Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Meeting Notice and Agenda

Planning Commission

Tuesday, September 1, 2020 | **6:00 PM** | **Council Chambers**

IN-PERSON ATTENDANCE AT PUBLIC MEETINGS HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. WATCH LIVE STREAMED MEETINGS AT: https://paradisevalleyaz.legistar.com/Calendar.aspx

1. CALL TO ORDER

2. ROLL CALL

THIS MEETING WILL BE HELD BY REMOTE PARTICIPATION ONLY

PUBLIC PARTICIPATION IN THE MEETING
Members of the public are encouraged to participate in the meeting via the following options:
1. View the live stream at https://paradisevalleyaz.legistar.com/Calendar.aspx
(a) Click on Calendar Tab
(b) Look for Planning Commission meeting (you may have to select it from the dropdown list) and find the meeting date
(c) Click the "In Progress" link in the column titled Video
2. Zoom Conference
(a) Computer: https://zoom.us/j/6678902153
(b) Telephone: 1 669 900 6833 Meeting ID 667 890 2153
3. Submitting questions and comments:
(a) Visit https://paradisevalleyaz.legistar.com/Calendar.aspx, search for the meeting date, and click "eComment". Locate the agenda item you are interested in and click "Comment" (Please submit comments at least 1 hr prior to meeting)
(b) Email pmichaud@paradisevalleyaz.gov (Please submit comments at least 1 hr prior to meeting)
4. Speaking during Call to the Public / Public Hearings
(a) Visit https://paradisevalleyaz.legistar.com/Calendar.aspx, search for the meeting date, and click "eComment". Locate the agenda item and click "Register to Speak". Join the meeting by dialing 1 669 900 6833 Meeting ID 667 890 2153
(b) If attending by Zoom Video Conference, click the chat button and enter your name and the agenda item you would like to address
(These meeting participation guidelines are pursuant to Town Council Resolution 2020-08 adopted March 17, 2020.)
Notice is hereby given pursuant to A.R.S. §38-431.02. that members of the Planning Commission will attend by audio/video conference call.

Notice is hereby given that members of the Public Body will attend either in person or by telephone conference call, pursuant to A.R.S. §38-431(4).

3. EXECUTIVE SESSION

The Public Body may convene into an executive session at one or more times during the

meeting as needed to confer with the Town Attorney for legal advice regarding any of the items listed on the agenda as authorized by A.R.S. §38-431.03.A.3.

4. CITIZEN REVIEW SESSION AND STUDY SESSION ITEMS

Work/Study is open to the public however the following items are scheduled for discussion only. The Public Body will be briefed by staff and other Town representatives. There will be no votes and no final action taken on discussion items. The Public Body may give direction to staff and request that items be scheduled for consideration and final action at a later date. The order of discussion items and the estimated time scheduled to hear each item is subject to change.

A. 20-327 Continued Discussion of a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

Staff Contact: Paul Michaud, Planning Manager, 480-348-3574

Attachments:

A - Application

B - Vicinity Map Related Maps

C.1 - Narrative and Plans (July 7, 2020 Submittal)

C.2 Parking Studies and Associated Documents (Revised 08-04-20)

C.3 - Traffic Impact Analysis

C.4 - Preliminary Drainage Report

C.5 - Wastewater Capacity Study

C.6 - Water Service Impact Study

D - SUP Guidelines

E - General Plan Policies

F - General & SUP History

G.1 - Public Comments (Revised 09-01-20)

G.2 - Notifications

H - Statement of Direction (June 2020)

I - Tentative Timeline (Revised 09-01-20)

J - Sample Use Parameters

K- Landscape Plan (Revised 08-04-20)

L - Right-of-Way

M - Floor Plans (Revised 08-04-20)

N - Site Elevation Grades (Revised 08-04-20)

O - Site Plan (Revised 08-04-20)

P - Elevations (Revised 08-04-20)

Q - Draft Ordinance (08-13-20)

R - Quail Run Road Illustration (09-01-20)

S - Lighting Plans (Revised 09-01-20)

5. PUBLIC HEARINGS

The Public Body may take action on this item.

6. ACTION ITEMS

The Public Body may take action on this item.

A. 20-328 **Recommendation of a Statement of Direction (SOD) Extension for a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort**

Staff Contact: Paul Michaud, Planning Manager, 480-348-3574

Attachments: A - Application

B - Statement of Direction (June 2020)

C - Revised Statement of Direction (September 2020)

7. CONSENT AGENDA

All items on the Consent Agenda are considered by the Public Body to be routine and will be enacted by a single motion. There will be no separate discussion of these items. If a Commissioner or member of the public desires discussion on any item it will be removed from the Consent Agenda and considered separately.

A. 20-321 **Approval of August 4, 2020 Planning Commission Minutes**

Attachments: 080420 MN Draft

B. 20-326 **Approval of August 18, 2020 Planning Commission Minutes**

Attachments: 081820 MN Draft

8. STAFF REPORTS

9. PUBLIC BODY REPORTS

10. FUTURE AGENDA ITEMS

11. ADJOURNMENT

AGENDA IS SUBJECT TO CHANGE

**Notice is hereby given that pursuant to A.R.S. §1-602.A.9, subject to certain specified statutory exceptions, parents have a right to consent before the State or any of its political subdivisions make a video or audio recording of a minor child. Meetings of the Planning Commission are audio and/or video recorded, and, as a result, proceedings in which children are present may be subject to such recording. Parents in order to exercise their rights may either file written consent with the Town Clerk to such recording, or take personal action to ensure that their child or children are not present when a recording may be made. If a child is present at the time a recording is made, the Town will assume that the rights afforded parents pursuant to A.R.S. §1-602.A.9 have been waived.*

The Town of Paradise Valley endeavors to make all public meetings accessible to persons with disabilities. With 72 hours advance notice, special assistance can also be

provided for disabled persons at public meetings. Please call 480-948-7411 (voice) or 480-483-1811 (TDD) to request accommodation to participate in the Planning Commission meeting.

Action Report

File #: 20-327

TO: **Chair and Planning Commission Members**

FROM: **Paul Michaud, Planning Manager**
George Burton, Senior Planner

DATE: **September 1, 2020**

DEPARTMENT: Community Development

AGENDA TITLE:
Continued Discussion of a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

SUMMARY STATEMENT:
REQUEST:
Gentree LLC, the property owner of the Smoke Tree Resort, is seeking redevelopment of the property located at 7101 East Lincoln Drive (APN 174-64-003A) via a major amendment to the site's existing Special Use Permit - Resort zoning. The application is attached as Attachment A. The proposed redevelopment of this property will be a complete demolition of all existing structures and construction of a resort.

MEETING PURPOSE:
Hold the Citizen Review Session pursuant to the Statement of Direction (SOD) and focus the review on the updated lighting and other items.

UPDATE FROM PRIOR MEEETING:
The Planning Commission last discussed the amended application at its August 18, 2020 work session. In summary, this discussion focused on the following:

- Lot Coverage/Floor Area Ratio. Town staff noted that the proposed lot coverage exceeds the Special Use Permit Guideline calculating all structures at not more than 25%. There are no specific Town Code or guideline provisions on floor area ratio. The proposed lot coverage is 29.3% (net) and 27.0% (gross), with a floor area ratio of 64.0% (net) and 59.0% (gross).

  The proposed project also does not meet the guideline that all impervious surfaces, including building footprints are not more than 60% and open space is at least 40%. The proposed impervious areas are 85% (net) and 78% (gross). The open space is 15% (net) and 12% (gross).

It was noted that the Special Use Permit Guidelines state that "the nature of the request, the architecture of the development, the unique characteristics of the site, among other factors; may merit less or more restrictive standards as determined during a complete review of each individual request." Also, the Statement of Direction allows the Commission to factor in the unique characteristics of the site. These characteristics include the property size at a quarter of the size suggested in the guidelines, the non-residential uses that border three sides of the site, the proximity to the City of Scottsdale, among others.

- Density. The lot coverage/floor area ratio discussion lead to a discussion on density, including concerns noted in a letter from the owner of the Andaz resort. Several Commissioners expressed concern over the hotel feel of the project, some desire to reconsider the third story or add more suite structures instead of the larger guest room building, reduce some accessory use areas, the size of the pool, the quality of the rooms (i.e. views of loading areas, views into the medical center), and the general impact the density has in driving the various aspects of the project. The applicant, along with their hotel expert, spoke regarding the niche market for this project being a modern reinterpretation of the resort experience. This included entering into a referral program to nearby resorts (e.g. spa at Andaz resort), the grouping of rooms with an ability to close off hallway areas for small groups (6 to 12 rooms), catering to guests that want to be in a higher energy area (e.g., walking to Scottsdale dining/shopping/events), and explained how the price point complements the other resort uses instead of competes with these other resorts.

- Stipulations. The draft stipulations were not discussed at the August 18th work session. The applicant was directed to work with staff on the stipulations in order to provide a vetted document for Planning Commission review.

- APS Utility Boxes. The Planning Commission requested an illustration showing space to relocate the cabinet should it be required. This illustration was shown during the August 18th work session presentation. APS will be a major determinant in cabinet relocation due to their system requirements once electric loads are provided closer to the construction drawing phase. Some potential locations include along the east side of the Quail Run Road right-of-way and at the southwest corner of Lincoln Drive and Quail Run Road, with a Town staff preference not at the southwest corner noted above. Attachment R includes the two possible utility box relocations.

- Lighting. The original submittal had bollard and landscape lighting located in the right-of-way. Based upon staff and Commission concerns, the applicant removed these fixtures from the right-of-way and submitted an updated lighting plan. The applicant also provided illumination information regarding the resort identification signs.

INFORMATION UNDER REVIEW OR STILL NEEDED FROM THE APPLICANT:
There are some items the applicant and Town staff are still working on, along with items not yet revised. These include, and may not be limited to, the following:

- Acoustical study. The applicant submitted their updated acoustical study on August 5th. The

Town secured a third party reviewer of this study on August 11th. As noted at the July 21st work session, Town staff requested that the applicant provide clarification on aspects of this study, including the assumptions and locations of the measurements. This study as originally submitted showed compliance to the Town Code decibel levels, noting the ambient noise from Lincoln Drive being higher than the fixed noise measurements of 45 dBA and 56 dBA. The Town's third-party reviewer, Acoustical Consulting Services, provided staff with additional review comments (which include questions regarding methods and assumptions used in the report). A copy of the comments will be forwarded to the applicant. Once the acoustical study is deemed complete by staff, it will be provided to the Planning Commission.

- Parking Management Plan. The applicant submitted the Parking Management Plan on August 10th. Town staff completed the review and provided the applicant with comments on August 20th. Once the updated plan is deemed complete by staff, it will be provided to the Planning Commission for review.

- Stipulations. Town staff provided the applicant with the comments on the draft stipulations on August 12th. However, the applicant did provide an earlier version several weeks before August 12th that was reviewed between the applicant and Town Attorney. The draft stipulations are still under review with the applicant. Staff and the applicant are working to finalize a draft version for Planning Commission review. The draft version should be ready for Commission review at the September 15th public hearing. For reference, the format of the stipulations is similar to other resort Special Use Permits and will be broken down into the following fourteen categories: definitions, general stipulations, construction and development standards, allowed uses, control of excessive noise, height and measurement, right-of-way, parking & circulation, signage, lighting, landscaping, temporary uses, cellular antennas, management-maintenance, and condition approval.

- Quail Run Road and Neighbor's Traffic Concerns. A resident west of the site had concerns regarding the possible stacking of vehicles leaving the resort on Quail Run Road; in which vehicles may pass the resort entrance and turnaround on their property. Town staff is working with the applicant and neighbor to address and resolve this issue. The plans and stipulations will be updated once an amenable solution is identified.

DISCUSSION:
Due to the pending items noted above, the purpose of this meeting is to take public comment on the proposed application, discuss any issues pertaining to the proposed Special Use Permit, evaluate the updated lighting plans provided by the applicant, and provide input and direction to the applicant in preparation for the September 15th public hearing. Please reference Attachment R regarding the updated lighting plans and documents.

Lighting
The SOD identifies that the Planning Commission focus on exterior lighting along the perimeter of the site. Parking lot, landscape, pathway, water feature, and building lighting will be placed around the site for on-site visibility, wayfinding, aesthetics, and life safety requirements. The SUP Guidelines recommend that the light source of each fixture be hooded and shielded so that it is not visible from adjacent properties, identifies recommended height and setbacks for certain fixtures, and

recommends a maximum output at the property line based upon the use (such as parking lot, entrance roadways, etc.). Article XXV of the Zoning Ordinance also recommends a maximum color temperature of 3000 Kelvins (K). Below is a summary of the resort light fixtures:

- *Pole Lights*. 23 pole lights will be placed in the parking lot and around the auto court/entrance (Fixture Type SA). This is a reduction of 3 lights since the original plan showed a total of 26 pole lights. These pole lights are 16' tall above the adjoining finished grade (height includes a 28" decorative base), have a color temperature of 2700 K, and vary in setback from 2' to 16' from the adjoining and post-dedicated property lines. The SUP Guidelines recommend that pole lights be limited to a maximum height of 16' tall, setback a distance equal to or greater than the height of the pole measured from the adjoining property line, and a maximum output of 1.6 foot candles for parking lot lights. The table below summarizes the setbacks of the parking lot light poles from each adjoining property lines:

Property Line	**Minimum Setbacks**
Lincoln Dr (North - Net/Post Dedication)	2'
Quail Run Rd (West - Net/Post Dedication)	16'
Andaz (South Property Line)	16'
Lincoln Plaza Medical Center (East Property Line)	2'
SUP Guidelines	16' Minimum (Height of the fixture determines the setback)

  The pole lights have a ML660 Millenia Series hood (with the light source recessed into the hood of the fixture), will have shields on all the perimeter fixtures to help reduce the amount of light trespass onto the neighboring properties, and are proposed to be on from dusk until dawn. However, several pole lights deviate from the SUP Guidelines since approximately 12 pole lights encroach into the 16' recommended setback. The number of pole lights which encroach into the recommended setback has been reduced from 18 to 12 poles. Encroachment into the recommended setback is typically discouraged or limited.

- *Building Lights*. Five different fixtures will be placed on or around the exterior of the resort buildings. All building lights will turn on at dusk, be reduced to 50% intensity at 1:00 a.m., and turned off at dawn. A stipulation will be added to identify the duration and reduced intensity of the building lights. Below is a summary of the various building light fixtures:

  - 57 wall sconces (Fixture Type WP) will be placed on the buildings. The light source is shielded by an opaque cover, directed downward, and has a color temperature of 2700K. This is the same as the prior lighting plan.
  - 30 sconces (Fixture Type WS) will be placed in the building patios. The light source is recessed in the hood of the fixture, directed downward, and has a color temperature of 3000K. This is the same as the prior lighting plan.
  - 62 accent lights (Fixture Type LT) will be placed on the building trellises and on two free standing trellises located in the event lawn. The light source is recessed into the

fixture, directed downward, and has a color temperature of 2700K. This is an increase of 6 fixtures from the prior lighting plan.

- An estimated 90 accent up-lights (Fixture Type LU) will be placed around five of buildings and will highlight the façade of the buildings. The light source is recessed within the fixture, will have a maximum of 250 lumens, and have a color temperature of 2700 K. Building accent lighting is typically discouraged or limited. This is an increase of 2 fixtures from the prior lighting plan.
- 17 carriage style lights will be placed on four of the buildings, predominately on the restaurant and event pavilion buildings. These are a new fixture type since the prior lighting plan. Some of these carriage lights replace proposed sconce fixtures. These fixtures have a color temperature of 3000K, will face Lincoln Drive and Quail Run Road, and do not meet all of the Town Code requirements. The Code requires the light source of each fixture to be screened or shielded so they are not visible from off the property. However, the light source on these fixtures are located behind semi-opaque or frosted glass panels, which does not properly shield the light bulb.

With the exception of the carriage style lights, the building fixtures are compliant with the SUP Guidelines.

- *Landscape and Path Lights*. One type of bollard, three types of landscape fixtures, and one type of handrail fixture will be used to illuminate the landscaping and pathways. All landscape lights will turn on at dusk, be reduced to 50% intensity at 1:00 a.m., and turned off at dawn:

  - 12 bollard lights (Fixture Type BL) will be placed next to the various walkways within the campus. The original plan had 8 bollards in the right-of-way. However, the applicant removed all lighting from the right-of-way in response to Commission and staff concerns. The bollards are approximately 4’ tall, have the light source recessed in the top of the fixture, and have a color temperature of 3000K.
  - 24 ring lights (Fixture Type TR) will be placed on the palm trees. Each ring can hold up to four lights. The lights are directed downward and will illuminate from the bottom half of the trees, have a color temperature of 2700 K, and the light source is recessed in the hood of the fixture. These lights will be limited to a maximum mounted height of 16’ tall. The majority of the tree lights are located in the event lawn; however, four of these tree lights are located at the main entrance off of Quail Run Road. Palm tree light rings are typically discouraged or limited.
  - 32 landscape up lights (Fixture Type GU) will placed around the campus. 18 of these lights were originally going to be placed in the right-of-way. However, all light fixtures have been removed from the right-of-way in accordance with Planning Commission’s direction. The color temperature is 2700 K.
  - An estimated 11 handrail fixtures (Fixture Type HR) will be placed under all the exterior handrails on campus. The light source is recessed inside the fixture, has a color temperature of 2700 K, and the light is directed downward on the walking surface.
  - 5 flush mounted up-lights (Fixtures LU) will be placed in the parking lot landscape islands adjoining Lincoln Drive in lieu of the bollard lights in the right-of-way. These lights will highlight the trees in the parking lot planters. The light source is recessed

within the fixture, will have a maximum of 250 lumens, and have a color temperature of 2700 K. Building accent lighting is typically discouraged or limited.

- *Resort Identification Sign Illumination*. As noted in the previous meetings, a total of three sign types will be used at the resort: resort identification, retail signage, and directional signage. Resort identification includes three signs that will face Lincoln Drive and one sign that will face Quail Run Road (see Sheets A25 and A26). However, the sign illumination information and details were not included in original submittal. The applicant provided updated plans and a detail illustrating the illumination of resort identification signs. These are backlit signs, with the light source located behind opaque aluminum lettering, and a color temperature of 2700K.

- *Water Feature Lights*. 19 water feature lights will be used in the seven water features shown on Sheet A12. Each fixture is 250 lumens.

- *Output*. The applicant provided an updated photometric plan (Sheet AL5) which illustrates the combined output of the proposed exterior lighting. The updated plan accounts for the changes noted above and identifies the minimum, average, and maximum output levels which are summarized in the Calculation Summary Table. The SUP Guidelines recommend maximum output levels at the property line per use. Parking lots have a recommended output of 1.6 foot candles at the property line and roadway entrances, drop off areas, and driveways have a recommended output of 5.0 foot candles measured at the property line. Please reference Section 2 in the SUP Guidelines (Attachment D) for all the recommended outputs by use. It is also recommended that all other areas not outlined in the SUP Guidelines comply with the residential output of 0.75 foot candles at the property line.

  Per the updated photometric plan, the output varies from 0.0 foot-candles to 0.5 foot-candles at the property lines. The Calculation Summary Table is broken down into three categories of the light trespass, interior drives, and pool deck area. The light tress pass areas have an average output of 0.18 foot-candles and maximum output of 0.5 foot-candles (which is compliant with the recommended output of 0.75 foot-candles at the property line). The interior drives have an average output of 1.08 foot-candles and a maximum output of 4.4 (which is compliant with the recommended output of 5 foot-candles for driveways and entrances). The pool deck area has an average output of 1.62 foot-candles and a maximum output of 4.9 (which is compliant with the recommended output of 5 foot-candles for pool decks and function areas).

Staff is seeking the Commission's input regarding the reduced setbacks for the parking lot light poles, use of palm tree lighting, and if there are any concerns regarding the timing of certain light fixtures. Refer to Attachment S for the updated lighting plans.

PUBLIC COMMENTS AND NOTICING:

There are six residents that provided comment to date.

- Three residents expressed concern about density.
- Another resident expressed concern over the Town's property tax model.
- A resident west of the site, who is generally supportive of the amendment, had concerns for the possible stacking of vehicles leaving the resort on Quail Run Road and concerns with

vehicles that may pass the resort entrance that would likely turnaround on private land and private driveways.
    - Regarding vehicle stacking, the Town Engineer explained that under normal operation the Quail Run Road signal operates at a Level of Service A. If there were a large event and everyone left at the same time, then there could be some stacking between the Smoke Tree Resort entrance and Quail Run Road while waiting for the traffic signal to cycle. This would mostly affect the property at the southwest corner of Lincoln Drive and Quail Run Road as they have the only driveway between Lincoln Drive and the Smoke Tree Resort entrance. However, an event would require the valet plan to be in place so only a certain of number of vehicles could be leaving the valet at one time with stacking due to the valet occurring on the resort property.
    - Regarding a driver passing the Quail Run Road resort entrance, the applicant and Town Engineer already reached out to this resident. As more is known, the Planning Commission will be provided an illustration on possible design and/or signage options. However, Attachment R shows a preliminary design.
- The owner of Andaz resort has concerns with density, setback, and the landscape barrier along south property line.

The applicant also held a neighborhood meeting on August 20th. There was both in-person and remote participation. The applicant will provide summary minutes of the neighborhood meeting, which will be included in the September 15th meeting packet.

Please reference Attachment G.1 for public comments on this amended application.

NEXT STEPS:
The Statement of Direction identifies that the Planning Commission shall complete their review and make a recommendation to Town Council by September 30th. However, since the applicant and staff are still working on the acoustical study, the draft stipulations, the Parking Management Plan, and the neighbor concern regarding traffic on Quail Run Road, staff recommends referring the Statement of Direction back to the Council to request additional time to complete the review on this application. Per Section 1102.3.C.3.c of the Town Zoning Ordinance, “At any time during the review process the Planning Commission may request clarification and/or expansion of the Statement of Direction based on additional information that has evolved.” A separate action item is agendized on this matter for September 1st.

ATTACHMENT(S):
A Application
B Vicinity Map & Related Maps
C.1 Narrative and Plans (July 7, 2020)
C.2 Parking Studies and Associated Documents (Revised 08-04-20)
C.3 Traffic Impact Analysis
C.4 Preliminary Drainage Report
C.5 Wastewater Capacity Study
C.6 Water Service Impact Study
D SUP Guidelines
E General Plan Policies

F	General & SUP History
G.1	Public Comments (June 28, 2020 and later)
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N	Site Elevation Grades (Revised 08-04-20)
O	Site Plan (Revised 08-04-20)
P	Elevations (Revised 08-04-20)
Q	Draft Ordinance (Dated 08-13-20)
R	Quail Run Road Illustration (09-01-20)
S	Lighting Plans (Revised 09-01-20)

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APPLICATION FOR SPECIAL USE PERMIT AND MAJOR AMENDMENT TO THE SPECIAL USE PERMIT

PARCEL NO.: 174-64-003A **DATE:** 5/4/18
(County Tax Assessor Number)

NAME OF SUBDIVISION OR PARCEL: _____

ADDRESS OR LOCATION OF PROPERTY: _____

7101 E. Lincoln Dr. Paradise Valley, AZ 85253

OWNER: Gentree, LLC
NAME

3620 E. Campbell Ave., Suite B (602)952-8811
ADDRESS PHONE #

_____
SIGNATURE OF OWNER

AUTHORIZED AGENT: Taylor Robinson
NAME

3620 E. Campbell Ave., Suite B
ADDRESS

(602)952-8811 ( )
PHONE # FAX #

_____
SIGNATURE OF AUTHORIZED AGENT

APPLICATION FOR SPECIAL USE PERMIT AND MAJOR AMENDMENT TO SUP

(REQUIRED) PLEASE PROVIDE A NARRATIVE/DESCRIPTION OF THE PROPOSAL

(Please Attach Additional Sheets as Necessary):

SEE BOOKLET

ADDITIONAL APPLICATIONS:

	YES	NO
GUARD GATES		X
ROADWAY ABANDONMENT		X
REZONING		X
HILLSIDE		X

IF YES, SEE ADDITIONAL APPLICATIONS

MARICOPA COUNTY RECORDER
ADRIAN FONTES
20180248085 04/03/2018 10:15
ELECTRONIC RECORDING

88012753-3-6-4--
morenoa

When recorded, return to:

GENTREE, LLC
c/o Chester & Shein, P.C.
6720 North Scottsdale Road, Suite 261
Scottsdale, Arizona 85253
Attention: David E. Shein, Esq.

SPECIAL WARRANTY DEED

FOR THE CONSIDERATION of the sum of Ten Dollars ($10.00) and other valuable consideration, the receipt and sufficiency of which are acknowledged, SMOKE TREE RESORT, LLC, an Arizona limited liability company (formerly known as Smoke Tree Resort Merger, LLC, an Arizona limited liability company, as successor by merger to Smoke Tree Resort, LLLP, an Arizona limited liability partnership and Smoke Tree Resort, an Arizona limited partnership) ("Grantor"), hereby grants, sells, and conveys to GENTREE, LLC, an Arizona limited liability company, the real property situated in Maricopa County, Arizona and described on **Exhibit A** (the "Property");

TOGETHER WITH all buildings, improvements and fixtures located thereon as of the date hereof and all right, title and interest, if any, that Grantor may have in and to all rights, privileges and all easements benefitting the Property, appurtenances pertaining thereto including all of Grantor's right, title and interest, if any, in and to all rights-of-way, open or proposed streets, alleys, easements, strips or gores of land adjacent thereto;

SUBJECT TO current taxes and assessments not yet due and payable, easements and restrictions of public record, and encroachments visible upon the Property;

And Grantor hereby binds itself and its successors and assigns to warrant and forever defend the title to the Property, as against all acts of Grantor herein and none other, subject to the matters above set forth.

[Signatures appear on the following page]

Dated as of April 2nd, 2018.

GRANTOR:

SMOKE TREE RESORT, LLC,
an Arizona limited liability company

By: _____
Name: Eric Williams
Title: Authorized Signer

STATE OF ARIZONA)
) ss.
County of MARICOPA)

The foregoing instrument was acknowledged before me on April 2nd, 2018, by Eric Williams, the Authorized Signer of SMOKE TREE RESORT, LLC, an Arizona limited liability company, on behalf of the company.

_____
Notary Public

My commission expires: 8/3/21

Drue Coats
Commission # 532170
Notary Public - Arizona
Maricopa County
My Commission Expires
August 3, 2021

Exhibit A

(Legal Description of the Property)

PARCEL NO. 1:

The North half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

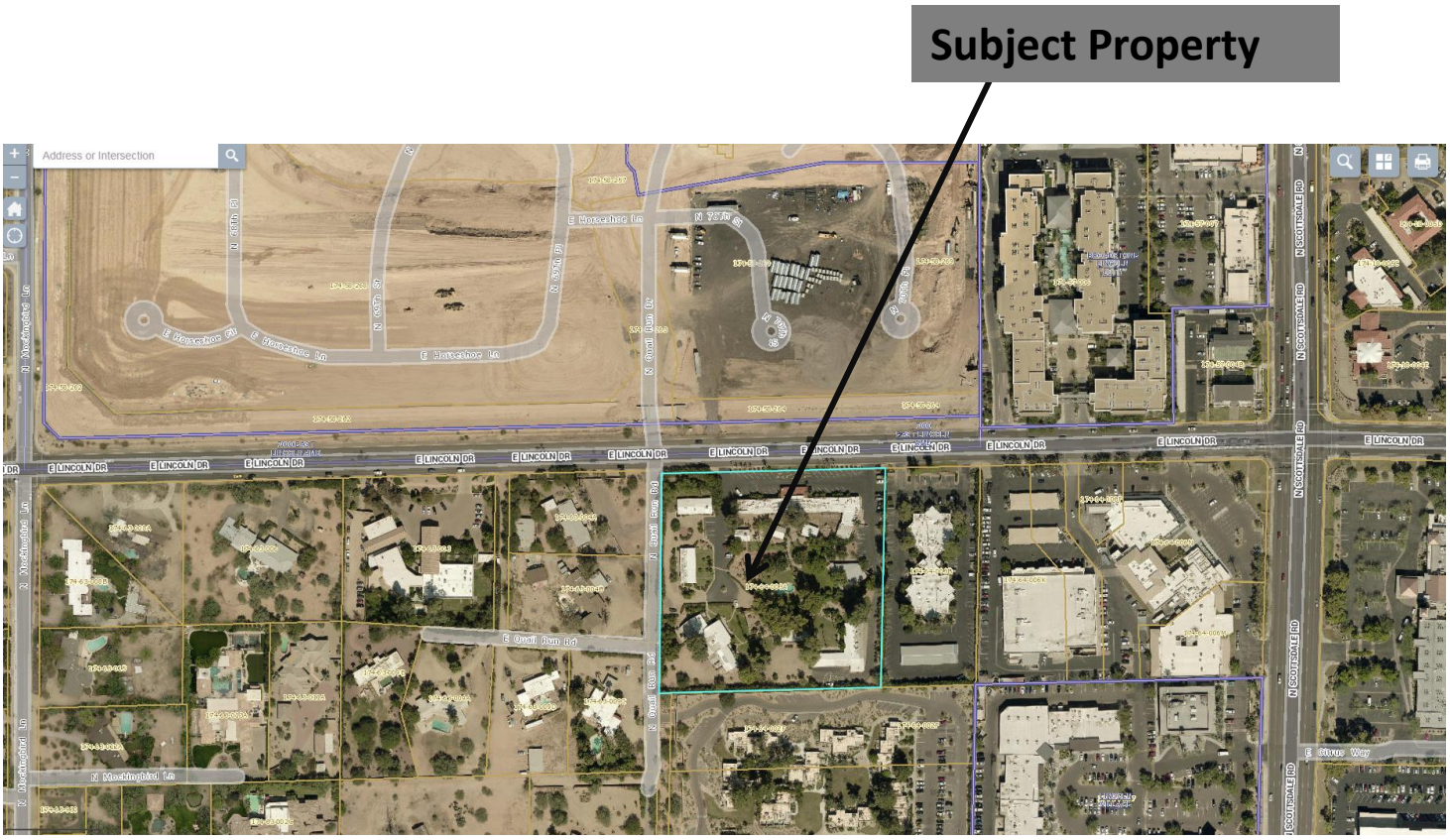
EXCEPT the East 200 feet, thereof.

PARCEL NO. 2:

The North half of the South half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

EXCEPT the East 200 feet, thereof.

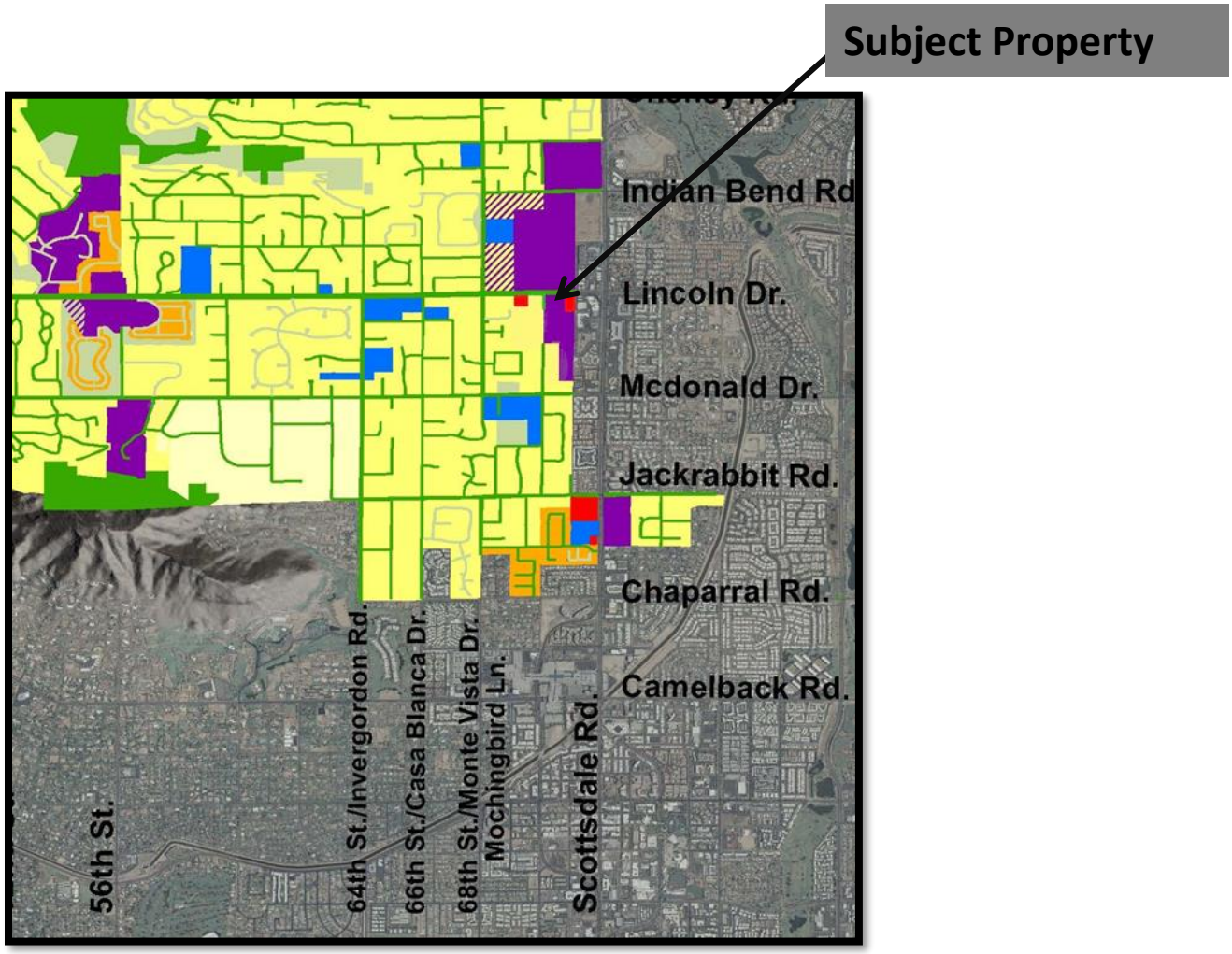
VICINITY MAP



Smoke Tree Resort SUP

7101 E Lincoln Drive

GENERAL PLAN



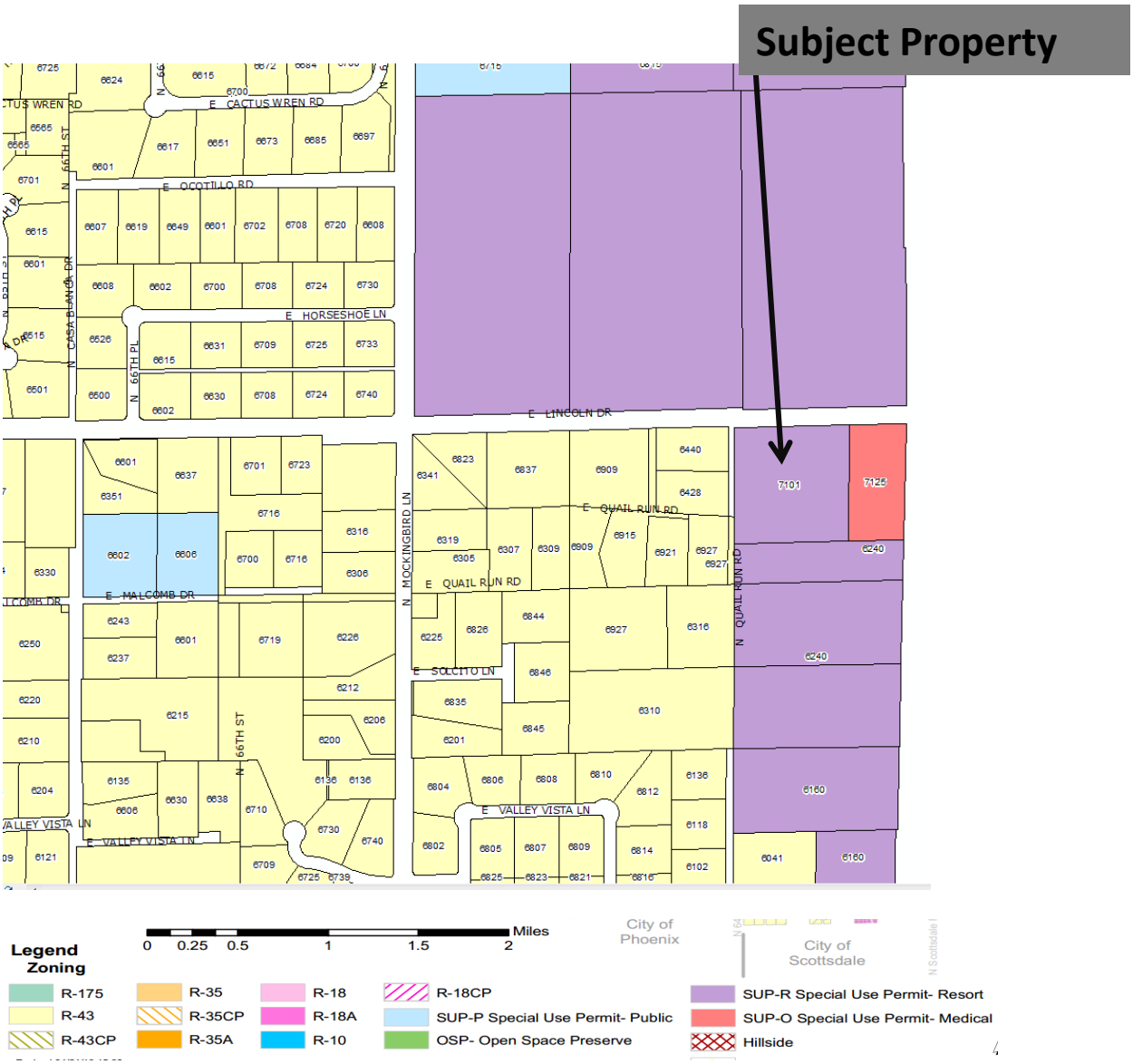
Legend

- Low Density Residential OR Resort/Country Club
- Private Open Space OR Resort/Country Club
- Very Low Density Residential
- Low Density Residential
- Medium Density Residential
- Private Open Space
- Public Open Space
- Medical Office
- Public/Quasi Public
- Resort/Country Club

Smoke Tree Resort SUP

7101 E Lincoln Drive

ZONING



Smoke Tree Resort SUP

7101 E Lincoln Drive

the smoke tree resort

SPECIAL USE PERMIT - MAJOR AMENDMENT APPLICATION

7101 E LINCOLN DRIVE, PARADISE VALLEY, ARIZONA 85253

SUBMITTAL SEPTEMBER 6, 2019
RESUBMITTAL OCTOBER 9, 2019
RESUBMITTAL NOVEMBER 1, 2019
RESUBMITTAL DECEMBER 6, 2019
RESUBMITTAL JANUARY 21, 2020
RESUBMITTAL MAY 14, 2020

OWNER	GENTREE LLC	TAYLOR ROBINSON / SAM ROBINSON
	3620 E Campbell Ave, Phoenix, AZ 85018 602.952.8811	
RESORT MANAGEMENT	VENTANA HOTELS	JASON WALTON
	9170 E Bahia Dr #102 Scottsdale, AZ 85260 480.788.0431	
PARTNER	STARK BUILDERS INC.	PAUL STARK
	9827 N 65th Place Scottsdale, AZ 85253 480.788.0431	
ZONING ATTORNEY	BEUS GILBERT	PAUL E. GILBERT
	701 N 44th St Phoenix, AZ 85008 480.429.3000	
ARCHITECT	PHX ARCHITECTURE	ERIK PETERSON, AIA
	15990 N Greenway-Hayden Loop C-100 Scottsdale, AZ 85260 480.477.1111	
CIVIL ENGINEER	CVL CONSULTANTS	FRED FLEET, P.E.
	4550 N 12th St Phoenix, AZ 85014 602.264.6831	
LANDSCAPE ARCHITECT	GREEY PICKETT	RUSSELL GREEY, RLA
	7144 E Stetson Dr #205 Scottsdale, AZ 85251 480.609.0009	
TRAFFIC CONSULTANT	CIVTECH INC.	DAWN CARTIER,P.E., PTOE
	10605 N Hayden Rd #140 Scottsdale, AZ 85260 480.659.4250	
LIGHTING DESIGN	CREATIVE DESIGNS IN LIGHTING	WALTER SPITZ
	15982 N 78th st, Suite A Scottsdale, AZ 85260 602.248.7822	

PHX ARCHITECTURE
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BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

PROJECT TEAM

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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SEP 6, 2019
11 x 17 format

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PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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MAY 14, 2020

OVERVIEW

The Smoke Tree Resort, located at 7101 East Lincoln Drive in the Town of Paradise Valley, is designated for Resort Use (SUP-R zoning) under the General Plan and within the designated East Lincoln Drive Development Areas (the "Resort"). Gentree LLC purchased the Resort in 2018 and is proposing a Major Amendment to the existing Special Use Permit that is harmonious with Town Plan Goal 2.2.

"Development Areas are meant to encourage new resort development and redevelopment that reflects the Town's needs for fiscal health, economic diversification, and quality of life."

Gentree LLC is comprised of Arizona-local principals with development project experience of this scale and within the Hotel/Resort sector.

Originally opened in 1966 and operating in perpetuity since, the approximately 5 acre Resort resides at the commercial interface of Lincoln Drive and Scottsdale Road. The Resort has historical presence at the entrance to the Town of Paradise Valley and serves as the gateway to the Town. Since inception, the Resort has yet to undergo any significant renovations or expansions beyond general maintenance and upkeep. The Resort is notably dated in comparison to other resorts.

b) Given its 5 acre size, guidelines for 20 acres and stipulations need to be modified.
c) Acknowledgment of its proximity to the adjacent commercial.
d) Special consideration that for its unique history and location on Lincoln Dr.

The vision for the transformation of the Resort is to welcome guests to a four-star "local-centric" hospitality experience in both form and substance. This is to be achieved through active forward-facing components and lifestyle programmatic aspects. The existing Resort often goes unnoticed in its unassuming character along Lincoln Drive. The revitalization of the Resort will retain its charming essence while providing the scale and quality of amenities sought by today's traveler; the specifics of which include 122 guest rooms, special event venues, and a neighborhood local-centric fresh market & eatery concept. The relaxed, pedestrian friendly environment will not include the typical resort perimeter walls or gates; instead, setbacks that align with existing buildings are desired, including a bicycle/pedestrian path that shall weave the resort into the local tapestry.

Gentree LLC understands that thoughtful design, unified independent management, and attentive local stewardship are key ingredients for the success of this project at such a pivotal location and has engaged adjacent property owners in fruitful collaborative dialog, exploring synergistic opportunities along common property lines.

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PROJECT NARRATIVE

the smoke tree resort
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SITE

The Resort property occupies approximately 5 acres of land at 7101 East Lincoln Drive in the Town of Paradise Valley. The existing Resort is comprised of 11 buildings, a restaurant, a pool and surrounding pool area, 2 bocce courts and 130 surface parking spaces. Attached exhibits reveal the current conditions with visuals of sight lines, existing oleander perimeters, and setbacks.

SETBACKS: The attached exhibit outlines existing setbacks, which are proposed to be increased in the revitalization of the property. The objective is to retain the existing building relationships along East Lincoln Drive with the proposed building frontage aligned with the existing building frontage.

The proposed East setback is 45' and the proposed South setback is 60' in consideration of the abutting SUP properties as a commercial office complex and resort, respectively.

The West setback is proposed at 50' from the net property line and 100' from the adjacent property line as described in the Statement of Direction.

EAST LINCOLN DRIVE ("LINCOLN"): Today, the property has an existing 33' county roadway easement along Lincoln and two existing vehicular access points which allow right and left turns. The proposed plan shows the elimination of the Western driveway and the movement of the Eastern driveway to a shared access with Lincoln Medical Center and located on the shared property line. This location may adjust as the Town finalizes their plans for Lincoln Drive. The proposed access point on Lincoln Drive will provide full turning movements and a right-turn deceleration lane.

WESTERN BOUNDARY: As shown on the plan, this improvement will provide for the Town's designated 2-lane road design for this category of roadway. Improvements will include those shown on the Resort property as well as 11' of asphalt and 2' of curbing in the Town's currently owned right-of-way designated as Quail Run Road.

HEIGHTS: The proposed buildings are to be no more than 3 stories and within two height tiers of 24' and 36' from Original Natural Grade (ONG). This request is complimentary to the characteristics of other nearby developments to the North and East along Lincoln and derived with consideration of adjacent property uses in context of the Town of Paradise Valley's Open Space Criteria ("OSC"). Specific to the OSC, the Resort is abutted on two sides (East and South) by Special Use commercial property. On the West and South boundaries, as previously indicated, the Resort design meets the OSC requirements. The only encroachment into the OSC will be along the North and East sides, as a result of dedication of Right of Way and adjacent to the SUP-O Medical office, and located generally along the parking for the Medical Office, respectively.

COVERAGE: Calculation of the proposed lot coverage is 29.3% with a floor area ratio of 0.64. These calculations are based on the post dedication parcel boundaries.

INGRESS/EGRESS: The primary access point for the Resort will be at Quail Run Road. One secondary access point is proposed on Lincoln Dr. Civtech, Inc. has submitted traffic studies to provide more information on the points of access.

SIDEWALK: The site plan illustrates a proposed meandering pedestrian path integrating the Resort within the existing network of sidewalks and providing pedestrian connectivity to nearby commercial areas. Alongside the right-turn deceleration lane, the sidewalk does not meander and is instead, attached to the back of the curb

PARKING: The proposed revitalization plan will utilize surface parking. The existing parking along Lincoln Drive is to be kept in place to allow for convenient local patron access to the forward-facing Resort features. Dedicated hotel guest and valet parking will be available. Civtech, Inc. has submitted multiple revisions to the related parking study and has provided information on the following items: shared parking, parking for all proposed uses, overflow parking during special events, limitations on joint use of facilities, and drop off/pick up. The existing parking requirements adopted by the Town do lag surrounding municipalities in accounting for the change in Resort parking and traffic impact. The proposed parking plan and related study balance these elements.

EMERGENCY VEHICLE ACCESS: The primary access points for Emergency Vehicles is Lincoln Drive or Quail Run Road.

DELIVERIES AND REFUSE COLLECTION: In order to address safety concerns of deliveries and refuse collection from Lincoln Drive, deliveries will be screened behind the proposed building and refuse will be stored in screened enclosures. The designated temporary loading and unloading area will be accessed from Lincoln Dr and will be restricted to specific times of the day per the Town's requirements.

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PROJECT NARRATIVE

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LANDSCAPE

LANDSCAPE DESIGN: As evaluated by Greey Pickett, the existing landscape on site consists of mature Eucalyptus and Pines with exposed root systems that have begun losing their form due to mature branches splitting off. There are also Mexican Fan Palms, all of which are different ages and heights, and Oleander and Sage bush that have become woody due to age and over pruning. There is no native planting or cacti on site that would need to be salvaged. The salvageability of the existing trees is not recommended due to age, size, and diseased quality.

The proposed forward-facing landscaping palette is anticipated to be comprised of regionally appropriate selections, low water-use trees, shrubs, ground cover and accent plants to enhance the entry and provide shade for pedestrians. Landscape and related lighting along Lincoln Drive will be conforming with the Town guidelines.

RESORT DESIGN

RESORT: The independent four-star Resort will be owned by Gentree LLC and operated by an affiliated resort operator:
122 Guest Room units with various categories of sizes and configurations
Forward facing resort facility to include a combination of the following components: Fresh Market, Café/Eatery, Restaurant, Bar/Lounge, Micro-Brewery, Speakeasy, Private dining vignettes, Pop-up Retail, Coffee Shop, Florist, Sandwicheria, Bakery, Epicurean Retail and Sundries
Resort Pavilion: appropriately sized for banquets, meetings, ceremonies, and special events
Open space gardens and grounds
Resort pool area(s)
Resort Spa
170 parking stalls with parking for 196 under a Valet plan

ARCHITECTURAL DESIGN: Within the property, each component will speak its own dialect, but all within a common design language. This is desired as a means to guide patrons through the variety of areas and purposes via the use of visual cues achieved via the architecture. The predominate architectural design pallet will be strongly rooted in Spanish Revival but accentuated with notably transitional components.

CONCLUSION

Until being acquired by Gentree LLC the historic Smoke Tree Resort had been operated and maintained continuously by the Williams family for over 50 years as a charming, small-scale retreat where the Town of Paradise Valley meets the City of Scottsdale. Development at this interface has well outpaced the venerable cluster of private rooms still maintained behind Dale Anderson's long-closed "The Other Place". The time has come to revitalize this important contributor to The Town with the following updates:

-Additional hotel rooms with resort quality
-Neighborhood amenities: local-centric Café/Market/Restaurant/Bar
-On-site entertainment venues for small events and family gatherings
-Integrated landscaping and pedestrian corridors for neighborhood access
-Modern guest amenities and building design to compliment the Town entrance

The local team of new owners and operator, together with PHX Architecture and other renowned professionals, have crafted an exciting plan of moderate intensity which synergizes with the Town's need for fiscal health, economic diversification, and quality of life. Balancing the critical mass of modern-day resort programming within the small scale of this 5-acre site fronting Lincoln Dr can be achieved within the flexibility of the current resort zoning and the East Lincoln Drive Development overlay to the best interests of the Town of Paradise Valley.

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PROJECT NARRATIVE

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LEGEND:

- Proposed Setback
- Area to be Dedicated
- Roadway Easement

* Note: as requested in the Statement of Direction

PHX ARCHITECTURE

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EXISTING SITE - AERIAL VIEW
PROPOSED SETBACK / DEDICATION OVERLAY

The smoke tree resort

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PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

Total Self-Park Spaces = 170
Dimensions: 9' x 18' + 2' overhang

or

Total Valet Spaces = 196

PHX ARCHITECTURE
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CREATIVE DESIGNS IN LIGHTING
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PROPOSED SITE PLAN - GROUND LEVEL

The smoke tree resort
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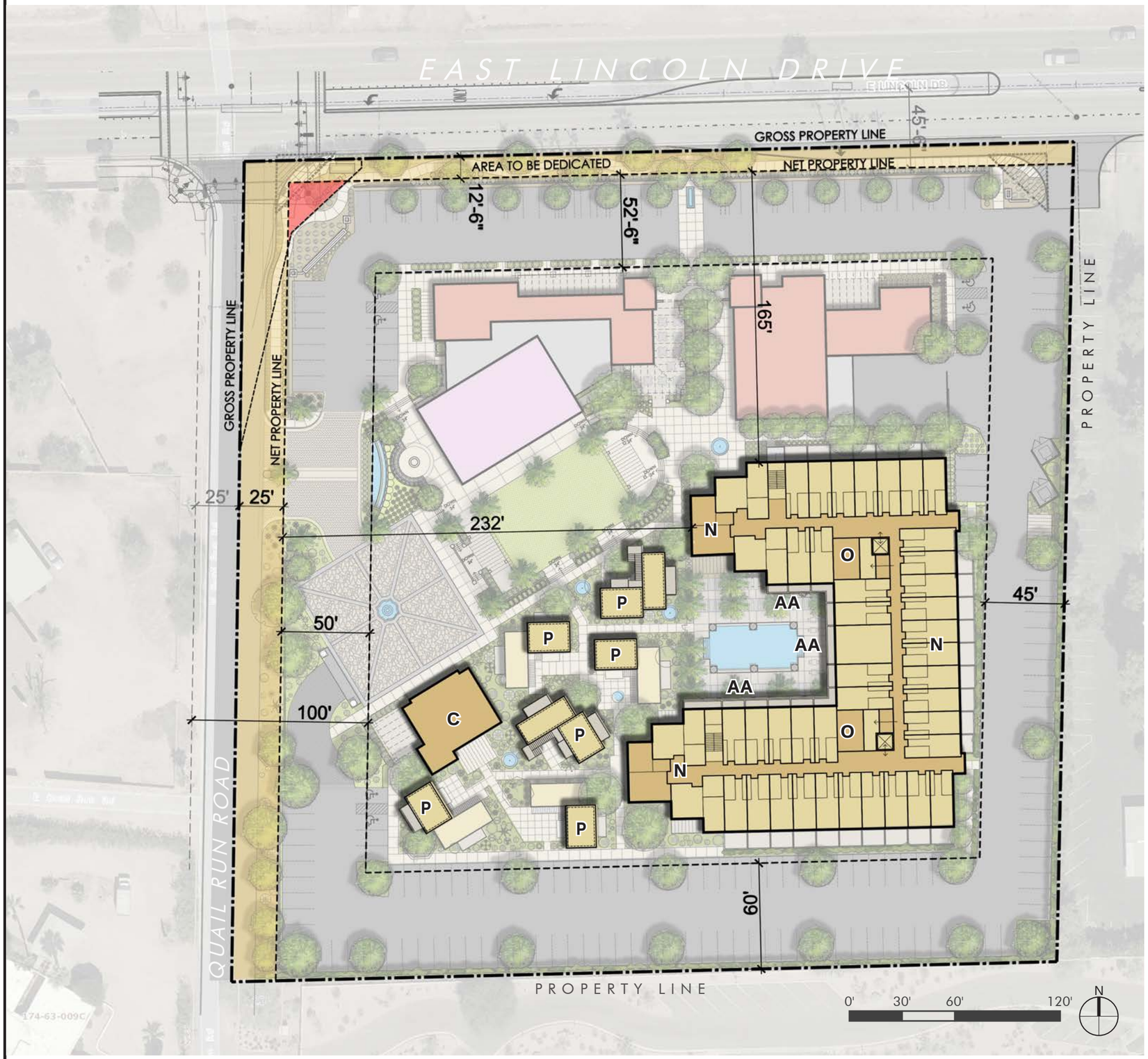

PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

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PROPOSED SITE PLAN - SECOND LEVEL

The smoke tree resort

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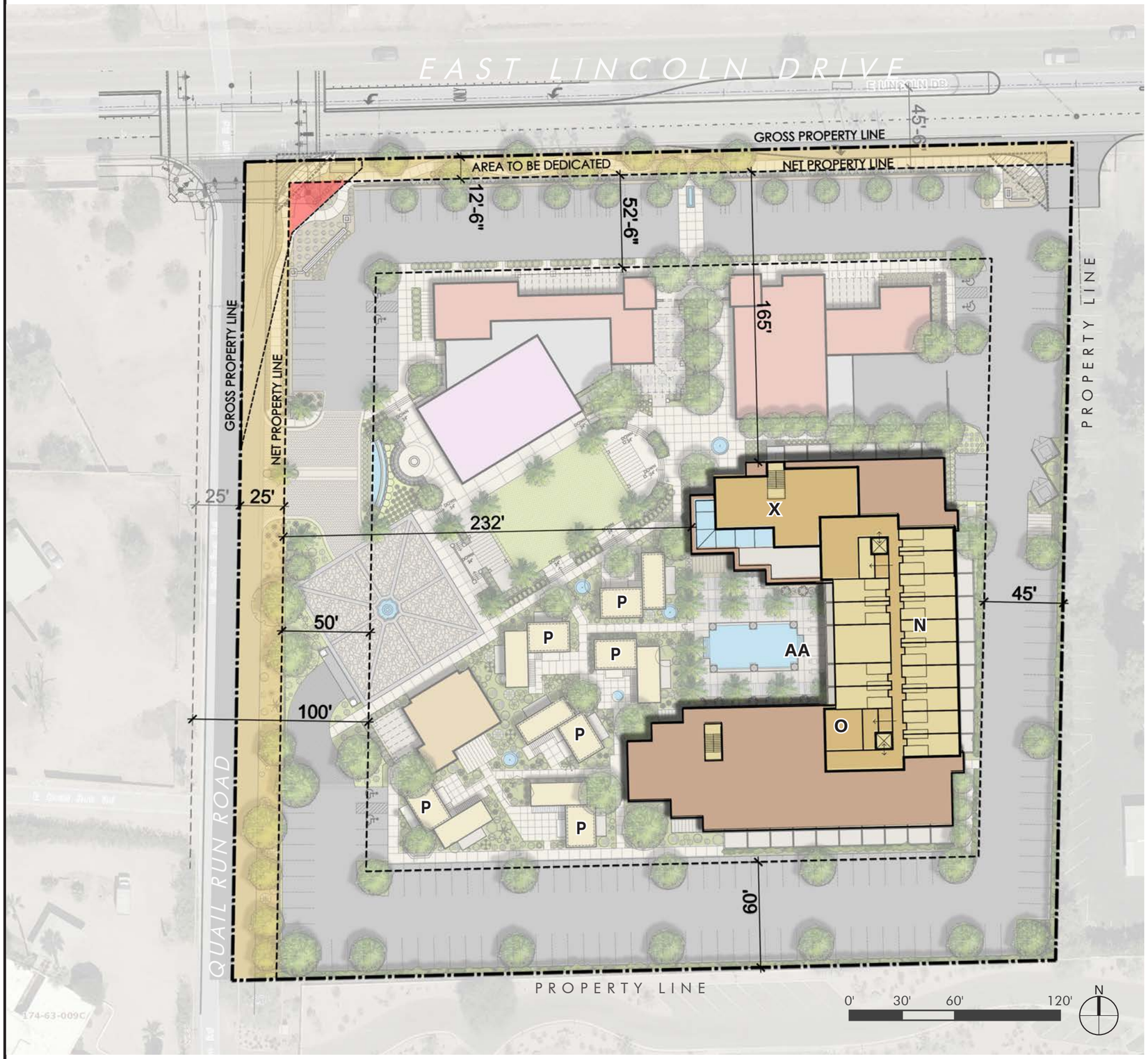

PROGRAM:

N. Resort Suites (guest rooms)
O. Meeting Room
X. Lounge
AA. Balconies

PHX ARCHITECTURE

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BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

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PROPOSED SITE PLAN - THIRD LEVEL

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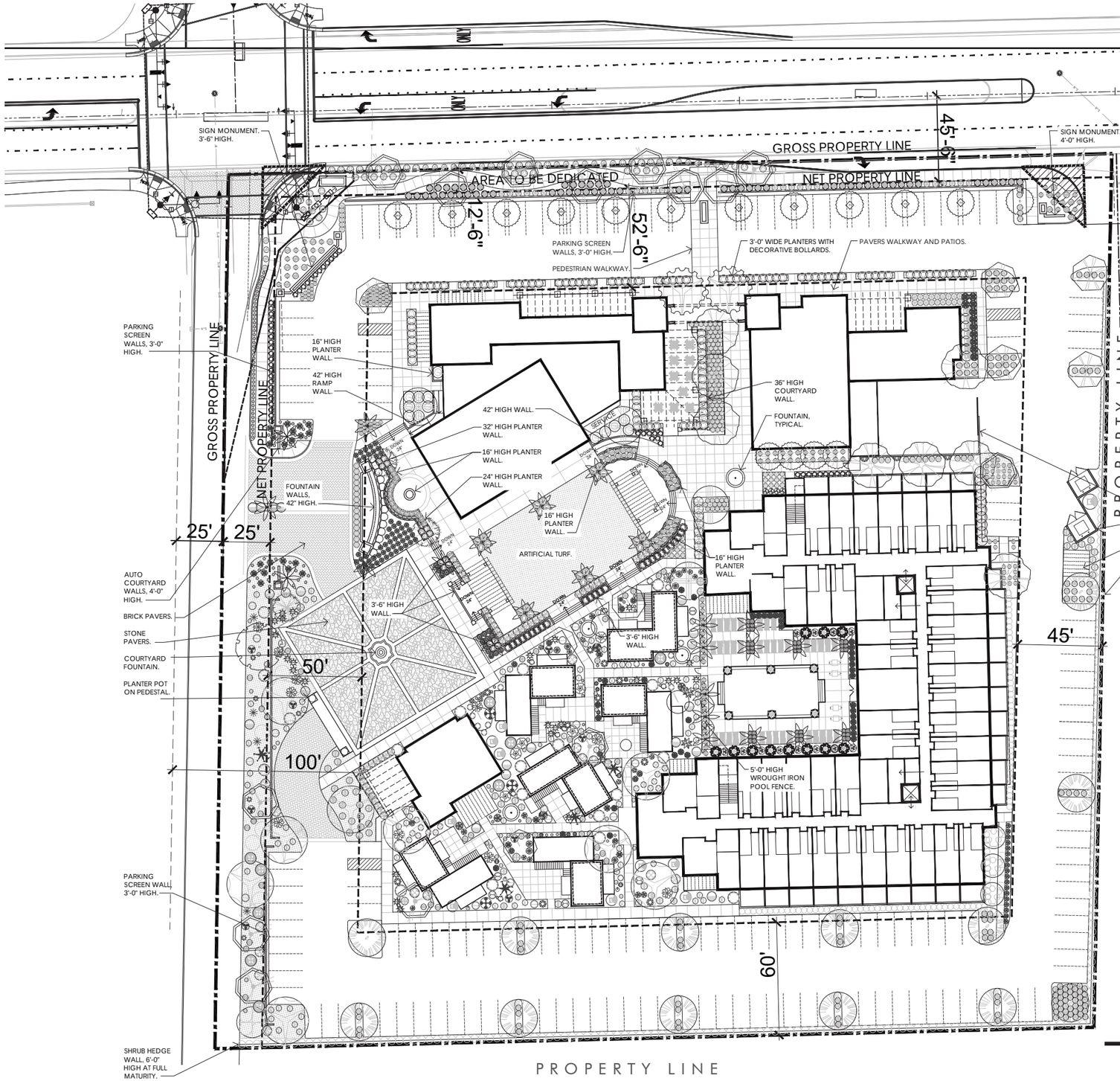


PLANT MATERIALS LEGEND

Sym.	Plant Name	Size	Qty
Trees			
	Acacia aneura Mulga Acacia	24" box	12
	Acacia stenophylla Shoestring Acacia	24" box	4
	Caesalpinia cacalaco 'Smoothie' Thornless Cascalote	24" box	1
	Chilopsis linearis 'Bubba' Bubba Desert Willow	24" box	13
	Chitalpa tashkentensis Chitalpa	24" box	1
	Nerium Oleander White Oleander	15 gallon	3
	Olea europaea 'Swan Hill' Swan Hill Olive	24" box	4
	Olney tesota Ironwood	24" box	3
	Parkinsonia hybrid 'Desert Museum' Desert Museum Palo Verde	24" box	14
	Parkinsonia praecox Palo Brea	24" box	5
	Phoenix dactylifera 'Medjool' Medjool Date Palm	16'	25
	Prosopis alba 'Cooperi' Cooper's Mesquite	24" box	2
	Prosopis glandulosa 'Maverick' Thornless Texas Honey Mesquite	24" box	9
	Quercus virginiana Southern Live Oak	24" box	8
	Sophora secundiflora Texas Mountain Laurel	24" box	9
	Tabebuia impetiginosa Pink Trumpet Tree	24" box	3
Shrubs			
	Alyogyne huegilii Blue Hibiscus	5 gal.	20
	Bougainvillea 'Rosenka' Bougainvillea	5 gal.	20
	Calliandra eriophylla Pink Fairy Duster	5 gal.	5
	Citrus aurantium Sour Orange Hedge	5 gal.	226
	Dodonaea viscosa Hop Bush	5 gal.	102
	Ilex vomitoria nana Dwarf Yaupon Holly	5 gal.	18
	Jasminum sambac Arabian Jasmine	5 gal.	29
	Justicia californica Chuparosa	5 gal.	7
	Justicia californica 'Yellow' Yellow Chuparosa	5 gal.	7
	Justicia spicigera Mexican Honeysuckle	5 gal.	16
	Leucophyllum pruinosum 'Sierra Bouquet' Sierra Bouquet TM	5 gal.	25
	Leucophyllum zygophyllum 'Cimarron' Cimarron Sage	5 gal.	52
	Nerium oleander 'Petite Pink' Petite Pink Oleander	15 gal.	109
	Olea europaea 'Montra' Little Ollie Dwarf Olive	5 gal.	57
	Perovskia atriplicifolia Russian Sage	5 gal.	12
	Rosmarinus officinalis 'Tuscan Blue' Upright Rosemary	5 gal.	24
	Ruellia brittoniana Ruellia	5 gal.	137
	Russelia equisetiformis Coral Fountain	15 gal.	48
	Salvia clevelandii Chaparral Sage	5 gal.	9
	Salvia greggii Autumn Sage	5 gal.	5
	Sphaeralcea ambigua Globe Mallow	1 gal.	14
	Tecoma stans Yellow Bells	5 gal.	17
Groundcovers			
	Baileya multiradiata Desert Marigold	1 gal.	29
	Carissa macrocarpa Boxwood Beauty	5 gal.	121
	Chrysactinia mexicana Damianita	1 gal.	77
	Dalea greggii Trailing Indigo Bush	5 gal.	44
	Eremophila glabra Minginew Gold	5 gal.	48
	Gazania x 'Copper King' Copper King Gazania	5 gal.	6
	Glandularia gooddingii Goodding Verbena	1 gal.	17
	Hymenoxys acaulis Angelita Daisy	1 gal.	20
	Lantana montevidensis Purple Trailing Lantana	1 gal.	38
	Lantana montevidensis 'White' White Lantana	1 gal.	82
	Lantana 'New Gold' New Gold Lantana	1 gal.	138
	Melampodium leucanthum Blackfoot Daisy	1 gal.	92
	Viguiera deltoidea Goldeneye	1 gal.	18
Accents Cactus			
	Agave americana Century Plant	5 gal.	2
	Agave deserti Desert Agave	5 gal.	5
	Agave nickelsiae x scabra 'Sharkskin' Sharkskin Agave	15 gal.	6
	Agave ovatifolia Whale's Tongue Agave	15 gal.	25
	Agave weberi Blue Agave	5 gal.	11
	Aloe barbadensis Medicinal Aloe	5 gal.	74
	Aloe 'Hercules' Hercules Aloe	24" Box	6
	Aloe dawei Dawe's Aloe	5 gal.	9
	Aloe Ferox Cape Aloe	5 gal.	10
	Aloe rudikoppe Little Red Riding Hood Aloe	5 gal.	42
	Aloe saponaria Soap Aloe	5 gal.	9
	Aloe x 'Blue Elf' Blue Elf Aloe	5 gal.	9
	Asclepias subulata Desert Milkweed	1 gal.	3
	Camegiea gigantea Saguaro	8' min.	7
	Dasylirion wheeleri Desert Spoon	5 gal.	4
	Euphorbia antisyphilitica Candelilla	5 gal.	10
	Euphorbia biglandulosa Gopher Plant	5 gal.	26
	Ferocactus wislizenii Fishhook Barrel Cactus	bare root	3
	Fouquieria splendens Ocotillo	bare root	4
	Hesperaloe funifera Giant Hesperaloe	5 gal.	3
	Hesperaloe parviflora-red Red Hesperaloe	5 gal.	11
	Hesperaloe parviflora 'Perpa' Brakelights Brakelights Red Yucca	3 gal.	59
	Kalanchoe beharensis 'Blue Slick' Kalanchoe	1 gal.	7
	Muhlenbergia rigens Deer Grass	5 gal.	12
	Opuntia basilaris Beavertail Pickley Pear	5 gal.	8
	Pedilanthus bracteatus Tall Slipper Plant	5 gal.	4
	Pedilanthus macrocarpus Lady's Slipper	5 gal.	37
	Rosa 'Korbin' Iceberg Roribunda Rose	5 Gal.	18
	Rosa x 'Noatraum' Pink Flower Carpet	5 Gal.	16
	Stenocereus thurberi Organ Pipe	5' min.	2
	Yucca elata Soaptree Yucca	5 gal.	6
Vines			
	Campsis radicans Common Trumpet Creeper	5 gal.	3

MASS PLANTING

ARTIFICIAL TURF, PIONEER BUILDING MATERIALS "DARBY", 3,794 SQ. FT.

INERTS

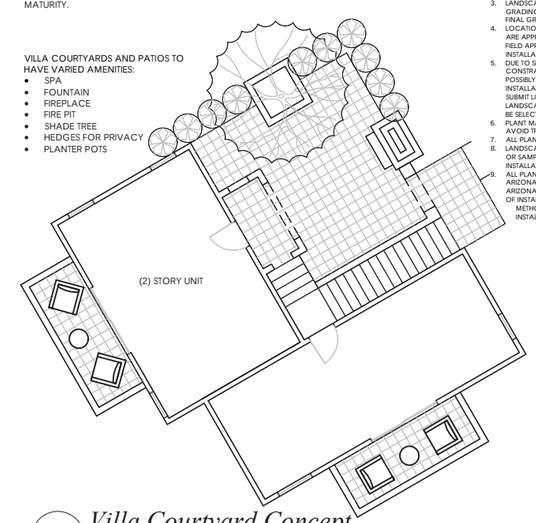
Sym.	Description
	1" SCREENED DECOMPOSED GRANITE, ROCK PROS USA, "MAHOGANY". 2" THICK MINIMUM.

NOTES:

1. ALL PLANTS SHALL BE WATERED WITH AUTOMATIC DRIP IRRIGATION SYSTEM.
2. ALL LANDSCAPE AREAS EXCLUDING TURF TO BE COVERED WITH CRUSHED ROCK.
3. LANDSCAPE ARCHITECT TO APPROVE FINAL GRADING. PLANTING SHALL NOT OCCUR UNTIL FINAL GRADING IS APPROVED.
4. LOCATIONS OF PLANTS SHOWN ON DRAWING ARE APPROXIMATE. LANDSCAPE ARCHITECT TO FIELD APPROVE ALL FINAL LOCATIONS PRIOR TO INSTALLATION.
5. DUE TO SEASONAL AND OR UNFORESEEN CONSTRAINTS SOME PLANT MATERIAL WILL POSSIBLY NOT BE AVAILABLE AT TIME OF INSTALLATION. LANDSCAPE CONTRACTOR TO SUBMIT LIST OF ANY NON-AVAILABLE MATERIAL TO LANDSCAPE ARCHITECT FOR REPLACEMENTS TO BE SELECTED.
6. PLANT MATERIAL SHALL BE ADJUSTED IN FIELD TO AVOID TREE ROOT BALLS.
7. ALL PLANT MATERIAL IS TO BE RETAIL QUALITY.
8. LANDSCAPE CONTRACTOR TO PROVIDE PICTURES OR SAMPLES OF ALL PLANT MATERIAL PRIOR TO INSTALLATION FOR APPROVAL.
9. ALL PLANT MATERIAL SOURCED FROM OUTSIDE OF ARIZONA TO BE PROPERLY ACCLIMATED TO ARIZONA CLIMATE DEPENDING ON TIME OF YEAR OF INSTALLATION.
   METHODS: SUN-SCREEN CLOTH/FABRIC TO BE INSTALLED ABOVE PLANT MATERIAL.

VILLA COURTYARDS AND PATIOS TO HAVE VARIED AMENITIES:

- SPA
- FOUNTAIN
- FIREPLACE
- FIRE PIT
- SHADE TREE
- HEDGES FOR PRIVACY
- PLANTER POTS



A *Villa Courtyard Concept*
Scale: *1/8" = 1'-0"*

0' 30' 60' 90'

GREEY | PICKETT
landscape architecture | community design

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DESIGN IS FOR CONCEPT PURPOSES ONLY.
NOT TO BE USED FOR CONSTRUCTION

PHX ARCHITECTURE
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CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED LANDSCAPE PLAN

the smoke tree resort
7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
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SEP 6, 2019
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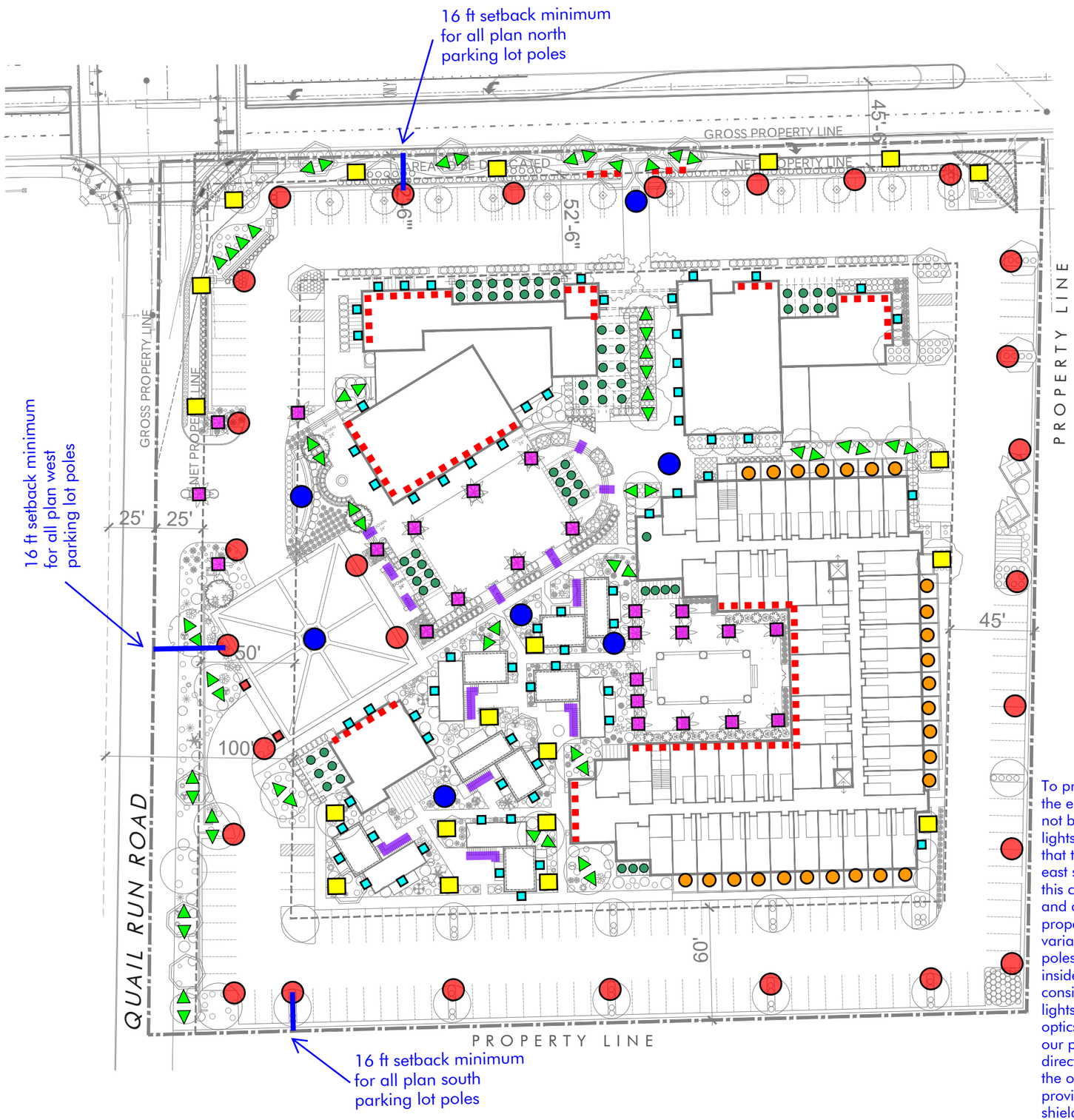


To provide safe levels of lighting on the east edge of the property, it may not be feasible to locate the pole lights 16' from the property line. Note that the neighboring property on the east side is not residential and that this commercial property has parking and drive lanes at this edge of their property. The design team requests a variance to the code to allow these (7) poles to be placed in the 2' buffer inside the property line. In consideration of this request, all pole lights will be provided with fixture optics that focus the light to aim onto our property and minimize light being directed off property. In addition to the optics, the pole fixtures will also be provided with a physical house-side shield that additionally block glare from vantage points off property.

TYPE BL
Symmetric bollard fixture for way-finding

TYPE GU
Ground mounted landscape fixture for accenting select trees and signage

TYPE HR
Handrail mounted puck LED lights for safe stair lighting

TYPE LU
Flush-to-grade fixture to uplight pots and key architecture, **max 250 lumens**

TYPE LT
Adjustable accent light trellis mounted and concealed from most vantage points

TYPE SA
Post-top thematic pole, **16' max pole height** (dark sky friendly with house-side shield & optics)

TYPE TR
Palm tree ring for grazing down sides of textured tree, **16' max mounting height**

TYPE WP
Thematic wall sconce for ambient illumination & way-finding

TYPE WS
Decorative wall sconce for patios (dark sky friendly)

Submersible fixtures in water features by water feature consultant

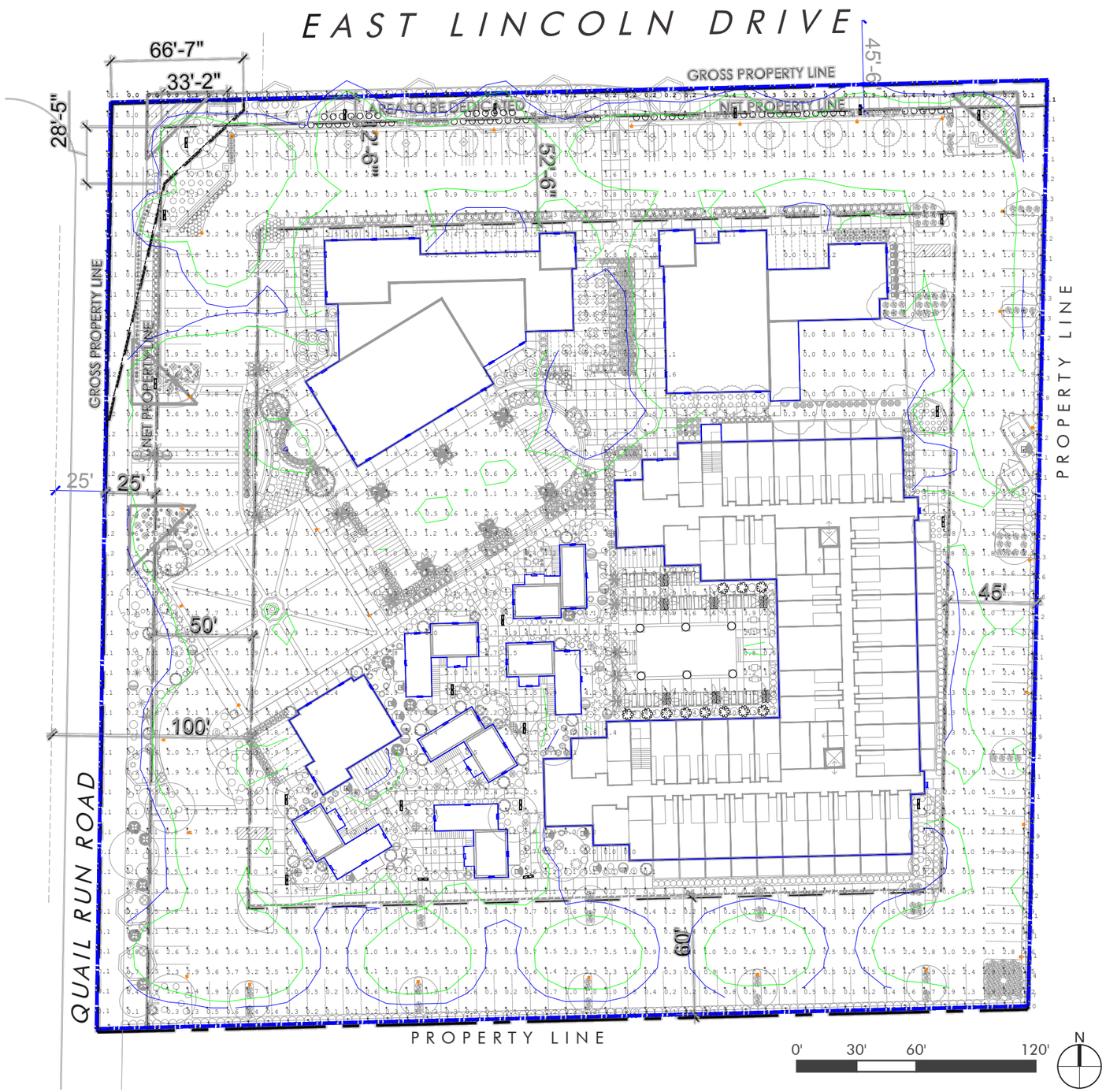
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED SITE LIGHTING PLAN

The Smoke Tree Resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A12

SEP 6, 2019
11 x 17 format
REVISED
MAY 14, 2020



PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PHOTOMETRIC LIGHTING PLAN

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A13

SEP 6, 2019

11 x 17 format

REVISED

MAY 14, 2020

TYPE "BL"

VOLTAIRE CONCRETE BOLLARD – ARCHILINEAR

VCBA

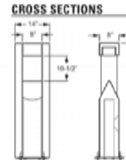
LED

CATALOG # | TYPE:

PROJECT: | NOTES:

EXAMPLE: VCBA - L9/830 - NC - AB - OPTIONS - 120
(SERIES, LUMEN PACKAGE, CRI & CCT, FINISH, ANCHOR BOLTS, OPTIONS, VOLTAGE)

CROSS SECTIONS



FEATURES

- Concrete housing complements gardens, pathways, and pedestrian-area applications
- Aesthetically designed to blend seamlessly with a variety of architectural styles
- Provides accent and security lighting
- Symmetric distribution
- Available in four concrete colors with light sandblast or glazed protective finish
- Engineered with the highest quality materials to ensure reliability and performance
- Rated >50,000 hours at 70% lumen maintenance (L70)
- ANSI 3000K, 4000K, or 5000K CCT
- Minimum 80 CRI
- Integral heatsink provides optimal passive thermal management
- Rated for -30°C to 40°C ambient operating temperature
- Direct line driven LED module
- This fixture is proudly made in the USA

ORDERING INFORMATION

SERIES
VCBA Voltaire Concrete Bollard – Archilinear

LED PACKAGE
Nominal lumens based on 120V input. See back for fixture performance data.

LUMEN PACKAGE	NOMINAL LUMENS	MINIMUM CRI & CCT	AVERAGE WATTAGE
L9	900	830 = 80 CRI, 3000K 840 = 80 CRI, 4000K 850 = 80 CRI, 5000K	17

CONCRETE FINISH

SANDBLAST FINISH
- NC Natural
- BF Buff
- BN Brown
- CP Copper

GLAZED SANDBLAST FINISH
- NCG Natural with glazed protective sealant
- BNG Brown with glazed protective sealant
- BFG Buff with glazed protective sealant
- CPG Copper with glazed protective sealant

ANCHOR BOLTS
- AB[1] Anchor bolts (4 each, shipped with fixture)[1]
- LAB Less anchor bolts
- PAB[1] Pre-shipped anchor bolts (4 each)[1]

OPTIONS
- SFW Single fuse, wet location (120V, 277V, or 347V only; must specify voltage)
- DFW Double fuse, wet location (208V, 240V, or 480V only; must specify voltage)

VOLTAGE
- 120 120V
- 208 208V
- 240 240V
- 277 277V (integral stepdown transformer)
- 347 347V (integral stepdown transformer)
- 480 480V (integral stepdown transformer)

[1] Four 3/8" x 12" cast-in galvanized steel anchor J-bolts. Mounting template included.

HK usa Lighting Group

TYPE 'GU'

ZX16-SOi

Area Accent / ZX16 Series

PROJECT

FIXTURE TYPE

Characteristics

- Listed
- Standard
- Soraa compatible

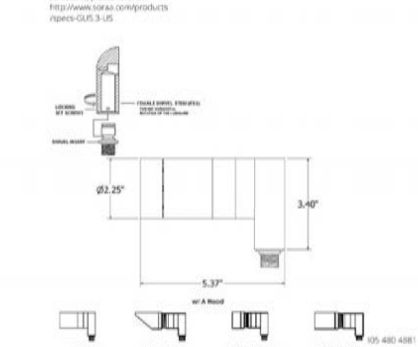
• Wet/Dry location rated. • Swivel Stem | facilitates 355° deg. rotation for aiming precision on any installation plane. • Integral Thermal dissipation for the SORAA MR16 LED in a compact, aesthetic fixture, US patented. • Reduces LED junction temperature by a tested 20-30C(68-86F) • Allows entire catalogue of SORAA LED MR16 lamps to be used in an enclosed fixture without sacrificing the performance of the light bulb. • For lamp selections, please refer to http://www.soraa.com/products/specs-GU5.3-US

Technical Data

Material	Housing/Cap/Stem - Machined silicone magnesium aluminum alloy (6061-T6) resistant to corrosion. Stainless steel (SS304) hardware
Lamp	Soraa MR16
Dimmability	ELV, MLV
Hoods	A, B, C
Socket	Bi-pin, GX5.3
Voltage	12V
Color Temp	2.7K, 3K, 4K, 5K
Power Supply	Integral LED Driver

Ordering Guide

Series	ZX16-SOi
Hoods	A / B / C
Glare Shields (optional)	GSL, GSA, GSS / CGSL, CGSA, CGSS
Voltage	12V
Lamp	Soraa MR16
Socket	Bi-pin GX5.3
Color Temp	2.7K, 3K, 4K, 5K
Stem (optional)	PS5
Finish	BK (black), BZ (bronze), WT (white), ABK (anodized black), ACL (anodized clear), NBS (natural brass), CC (custom)



ALPHABET LEDRA brands — Alphabet By Ledra Brands | 15774 Gateway Circle, Tustin, CA 92780 | PH: 714.259.9959 FAX: 714.259.9989 | www.alphabetlighting.com

TYPE 'HR'

Job Name: | Contact:

Ordering Code: | Fixture Type:

ZETA750

Description

The ZETA750 Series Puck is the most flexible and vandal resistant LED handrail lighting module on the market, offering unrivaled uniformity and photometric performance. Designed with the specifier in mind, it accommodates a wide range of options of beam distribution for a clean design.

The pucks can be installed in new handrail or retrofitted into existing handrail, flat or oval metallic structures and surfaces. Powerful yet small and unobtrusive, makes the Handrail Puck ideal for incorporation into street sculptures, illuminating artwork or to wash walls with clean, white LED light.

The ZETA750 is engineered of electroplated 316 stainless steel. Other custom materials are available including aluminum, brass, and super-duplex stainless steel (which offers exceptional corrosion resistance), as well as custom painted finishes. Please consult factory for these custom options.

At standard handrail height the pucks provide 11 foot-candles at the surface below. They are offered with wide, narrow, and asymmetric beam patterns. ETL wet rated for outdoor applications. For round handrail, the LED pucks are field installed with use of the ZETA750 series Drill Tool Kit. For flat surfaces, the installer may use their own drill bits and threading taps. Please refer to the installation instructions.

Housing

Extremely durable 316 stainless steel marine grade housing, with 3.5" (90mm) 20AWG wire leads. Choice of Thin Wall (recommended for ease of installation), or Heavy Wall. Curved face or flat face options available in three different beam patters 60°, 90° asymmetric, and 120°.

Mounting

Type of Surface- Install in metallic surface only for proper thermal dissipation. Luminaire is for use in non-insulated recessed surfaces.
Fits Railing size - Ø38.0mm, 1.496in to 100.0mm, 3.937in.
Thin Wall Puck minimum wall thickness - 1.5mm, 0.059in.
Heavy Wall Puck minimum wall thickness - 2.5mm, 0.980in.
Minimum distance between lights - 101.6mm, 4.000inches (center to center). Max 16 lights may be connected in series.

Electrical / Led Driver

- 3VDC, 500mA, 1.5W (Remote Driver Required)

Listings

- ETLus Listed to UL2108 (suitable for wet locations)
- cETL Listed to CSA C22.2 #250.0
- Impact tested to IK10 (EN62262)
- IP66 rated
- ADA Compliant when using handrail diameter 31.75mm (1.25") to 38.1mm (1.5") O.D.

LED Performance

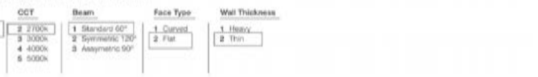
			Lumens	CCT
LED:	Cree XPG		104 lm	2700k
DUV:	.001		111 lm	3000k
CCT:	2700k, 3000k, 4000k, 5000k		119 lm	4000k
CRI:	>80*		127 lm	5000k
Life:	90% at 51k hrs based on LM-80 testing			
Warranty:	5 year limited warranty			

*At 5000K CRI >70

Ordering Codes

Follow the steps to specify your fixture, example: 750 - 4 - 2 - 1 - 1

Part Number	CCT	Beam	Face Type	Wall Thickness
750 Rail Puck	2 2700k 3 3000k 4 4000k 5 5000k	1 Standard 60° 2 Symmetric 120° 3 Assymetric 90°	1 Curved 2 Flat	1 Heavy 2 Thin



Heavy Wall Curved Face
- Mounts to pipe size: Ø38mm - Ø100mm
- Wall thickness ≥ 2.5mm
- Mounting thread: M16x1mm
- Requires counterbore Ø16mm x 1.8mm

Thin Wall Curved Face
- Mounts to pipe size: Ø38mm - Ø100mm
- Wall thickness ≥ 1.5mm
- Mounting thread: M16x1mm

Heavy Wall Flat Face
- Mounts to flat surfaces
- Wall thickness ≥ 2.5mm
- Mounting thread: M16x1mm
- Requires counterbore Ø16mm x 1.8mm

Thin Wall Flat Face
- Mounts to flat surfaces
- Wall thickness ≥ 1.5mm
- Mounting thread: M16x1mm

LM-79

TYPE 'L'

Lumière

Catalog #		Type
Project		
Comments		Date
Prepared by		

DESCRIPTION

Cambria 203 is a small, low voltage dimmable LED and halogen MR16 luminaire. It is available with a fully adjustable side swivel stem (203, 203-FL), an adjustable center rear swivel (203-CRS) or a stationary rear flush mount (203-FM). Side swivel models 203 and 203-FL provide 340° tilt and 360° rotation. Center rear swivel model CRS provides 200° tilt and 360° rotation. Various lenses, louvers and color or dichroic filters can be combined - up to three at once - to create multiple lighting effects. The Lumière exclusive Siphon Protection System (S.P.S.) prevents water from siphoning into the fixture through its own lead wires.

SPECIFICATION FEATURES

Material
Housing, hood and mounting stem are precision-machined from corrosion-resistant billet stock 6061-T6 aluminum, C360 brass, C932 bronze, C110 copper or 303/304 stainless steel.

Finish
Fixtures constructed from 6061-T6 aluminum are double protected by an ROHS compliant chemical film undercoating and polyester powdercoat paint finish, surpassing the rigorous demands of the outdoor environment. A variety of standard colors are available.

Brass, Bronze, Copper or Stainless Steel
Fixtures constructed from brass, bronze, copper or stainless steel are left unpainted to reveal the natural beauty of the material. Brass, bronze and copper will patina naturally over time.

Hood
Hood is removable for easy relamping and accepts up to three internal accessories at once (lenses, louvers, filters) to achieve multiple lighting effects. Model 203, 203-CRS & 203-FM: Weep holes prevent water and mineral stains from collecting on the lens, even in the straight-up position. Model 203-FL: The flush lens design reduces fixture length, minimizes debris collection and prevents water and mineral stains from collecting on the lens.

Gasket
Housing and hood are sealed with a high temperature silicone o-ring gasket to prevent water intrusion.

Lens
Tempered glass lens, factory sealed with high temperature adhesive to prevent water intrusion and breakage due to thermal shock.

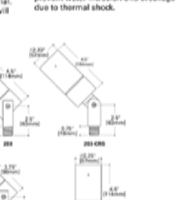
Mounting Stem
Model 203 and 203-FL include fully adjustable side-mounted swivel stem, providing 340° tilt and 360° rotation for easy aiming. Center rear swivel (203-CRS) or stationary rear flush mount (203-FM) models are also available. All models include 1/2" NPS threaded male fitting. Stainless steel aim-locking mechanisms are standard (not available on 203-FM). Lumière's exclusive Siphon Protection System (S.P.S.) prevents water from siphoning into the fixture through its own lead wires.

Hardware
Stainless steel hardware is standard to provide maximum corrosion-resistance.

Socket
Ceramic socket with 250° C Teflon® coated lead wires and GU5.3 bi-pin base.

Electrical
Remote 12V transformer required (not included). NOTE: initial power draw on LED equipped fixtures is 15 watts. When sizing transformer use 15 watts per LED fixture. Nominal power draw after start up is 6 watts or 10 watts accordingly. Also, LEDs are more voltage sensitive than standard halogen MR16 lamps. The LED module is designed to operate between 10 and 13 volts. Any less or more voltage can cause premature failures.

Lamp
Halogen lamp not included. LED modules are included and are available in four color temperatures (2700, 3000, 4000, and 5700) and three distributions (spot, narrow, and flood). Both color temperature and distribution must be specified when ordering. Soraa lamp compatible (10W Max).



203
CAMBRIA
LED
HALOGEN

APPLICATIONS:
ACCENT / FLOOD

WORKS WITH SORAA

CERTIFICATION DATA
UL and cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
IP66 Ingressed Protection Rated

TECHNICAL DATA
6W LED, L70/60,000 hours at 25°C
10W LED, L70/60,000 hours at 25°C
Low Voltage: 50W Halogen MR16

ORDERING INFORMATION

Sample Number: 203-FL-50MR16-12-NSS

Series	Construction	Source (for LED, select from each column and combine)	Voltage	Finish
203=LED of MR16 Cambria Accent Fixture	_=Standard Side Swivel Stem, 1/2" NPS CRS=Center Rear Swivel Stem, 1/2" NPS FM=Rear Flush Mount, 1/2" NPS FL=Flush Lens, Side Swivel Stem, 1/2" NPS	50MR16=50W max. Halogen MR16 (lamp not included) 6LED=6W LED, 10LED=10W LED / 27=2700K, 30=3000K, 40=4000K, 57=5700K / 12=12° Spot, 21=21° Narrow, 41=41° Wide 4LED=4W LED, 7LED=7W LED / AM=Amber (585-595nm)	12=12V	Painted: BK=Black, BZ=Bronze, CS=City Silver, VE=Verde, WT=White Premium Finish: NBR=Natural Brass, NCP=Natural Copper, NBZ=Natural Bronze, NSS=Natural Stainless Steel

EATON Powering Business Worldwide

ADL032452
July 22, 2016
1 of 3

TYPE "BL"

VCBA

VOLTAIRE CONCRETE BOLLARD – ARCHILINEAR

LED

SPECIFICATIONS

Housing – Steel reinforced precast concrete with a light sand blasted finish.
Thermal Management – Integral aluminum heatsink and LED source provide passive thermal management. Rated -30°C to 40°C ambient operating temperature.
LED Housing – High-grade cast aluminum with superior corrosion resistance. Silver polyester powder coat finish bonded to phosphate-free, multi-stage pretreated metal, meets and exceeds AAMA 2604 specifications for outdoor durability.
LED Module – High quality mid-power LED board. L70 >50,000 hours.
Electrical – 10kA/10kV surge protection standard.
Mounting – Minimum 4" recessed in ground with four-point hot dip galvanized 1/4" A36 steel baseplate. For accurate installation a fullscale mounting template is provided with each bollard and anchor bolt order. Fixture weight: 220 lbs.
Handhole Cover – Grounded stainless steel plate with precast concrete secured with vandal resistant torx fastener.
Labels – cCSAus certified as luminaire suitable for wet locations.
Certifications & Qualifications –
- Calculated L70 lumen maintenance will exceed 50,000 hours per IES TM-21.
- IDA Dark-Sky approved
- Tested to IES LM-79-08 standards.
- RoHS compliant.

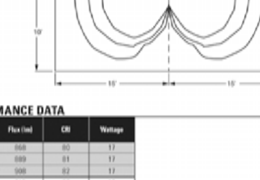
Warranty – 5-year limited warranty, see hew.com/warranty.

PHOTOMETRY INFORMATION

Catalog #: VCBA-L9/840-NC

TEST REPORT INFORMATION
- Test Report #: ATAL009242-R2
- Date: 05/28/15
- **Rated Lumens: 932**
- **Watts: 16.85**
- **Lumens Per Watt: 55.3**
- **CRI: 81**
- **CCT: 3797K**

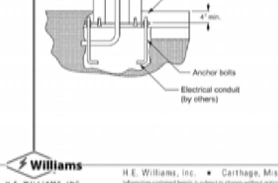
FOOTCANDLE DISTRIBUTION



FIXTURE PERFORMANCE DATA

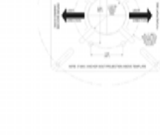
LED Package	Voltage	Flux (lm)	CRI	Wattage
L9/830	120	868	80	17
L9/840	120	889	81	17
L9/850	120	908	82	17
L9/830	208	818	80	16
L9/840	208	838	81	16
L9/850	208	856	82	16
L9/830	240	922	80	19
L9/840	240	944	81	19
L9/850	240	965	82	19
L9/830	277	926	80	20
L9/840	277	949	81	20
L9/850	277	970	82	20
L9/830	347	864	80	19
L9/840	347	884	81	19
L9/850	347	904	82	19
L9/830	480	922	80	19
L9/840	480	944	81	19
L9/850	480	965	82	19

MOUNTING DETAILS



MOUNTING TEMPLATE

Mounting template is provided with each order. A pdf file (not to scale) of the mounting template is available at www.hew.com.



SORAA

TYPE 'GU'

SORAA LED MR16
7.5W

OUTPUT RANGE: VIVID SERIES	390-455 lumen; CRI-95, R9>90
OUTPUT RANGE: BRILLIANT SERIES	475-525 lumen; CRI-80
BEAM ANGLE RANGE	10°, 25°, 36°
COLOR TEMPERATURE RANGE	2700K, 3000K, 4000K, 5000K
APPLICATION	Halogen replacement for indoor & outdoor applications

12VAC · GU5.3 · DIM · IR · UV · Hg

POINT SOURCE OPTICS
Exceptional beam control enables unique 10° narrow spot and smooth uniform beams
Single light source, single crisp shadow

VP_3 VIVID COLOR AND VP_3 NATURAL WHITE
VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, CRI-95, R9>90
Accurate white rendering based on >70% excitation of Optical Brightening Agents with emission between 400nm & 440 nm

ENERGY EFFICIENCY AND LONG LIFE
85% more energy efficient than standard halogen lamps
Typical payback of one year or less
Rated lifetime of 35,000 hours. Three year warranty

CERTIFICATIONS
UL/CUL Class 2 and non-Class 2, FCC Title 47 Part 15B, RoHS, CE

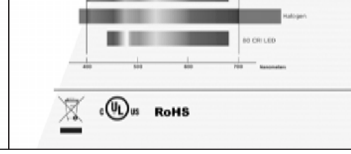
HIGHLY COMPATIBLE
Narrow spot compatible with Soraa SNAP System accessories
Geometrically compatible with standard fixtures and suitable for damp locations
This lamp is suitable for use in fully enclosed fixtures, subject to the maximum heatsink temperature limits stated in this data sheet. A list of qualified enclosed fixtures can be found at www.soraa.com/resources
Works with trailing edge and leading edge phase cut dimmers, 12V AC magnetic and electronic transformers and 12V DC transformers (see www.soraa.com/resources)

INTENDED USE AND APPLICATIONS
Intended for use in MR16 compatible recessed downlights, track lighting and other indoor and outdoor applications
Soraa lamps are designed to safely turn down in any thermal environment not conducive to minimum airflow or proper ventilation

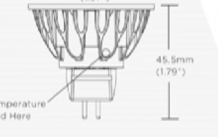
GENERAL SPECIFICATIONS

Form Factor	Operating Temperature	Electrical	
Width: 50.1mm (1.97")	Minimum: -40°C (ambient)	Wattage: 7.5W	Dimmable to < 20%
Height: 45.5mm (1.79")	Typical: 85°C - 95°C (base)	Power factor: 0.92	Frequency: 50/60Hz
Weight: 47g	Maximum: 100°C (base)	Voltage: 12V +/- 1.2V	

COLOR RENDERING



DIMENSIONS



c UL us RoHS

Soraa Inc. 6500 Kaiser Drive, Suite 110, Fremont, CA 94555
855 GO-SORAA / 855 467-6722 www.soraa.com

ALPHABET LEDRA brands — Alphabet By Ledra Brands | 15774 Gateway Circle, Tustin, CA 92780 | PH: 714.259.9959 FAX: 714.259.9989 | www.alphabetlighting.com

TYPE 'HR'

Job Name: | Contact:

Ordering Code: | Fixture Type:

60° STANDARD BEAM

W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	107	0.67	82	0.51	61	0.31	47	0.19
1.0m	55	0.78	41	0.58	31	0.34	24	0.21
2.0m	27	0.78	21	0.59	15	0.34	12	0.21

lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	216	0.76	164	0.68	121	0.66	95	0.66
1.0m	109	0.62	83	0.72	61	0.72	48	0.72
2.0m	55	0.64	41	0.72	31	0.71	24	0.72

lx = average lux u = uniformity color temp = 3000K

90° VERTICAL ASYMMETRIC

W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	95	0.8	73	0.45	52	0.21	40	0.15
1.0m	48	0.89	37	0.51	27	0.23	20	0.16
2.0m	23	0.89	18	0.51	13	0.23	10	0.16

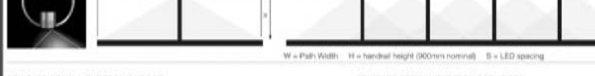
lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	193	0.69	148	0.8	105	0.77	81	0.62
1.0m	97	0.9	74	0.8	53	0.86	41	0.66
2.0m	48	0.84	37	0.8	27	0.84	20	0.68

lx = average lux u = uniformity color temp = 3000K

120° VERTICAL SYMMETRIC



W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	147	0.7	113	0.4	79	0.12	58	0.02
1.0m	74	0.71	57	0.44	40	0.12	29	0.02
2.0m	36	0.22	28	0.11	19	0.03	14	0.01

lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	195	0.67	100	0.56	61	0.12	46	0.02
1.0m	95	0.68	52	0.62	32	0.11	24	0.02
2.0m	43	0.25	25	0.15	15	0.05	11	0.01

lx = average lux u = uniformity color temp = 3000K

FULLY SHIELDED LIGHTING

TYPE 'L'

OPTICAL ACCESSORIES - ORDER SEPARATELY

Filters (2.00" Diameter)	Optical Lenses (2.00" Diameter)	Optical Louvers (2.00" Diameter)
F71 = Peach Dichroic F72 = Amber Dichroic F73 = Green Dichroic F74 = Medium Blue F75 = Yellow Dichroic F76 = Red Dichroic F77 = Dark Blue Dichroic F78 = Light Blue Dichroic F79 = Neutral Density Dichroic F80 = Magenta Dichroic F22 = Red Color F33 = Blue Color F44 = Green Color F55 = Yellow Color F66 = Mercury Vapor	LSL=Linear Spread Lens (elongates standard beam spread) DIF=Diffused Lens (provides even illumination) OSL=Overall Spread Lens (increases standard beam spread)	LVR=45° Hex Cell Louver (reduces glare)

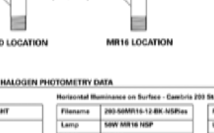
MOUNTING ACCESSORIES - ORDER SEPARATELY

Ground Mounting
- GS01= 1-1/2" x 6-3/4" (38mm x 171mm) cast zinc ground spike.
- GS03= 2-3/8" x 6-5/8" (60mm x 168mm) aluminum ground spike with integral 12V wiring compartment. Specify powder paint finish (BK,BZ,CS,VE,WT)
- GS04= 1" x 16-1/2" (25mm x 419mm) aluminum ground spike with integral 12V wiring compartment. Specify powder paint finish (BK,BZ,CS,VE,WT)
- GS05= 1" x 16-1/2" (48mm x 438mm) black polycarbonate ground spike with 2"-13" height adjustment - requires fixture with extended stem.
- GS06= 2" x 10-1/2" (51mm x 267mm) plate steel/brass spiral ground spike.
- GS08= 1-7/8" x 8" (48mm x 203mm) black ABS ground spike.
- GS13= 3-3/4" x 4-1/2" (95mm x 114mm) brass/stainless steel 3 prong ground spike.

Surface / Wall Mounting - specify powder paint finish (BK,BZ,CS,VE,WT)
- FS1 = 2-7/8" x 4-5/8" (73mm x 117mm) rectangular wall plate or box cover with single 1/2 NPS mounting hole.
- FS2 = 2-7/8" x 4-5/8" (73mm x 117mm) rectangular wall plate or box cover with dual 1/2 NPS mounting holes.
- RS1= 4-1/2" (114mm) machined aluminum standard round wall plate with single 1/2 NPS mounting hole.
- RS2= 4-1/2" (114mm) machined aluminum standard round wall plate with single 1/2 NPS mounting hole.
- TM01= 2-3/16" x 1-1/2" (71mm x 38mm) round mount for installation on trees or other wood surfaces with 1/2 NPS mounting hole.
- TM05= 3-7/8" x 2" (98mm x 51mm) rectangular tree/surface mount with wiring compartment and single 1/2 NPS mounting hole.

Low Voltage Tree Mounting - specify finish (BK,BZ,CS,VE,WT)
- TM04= 2-1/2" x 4-1/4" (64mm x 108mm) expanding tree strap with self adjusting tension release for one fixture mount. Designed for a maximum tree diameter of 24" (610mm).
- TM04-2= two fixture mount.
- TM04-3= three fixture mount.
- TM04-4 = four fixture mount.
- TR07= tree friendly ring with adjustable stand-offs. Accomidates 18"-24" (457mm - 610mm) tree diameter.
- TR07-2= two fixture mount.
- TR07-3= three fixture mount.
- TR07-4 = four fixture mount.
- TR07-6 = six fixture mount.

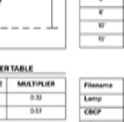
LAMP OR LED MODULE PLACEMENT



CAMBRIA 203 MR16 HALOGEN PHOTOMETRY DATA

Horizontal Illuminance on Surface - Cambria 203 Standard Recessed Hood - 50W MR16

CONE OF LIGHT



Filename	203-50MR16-12-BK-NSP.ies	
Lamp	50W MR16 NSP	
CBCP	11,000	
Distance	FC	Beam Diameter
2'	2550	1'0"
4'	638	1'0"
6'	283	1'6"
8'	159	2'0"
10'	102	3'0"
15'	45	4'0"

Filename	203-50MR16-12-BK-NFL.ies	
Lamp	50W MR16 NFL	
CBCP	3,200	
Distance	FC	Beam Diameter
2'	725	1'0"
4'	181	2'6"
6'	81	4'0"
8'	45	5'0"
10'	29	6'6"
15'	13	10'0"

CCT MULTIPLIER TABLE

LAMP WATTAGE	MULTIPLIER
20W	0.32
35W	0.57

Filename	203-50MR16-12-BK-FL.ies	
Lamp	50W MR16 FL	
CBCP	2,000	
Distance	FC	Beam Diameter
2'	431	1'6"
4'	108	3'0"
6'	48	5'0"
8'	27	6'6"
10'	17	8'0"
15'	7	12'0"

Filename	203-50MR16-12-BK-WFL.ies	
Lamp	50W MR16 WFL	
CBCP	1,200	
Distance	FC	Beam Diameter
2'	269	2'0"
4'	67	4'6"
6'	30	7'6"
8'	17	9'0"
10'	11	11'6"
15'	5	17'0"

NOTES AND FORMULAS
- Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.
- Footcandle values are initial. Apply appropriate light loss factors where necessary.
- Bare lamp data shown. Consult lamp manufacturers to obtain detailed specifications for their lamps.

EATON Powering Business Worldwide — Eaton, 16901 East Colfax Avenue, Aurora, CO 80011, P: 303.393.1522, www.eaton.com/lighting — Specifications and dimensions subject to change without notice.

ADL032452
July 22, 2016
2 of 3

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

PROPOSED SITE LIGHTING TEAR SHEETS

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A14

SEP 6, 2019
11 x 17 format
REVISED
MAY 14, 2020

TYPE 'LU'

3" INGROUND 120V
5032

WAC
LANDSCAPE LIGHTING

Fixture Type:

Catalog Number:

MAXIMUM LUMEN OUTPUT SET TO 250 LUMENS

PRODUCT DESCRIPTION
Landscape Wall Wash luminaire

SPECIFICATIONS
Input: 110V - 120VAC
Power: 3W to 11.5W
Brightness: 65 lm to 515 lm
Beam Angle: 15° to 60°
CRI: 85
Rated Life: 45,000 hours

FEATURES
- Adjustable beam angle
- Integral dimmer
- IP67 rated, protected from temporary immersion under water
- Drive over up to 4500lbs
- Solid diecast brass or corrosion resistant aluminum
- Available concrete pour kit
- 6' lead wire and wire nuts included
- Maintains constant lumen output against voltage drop
- UL 1598 listed
- Not suitable to use with external dimmers

IEC safety Standard	Walk over	Drive over
Resistance to static load test	Yes (1125lbs)	Yes (4496lbs)
Resistance to torque and shear loads test	N/A	Yes

ORDERING NUMBER

	Color Temp	Finish
5032 3" Inground 120V	30 3000K	BZ Bronze on Aluminum BBR Bronze on Brass

Module Replacement
3000K M5032LE-30BZ

5032-30____
Example: 5032-30BBR

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585
Headquarters/Eastern Distribution Center 44 Harbor Park Drive Port Washington, NY 11050
Central Distribution Center 1600 Distribution Ct Lithia Springs, GA 30122
Western Distribution Center 1750 Archibald Avenue Ontario, CA 91760
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TYPE 'SA'

ML660 MILLENIA SERIES
LED

EPA 1.3 (ft²) WEIGHT 35 LBS | 7 YEAR WARRANTY | LUMEN RANGE 2,065 to 7,820 | LIFE SPAN L70 MINIMUM 100,000 HOURS | UL LISTED | CLICK FOR FAQ's

JOB NAME
FIXTURE TYPE

POLE HEIGHT 16' MAXIMUM

BUILD A PART NUMBER
ORDERING EXAMPLE: PT-ML660-12L40T3-MDL018-SVI-FHD-BLOC/4SQ12-.125/UGMT

Mounting Config.	Fixture	LED	CCT	Distribution Type	Driver	Lens	Option Fuse	Option House Side Shield	Arm	Pole	Finish
PT	ML660	16L	27	T5	MDL018	SV1		BLOC			BKT

Mounting Configuration
- IW • 2A • 3A90 • 1AM
- PT • 2A90 • 3APT • 2AM
- IA • 2APT • 4A
- IAPT • 3A • 4APT

W = Wall Mount A = Arm Mount AM = Arm Mid Mount

Fixture
- ML660

LED
- 24L • 16L • 12L

CCT - Color Temperature (K)
- 27(00) • 30(00) • 40(00) • 50(00)

Distribution Type
- T2 • T3 • T4 • T5

Driver
- MDL018 (120V-277V, 180mA)
- MDH018 (347V-480V, 180mA)
- MDL014 (120V-277V, 140mA)
- MDH014 (347V-480V, 140mA)
- MDL008 (120V-277V, 80mA)
- MDH008 (347V-480V, 80mA)

Lens
- CA (Clear Acrylic)
- SVI (Flat Soft Vue Light Diffused Acrylic)
- SV2 (Flat Soft Vue Moderate Diffused Acrylic)

Options
- FHD Double Fuse and Holder
- HSS External 120° House Side Shield
- BLOC Internal optic level House Side Shield

Arm
See Arms & Wall Brackets specification sheets.
- 480

Pole
See Pole specification sheets.

Finish
Standard Urban Finishes
- UGMT Gun Metal Textured
- UGM Gun Metal Matte
- UBT Urban Bronze Textured
- UB Urban Bronze Matte
- ULBT Urban Light Bronze Textured
- ULB Urban Light Bronze Matte
- USLT Urban Silver Textured
- USL Urban Silver Matte
- UWHT Urban White Textured
- UWH Urban White Matte
- UCHS Urban Champagne Satin Smooth
- BKT Black Textured

Custom Urban Finishes
- CM Custom Match

Specifications
Fixture
The medium scale ML660 Millenia® post top luminaire is a breakthrough in modern area lighting technology. Its new world urban design transcends traditional lighting convention by seamlessly interweaving form and function to yet another level. Our convective AAD™ "Advanced Air-flow Dynamics" maximizes heat sink expulsion to deliver unsurpassed thermal management for long-life LED performance and energy efficiency. Available with a myriad of options, the Millenia is perfect for commercial, institutional and municipal markets. The cast aluminum slipfitter slips a 3" OD x 3" tall tenon. The Luminaire shall be UL listed in US and Canada.

LEDs
The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 4000K (2700K, 3000K or 5000K option) color temperature with a minimum CRI of 70. Consult factory for custom color CCT. The luminaire shall have a minimum ______ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics
The luminaire shall be provided with refractor type optics applied to each LED array. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.
BLOC Optic: An optional "Back Light Optical Control" shield can be provided at the factory. This is an internal optic level "House Side Shield" offering significantly reduced backlight and glare while maintaining the original design aesthetics of the luminaire.

Electronic Drivers
The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload, overheat and short circuit protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be a high efficiency driver with a THD less than 20% and a high power factor greater than .9. It shall be dimming capable
See next page

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
info@sternberglighting.com
www.sternberglighting.com
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TYPE 'TR'

PALM TREE RING INTEGRAL
ARTISTAR™

BKSSL SOLID STATE LIGHTING

PROJECT:
TYPE:
CATALOG NUMBER:
SOURCE:
NOTES:

CATALOG NUMBER LOGIC
Example PTR - 3 - 21 - AR - LED - TR - e65 - SP - A9 - BZP - 12 - 11 - A - TRe20 - MT

Series: PTR - Palm Tree Ring
Fixture Quantity: 2 - 2 @ 180; 3 - 3 @ 120; 4 - 4 @ 90; 6 - 6 @ 60
Strap Sizes (based on tree DIAMETER): 16 - 16" min to 22" max; 21 - 21" min to 27" max; 26 - 26" min to 32" max; 31 - 31" min to 38" max — VERIFY
Fixture: AR - ArtiStar™
Source: LED - Technology with Integral Driver
Housing: TR - Integral Transformer
LED Type: e64 - 7WLED/2.7K; e65 - 7WLED/3K; e66 - 7WLED/4K; e74 - 7WLED/Amber
Optics: NSP - Narrow Spot (Red Indicator); MFL - Medium Flood (Yellow Indicator); SP - Spot (Green Indicator); WFL - Wide Flood (Blue Indicator)
Adjust-e-lume: A9 - (Standard), A8, A7, A6, A5, A4, A3, A2, A1
Finish: Standard Finish / Premium Finish

Powder Coat Color	Satin	Wrinkle
Bronze	BZP	BZW
Black	BLP	BLW
White (Gloss)	WHP	WHW
Aluminum	SAP	—
Verde	—	VER

Premium Finish: ABP Antique Brass Powder; AMG Aleutian Mountain Granite; AQW Antique White; BCM Black Chrome; BGE Beige; BPP Brown Patina Powder; CAP Clear Anodized Powder; CMG Cascade Mountain Granite; CRI Cracked Ice; CRM Cream; HUG Hunter Green; MDS Mojave Desert Sandstone; NBP Natural Brass Powder; OCP Old Copper; RMG Rocky Mountain Granite; SDS Sonoran Desert Sandstone; SMG Sierra Mountain Granite; TXF Textured Forest; WCP Weathered Copper; WIR Weathered Iron

Lens Type: 12 - Soft Focus Lens; 13 - Rectilinear Lens
Shielding: 11 - Honeycomb Baffle
Cap Style: A - 45°; B - 90°; C - Flush; F - 90° cutoff with Flush Lens
Power Supply: TRe20 - TRe20 Electronic Transformer
Input Voltage: MT - 120-277 VAC Input

B-K LIGHTING
40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com
RELEASED 6-30-2019 DRAWING NUMBER SUB2801-00

TYPE 'WP'

Cypher™ – CY1 Accent Scale
TYPE

FEATURES
- Integral Battery Backup Option
- 360° Light Distribution
- RGBW or Static White Luminous Front Option
- IES Type I, II, III & IV Distributions
- Wall Graze, Spot and Pencil Distributions
- Multiple Fascia Options and Finishes
- 0-10V dimming
- IP-66 Housing & Optical System
- 120-277V
- 3000K, 4000K & 5000K CCT
- 10kA Surge Protection
- Fascia Forms F, E and T are ADA compliant for use in low mounting height applications (80 inches or less)
- IDA approved, downlight only, 3000K and warmer CCTs

ORDERING CODE
1 Series-Output | 2 CCT/CRI | 3 Model | 4 Main Distribution | 5 Secondary Distribution | 6 Voltage | 7 Housing Finish | 8 Fascia Form | 9 Luminous Front | 10 Fascia Panel | 11 Control Options | 12 Options

SERIES-OUTPUT (Base)
CY1-15 15w, 1500 nominal lumens
CY1-25 25w, 2500 nominal lumens

CCT-CRI
27K8 2700K, 80CRI
3K7 3000K, 70CRI
3K8 3000K, 80CRI
4K7 4000K, 70CRI
4K8 4000K, 80CRI
5K7 5000K, 70CRI

MODEL (Light Engine)
1 DownLight Only
2 50/50 Down/Up, Down/Up distributions must match
3 90/10 Down/Up
4 25/25/25/25 Split, Down/Up/Side distributions must match
5 70/10/10/10 Split, Top/Side distributions must match
Contact factory for custom distributions. See Distribution Matrix on page 2 for restrictions.

MAIN DISTRIBUTION (Down)
1 IES Type I; 2 IES Type II; 3 IES Type III; 4 IES Type IV; SP 15° Spot/Column; WG 60° Wall Graze; 1D Type 1 Diffused; 2D Type 2 Diffused; 3D Type 3 Diffused; 4D Type 4 Diffused

SECONDARY DISTRIBUTION (Up, Sides)
1 IES Type I; 2 IES Type II; 3 IES Type III; 4 IES Type IV; SP 15° Spot/Column; WG 60° Wall Graze; PB* Pencil Beam; 1D Type 1 Diffused; 2D Type 2 Diffused; 3D Type 3 Diffused; 4D Type 4 Diffused
** PB distribution is available for 90/10 and 70/10/10/10 models only. Not all combinations are recommended. See Distribution Matrix on page 2 for restrictions.*

VOLTAGE
UNV 120-277V

BASE HOUSING FINISH
Standard Colors: AGN Antique Green; BL Black; BLT Matte Black; CRT Corten; DB Dark Bronze; DGN Dark Green; GT Graphite; LG Light Grey; MAL Matte Aluminum; MDB Metallic Bronze; MG Medium Grey; TT Titanium; VBU Verde Blue; WDB Weathered Bronze; WH Arctic White
Premium Colors: SFM Seafoam; SHK Shamrock; SPP Salt and Pepper; WCP Weathered Copper; RAL Provide a RAL 4 digit color number; CUSTOM COLOR Please provide color chip for matching

FASCIA FORM
F Flat; R Radius/Curved; T Triangle/Wedge; E Rounded Edge; C Circle/Curved; CB Cylinder Balanced; CT Cylinder Tall; CBM Custom Building Material Mount Ghost Fascia

LUMINOUS FRONT
BLANK Standard None; RGBW RGBW Luminous Front; LFSW Static White Luminous Front
RGBW and LFSW luminous fronts are only available with open, four square and perforated fascia panels

FASCIA PANEL
FPP Full Panel Painted; FPS Full Panel Stainless Steel; FPC Full Panel Copper; OPP Open Panel Painted; OPS Open Panel Stainless Steel; OPC Open Panel Copper; 4PP 4-Square Panel Painted; 4PS 4-Square Panel Stainless Steel; 4PC 4-Square Panel Copper; PPP Perforated Panel Painted; PPS Perforated Panel Stainless Steel; PPC Perforated Panel Copper
Flat and Radius Fascia forms only. Painted panels by default match base housing finish/color. Consult factory for custom panel finishes.

CONTROL OPTIONS
PCU Universal Button Photocell (120-277V)

OPTIONS
EM Battery Backup Unit -20°C; SF Single Fuse (120, 277); DF Double Fuse (208, 240)
Battery Backup not available with Triangle and Rounded Edge Fascia Forms.

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ARCHITECTURAL AREA LIGHTING
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P 626.968.5666 | F 626.369.2695 | www.aal.net
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JOB
TYPE
NOTES

TYPE 'LU'

3" INGROUND 120V
5032

WAC
LANDSCAPE LIGHTING

Rock Guard
Protects the fixture face
5030-GRD-BZ *Bronze on Aluminum*
5030-GRD-BBR *Bronze on Brass*

Optics
Enhances saturation of florals and foliage
LENS-25-AMB *Amber* | LENS-25-RED *Red* | LENS-25-FR *Frosted*
LENS-25-GRN *Green* | LENS-25-BLU *Blue* | LENS-25-HCL *Honeycomb Louver Reduces glare*

Concrete Pour Kit
For installation in concrete
Five ½" NPT threaded holes, PC
5030-PIP-PVC *Shown with temporary dense foam cap*

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585
Headquarters/Eastern Distribution Center 44 Harbor Park Drive Port Washington, NY 11050
Central Distribution Center 1600 Distribution Ct Lithia Springs, GA 30122
Western Distribution Center 1750 Archibald Avenue Ontario, CA 91760
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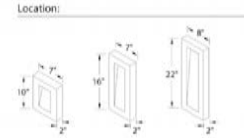
TYPE 'WS'

URBAN – model: WS-W11
LED Outdoor Sconce Luminiare

MODERN FORMS

Fixture Type:
Catalog Number:
Project:
Location:



PRODUCT DESCRIPTION
Like urban renewal, the Urban sconce gives new life to the conventional step baffle. Form follows function in this simplified indirect wall sconce. Clean styling and robust LED performance are combined in this modern dark sky luminaire.

FEATURES
- ETL & cETL listed for wet locations. IP65
- Interior light and down light
- Low profile design
- Replaceable LED module
- 277V option available special order
- 50,000 hour potential life
- Color Temp: 3000K
- CRI: 85

SPECIFICATIONS
Construction: Aluminum.
Power: No driver or transformer required.
Light Source: High output LED.
Dimming: Dims to 10% with an electronic low voltage (ELV) dimmer.
Mounting: Mounts directly to junction box.
Finish: Black (BK), Bronze (BZ), Graphite (GH), White (WT).
Standards: ETL & cETL listed. ADA compliant. Dark Sky friendly. IP65. Wet location.

ORDER NUMBER

Model	Height		Watt	# of LEDs	LED Lumens	Photometric Lumens	Finish	
WS-W11	10	10"	12W	3	720	370	BK	Black
	16	16"	16W	4	960	490	BZ	Bronze
	22	22"	20W	5	1200	610	GH	Graphite
							WT	White

REPLACEMENT GLASS

Part#	Fixture
RPL-GLA-1122-02 RPL-GLA-1122-01	WS-W1122
RPL-GLA-1116-02 RPL-GLA-1116-01	WS-W1116
RPL-GLA-1110-02 RPL-GLA-1110-01	WS-W1110

WS-W11 [ ] - [ ]
Example: WS-W1116-GH
For 277V special order, add an "F" before the finish: WS-W1116F-GH

modernforms.com
Phone (800) 526.2588
Fax (800) 526.2585
Headquarters/Eastern Distribution Center 44 Harbor Park Drive Port Washington, NY 11050
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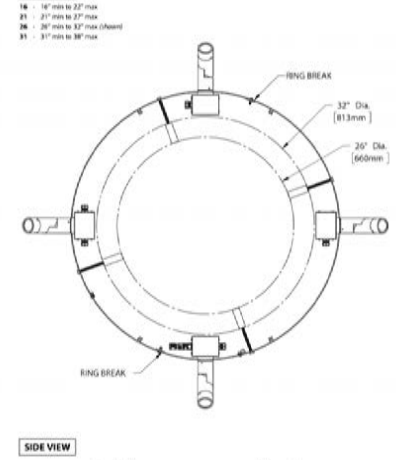
PALM TREE RING INTEGRAL
ARTISTAR™

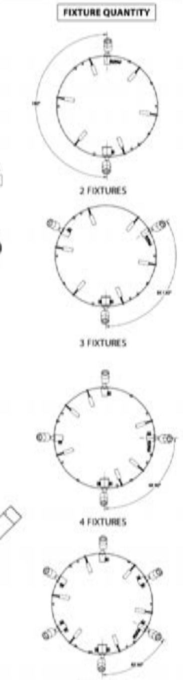
BKSSL SOLID STATE LIGHTING

PROJECT:
TYPE:

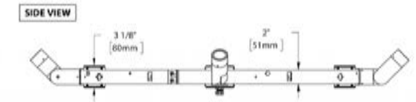
TOP VIEW
16 - 16" min to 22" max
21 - 21" min to 27" max
26 - 26" min to 32" max (shown)
31 - 31" min to 38" max



FIXTURE QUANTITY



SIDE VIEW



B-K LIGHTING
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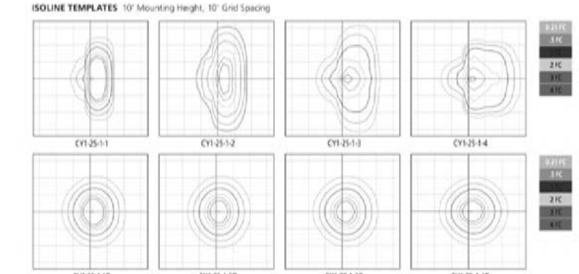
www.bklighting.com • info@bklighting.com
RELEASED 6-30-2019 DRAWING NUMBER SUB2801-00

Cypher™ – CY1 Accent Scale
TYPE

LUMINAIRE PERFORMANCE

Nominal Output (Lm)	Average System Wattage	Distribution	5000K 70 CRI Delivered Lumens	Efficacy (Lm/W)	B	U	G	4000K 70 CRI Delivered Lumens	Efficacy (Lm/W)	B	U	G	3000K 70 CRI Delivered Lumens	Efficacy (Lm/W)	B	U	G
1,500	17	Type 1	1523	113	0	0	0	1928	113	0	0	0	1825	107	0	0	0
		Type 2	1726	102	0	0	0	1730	102	0	0	0	1638	96	0	0	0
		Type 3	1750	100	0	0	1	1755	103	0	0	1	1661	98	0	0	1
		Type 4	1757	103	0	0	0	1762	104	0	0	0	1668	98	0	0	0
		Wall Graze	1971	114	1	0	0	1976	116	1	0	0	1821	110	1	0	0
		Spot/Column	1792	103	2	0	0	1797	106	2	0	0	1701	100	2	0	0
		Type 1 Diffused	1629	96	1	0	0	1634	96	1	0	0	1547	91	1	0	0
		Type 2 Diffused	1573	93	1	0	0	1577	93	1	0	0	1493	88	1	0	0
		Type 3 Diffused	1425	84	1	0	0	1429	84	1	0	0	1353	80	1	0	0
		Type 4 Diffused	1602	94	1	0	1	1607	95	1	0	0	1521	[illegible]	1	0	0
2,500	26	Type 1	2517	96	0	0	0	2524	97	0	0	0	2390	92	0	0	0
		Type 2	2233	85	1	0	1	2239	86	1	0	1	2120	82	1	0	1
		Type 3	2229	85	1	0	1	2236	85	1	0	1	2117	80	1	0	1
		Type 4	2319	88	1	0	1	2325	89	1	0	1	2201	85	1	0	1
		Wall Graze	2744	104	2	0	0	2752	106	2	0	0	2605	100	2	0	0
		Spot/Column	2471	94	2	0	0	2478	95	2	0	0	2346	90	2	0	0
		Type 1 Diffused	2344	89	1	0	1	2350	90	1	0	1	2225	86	1	0	1
		Type 2 Diffused	2062	79	1	0	1	2068	80	1	0	1	1958	75	1	0	1
		Type 3 Diffused	2050	78	1	0	1	2056	79	1	0	1	1946	75	1	0	1
		Type 4 Diffused	2123	80	1	0	1	2129	82	1	0	1	2016	78	1	0	1

ISOLINE TEMPLATES 10' Mounting Height, 10' Grid Spacing



ARCHITECTURAL AREA LIGHTING
17760 Rowland Street | City of Industry | CA 91748
P 626.968.5666 | F 626.369.2695 | www.aal.net
Copyright © 2017 | September 7, 2018 11:56 AM
JOB
TYPE
NOTES

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

PHX ARCHITECTURE
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BEUS GILBERT
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PROPOSED SITE LIGHTING TEAR SHEETS

the smoke tree resort
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PHX ARCHITECTURE

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AERIAL VIEW

The smoke tree resort

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PHX ARCHITECTURE

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CONCEPT RENDERING

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WEST ELEVATION

scale: 1" = 40'-0"

SOUTH ELEVATION

scale: 1" = 40'-0"

EAST ELEVATION

scale: 1" = 40'-0"

PHX ARCHITECTURE

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EXTERIOR ELEVATIONS

the smoke tree resort

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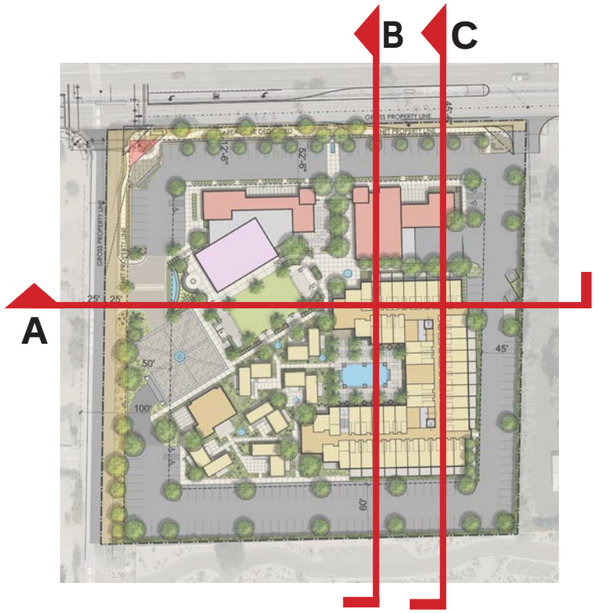
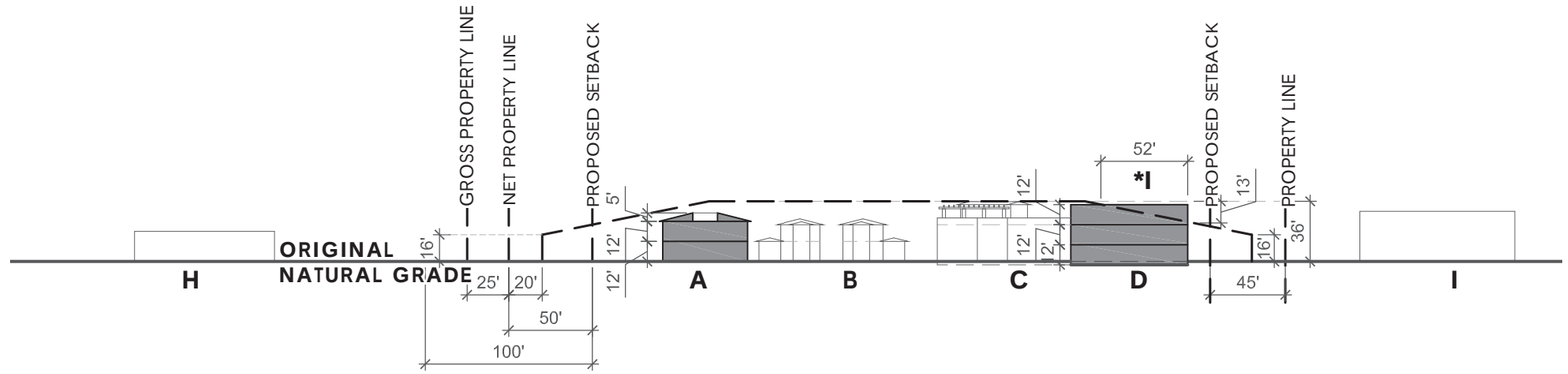
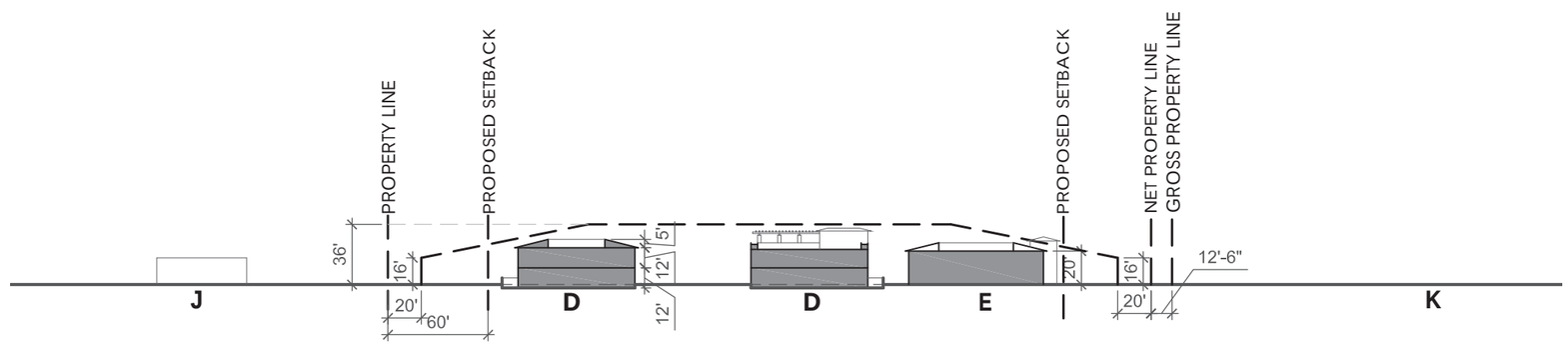


KEY MAP - NOT TO SCALE



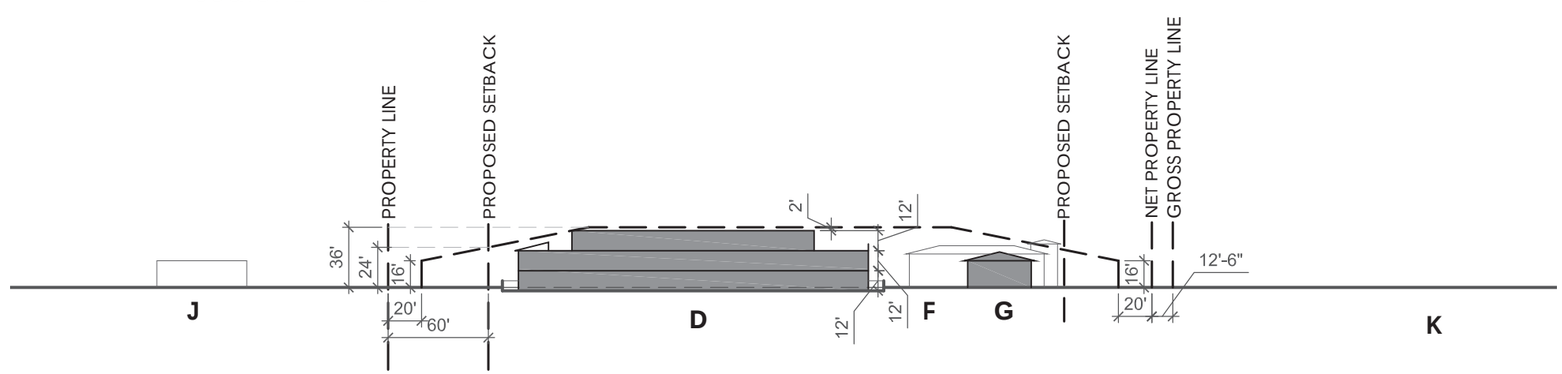
SECTION A - cut 150' from south property line

scale: 1" = 90'-0"



SECTION B - cut 140' from east property line

scale: 1" = 90'-0"



SECTION C - cut 80' from east property line

scale: 1" = 90'-0"

PROGRAM:

- A Resort Reception
- B Resort Villas
- C Pool Area
- D Resort
- E Market
- F Service Yard
- G Coffee Shop
- H Adjacent Residential Parcel
- I Medical Office Building
- J Special Use Permit Resort (Andaz)
- K Special use Permit Resort (Ritz)

NOTES(*):

i. Building facade extends 13' to top of parapet above the OSC plane spanning 145' linear feet for a total of 1,885 sf vertically.
Occupiable square footage affected is 7,540 sf (52' linear feet x 145' linear feet = 7,540 sf horizontally)

PHX ARCHITECTURE

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OPEN SPACE DIAGRAM

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KEY MAP - NOT TO SCALE

PROGRAM:

A. Typical Resort Suite - Approx. 400 sf - average

Ground Level	38 keys
Second Level	38 keys
Third Level	14 keys

B. Typical Resort Suite - Approx. 725 sf - average

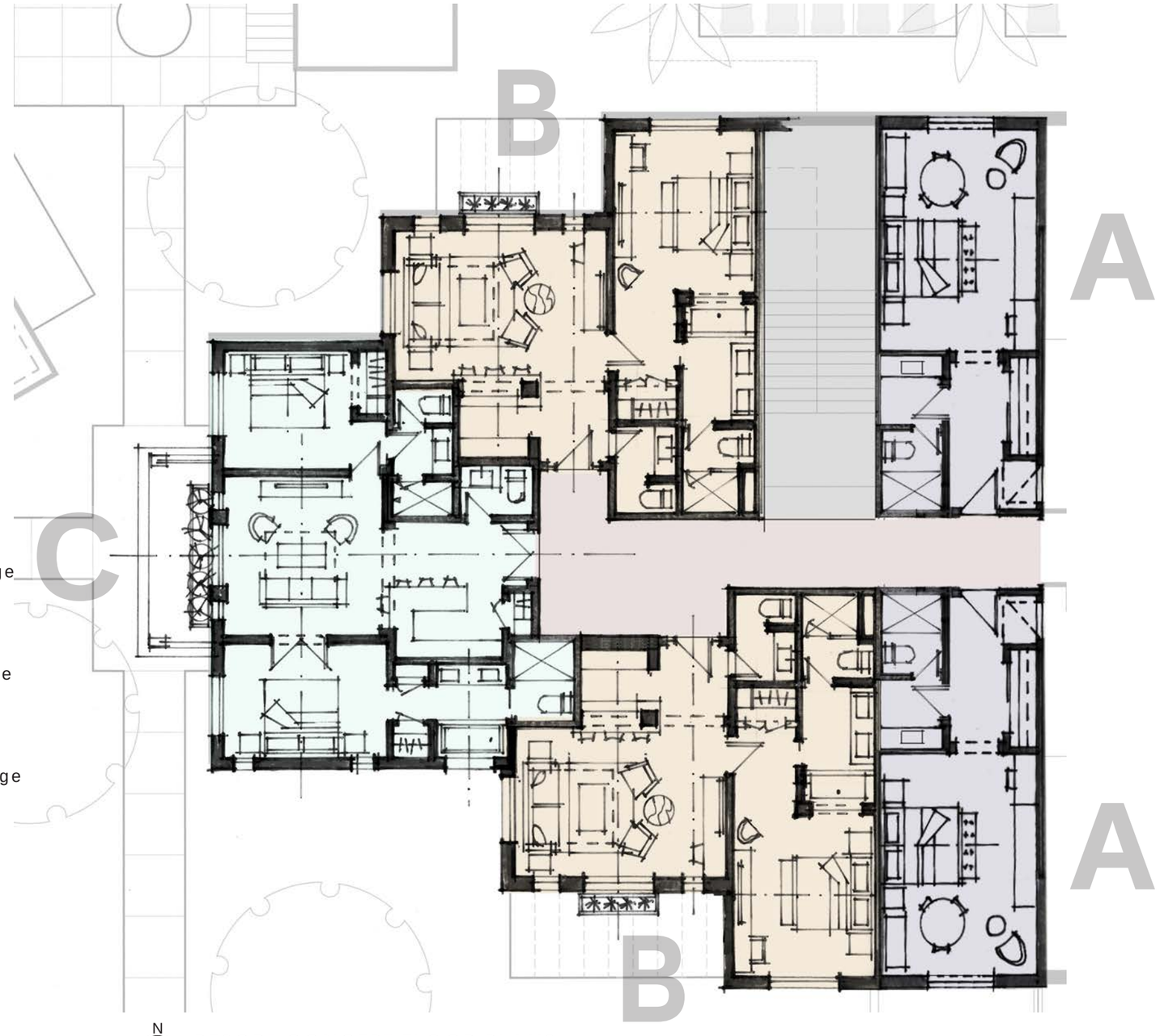
Ground Level	4 keys
Second Level	5 keys
Third Level	1 keys

C. Typical Resort Suite - Approx. 700 sf - average

Ground Level	0 keys
Second Level	2 keys
Third Level	0 keys
TOTAL RESORT KEYS:	102 keys

ADDITIONAL:

LUXURY SUITES	20 KEYS
TOTAL KEYS	122 KEYS



N

RESORT CONCEPT FLOOR PLANS

scale: 1" = 10'-0"

PHX ARCHITECTURE

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CONCEPT FLOOR PLANS

the smoke tree resort

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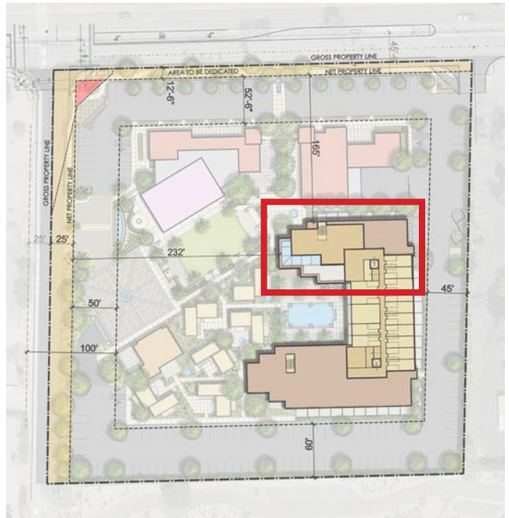

KEY MAP - NOT TO SCALE

PROGRAM:

- A Lounge
- B Enclosed Terrace
- C Exterior Terrace
- D Back of House
- E Third Floor Lobby

ENLARGED FLOOR PLAN at top floor lounge

scale: 1" = 10'-0"

PHX ARCHITECTURE

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ENLARGED FLOOR PLAN

the smoke tree resort

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KEY MAP - NOT TO SCALE

WEST ELEVATION at top floor lounge

scale: 1" = 10'-0"

PHX ARCHITECTURE

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EXTERIOR ELEVATION

the smoke tree resort

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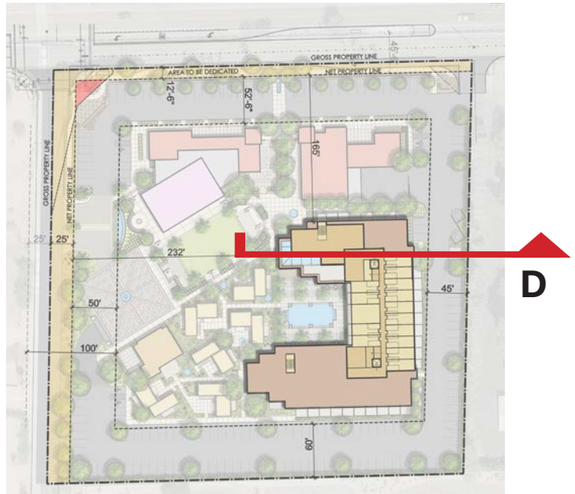
KEY MAP - NOT TO SCALE



SECTION D - cut at top floor lounge

scale: 1" = 10'-0"

PHX ARCHITECTURE

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SECTION AT TOP FLOOR LOUNGE

the smoke tree resort

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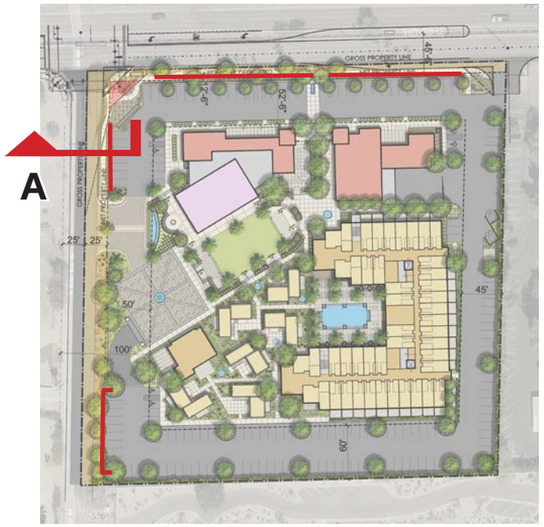

KEY MAP - NOT TO SCALE

PARKING SECTION A - typical 3'-0" high parking screen wall throughout

Scale: 1" = 6'-0"

PHX ARCHITECTURE

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PARKING SECTION

The smoke tree resort

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SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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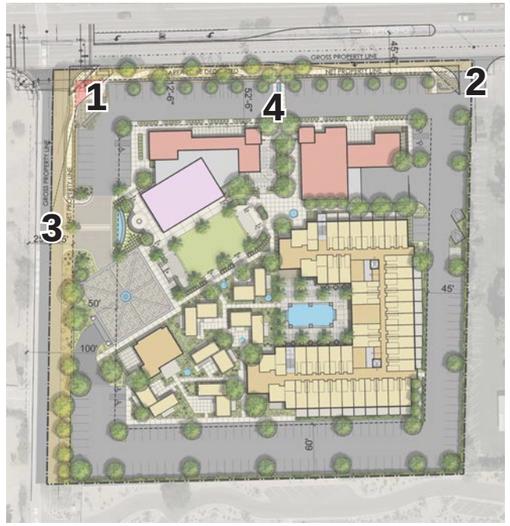
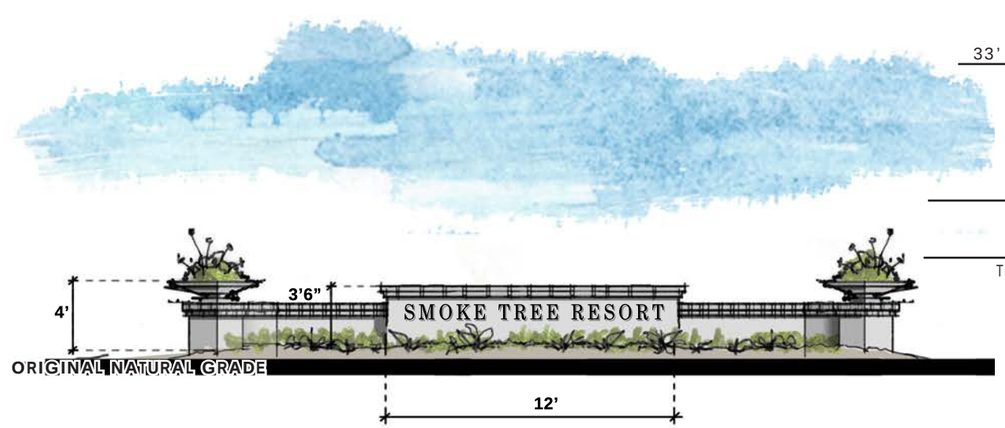
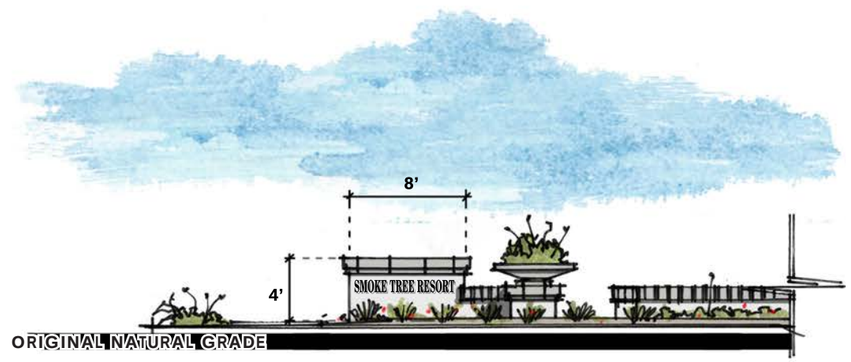


KEY MAP - NOT TO SCALE



1. STREET CORNER SIGNAGE - 48 SF MAX SIGN WITH BACKLIT LETTERS

scale: 1" = 10'-0"

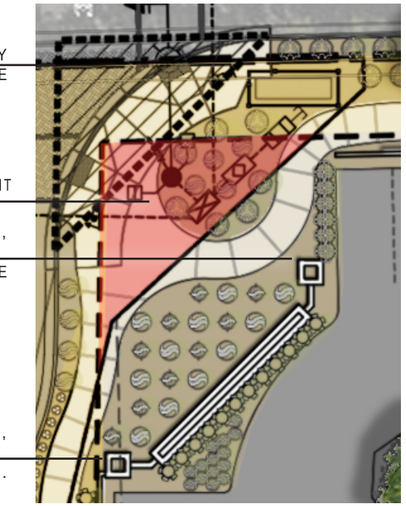


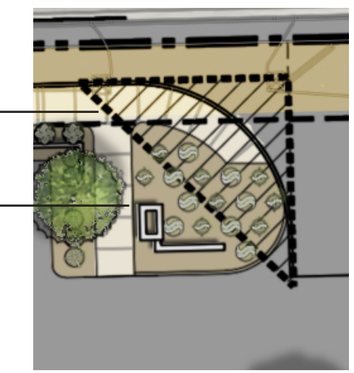
2. STREET CORNER SIGNAGE - 32 SF MAX SIGN WITH BACKLIT LETTERS

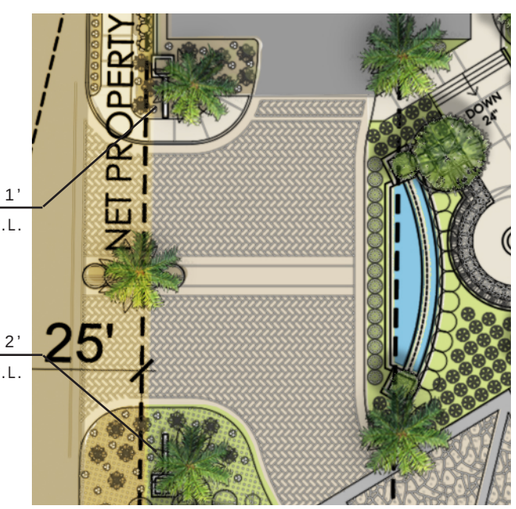
scale: 1" = 10'-0"

3. RESORT AUTO COURTYARD ACCESS - (qty2) 32 SF MAX SIGN WITH BACKLIT LETTERS

scale: 1" = 10'-0"







PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

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PROPOSED SIGNAGE AND MONUMENTS

the smoke tree resort

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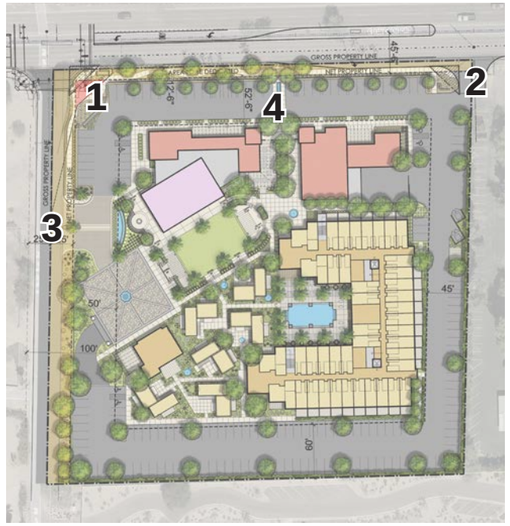
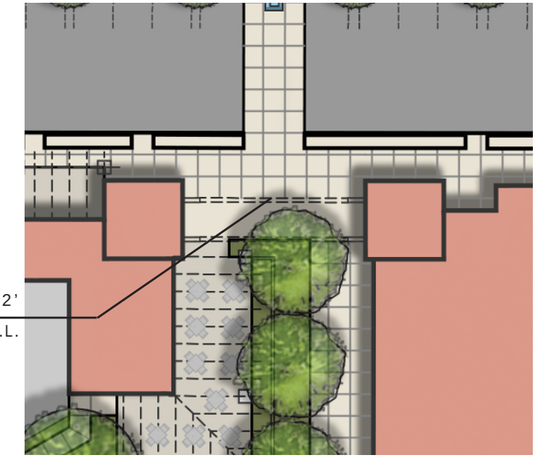


KEY MAP - NOT TO SCALE



4. PEDESTRIAN COURTYARD ACCESS - 40 SF MAX SIGN WITH BACKLIT LETTERS

scale: 1" = 10'-0"

PHX ARCHITECTURE

GREEY|PICKETT

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PROPOSED SIGNAGE AND MONUMENTS

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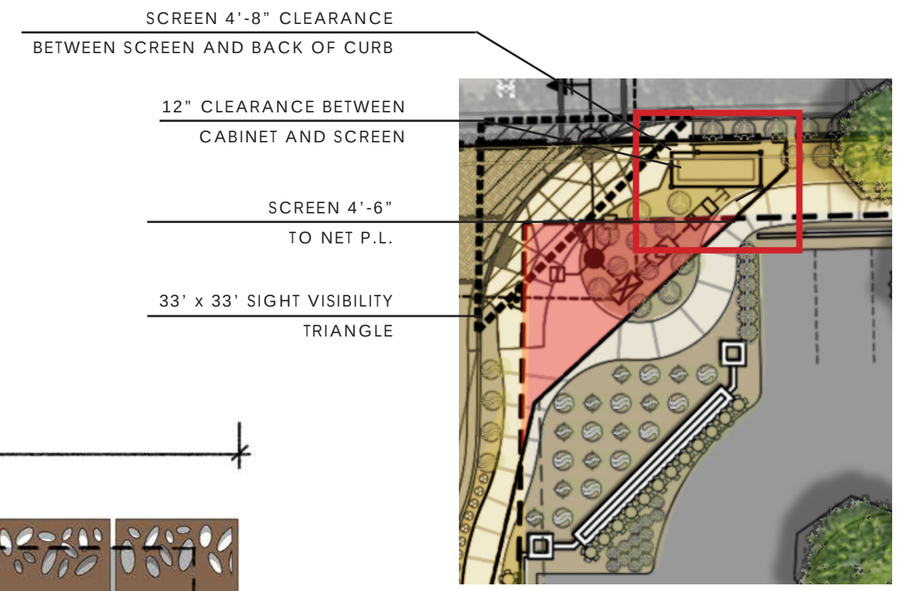
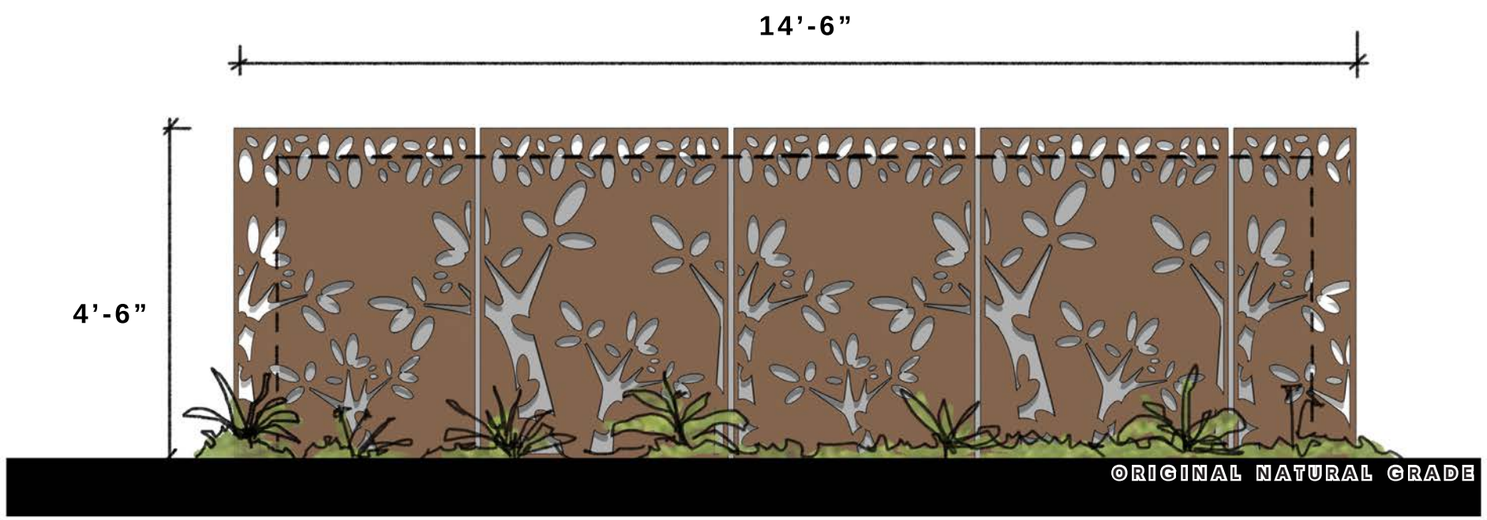
KEY MAP - NOT TO SCALE





LASER CUT METAL SCREEN FOR APS UTILITY BOX - removable panels set 12" from box

scale: 1" = 2'-0"

PHX ARCHITECTURE

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PROPOSED DECORATIVE SCREEN

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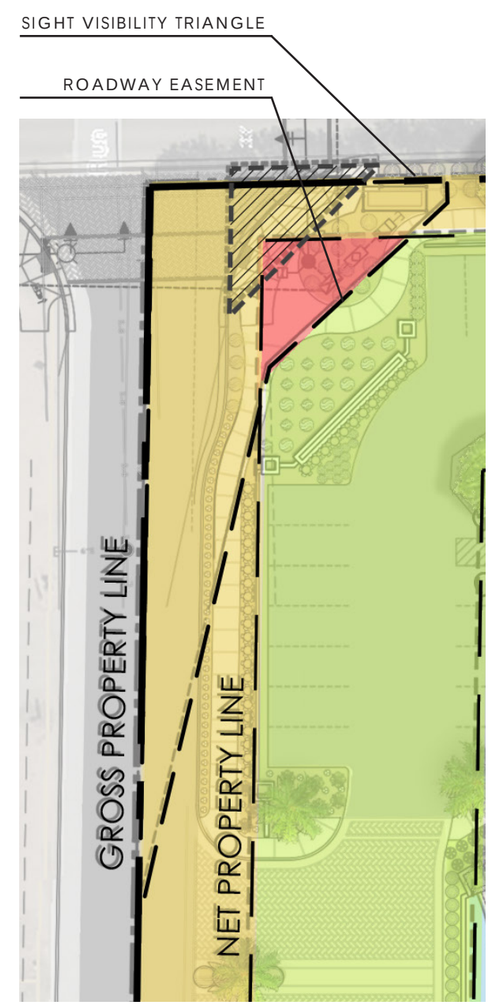
LEGEND:

- Proposed Setback
- Area to be Dedicated
- Roadway Easement



PHX ARCHITECTURE

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PROPOSED SETBACK / DEDICATION OVERLAY

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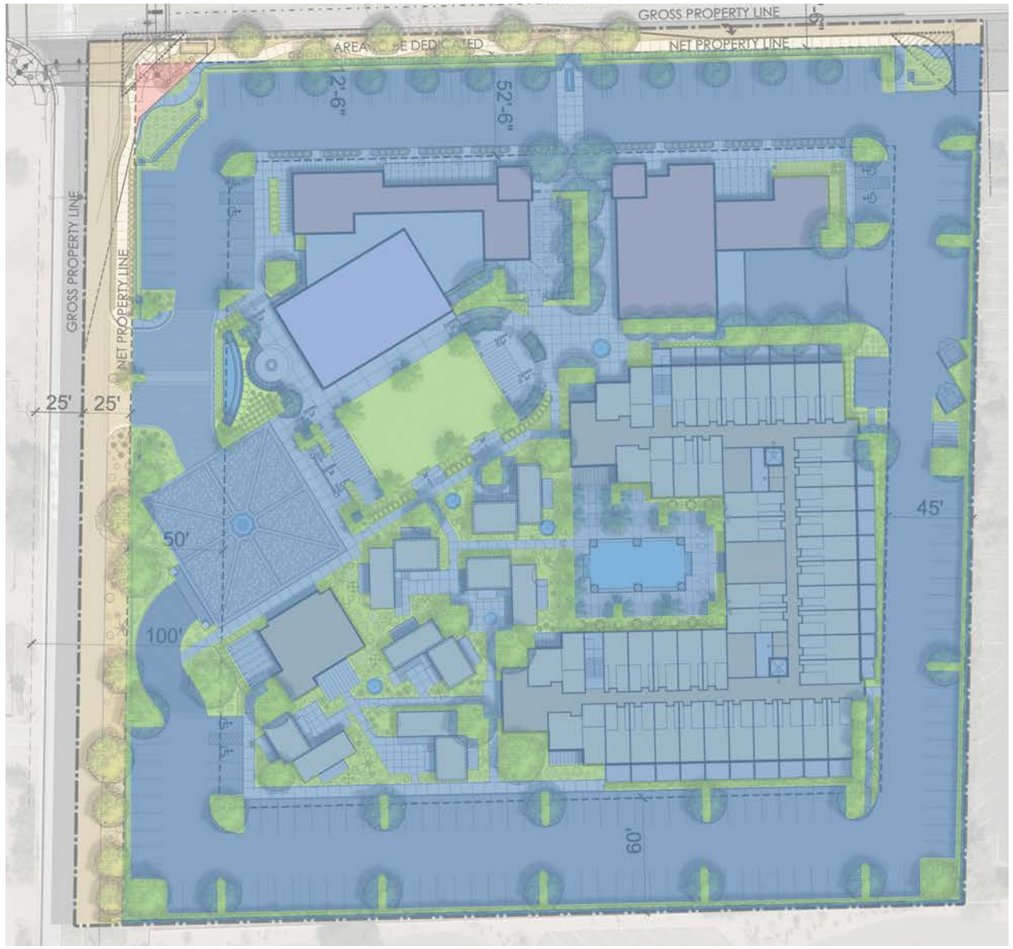

PERVIOUS VS IMPERVIOUS:

Lot size:	200,830 sf net
Pervious Surfaces (Green):	30,125 sf net
Impervious Surfaces (Blue):	170,705 sf net

OPEN SPACE:

Lot Size:	200,830 sf net
Open Space (Green)	65,830 sf net
Buildings (Orange)	58,832 sf net
Roadways and Parking (Gray)	76,168 sf net

PHX ARCHITECTURE

GREEY|PICKETT

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LAND USE GRAPHICS

the smoke tree resort

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SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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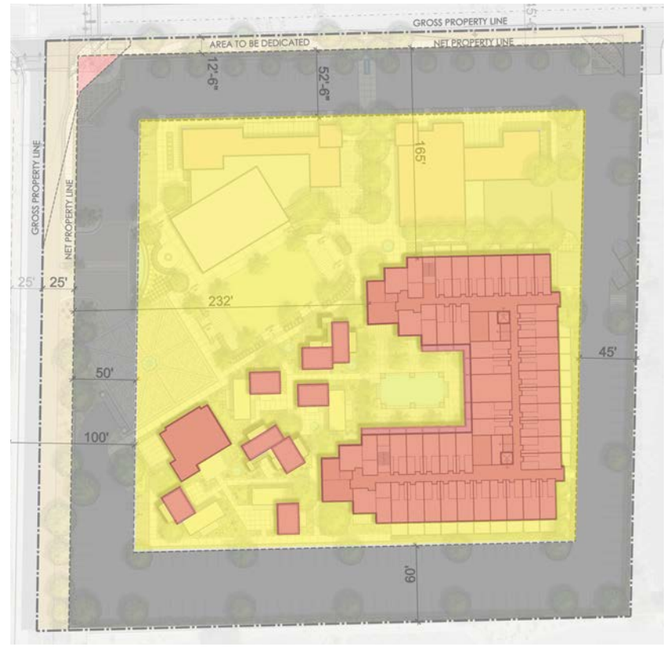
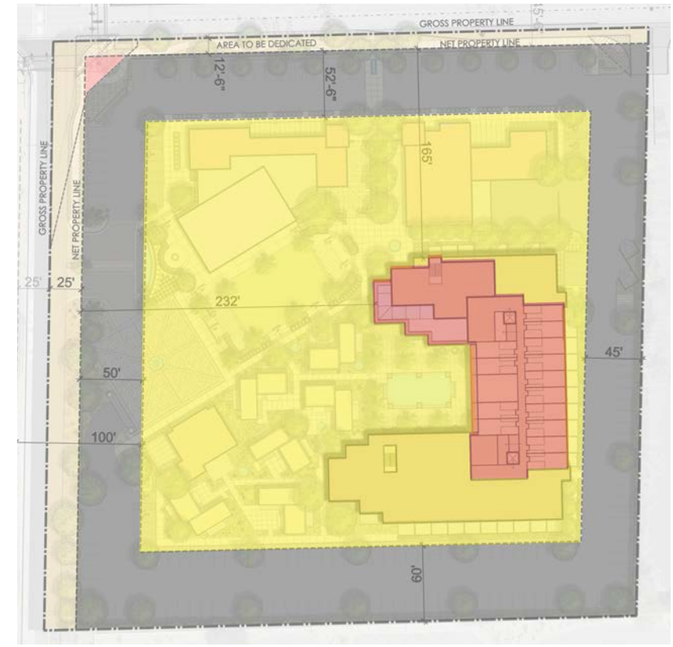
GROUND FLOOR:

Cumulative Total (orange): 58,832 sf



SECOND LEVEL:

Cumulative Total (orange): 47,270 sf



THIRD LEVEL:

Cumulative Total (orange): 22,048 sf

FLOOR RATIO SQUARE FOOTAGES

TOTAL PARCELS:

Ground Floor:	58,832 sf
Second Level:	47,270 sf
Third Level:	22,048 sf
Total	128,150 sf

PHX ARCHITECTURE

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LAND USE GRAPHICS

The smoke tree resort

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Area	Land Use Product	Gross Acreage (Excluding Condemned Area)	Additional Dedication	Net Acreage	Proposed Units	Maximum Total Resort Related Floor Area, sf	Lot Coverage: Drip Line Area, sf	Area Coverage, Percentage	Maximum Height, ft (1)
	The Smoke Tree Resort Hotel	5.01	-0.39	4.61	Public Space	80,000	29,257	14.6%	36'
					122 Hotel Rooms				36'
	Accessory & Service Structures					29,150	14,575	7.3%	24' / 36'
	Restaurant					3,200	3,200	1.6%	24'
	Food & Beverage (misc)					8,800	4,800	2.4%	24'
	Market					4,000	4,000	2.0%	24'
	Coffee Shop					1,800	1,800	0.9%	24'
	Resort Related Retail (misc)					1,200	1,200	0.6%	24'
	Total All Parcels	**5.01**	**-0.39**	**4.61**		**128,150**	**58,832**	**29.3%**	

Post Dedication Metrics						
		Gross Acreage (Excluding Condemned Area)	Additional Dedication	Net Acreage	Gross	Net
	Lot Coverage	218,029	-17,199	200,830	27.0%	29.3%
	FAR	218,029	-17,199	200,830	0.59	0.64
	Setbacks	North	-12.5		65	52.5
		East	0		45	45
		South	0		60	60
		West	-25		75	50
	Open Space Criteria	North	-12.5		Comply	Encroach
		East	0		Encroach	Encroach
		South	0		Comply	Comply
		West	-25		Comply	Comply
	Total Lot Coverage of All Impervious Surfaces *			170,705	78%	85%
	(1) Original Natural Grade	1310.5'				

***Coverage data based from CAD file.**

PHX ARCHITECTURE

GREEY|PICKETT

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PROPOSED PROJECT DATA

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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	SPECIAL USE PERMIT GUIDELINES FOR RESORTS	PROPOSED DESIGN
Section 4.1.a	Site Standards: Except for properties that have existing special use permits for resort uses, the minimum site area shall be 20 acres which shall not be bisected by any public right-of-way.	Smoke Tree Resort is an existing 5 acre special use permit resort property.
Section 4.1.b	Site Standards: Except for properties that have existing special use permits for resort uses, the site shall have primary access from and frontage of at least 300 feet on a Major or Minor Arterial as designated in the Paradise Valley General Plan.	Proposed Design: The proposed plan has 445 feet of frontage on a Major Arterial and primary access via a signalized intersection at Qual Run Road and Lincoln Dr. and secondary access via a Major Arterial (Lincoln Dr).
Section 4.1.c	Site Standards: Principal structures shall be those containing guest units or those containing guest registration areas, facility administrative offices and accessory uses. Principal structures with guest units also may contain permitted accessory uses.	Proposed Design: Comply
Section 4.1.d	Site Standards: Accessory structures shall be those containing accessory uses.	Proposed Design: Comply
Section 4.1.e	Site Standards: Service structures shall include those structures used for support and maintenance of the resort.	Proposed Design: Comply
Section 4.1.f	Site Standards: All parking on a site shall be at the surface or underground.	Proposed Design: The proposed plan consists of all surface parking.
Section 4.1.g	Site Standards: No individual retail business, office or business service shall occupy more than 2000 square feet. Entrances to any retail business, office, or business service shall be from within a principal or accessory structure.	Proposed Design: The proposed plan does not contain stand-alone retail. All retail shall be resort related and commonly managed.
Section 4.2.a.i	Bulk and Density Standards: Maximum building height for principal structures - 36 feet	Proposed Design: The maximum building height of the proposed plan is 36 feet from Original Natural Grade, or 1,310.5′ elevation. The Main Hotel (Building "N" on the site plan) will have a 38' facade, and still comply with the maximum 36' height due to an excavation of 2' and lowering of the building in this area.
Section 4.2.a.ii	Bulk and Density Standards: Maximum building height for accessory structures - 24 feet	Proposed Design: Comply
Section 4.2.a.iii	Bulk and Density Standards: Maximum building height for service structures - 18 feet	Proposed Design: Comply
Section 4.2.a.iv	Bulk and Density Standards: Towers and other architectural features may exceed maximum building heights, subject to special use permit or major amendment approval.	Proposed Design: The proposed plan does not exceed 36′ above original natural grade.
Section 4.2.a.v	Bulk and Density Standards: To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines in accordance with eh Open Space Criteria per Section 3 of the Special Use Permit Guidelines.	Proposed Design: The proposed plan encroaches on the OSC on the North and East sides and meets the OSC on the West and South.

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TABLE OF GUIDELINES AND COMPLIANCY

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
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	SPECIAL USE PERMIT GUIDELINES FOR RESORTS	PROPOSED DESIGN
Section 4.2.b.i	Lot coverage: Lot Coverage: Total of all structures - 25%	Proposed Design: 29.3%
Section 4.2.b.ii	Lot coverage: Lot Coverage: Total of all impervious surfaces including building footprints - 60%	Proposed Design: 85%
Section 4.2.b.iii	Lot coverage: Open space, which shall consist of land and water areas retained for active or passive recreation purposes or essentially underdeveloped areas retained for resource protection or preservation purposes, a minimum of 40%.	Proposed Design: 15%
Section 4.2.c	Maximum density of guest units - 1 unit for each 4000 sq. feet of site area	Proposed Design: The proposed plan consists of 1 guest unit per 1,646 sf of net site area (post-dedication).
Section 4.3.a.i	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Principal structures - 100 feet	Proposed Design: 100 feet minimum is maintained as measured to adjacent residential property line per the Statement of Direction.
Section 4.3.a.ii	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Accessory structure - 60 feet	Proposed Design: 45′ on the East, 60′ on the South, 50′ on the West, and 52.5′ on the North.
Section 4.3.a.iii	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Service Structure - 100 feet	Proposed Design: 45′ on the East, 60′ on the South, 50′ on the West, and 52.5′ on the North.
Section 4.3.a.iv	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Outdoor game courts and swimming pools which are generally available to all guests - 200 feet	Proposed Design: Comply
Section 4.3.a.v	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Parking lots and interior drives, excluding exterior points of access - 60 feet	Proposed Design: Comply. The Western Property Line is adjacent to a public street.
Section 4.3.a.vi	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is residential: Any portion of an equestrian facility, including structures barns, stalls and corrals - 200 feet	Proposed Design: Comply, no equestrian facilities proposed.
Section 4.3.b.i	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street: Principal structures - 100 feet	Proposed Design: 45′ on the East, 60′ on the South, 50′ on the West, and 52.5′ on the North.
Section 4.3.b.ii	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street: Accessory structure - 40 feet	Proposed Design: 45′ on the East, 60′ on the South, 50′ on the West, and 52.5′ on the North.

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TABLE OF GUIDELINES AND COMPLIANCY

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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	SPECIAL USE PERMIT GUIDELINES FOR RESORTS	PROPOSED DESIGN
Section 4.3.b.iii	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street: Service structure - 65 feet	Proposed Design: 45′ on the East, 60′ on the South, 50′ on the West, and 52.5′ on the North.
Section 4.3.b.iv	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street: Outdoor game courts and swimming pools which are generally available to all guests - 65 feet	Proposed Design: Comply.
Section 4.3.b.v	Perimeter Standards: Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street: Parking lots and interior drives, excluding exterior points of access - 40 feet	Proposed Design: 0′ proposed
Section 4.3.c	There shall be a 40 foot wide landscaped area adjacent to an exterior property line where it abuts residentially zoned property.	Proposed Design: Comply. The proposed plan does not abut a residentially zoned property.
Section 4.3.d	There shall be a minimum 30 foot wide landscaped area where an exterior property line abuts a public or private local or collector street and a 50 foot wide landscaped area where an exterior property line abuts a Major or Minor Arterial.	Proposed Design: 0′ proposed. The proposed plan contains landscape buffers in the Right of Way.
Section 4.3.e	The provisions of Chapter XXIV, Walls, and Fences, of the Town's Zoning Ordinance shall apply.	Proposed Design: See Sheets A24 - A27 for additional details.
Section 4.4.a.i	Parking and Circulation: Parking and Circulation; on site parking shall be provided as follows: For each guest unit - 1.2 spaces	Proposed Design: Comply. Per Section 4.4.b of the SUP Guidelines, reduction for overlapping usage of on-site facilities has been proposed in the Parking Study.
Section 4.4.a.ii	Parking and Circulation: Parking and Circulation; on site parking shall be provided as follows: For each dwelling unit - 2.0 spaces	Proposed Design: Comply. No Dwelling Units proposed.
Section 4.4.a.iii	Parking and Circulation: Parking and Circulation; on site parking shall be provided as follows: For each 50 square feet of net dining area in restaurants - 1.0 space	Proposed Design: Comply. Per Section 4.4.b of the SUP Guidelines, reduction for overlapping usage of on-site facilities has been proposed in the Parking Study.
Section 4.4.a.iv	Parking and Circulation: Parking and Circulation; on site parking shall be provided as follows: For each two seats or equivalent area in meeting rooms, auditoriums or group assembly areas - 1.0 space	Proposed Design: Comply. Per Section 4.4.b of the SUP Guidelines, reduction for overlapping usage of on-site facilities has been proposed in the Parking Study.
Section 4.4.a.v	Parking and Circulation: Parking and Circulation; on site parking shall be provided as follows: For each 300 square feet of net sales areas in retail establishments - 1.0 space	Proposed Design: Comply. Per Section 4.4.b of the SUP Guidelines, reduction for overlapping usage of on-site facilities has been proposed in the Parking Study.
Section 4.4.a.vi	Parking and Circulation: On site parking shall be provided as follows: For each 300 square feet of net occupied space in office and service establishments - 1.0 space.	Proposed Design: Comply. Per Section 4.4.b of the SUP Guidelines, reduction for overlapping usage of on-site facilities has been proposed in the Parking Study.

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TABLE OF GUIDELINES AND COMPLIANCY

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
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	SPECIAL USE PERMIT GUIDELINES FOR RESORTS	PROPOSED DESIGN
Section 4.4.b	Parking and Circulation: These requirements may be modified in conjunction with special use permit or major amendment approval based on information documenting overlapping usage of on-site facilities by guests or visitors and as contained in an approved traffic and parking analysis.	Proposed Design: A Parking Study has been provided that proposes reductions for overlapping usage of in-site facilities.
Section 4.4.c	Parking and Circulation: All parking and driveway areas shall be located so as to prevent lights from shining onto adjacent residential property.	Proposed Design: Parking and drives have proposed headlight screen walls or landscape screening.
Section 4.4.d	Parking and Circulation: All parking areas and driveways located within 200 feet of adjacent residentially zoned property shall be screen with a minimum three foot high, solid, decorative wall or a landscaped berm providing equivalent screening or a combination of both.	Proposed Design: The parking area and driveways have been proposed to have a minimum 3' high wall and/or landscaping to provide such screening.
Section 4.4.e	Parking and Circulation: Landscaped islands shall be provided every 100 feet within surface parking areas. Shade tree planters shall be provided between every four stalls.	Proposed Design: Landscape islands have been provided every 100'/ Shade tree planters have been proposed along the Lincoln Dr frontage, but not in other parking areas on site.
Section 4.4.f	Parking and Circulation: No loading, truck parking, trash containers or outdoor storage area shall be located within 100 feet of adjacent residentially zoned property. All such areas shall provide visual and noise screening to minimize impacts on adjacent residential property.	Proposed Design: Comply. These areas have been moved to the north east side of the site.
Section 4.5.a	Signs: An identification sign may be located at each entrance to the resort from a major or minor arterial street. The maximum height shall be 8 feet and maximum sign area shall eb 40 square feet, aggregate.	Proposed Design: The proposed sign is 12' x 4' = 48 sf
Section 4.5.b	Signs: On entrances from all other streets, the maximum height shall be 4 feet and the maximum area shall be 32 square feet, aggregate.	Proposed Design: Comply.
Section 4.5.c	Signs: All signs shall be only backlit or indirectly illuminated according to the standards in article XXV, Signs, of the Town's Zoning Ordinance.	Proposed Design: Comply.
Sections 4.5.d	Signs: No moving or animated signs shall be permitted. Changeable copy is permitted within the allowable sign area.	Proposed Design: Comply.
Section 4.5.e	Signs: Traffic and directional signs within the site shall not exceed 12 square feet in area, aggregate and shall not exceed 5 feet in height.	Proposed Design: Comply.
Section 4.5.f	Signs A sign, mounted on an exterior wall of any structure shall contain only structure identification as necessary for emergency access.	Proposed Design: The Pedestrian Courtyard Access sign is proposed to be 40sf, counting the area of the backlit letters.
Section 4.6	Lighting as per Section 2 of the Special Use Permit Guidelines	Proposed Design: See Sheets A12 - A15 for additional details.

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TABLE OF GUIDELINES AND COMPLIANCY

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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Smoke Tree Resort

Traffic Impact Analysis

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

May 2020
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

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

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 5.14.2020
ARIZONA, U.S.A.

May 2020
CivTech Project No. 18-0550

Full 258 page report has been submitted to the Town of Paradise Valley.

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TRAFFIC IMPACT ANALYSIS

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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CivTech

May 14, 2020

Taylor Robinson
Geneva Holdings, LLC
3620 East Campbell Ave, Suite B
Phoenix, AZ 85018

RE: Parking Study for Smoketree Resort – Paradise Valley, Arizona

Dear Mr. Robinson:

CivTech has been retained to prepare a parking study for Smoketree Resort which will be redeveloped. The site is located at 7101 E. Lincoln Drive, Scottsdale, AZ 85253; south of Lincoln Drive and east of Quail Run Road. The project is the first step in revitalizing the resort.

The project is submitting for a Special Use Permit (SUP) within The Town of Paradise Valley. This SUP anticipates the preparation of a parking study prepared and sealed by a licensed engineer that will consider, among other things, internal capture and time-of-day usage. The information herein provides the parking requirements for the Smoketree Resort during its peak operations on a weekday and on a weekend. Peak operations are defined as the number of parking spaces required during the peak season when all of the resort uses are at full occupancy.

CivTech has completed a parking study to determine the number of spaces required compared to the number of spaces provided at the resort. The results of this analysis are documented herein.

In addition, this parking study was reviewed by Walker Parking to determine if the internal capture and shared parking methodology applied met the industry standard of care and standard practice of application. The review indicates that Walker Parking's calculations result in slightly less parking demand than shown herein. It also states that "Based on our review of the January 2020 Parking Study, we have determined that the materials were prepared in a professional manner and follow (sic) applicable standards of care. The proposed parking supply is projected to exceed the Project's parking needs based on ITE and ULI methodologies and standards. The operational recommendations provided within the report are sound and follow industry best practices." Significantly, the peer review specifically concluded that the methodology used in the CivTech analysis was correct and indeed even somewhat conservative.

CivTech Inc. • 10605 North Hayden Road • Suite 140 • Scottsdale, AZ 85260
Office 480-659-4250 • Fax 480-659-0566

PROPOSED DEVELOPMENT

The proposed project will consist of a resort hotel with 122 dedicated resort hotel rooms. The 122 dedicated hotel rooms will be considered "hotel keys" under the Special Use Permit. The resort hotel also includes a stand alone retail, market, restaurant, and coffee shop. The resorts hotel will include fitness and event/meeting amenities within the primary resort building. The proposed development land uses and quantities are summarized within **Table 1**. The proposed project will provide 170 traditional parking spaces. An exhibit illustrating the provided parking is provided in **Attachment A**.

When necessary, the resort will operate using a valet only scenario which provides up to 199 parking spaces including the area in front of the garbage dumpsters. To be conservative the analysis will consider 196 valet spaces with the potential to park in front of the dumpsters providing more space.

Table 1: Proposed Land Uses and Quantities

(2) SUP	Land Use	Quantities
i.	Hotel Key	122 Keys
vi	Executive Office	250 SF
vi	HR/Accounting Office	250 SF
vi	Sales Office	250 SF
	(3) Front Desk	250 SF
vi	Misc Office	250 SF
	Lobby	1,800 SF
iv.	(2) Pavilion	4,000 SF
iv.	(2) Event Lawn	4,200 SF
	(3) Valet/Bag+Bell	600 SF
	(3) Housekeeping	2,300 SF
iii.	(4) Stand Alone Food and Beverage – Restaurant	(6) 2,100 SF
iii.	(4) Guest Oriented Retail/Coffee – Restaurant	(7) 500 SF
v.	(5) Guest Oriented Retail/Coffee – Retail	(8) 2,000 SF
vi.	Fitness	2,000 SF

(1) See Table 2 for category description.
(2) Pavilion not used simultaneously with the Event Lawn due to parking supply limitations; therefore, the land use with the higher SF was used within the analysis.
(3) Areas considered back of house were not included in the parking generation.
(4) Restaurant seating area square footage excluding storage, kitchen, restrooms, etc.
(5) Usable area square footage of retail space.
(6) The gross square footage for the Stand Alone Food and Beverage – Restaurant is 3,200 square feet.
(7) The gross square footage for the Guest Oriented Retail/Coffee – Restaurant is 1,800 square feet.
(8) The gross square footage for the Guest Oriented Retail/Coffee – Retail is 4,000 square feet.

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the smoke tree resort
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August 5, 2019
Revised: May 7, 2020

SMOKE TREE RESORT

Town of Paradise Valley, AZ

Prepared for:

Gentree, LLC
3620 E Campbell Ave, Suite B
Phoenix, AZ 85018
(602) 952-8811

Prepared by:

CVL Consultants, Inc.
4550 N 12th Street
Phoenix, AZ 85014
(602) 264-6831

Job #:1-01-03153-01

PRELIMINARY DRAINAGE REPORT

Preliminary Drainage Report

For

SMOKE TREE RESORT

Paradise Valley, Arizona

August 5, 2019

Revised: *May 7, 2020*

Prepared for:

Gentree, LLC

3620 E Campbell Ave, Suite B

Phoenix, AZ 85018

(602) 952-8811

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

(602) 264-6831

CVL Job Number: 1-01-03153-01

Full 22 page report has been submitted to the Town of Paradise Valley.

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PRELIMINARY DRAINAGE REPORT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
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May 8, 2020

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Water Service Impact Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Registered Professional Engineer (Civil) CERTIFICATE NO. 67062 CASSANDRA ALEJANDRO Date Signed 05/08/20 ARIZONA, U.S.A.

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

Job # 1.01.0315301

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WATER SERVICE IMPACT STUDY

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Registered Professional Engineer (Civil) CERTIFICATE NO. 67062 CASSANDRA ALEJANDRO Date Signed 05/08/20 ARIZONA, U.S.A.

Full 55 page report has been submitted to the Town of Paradise Valley.

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WATER SERVICE IMPACT STUDY

the smoke tree resort

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May 8, 2020

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Wastewater Capacity Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Registered Professional Engineer (Civil) CERTIFICATE NO. 67062 CASSANDRA ALEJANDRO Date Signed 05/08/20 ARIZONA, U.S.A.

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

Job # 1.01.0315301

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WASTEWATER CAPACITY STUDY

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Registered Professional Engineer (Civil) CERTIFICATE NO. 67062 CASSANDRA ALEJANDRO Date Signed 05/08/20 ARIZONA, U.S.A.

Full 25 page report has been submitted to the Town of Paradise Valley.

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WASTEWATER CAPACITY STUDY

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2355 West Pinnacle Peak Road, Suite 300
Phoenix, AZ 85027 USA
epcor.com

September 26, 2019

Coe & Van Loo Consultants, Inc.
Attn: Fred Fleet, P.E.
4550 N. 12th Street
Phoenix, AZ 85014

Sent via e-mail to: fef_@cvlci.com

Re: Will-Serve Letter for Water Service
7101 E. Lincoln Drive, Paradise Valley
APN 174-64-003A

Dear Mr. Fleet;

This letter is in response to your request to EPCOR Water Arizona Inc. ("EPCOR") regarding EPCOR's willingness to provide water service to a proposed resort hotel to be located at 7101 E. Lincoln Drive in Paradise Valley (the "Development") as shown in **Exhibit A**. EPCOR provides the following information for your consideration:

1. EPCOR has confirmed that the Development is located within the area encompassed by EPCOR's Certificate of Convenience & Necessity ("CC&N") for water service as issued by the Arizona Corporation Commission.
2. Water service to the Development by EPCOR will be conditioned upon developer entering into a Main Extension Agreement (an "MXA") with EPCOR in a form acceptable to EPCOR, and upon EPCOR and developer fully performing its respective obligations under the MXA. The MXA will provide, among other things, that developer will be responsible for constructing at its cost all water main extensions necessary to distribute water from EPCOR's water system to the individual service line connections in the Development. The design and construction of all such main extensions will be subject to EPCOR's approval, and ownership of the main extensions, together with related real property easement rights, must be transferred to EPCOR prior to the initiation of water service in the Development.
3. Based on the water service currently provided by EPCOR in the CC&N, EPCOR will have adequate water capacity for normal use in the Development upon EPCOR's and developer's fulfillment of its respective obligations under the MXA. Please note that EPCOR does not guarantee the adequacy of its water capacity for fire protection.
4. Developer will also be required, as a condition to EPCOR providing water service to the Development, to pay all required fees pursuant to EPCOR's tariffs and as may be provided in the MXA.

This letter assumes that construction of the main extensions within the Development will begin within one (1) year after the date of this letter.

If developer begins construction of any water mains in the Development or any other water service infrastructure intended to serve the Development without, in each instance, the prior written approval of such construction by EPCOR, developer will be proceeding with such construction at its own risk.

This letter does not independently create any rights or obligations in either developer or EPCOR, and is provided for information only. Any agreement between developer and EPCOR for water service in the Development must be memorialized in a written agreement executed and delivered by their respective authorized representatives.

For additional information, please contact me at (623) 445-2402 or at bfinke@epcor.com.

Sincerely,

Brad Finke, P.E.
Engineering Manager

Enclosure: Exhibit A – Location Description of Development

Full 3 page report has been submitted to the Town of Paradise Valley.

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WILL SERVE LETTER

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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JAN. 21, 2019

DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
NOVEMBER 7, 2018			
11/7/2018	1:20:30	Discussion spurred by Wastchak regarding the 3D graphic presented versus Section A of the Site Design. Wastchak stated that they were showing an encroachment into the diagonal view-lines in the plans in the packet. The graphic shows that they are no longer within the view-lines, which Wastchak says is a good thing. Knapp stated that there is a difference between the packet given and Section A on the presentation. In the presentation, as shown in Section A, the property was moved 20 feet East towards Lincoln Medical. Wastchak asks if this is the correct way to account for the open-space criteria and Knapp replies that they are 40 feet East of where they should be. Peterson clarified that the 20-foot measurement is for a 20-acre site, while this site is 5-acres. No guidelines are in place for 5-acres. Wastchak is concerned that this is a manipulation and that other things will be affected by the height.	Corrected to show the correct OSC calculation.
11/7/2018	1:53:09	Lewis asks about the word "Market" to describe the "La Grande Orange" style café located at the front of the property off Lincoln Drive. Peterson clarifies the purpose of the Market. Lewis makes the point that this type of café was not successful at the Montecito. Peterson counters with the design of their café, commenting that it was walled off, not open to the community, and has no public parking. Gilbert agrees with Lewis that the word "Market" is not precise, and they will re-invent a new term for the Market.	Market has been clarified to be Resort Market.
11/7/2018	1:56:59	Campbell addresses the open-space guidelines, stating that the only place the diagonal view lines should begin are on the property line. Georgelos sides with Campbell, stating they need a concrete starting point and the diagrams between the packet and the presentation are quite confusing. Campbell states that the diagonal view lines clearly work on the residential side of the property, but don't work on the commercial side. Campbell states that they need to figure out what the impacts are and how they will affect the surrounding area. He is uncertain if these impacts meet the criteria and guidelines.	Corrected to show the correct OSC calculation.
11/7/2018	2:02:32	Covington makes the point that the entrance for trash pickup and deliveries may pose a problem if the property across the street remains residential. Concerns by multiple commissioners arise that loud trucks constantly driving in and out of the property may disturb residents and may be unsightly and unwelcoming to the community.	This has been relocated and redesigned to be screened, away from residential properties, and accessed independently of Resort guests.
11/7/2018	2:04:15	Lewis is concerned that the height of the Pavilion is too high and individuals using the pool will have the sun blocked by the height of the building. Peterson indicates that the slope on the roof of the Pavilion will allow sun at the pool.	The Pavilion has been relocated so as to not interfere with the pool.
11/7/2018	2:19:48	Wastchak is concerned about the right-of-way easements/front dedication being prepared at the last minute and how it will interact with Lincoln Medical. Knapp stated that the staff will always start with the General Plan and Town Code. They only have a starting point and more information will follow with the traffic analysis.	This has been corrected and additional language added to the SUP Ordinance and Development Agreement.
11/7/2018	2:26:45	Knapp points out that on Quail Run, 50 feet of right-of-way easement is required. Wastchak is concerned about the landscape buffer designed along the east side of Quail Run and how it is compromising the roadway and the 50 feet of right-of-way. Peterson explains that Quail Run would eventually turn into a one-way street as it comes further into the property to accommodate the residential side's desires to not expand the road while keeping the intersection safe. Campbell is concerned that the street should be a two-way street because this is a re-development area and a lot of people are going to want access to this roadway.	The entrance on Quail Run Road has been redesigned to incorporate a grand resort entrance. Roadway Easements and Parking and Circulation Easements are shown to yield the required dimensions.
11/7/2018	2:34:40	Campbell states that asking for a one-way street on Quail Run is unacceptable because Quail Run is going to be a huge access point for this re-developed area. Campbell states that this road needs to be a two-way street even if it means that the property loses several rooms to account for a larger roadway. He believes that the number of driveways between Smoke Tree and Lincoln Medical will cause large traffic issues and that the intersection on the corner of the property could be utilized and is completely being ignored. Many council members agree that this directly affects the property and the re developed area being serviced.	The entrance has been redesigned to separate the Resort traffic from the Single-Family Residential traffic. The recent feedback from Council has suggested that the development area southwest of the resort will remain as 1-acre parcels.

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the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
11/7/2018	2:36:23	Campbell is concerned that the architectural elements" that go above the height limitation aren't actually architectural and are just part of the building itself. He states that it appears that the vaulted ceilings appear to go above the height limitation and these are not architectural elements, but part of the rooms themselves. He states that they need more clarification of what these architectural elements are.	The height has been limited to 36', hard stop.
11/7/2018	2:37:45	Anton is concerned about the ingress/egress of the garage and how deliveries will be able to be made in the garage. Anton is confused about the placement of the entrance and exit of the garage and doesn't feel like it will coincide with trucks making deliveries. Anton thinks that truck deliveries should be moved to another area of the property. Covington agrees with Anton's statements.	The garage has been eliminated and the delivery area has been redesigned to satisfy these comments.
11/7/2018	2:39:01	Wainwright states that the Lincoln Drive has to be consistent with the property to the East, this is a non-starter. He also states that the number of units on the property shouldn't exceed the density in the Statement of Direction.	The units have been reduced to comply with the SOD and Dwelling Units have been removed entirely. The treatment of Lincoln Dr is in line with what is proposed to the East.
11/7/2018	2:44:10	Georgelos uses the Hermosa Inn as an example of a 5-acre resort in Paradise Valley. She states that their density level is much less than what is being proposed and that the resort is still successful. She states that they need to be weary of the density of this property.	The density has been reduced. The nature of the location; surrounded on three sides by commercial properties and Lincoln Dr, adjacent to Scottsdale is a different context than that of Hermosa Inn.
11/7/2018	2:42:52	Wastchak is concerned with the West and South side of the property regarding the diagonal view lines. Wastchak stated that they need elevations from the West and South sides of the property so they can determine how this will affect other properties. There isn't much concern about the East side of the property.	The property now complies with the OSC on the West and South as well as incorporates several view corridors into the site.
DECEMBER 4, 2018			
12/4/2018	2:50:27	In regard to the accessory uses, Georgelos states that the property seems very dense. Wastchak points out that these are possible uses and not everything will be packed into the property. Wastchak also suggests that a list of accessory uses should be put together by the staff based on stipulations from other approved SUP's.	The uses have been reduced and language governing these uses has been added into the SUP Ordinance.
12/4/2018	2:54:32	Wastchak is concerned about following the Council's direction of reducing the percentage of lot coverage. Wastchak also stated that they need to re-asses the density of units on the property because this is going to affect the lot coverage.	The proposal has been adjusted.
12/4/2018	2:56:56	Georgelos is concerned about the placement of the utilities easements that are running between the two parcels. She states that they need to be moved to a different portion of the property because it will cause considerable problems if they are built over. Georgelos also said that she hasn't seen any supporting documents with plans to move these easements.	The electrical easements have been previously abandoned and this has been rectified.
12/4/2018	3:00:30	Anton points out that there seems to be a lack of green space and the pool seems quite small in comparison with the high number of rooms on the property. Anton states that he seems like the property is overwhelmed by the number of rooms. He also highlights that the meeting space for corporate meetings seems rather small. Georgelos agrees with Anton's statements.	The pool has been redesigned to coincide with the revised room count. The open space and green space has been optimized to provide the greatest enjoyment to resort guests.
12/4/2018	3:01:44	Campbell states that the property lines haven't been identified yet. He also states that it appears that there is landscaping and parking breaching into the right-of-way along Quail Run. Georgelos agrees with Campbell, stating that it appears to small for the amount of traffic the resort is going to be bringing in.	This has been updated per subsequent discussions with Town Staff.

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
12/4/2018	3:08:05	Because of the recommendation of a shared access point, Anton is concerned that if parking isn't free and open to the public, people will begin to park at Lincoln Medical. This will cause an overflow of parking and in turn, police will have to monitor who is parking in their lot.	Sufficient Parking per the Town's parking requirements has been provided on-site. For special events, an overflow parking agreement may be reach with adjacent properties.
12/4/2018	3:15:12	Anton and Wastchak are concerned that parking should not be allowed on the curb along Quail Run.	This has been updated per subsequent discussions with Town Staff.
12/4/2018	3:21:50	In regard to the 44' tall building on the West side of the property, Campbell states that from an architectural mass standpoint, he would have like to have seen some stair stepping on the West side of the building. He points out that the building goes right out to the property line. Georgelos agrees with Campbell stating that a few teaks could help the building be more in compliance as well as interesting from an architectural standpoint.	The building height has been reduced, the setbacks have been increased, and "stair stepping" included in the design.
12/4/2018	3:24:22	Wastchak points out that the Council wasn't necessarily concerned with the number of units at the resort, but instead with the overall mass of the property and that mass not sitting to close to the residential side. Wastchak says that a good way to reduce this mass is to, in fact, lessen the number of units on the property. Anton and Georgelos agree that there is too much squeezed into a small area of land and the mass (and therefore number of units) needs to be scaled back to a smaller degree. Georgelos also says that it doesn't fit with the style of Paradise Valley because of how cluttered and dense it is. Wastchak goes on to say that because of the large number of units, the property is starting to feel more like a hotel instead of a resort.	The number of Resort keys has been reduced to 122 and the dwelling units have been eliminated.
12/4/2018	3:31:45	Anton is concerned with the trash pickup on the North East corner of the property infringing on Lincoln Medical and suggests that all trash pickup should be moved to the South side of the property.	The trash pickup has been located on the East side of the property behind screening.
12/4/2018	3:39:25	Lewis is concerned that the demand for the Market and Restaurant is too high for the number of allotted public parking spaces.	Sufficient Parking per the Town's parking requirements has been provided on-site. For special events, an overflow parking agreement may be reach with adjacent properties.
12/4/2018	3:40:30	Georgelos is concerned that the outdoor seating at the Market generating too much noise for the residential area to the West. Anton is not concerned about the noise level because of the Market's daytime use. Campbell also pointed out that the noise from Lincoln Drive will overshadow the people on the patio.	The outdoor seating has been relocated to the center and interior of the site.
DECEMBER 18, 2018			
12/18/2018	12:47:53	Wastchak doesn't want to see the landscape buffer along Lincoln Drive turn into easement, it needs to stay a dedication with the parking along Lincoln staying an easement. This will be consistent with Lincoln Medical.	This has been updated per subsequent discussions with Town Staff.
12/18/2018	12:58:16	Wastchak is concerned that the signs along Lincoln Drive are too large and doesn't understand why they need two monument style signs of that proportion. He believes one is unnecessary.	The signage has been reduced and brought into compliance with the signage ordinance.
12/18/2018	1:10:10	Georgelos is concerned that some of the pole lights along Quail Run will cause too much light pollution for the residential area. She would like other options to be proposed for lighting for the parking along Quail Run. She also doesn't like the wall washing feature on the side of the building along Quail Run. She doesn't think it serves any purpose and Covington agrees with her.	The lighting has been revised to comply with the Town's lighting ordinance.

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
12/18/2018	1:17:26	Anton reiterates that a firm place needs to be established for employees to take breaks and “have a smoke”. He points out that it would be naïve for this to occur only in the parking garage underground and an above ground area needs to be designated.	An employee break area has been provided on the east side of the site near the employee parking and back of house storage elements.
12/18/2018	1:18:20	Anton is concerned about the height of the 36’ building. He states that the Council gave explicit direction that they need a “compelling” reason to go over 36’ and he has yet to see a reason that could be deemed as “compelling”. Covington agrees that this needs to be addressed. Georgelos agrees at 1:21:11.	The height has been reduced to 36', hard stop.
12/18/2018	1:19:19 AM	Wastchak is okay with the tallest and most dense building being in the center of the property and above 36’. He is concerned that the buildings on the edge of the property are encroaching on the viewshed because this is out of line with the open space criteria. He is concerned that the height of the building being so close to the property line will feeling like it is looming over the street.	The site has been revised to comply with the OSC on the West and South. The height has been reduced to 36'. View corridors have been provided into the site.
12/18/2018	1:22:28	Wainwright agrees that the height being over 36’ is an issue. He also wants more undulation in the project. He agrees with Wastchak that the farther into the center of the property, the taller buildings can be on the property. He also agrees that there needs to be an established break area for employees.	The heights have been varied as well as small grade changes to create the requested undulation.
12/18/2018	1:23:35	Lewis is concerned that the property is overwhelming. As a resort, it should be a peaceful environment and that will make it a successful resort. He expresses that “less is more”.	The site has been revised to incorporate the "less is more" perspective while balancing minimum operational needs.
JANUARY 9, 2019			
1/9/2019	00:23:11	The Town engineer, Mood, begins discussing the staff’s recommendation for the shared driveway between Smoke Tree and Lincoln Medical. The applicant says this is still under discussion. Wastchak states that he is concerned that this issue needs to be resolved in Planning Commission instead of in Town Council. He says it will impact what is approved by the Commission. Campbell agrees that this issue needs to be resolved sooner rather than later.	This has been updated per subsequent discussions with Town Staff.
1/9/2019	00:30:15	Comments from the Public: Jini Simpson: she is concerned with the setbacks not being large enough on Lincoln to satisfy the open space criteria. Simpson is also concerned with the property being too dense because it is sitting at 34% density instead of the 25% density of most properties.	The site has been revised to comply with the OSC on the West and South. The coverage has been reduced.
1/9/2019	00:36:17	Comments from the Public: Gary Stougaard: With his 24-acre property, the Planning Commission was extremely strict with the setbacks, height, and density requirements that were set. The applicants originally reached out to Stougaard informing him that they purchased the property and he told them he would never support this project. He is concerned that the Commission is not treating Smoke Tree with the same level of harshness that he was treated with when building the Andaz. His main concerns are that the setback between their properties is only 25 feet, the buildings are too tall, and the density is far too high. Stougaard says that this project is far too intense for the size of the property. He says the underground parking and the residential aspect of the property adds to the intensity of the project.	The setback has been increased by approximately 3x, the buildings heights reduced, stair stepping of the buildings, view corridors, the density reduced, and the underground parking eliminated.
1/9/2019	00:45:16	Comments from the Public: Gary Stougaard: He is concerned that the residential side of the project is going to cause significant problems on his property. He owns a residential property and because of this experience, feels like the residents of Smoke Tree will encroach onto his property.	The dwelling units have been eliminated from the site.
JANUARY 22, 2019			

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
1/22/2019	1:16:41	Wastchak is concerned that the right-of-way is not even along the center line on Quail Run. He thinks that the Western side of the center line looks much larger in comparison to the Eastern side. Knapp responds that the drawing was not done by an Engineer and may be skewed slightly.	The centerline of Quail Run Road has been confirmed to align with the Palmerie Blvd.
1/22/2019	1:22:13	Campbell states that he isn't sympathetic to the 9'x18' spaces in the parking garage because they are not getting a 2' overhang like the description says. He says because it is under ground, there is no way to have a 2' overhang because there is no landscaping.	The parking spaces have been designed to provide the required 180sf per space, utilizing a 2' overhang where available.
1/22/2019	1:26:35	Anton is still concerned that he still isn't seeing any compelling reason to go past the height limitation.	The height has been reduced to 36', hard stop.
1/22/2019	1:28:31	Georgelos stated regarding the height, changing the roof design so it complies with the 36' height limitation would be preferred. Georgelos stated that the roof design would have to be extremely compelling to go to the 44' that the building is currently designed at. The Commission wants to see other options for the roof since Knapp is saying it is possible to reach the 36' height limitation with a different roof. Campbell agrees with Georgelos, stating that with architectural elements, the height will exceed even the 44' of the current roof structure.	The height has been reduced to 36', hard stop.
1/22/2019	1:31:15	Georgelos states that this project is unlike anything else in Paradise Valley and is concerned that it looks like something out of Scottsdale.	The project has been designed to reflect the character of other cherished sites in Paradise Valley. Much of the look and feel will be comparable to the Royal Palms Resort.
1/22/2019	1:31:25	After walking the Andaz property, Wastchak said that he felt like Smoke Tree will be looming over the Andaz. Wastchak says that the graphic the applicants created that presents the view of Smoke Tree from the Andaz property is misleading. Wastchak is still concerned that the South side of Smoke Tree is breaching into the open space criteria.	The setback has been increased by approximately 3x, the buildings heights reduced, stair stepping of the buildings, view corridors, the density reduced. The site complies with the OSC on the South boundary.
1/22/2019	1:35:24	Georgelos expresses her concern that the density of Smoke Tree is exceedingly high because it is a 5-acre property. In comparison, there is the same amount of density at Andaz spread out over a 20-acre property. She states that there is a much more open feel at Andaz. She states that they are trying to jam a much denser project into a much smaller property. Georgelos also states that she feels the project is going in the wrong direction and needs to be scaled back immensely. Campbell and Covington agree with the statements made by Georgelos.	The project has been significantly reduced.
1/22/2019	1:38:26	Covington makes it clear that he is not comfortable with a 44' height on the Eastern side of the property bordering Lincoln Medical. Wastchak states that a setback there would be preferred.	The height has been reduced to 36', hard stop.
1/22/2019	1:40:30	Anton is concerned about the high number of for-sale units on the property. He says this is becoming more of a condominium complex rather than a resort. Georgelos agrees that the number is high, and it should be scaled back to match the size of the property.	The dwelling units have been eliminated from the site.
1/22/2019	1:45:43	Wastchak points out that the Commission feels that there should not be units that are not able to be rented.	The dwelling units have been eliminated from the site. All units are now Resort Units.
1/22/2019	1:49:29	Wastchak is concerned that 20-30 years from now, the condo owners will take their units out of the rental pool, causing individuals to live on the property full time.	The dwelling units have been eliminated from the site.

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1/22/2019	1:49:51	Campbell is less concerned with the number of for-sale units, while he is more concerned that the property looks like an actual resort and not a hotel or condominium complex.	The dwelling units have been eliminated from the site.
1/22/2019	1:55:27	Wastchak is concerned that the street corner signage on Quail Run is in the 16 foot dedication for right-of- way.	The signage has been relocated and placed inside appropriate easements.
FEBRUARY 5, 2019			
2/5/2019	1:25:35	With the elimination of the third floor on the back half of the building on the South side of the property and a potential addition of the patio, Wastchak is concerned about having a patio look over into the Andaz property. He wants to see very specific plans regarding this.	The patios have been eliminated.
2/5/2019	1:31:08	Campbell is concerned that having a patio or balcony type space along the South side of the property will ensure it to become a "party deck" This will cause disruption for Andaz guests. Anton points out that limiting the balconies to per unit instead of making one large patio will help with this issue.	The patios have been eliminated.
2/5/2019	1:35:38	Even though a portion of the building on the South side of the property was considerably lowered in height, Anton is still concerned that half of the building goes up to three floors and is 44'.	The height has been reduced to 36', hard stop.
2/5/2019	1:48:20	Wastchak is concerned that along Quail Run, landscaping won't be enough to block headlights from the parking lot. Since there is no wall allowed in the right-of- way, Wastchak is worried that headlights from the parking lot may distract or blind drivers on Quail Run. Wastchak states that a wall needs to be built outside of the right-of-way to block the headlights, even if it means a reduction in parking spaces.	A 3' screen way and additional landscaping to provide screening for the headlights. The wall will be located in and appropriate easement.
2/5/2019	2:06:29	Anton is concerned that there is no parking for boats and trailers. He doesn't want these to end up being parked along Quail Run or in a residential neighborhood.	Boat and trailer parking is not required in the Town's parking requirements. In operation, boats and trailers will not be allowed.
2/5/2019	2:28:56	Wastchak is concerned that the frontage and right-of-way easements on Lincoln have not been figured out. He does not want to send an incomplete plan to Council. The other Commission members (besides Lewis) disagree with this. They feel like time is running out and there is just nothing more they can do. They feel like it is not fair to the applicants to keep holding the plans back from Council.	This has been updated per subsequent discussions with Town Staff.
2/5/2019	2:39:26	Wastchak is concerned that the signage on Quail Run is in the right-of-way, which is not allowed. Knapp points out that it is half-in and half-out of the right-of-way.	The signage has been relocated and placed inside appropriate easements.
FEBRUARY 19, 2019			
2/19/2019	1:27:56	Wastchak is concerned that there is no layout for Valet parking at this point. He wants to know where stacked Valet parking could be placed on this site and be feasible in case there is an increase in need for additional parking.	Sufficient Parking per the Town's parking requirements has been provided on-site. Efficiency from a Valet Plan may be had, but is not critical to the basic parking of the site.

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
2/19/2019	1:31:45	Wastchak and Georgelos don't like the "residence only hardscape" outside of the resident only balconies. Because the walkway doesn't lead to anything, they don't see the purpose of this area and see it potentially posing problems of individuals partying in this area. Campbell doesn't like the residence only walkway because it is too close to the edge of the building and they could see into the Andaz property more clearly.	The patios have been eliminated.
2/19/2019	1:47:27	Anton and Georgelos express that they still don't see a compelling reason for the height to go over 36' and feel like their comments about this issue have been ignored. Anton states that with the architectural elements they are well over 44' and that is not even close to the 36' in the SOD.	The height has been reduced to 36', hard stop.
2/19/2019	1:50:00	Campbell doesn't agree with the height because the roof goes to 36' and what's making the height increase is the hips/ parapet. He doesn't agree with an additional 8' for a parapet. They can reduce the size of the parapet by spreading out the mechanics. This would reduce the parapet to 4'.	The height has been reduced to 36', hard stop.
2/19/2019	2:07:40	Georgelos is not opposed to three stories in the resort, however she doesn't support going up with 36'. She thinks it will be really tough to squeeze three stories inside 36'. Wastchak points out that it would be impossible to put three stories in 36'. He states that if they allow three stories then the building will inevitably be above 36' because of roofing, architectural, and mechanical elements. Overall, the commission is open to slightly over 36', however 44' is too much height.	The height has been reduced to 36', hard stop.
2/19/2019	2:12:55	Covington is not open to going over 36' in height because the Council stated in the Statement of Direction that they are not allowed to exceed that.	The height has been reduced to 36', hard stop.
2/19/2019	2:31:59	Wainwright likes the current street signage but is concerned that if you add the various names of the restaurant, market, etc. it will appear more like an advertisement. Wastchak and Georgelos state that they need more renderings of how signage will look.	The signage has been proposed to comply with the Town's signage ordinance.
2/19/2019	2:53:03	Knapp states that Staff is concerned with the Residences not having the same name brand as the rest of the hotel. Miller agrees with Knapp stating that having a consistent specific brand will distinguish this resort from other resorts and hotels in the area. Wastchak, Georgelos, Wainwright and Covington agree.	The dwelling units have been eliminated.
2/19/2019	3:19:23	The hotel representative details the plans regarding no Fitness Center on the property. He states that they will affiliate with a local gym. Anton states that this could be an incorrect way to provide gym services to guests.	A fitness center will be included in the main guest room building. Language describing this has been included in the SUP Ordinance.
2/19/2019	3:20:47 AM	Georgelos is concerned that not having amenities such as a Spa or Fitness Center will hurt their ability to market the Smoke Tree.	A spa and fitness center will be included in the main guest room building. Language describing these has been included in the SUP Ordinance.
FEBRUARY 26, 2019			
2/26/2019	00:08:38	Campbell states that while having a solid wall along the residential patios will help with the site lines from the Andaz Resort, there would be no view for the residents and would be a disservice to those individuals. Wastchak agrees with these statements and is concerned with the noise from the patios reaching the Casitas at the Andaz Resort.	The patios have been eliminated.

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DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
2/26/2019	00:16:15	Wastchak is still concerned that an 18' deep patio is too deep and should be scaled back. He states that this will help with the view lines from the Andaz Resort and, in turn, will help them to have a see-through wall instead of a solid wall along the patios. Wastchak said the applicant has some flexibility but wants to make sure that individuals cannot see the patio while standing 10 feet in front of the Casita.	The patios have been eliminated.
2/26/2019	00:34:01	The Commission opens a discussion about lighting from the patios on the South side bordering the Andaz property. Campbell notes that he is concerned about light polluting the Andaz property and wants to stipulate that there should be hooded lighting for safety purposes but no architectural lighting to highlight building features should be used.	The patios have been eliminated. The lighting has been revised to comply with the Town of Paradise Valley Ordinance.
2/26/2019	00:39:06	Wastchak states that the Commission needs to set a minimum height for the patio wall. Wastchak and Georgelos are concerned that if the wall is not tall enough, people will be able to hop over the wall and walk on the roof, which is not desirable.	The patios have been eliminated.
2/26/2019	00:56:45	Commission members agree that the directional sign advertising the commercial aspects of Smoke Tree in the North parking lot is quite large and should be reduced in size. Wainwright specifically states that he would like the signs to only be 6 feet tall.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:02:11	Wastchak suggests that the directional signage advertising the commercial aspects be reduced to 6 feet in height and an overall square footage of 18 square feet. Lewis states that he cannot support this sign at all because it does not match the discreet signage of other resorts in Paradise Valley. Georgelos suggests that it should be reduced to 5 feet in height and 15 square feet overall. The Commission seems to agree.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:07:11	The Commission agrees that there are too many directional signs on the property that aren't necessary. Georgelos and Anton agree that these signs should be limited to entry points.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:19:10	Wastchak is concerned that the signage on the side of the restaurant that will be visible from the street. He expressed that they need to see a proposal for this sign. Wastchak also states that the restaurants signs that are internal to the resort have so much variation that the Commission can't approve anything.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:27:12	Anton and Lewis are concerned with the restaurant sign that will be visible from the street. Anton feels like it should be smaller than Lincoln Medical's sign. Lewis states that "less is more" in Paradise Valley and that this sign shouldn't exist because the restaurant is listed on the monument sign on the street. Lewis also makes the point that there are no restaurant signs on Lincoln so they should not add one to this restaurant. Wastchak suggests that they put a monument sign next to the restaurant entrance that is no larger than 5 feet in height.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:40:07	Georgelos doesn't approve of how large and grand the sign for the access point of the auto-court is. Lewis is concerned that his signage is not standard.	The signage has been brought into compliance with the Town's signage ordinance.
2/26/2019	1:59:05	In regard to the for-sale units, Wastchak is concerned that they are not following the guidelines set forth in the SOD by Council. He states that Council wanted to see all of the for-sale units in a rental program. This would ensure that no one would be living on the property all year round. He says what the Commission is currently approving is that for-sale units may not have to be included in the rental program.	The dwelling units have been eliminated.

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PLANNING COMMISSION LOG & RESOLUTIONS

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A49

SEP 6, 2019

11 x 17 format

DATE	TIMESTAMP	DESCRIPTION OF DISCUSSION	RESOLUTION
2/26/2019	2:26:18	After consultation with David Sherf, the Commission is concerned that the resort is more like a hotel and revisits the idea of needing a spa and/or fitness area on the property. Anton thinks a spa is a must for the property. Anton feels like this is more of a hotel than a resort because of the lack of a spa. Georgelos states that because this is a resort, there should be more amenities on the site. The Commission agrees that a spa and/or fitness center should be a minimum requirement.	A spa and fitness center will be included in the main guest room building. Language describing these has been included in the SUP Ordinance.
2/26/2019	3:00:52	Wastchak is concerned that the chimneys and elevator overrides are exceeding the height of the maximum height requirement. He is concerned that they are not higher than the roof of the buildings, but 3 feet above the mechanical screen. Georgelos states that with these things being above the mechanical screen, the building is almost 50 feet in height.	The height has been reduced to 36', hard stop.
2/26/2019	3:09:33	The Commission suggests that only areas where mechanical screens exist can elevator and chimneys exceed the 39′. Lewis states that this will give the applicant freedom to put in as many chimneys, or "mock" chimneys, as they would like.	The height has been reduced to 36', hard stop.
2/26/2019	3:39:01	Anton is concerned with the mechanical screening on the commercial buildings being visible. He suggests either setting the screening back from the edge of the rooftop or covering it.	The height has been reduced to 36', hard stop. In areas where mechanical units are located below 36', they will screened.

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PLANNING COMMISSION LOG & RESOLUTIONS

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

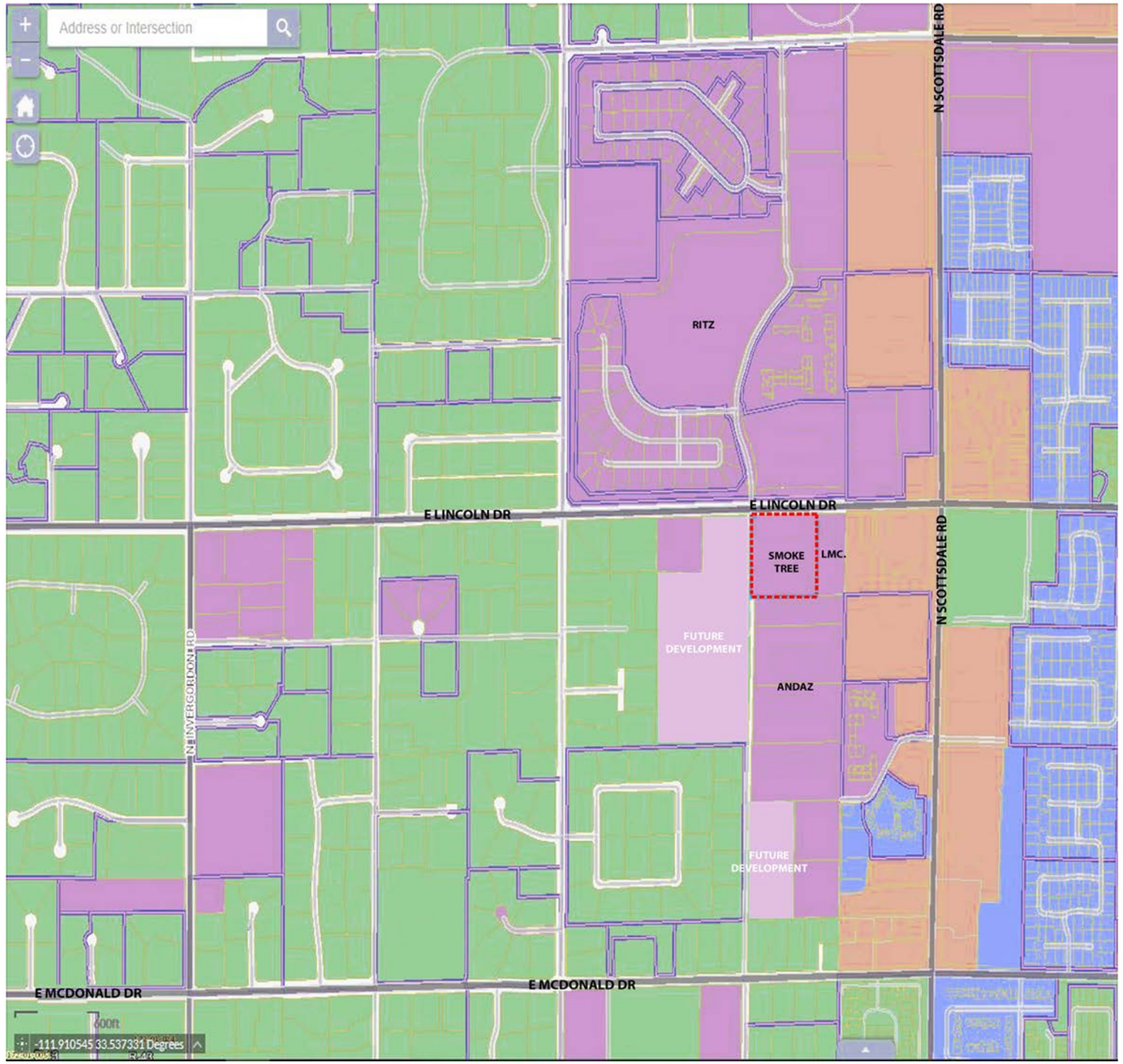
A50

SEP 6, 2019
11 x 17 format

the smoke tree resort

EXHIBITS

ZONING EXHIBIT



SUP/PUD

Commercial

High Density Residential

Low Density Residential

NOTE

Applicant altered the County Zoning Map to show residential parcels in the Development Area as "Future Development"

N

REVISED FEBRUARY 12TH, 2019

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

EXHIBIT

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A52

SEP 6, 2019

11 x 17 format

CONCEPT IMAGE

REVISED JANUARY 09TH, 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A53

SEP 6, 2019
11 x 17 format

CONCEPT IMAGE

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A54
SEP 6, 2019
11 x 17 format

CONCEPT IMAGE

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A55

SEP 6, 2019
11 x 17 format

CONCEPT IMAGE

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

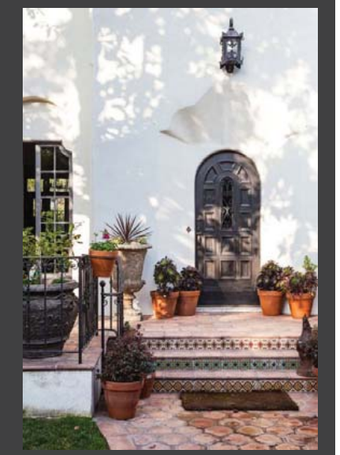
EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A56

SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - RESORT ARCHITECTURAL FEATURES



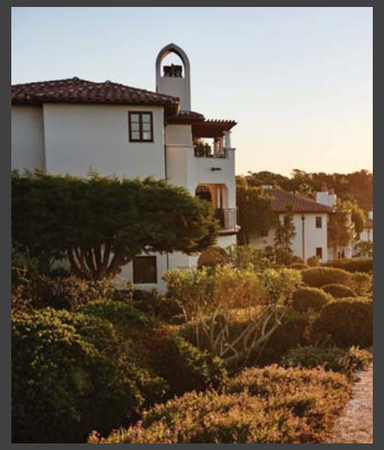
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

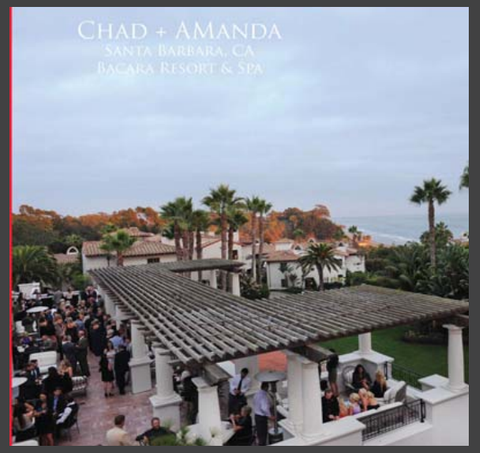
EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A57
SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - RESORT ARCHITECTURAL FEATURES





PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

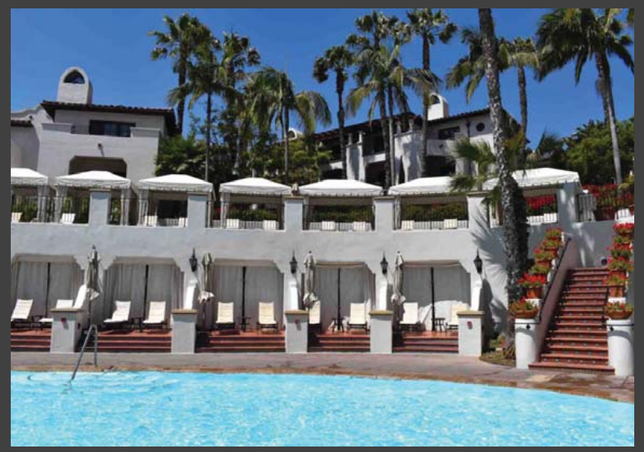
EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A58

SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - POOL, LOBBY AND GUEST ROOMS



PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

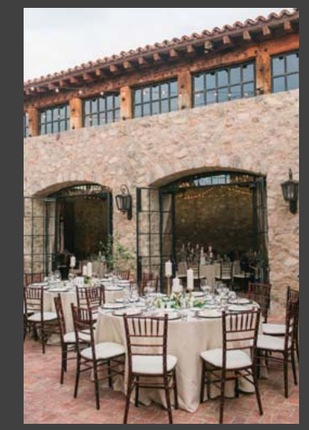
EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A59

SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - RESORT PAVILION



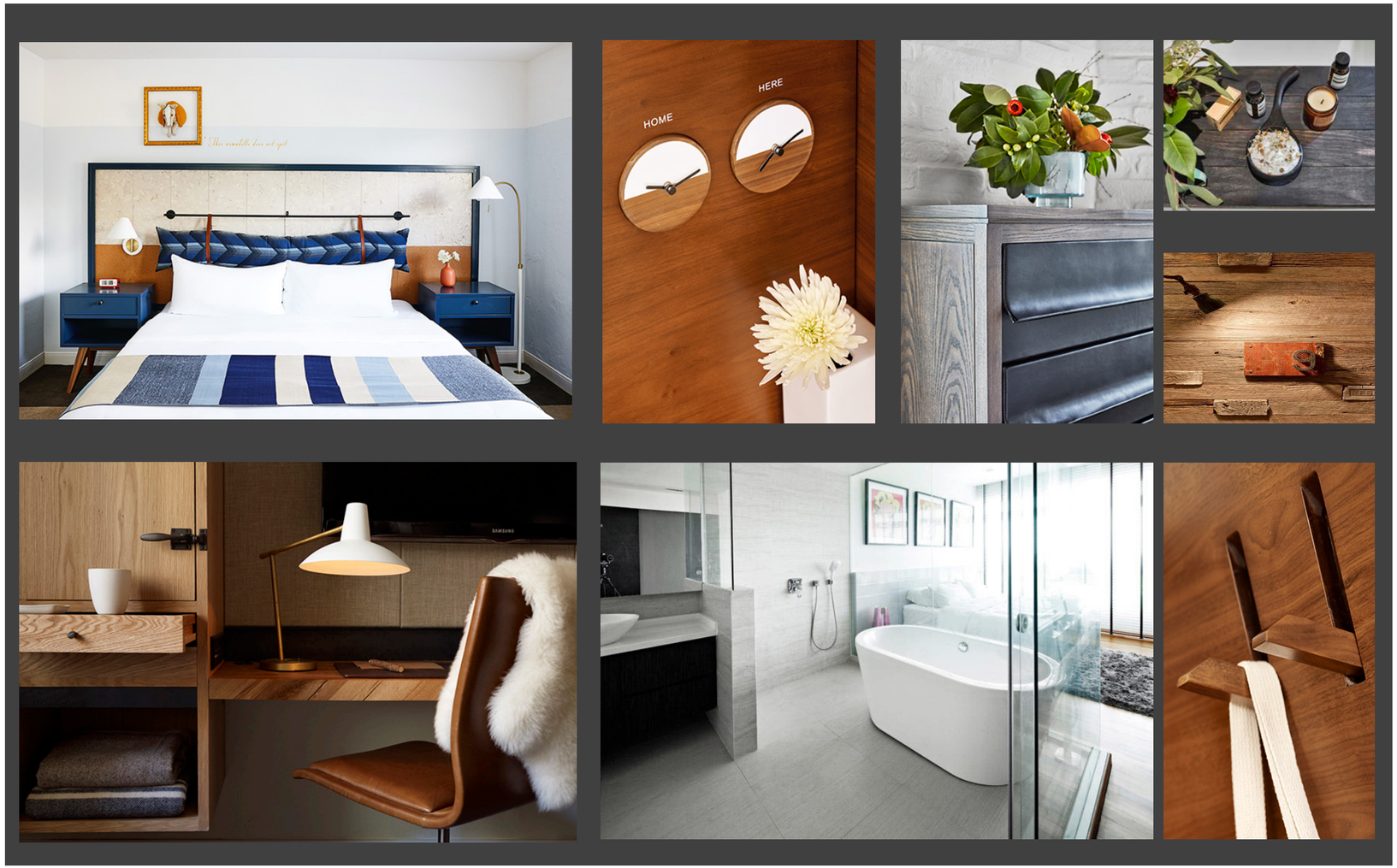
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

The smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A60
SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - GUEST ROOMS



REVISED JANUARY 09TH, 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A61

SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - RETAIL BUILDING SIGNAGE

REVISED JANUARY 09TH, 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A62

SEP 6, 2019
11 x 17 format

DESIGN CONCEPT - HOTEL BUILDING SIGNAGE

REVISED JANUARY 09TH, 2019

EXHIBIT

The smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A63

SEP 6, 2019
11 x 17 format

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

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

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 2-12-19
ARIZONA, U.S.A.
Expires 3-31-2019

February 2019

CivTech Project No. 18-0550

Full 152 page report has been submitted to the Town of Paradise Valley.

REVISED FEBRUARY 12TH, 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A64

SEP 6, 2019
11 x 17 format

SURVEY NOTES

1. This survey and the description used are based on a Commitment for Title Insurance issued by Fidelity National Title Agency, Inc., issuing agent for Fidelity National Title Insurance Company, Order Number 88012753–088–BS, dated October 12, 2017.
2. BASIS OF BEARING: The monument line of Lincoln Drive, also being the North line of the Southeast quarter of Section 10, using a bearing of North 88 degrees 36 minutes 34 seconds East.
3. The Boundary information shown on this survey is based on a prior survey prepared by Alliance Land Surveying, LLC, dated October 6, 2012, recorded in Book 1127, Page, 5, M.C.R. The centerline and section monuments were not re–measured and are shown based on the prior survey. The Property corners for the subject property have been verified and exist in the ground as shown on this survey.
4. The building square footage shown is based on exterior measurements of the building footprint at ground level and is not intended to reflect the interior or leaseable area of any building. The building footprint and dimensions depict the general configuration of the building(s).
5. The utility information shown is limited to visible above ground evidence. This survey makes no attempt to depict any underground utilities and there is no guarantee or warranty to the exact location or presence of any underground utilities that may actually exist adjacent to or within the boundaries of the subject property. Prior to any excavation please call an underground utility locator or "BLUE STAKE" at (602)263–1100 for the precise location and extent of all utilities in the area.
6. This Survey has been prepared exclusively for the parties stated in the certification for use in conjunction with the escrow referenced in Survey Note No. 1. Reproduction or use of this survey by any other party for any other transaction or purpose is unauthorized without written authorization from Alliance Land Surveying, LLC. The use of the word "certify" or "certification" by a person or firm that is registered or certified by the board is an expression of professional opinion regarding facts or findings that are the subject of the certification and does not constitute an express or implied warranty or guarantee (A.R.S. 32–151).

SCHEDULE "B" ITEMS

(2) Reservations contained in the Patent
From: The United States of America
Recording Date: June 17, 1915
Recording No: Book 115 of Deeds, Page 138
(AFFECTS SUBJECT PROPERTY – NOT PLOTTABLE)

(4) Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Purpose: roadway
Recording Date: July 21, 1945
Recording No: Book 5 of Road Maps, Page 28
(PLOTTABLE MATTERS SHOWN HEREON)

(5) Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Purpose: roadway
Recording Date: July 15, 1946
Recording No: Book 6 of Road Maps, Page 12
(PLOTTABLE MATTERS SHOWN HEREON)

(6) Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Purpose: electric lines and appurtenant facilities
Recording Date: October 29, 1968
Recording No: Docket 7328, Page 755
(PLOTTABLE MATTERS SHOWN HEREON)

(7) A resolution in favor of the Town of Paradise Valley
For: Relating to personal wireless service facilities, identifying possible site locations
Recording Date: March 19, 1998
Recording No: 98–0213661
(AFFECTS SUBJECT PROPERTY – NOT PLOTTABLE)

(8) Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Purpose: utility
Recording Date: June 07, 2005
Recording No: 2005–0760319
(PLOTTABLE MATTERS SHOWN HEREON)

(9) Matters shown on record of survey:
Recording No.: Book 865 of Maps, Page 15
Recording No.: Book 1127 of Maps, Page 5
(DOCUMENT IS A RECORD OF SURVEY AND DOES NOT CREATE ANY PLOTTABLE EASEMENTS OVER THE SUBJECT PROPERTY)

(10) Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:
Purpose: utility
Recording Date: September 09, 2008
Recording No: 2008–0779388
(PLOTTABLE MATTERS SHOWN HEREON)

LEGEND

- Property Corner (See Monument Table)
- Property Line
- Fnd Survey Monument (See Monument Table)
- (See Monument Table)
- Schedule "B" Item
- 24 inch Vertical Curb & Gutter
- 6 inch Concrete Curb
- Indicates Driveway (means of access)
- Concrete Surface
- Fence
- Wall
- Overhead Electric Line
- Electric Box
- Electric Cabinet
- Electric Transformer
- Gas Meter
- Pool Equipment
- Guard Post or Gate Post
- Handicapped Space
- Light Pole
- Manhole
- Power Pole
- Power Pole W/ Underground Electric
- Sprinkler Hook–Up (fire department)
- Telephone Riser
- TV Junction Box
- Water Meter
- Water Valve
- Physical Access To & From Adjoining Property
- (R) See Reference Documents

A.L.T.A. / N.S.P.S. LAND TITLE SURVEY

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 10, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

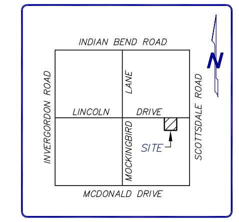
SCALE IN FEET
SCALE : 1" = 40'

TREE TABLE

TREE NO.	TREE TYPE	SIZE
1	TREE	16"
2	TREE	12"
3	EUCALYPTUS	24"
4	EUCALYPTUS	30"
5	PALM	30"
6	EUCALYPTUS	36"
7	PINE	30"
8	TREE	20"

BUILDING TABLE

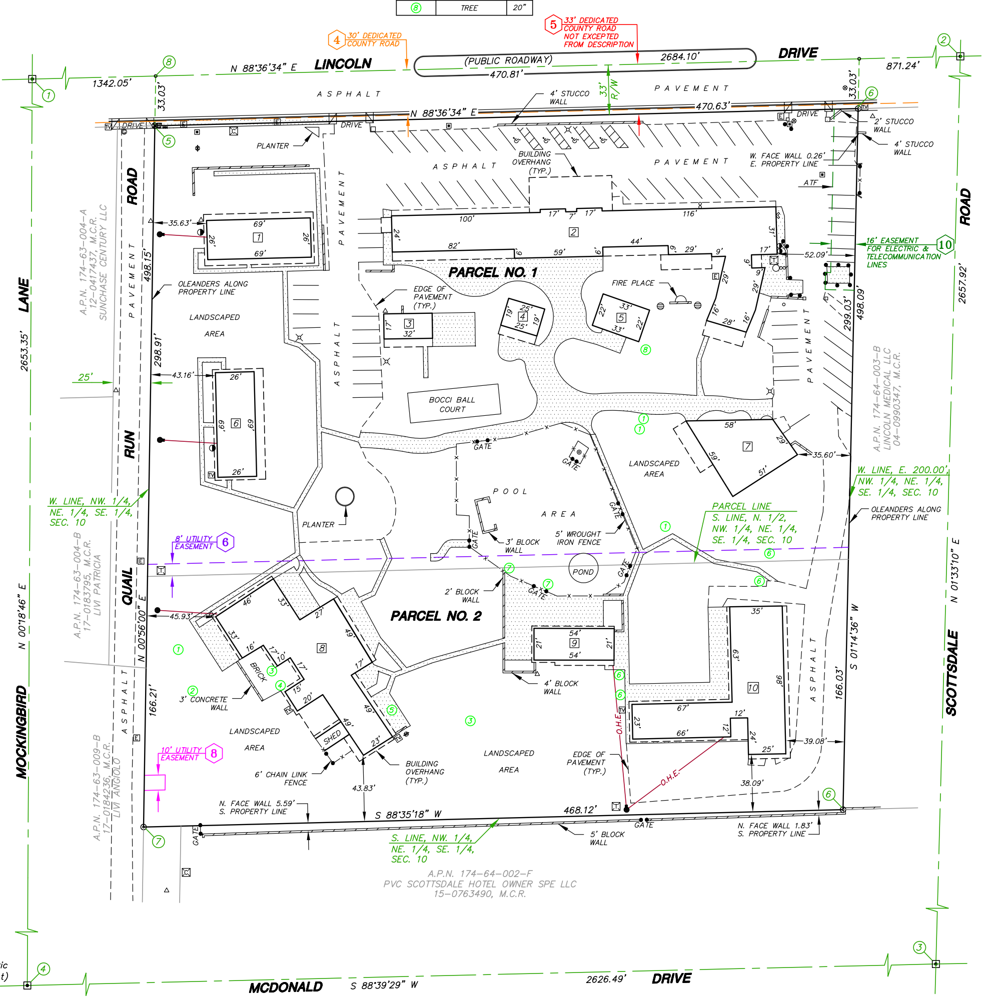
BUILDING	HEIGHT	SQ. FEET	TYPE
1	11.5'	1,805	ONE STORY BLOCK
2	11.5'	8,372	ONE STORY BLOCK
3	11.5'	542	ONE STORY BLOCK
4	11.5'	469	ONE STORY BLOCK
5	11.5'	727	ONE STORY BLOCK
6	11.5'	1,801	ONE STORY BLOCK
7	11.5'	2,208	ONE STORY BLOCK
8	15'±	5,276	ONE STORY BLOCK
9	11.5'	1,127	ONE STORY BLOCK
10	11.5'	4,721	ONE STORY BLOCK



VICINITY MAP
NOT TO SCALE

MONUMENT TABLE

1	CEN. OF SEC. 10 – FND BRASS CAP IN HANDHOLE
2	E. 1/4 COR. SEC. 10 – FND BRASS CAP IN HANDHOLE
3	SE. COR. SEC. 10 – FND BRASS CAP IN HANDHOLE
4	S. 1/4 COR. SEC. 10 – FND BRASS CAP FLUSH
5	FND PK NAIL & WASHER L.S. 34399 AS SHOWN ON (R1)
6	FND 1/2" REBAR W/CAP L.S. 21780 AS SHOWN ON (R1)
7	FND 1" IRON PIPE W/TAG L.S. 31020 PER (R1) – ALSO FND 1/2" REBAR NO I.D. – N. 06° W., 0.41' AS SHOWN ON (R1)
8	FND 1/2" REBAR NO I.D. 0.20' BELOW SURFACE AS SHOWN ON (R1)



PARCEL DESCRIPTION

PARCEL NO. 1:
The North half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
EXCEPT the East 200 feet, thereof.

PARCEL NO. 2:
The North half of the South half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
EXCEPT the East 200 feet, thereof.

SITE INFORMATION

ADDRESS: 7101 E. LINCOLN DRIVE, PARADISE VALLEY, ARIZONA

A.P.N.: 174–64–003–A

LAND AREA:
GROSS AREA = 5.363 ACRES – 233,630 SQ. FT.
NET AREA = 5.007 ACRES – 218,096 SQ. FT.
NET AREA IS THE GROSS AREA LESS EASEMENT (5) FOR COUNTY ROAD

STRIPED PARKING SPACE TABULATION:
Regular: 70
Handicapped: 4
Total: 74

REFERENCE DOCUMENTS

(R) R.O.S. PER BOOK 865, PAGE 15, M.C.R.
(R1) R.O.S. PER BOOK 1127, PAGE 5, M.C.R.

CERTIFICATION

TO:
Geneva Holdings, L.L.C., an Arizona limited liability company; Smoke Tree Resort, a limited partnership; Fidelity National Title Agency, Inc.; and Fidelity National Title Insurance Company.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 4, 7(a), 7(b)(1), 7(c), 8, 9, 13, and 14 of Table A thereof. The fieldwork was completed on October 23, 2017.

November 1, 2017
G. Bryan Goetzenberger
R.L.S. 31020

REGISTERED LAND SURVEYOR CERTIFICATE NO. 31020 G. BRYAN GOETZENBERGER 11/1/17 ARIZONA
EXPIRES 3/31/18

REV.	12–1–17	Added Tree Table
REV.		
REV.		

SMOKE TREE RESORT
7101 E. LINCOLN DRIVE, PARADISE VALLEY, ARIZONA

ALLIANCE LAND SURVEYING LLC
7900 N. 70th AVENUE, SUITE 104 GLENDALE, AZ 85303
Phone: (623) 972-2200 contactus@azals.com www.alliancelandsurveying.com

SHEET: 1 OF 1 | DATE: 11-1-17 | JOB NO.: 171026

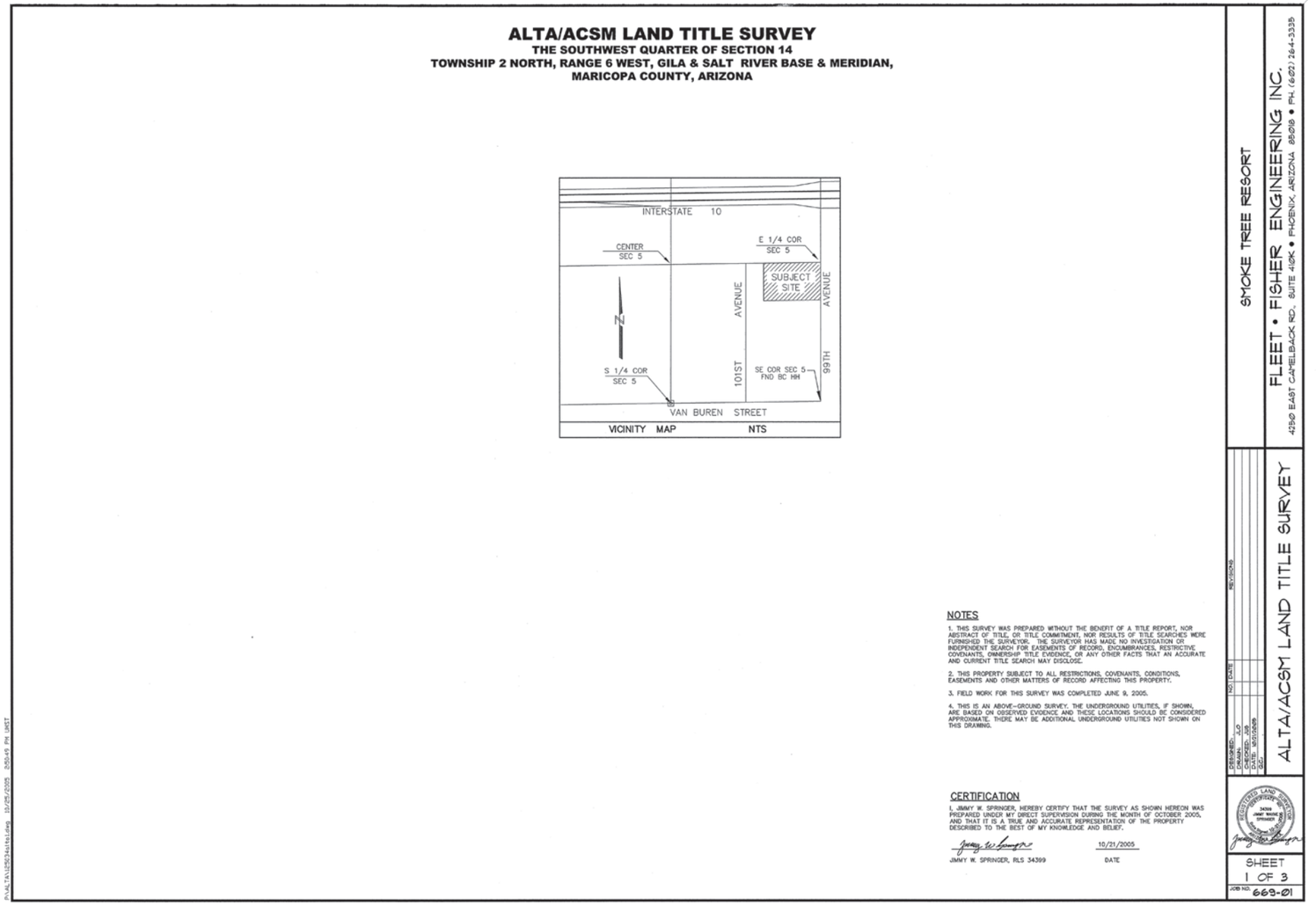
GREEY|PICKETT

CREATIVE DESIGNS IN LIGHTING

EXHIBIT

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A65
SEP 6, 2019
11 x 17 format



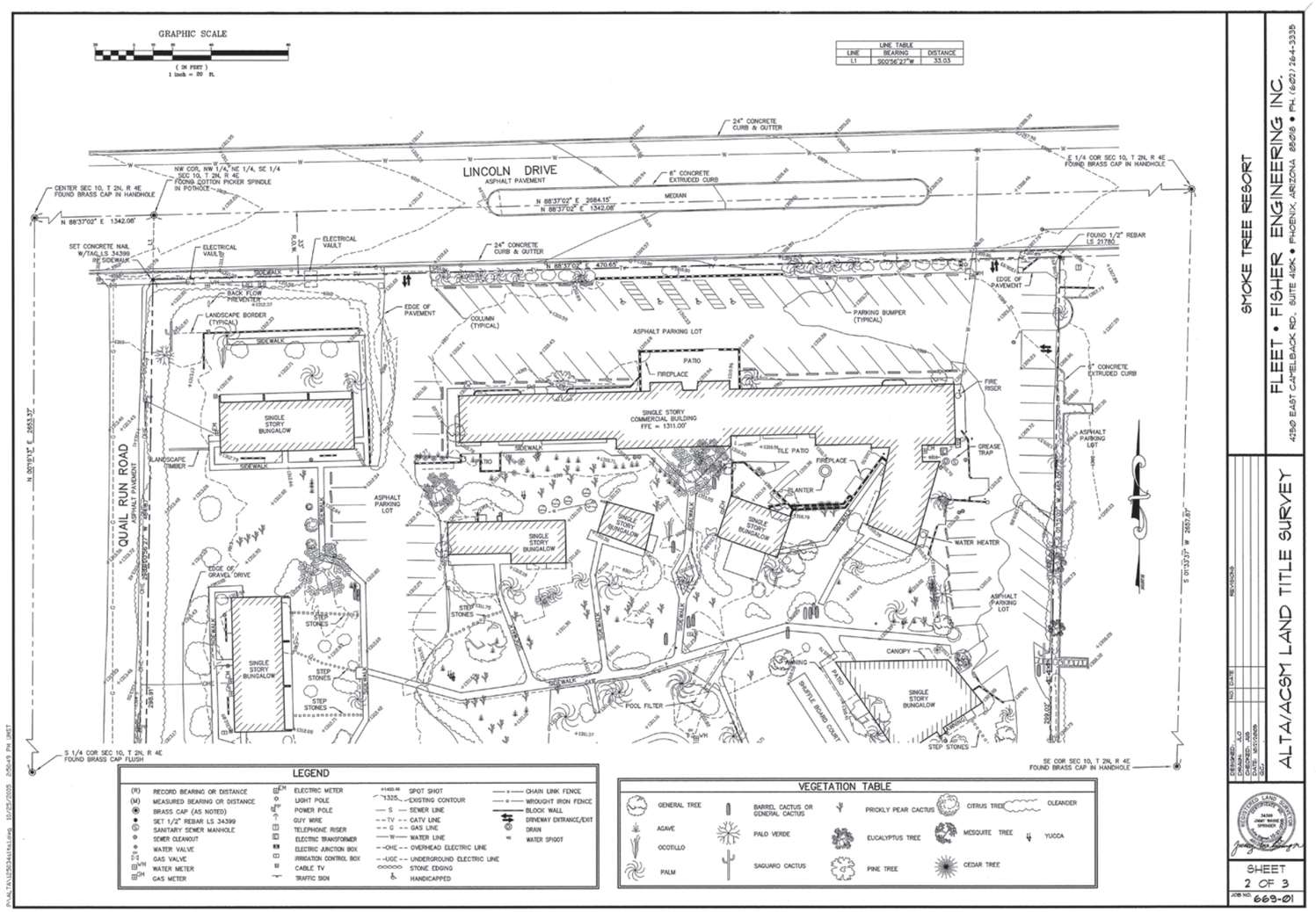
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A66
SEP 6, 2019
11 x 17 format

EXISTING TOPOGRAPHIC SURVEY



REVISED FEBRUARY 22ND 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
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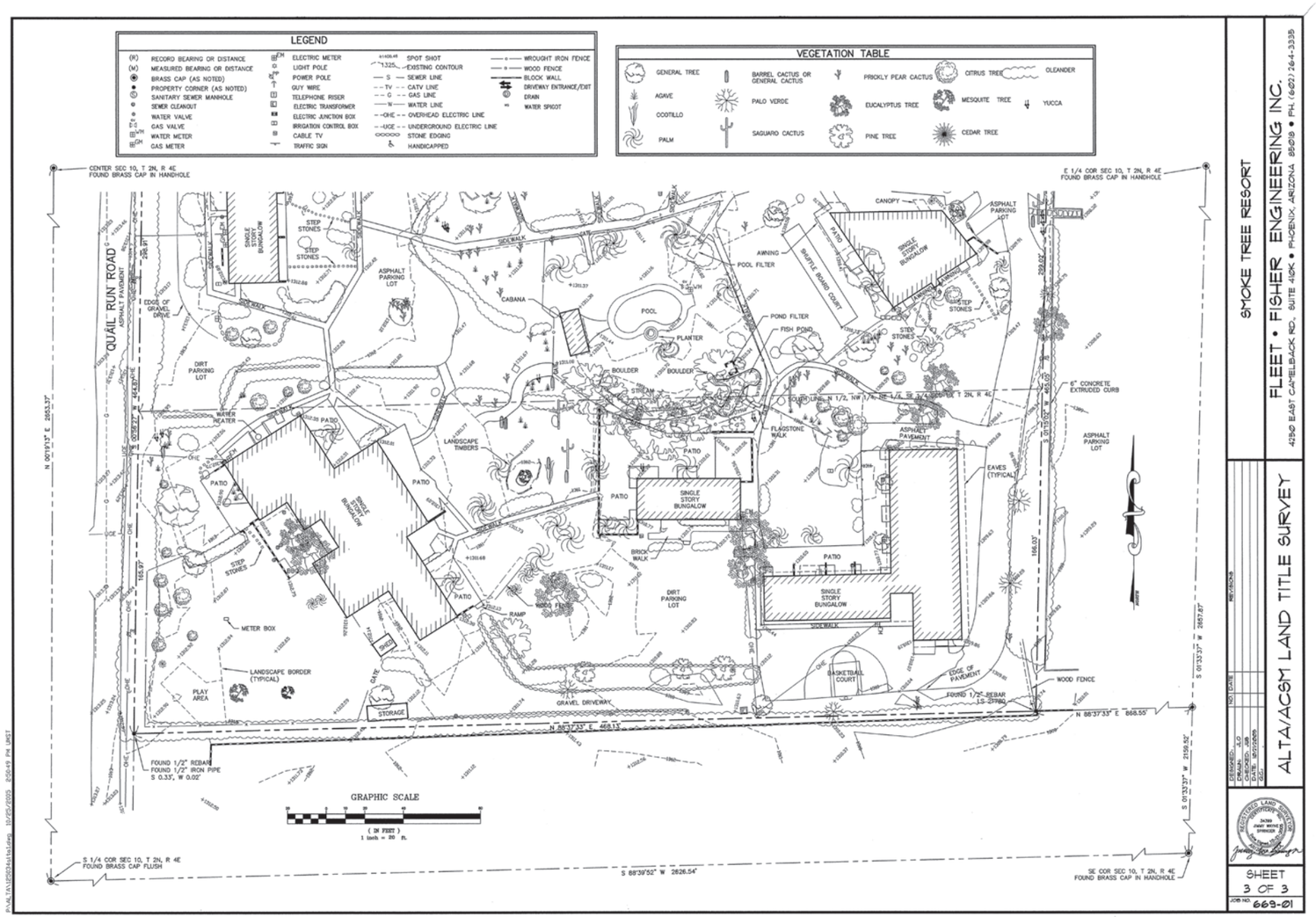
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A67
SEP 6, 2019
11 x 17 format

EXISTING TOPOGRAPHIC SURVEY



REVISED FEBRUARY 22ND 2019

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A68

SEP 6, 2019
11 x 17 format

April 12, 2018

LEGAL DESCRIPTION FOR
SMOKE TREE RESORT

PARCEL NO. 1:

The North Half of the Northwest Quarter of the Northeast Quarter of the Southeast Quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

EXCEPT the East 200 feet, thereof.

PARCEL NO. 2:

The North Half of the South Half of the Northwest Quarter of the Northeast Quarter of the Southeast Quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

EXCEPT the East 200 feet, thereof.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
33851
RICHARD G. ALCOCER
Date Signed 4.12.18
ARIZONA, U.S.A.
Expires: 6/30/2020

N:\01\0315301\Admin\Legal Descriptions\LG OVERALL.docx

Page 1 of 1

4550 N 12th Street | Phoenix AZ 85014 | 602.264.6831 | (F) 602.264.0928

CVL CONSULTANTS

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A69
SEP 6, 2019
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Smoke Tree Resort

Water Supply Narrative

The subject parcel is within the designated water service area of EPCOR Water and a copy of their "Will Serve" Letter is attached.

A Water Impact Service Study and a Certificate of Assured Water Supply will be prepared and made part of our formal application as we proceed thru the formal approval process.

Smoke Tree Resort

Drainage Narrative

The existing 5 acre resort parcel falls approximately four feet from west to east with no significant or defined drainage ways, such that the entire parcel experiences sheet flow from west to east with no defined inlet or outlet.

The proposed resort will honor the existing flow patterns in the area while providing stormwater retention in accordance with the proposed Town of Paradise Valley Storm Drain Design Manual based on a 100 year 2 hour storm with 2.2" of rainfall.

Smoke Tree Resort

Sewer Narrative

Sanitary sewer service to the proposed resort will be provided by the existing 8" gravity sewer line in Lincoln Drive.

A "Will Serve Letter" relative to this matter is presently being prepared by the Town Engineering Department.

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GH
EXHIBIT
the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION
A70
SEP 6, 2019
11 x 17 format

E·J | Flow Test Summary

Project Name:	EJFT 16154
Project Address:	6720 N Scottsdale Rd, Scottsdale , AZ 85253
Date of Flow Test:	2016-09-30
Time of Flow Test:	7:25 AM
Data Reliable Until:	2017-03-30
Conducted By:	Austin Gourley & Eder Cueva (EJ Flow Tests) 602.999.7637
Witnessed By:	Lee Huddleston (EPCOR Water) 602.882.4846
City Forces Contacted:	EPCOR Water (602.882.4846)

City of Scottsdale requires a maximum static pressure of 72 psi for use as a safety factor

Raw Flow Test Data

Static Pressure:	112.0 PSI
Residual Pressure:	100.0 PSI
Flowing GPM:	2,374
GPM @ 20 PSI:	7,131

Data With A 40 PSI Safety Factor

Static Pressure:	72.0 PSI
Residual Pressure:	60.0 PSI
Flowing GPM:	2,374
GPM @ 20 PSI:	5,240

Hydrant F_1

Pitot Pressure (1):	50 PSI
Coefficient of Discharge (1):	0.9
Hydrant Orifice Diameter (1):	2.5 inches
Pitot Pressure (2):	50 PSI
Coefficient of Discharge (2):	0.9
Hydrant Orifice Diameter (2):	2.5 inches

Static-Residual Hydrant

Flow Hydrant

Main Size
8 inches

Distance Between F_1 and R
382 ft (measured linearly)

Static-Residual Elevation
1306 ft (above sea level)

Flow Hydrant (F_1) Elevation
1306 ft (above sea level)

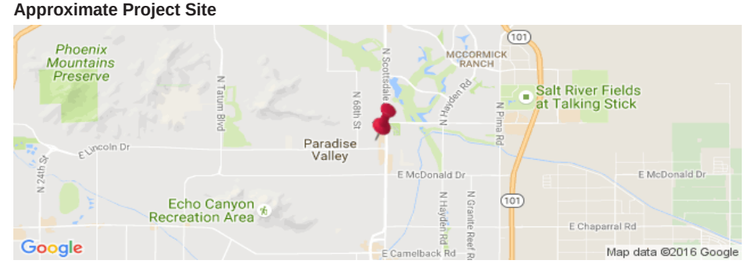
Elevation & distance values are approximate

E·J | Flow Test Summary

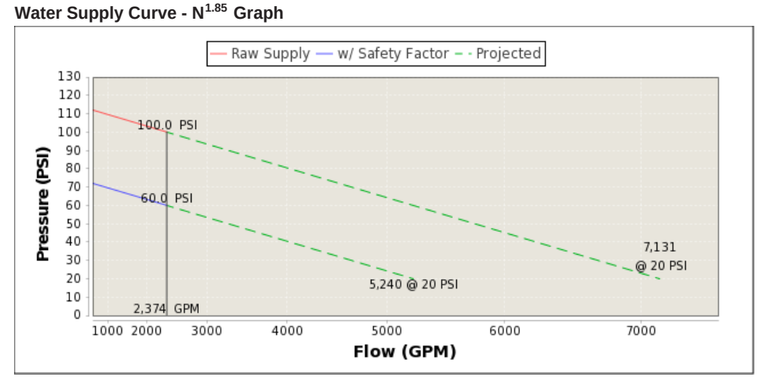
Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site



Water Supply Curve - $N^{1.85}$ Graph



PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A71
SEP 6, 2019
11 x 17 format

CenturyLink™

CenturyLink Engineering
135 W. Orion St. 1st Floor
Tempe, AZ 85283
BICS@Centurylink.com

April 16, 2018

Mr. Fred Fleet
Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, Arizona 85014

RE: CVL #1-01-03153-01

Mr. Fleet,

The above mentioned project is located in a parcel of land located in Section 10, Township 2N and Range 4E in Maricopa County.

In response to your "Service Availability" request for the above mentioned development located at 7101 East Lincoln Drive, Paradise Valley, AZ, this letter is to acknowledge that this subject property is within CenturyLink serving territory.

The tariff Rates and Regulations prescribed for service for this area are on file with your State Utilities Commission, and may be examined at your local CenturyLink Business Office.

Sincerely,

Stacey Alfier

Stacey Alfier
CenturyLink Engineer II/Supervisor of Engineering Support
135 W Orion Street, 1st Floor
Tempe, AZ 85283
480/768-4294 (Office)
Stacey.Alfier@centurylink.com

COX Business®

3010 W. Agua Fria Freeway
Phoenix, AZ 85027

April 17, 2018

Mr. Fred Fleet
Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, AZ 85014

Project: Commercial Project
7101 East Lincoln Drive
Scottsdale, AZ 85253
Parcel 174-64-003A
Map 127 2N 4E S:10 SE

Dear Mr. Fleet:

This letter is to confirm that Cox Communications is a licensed telecommunications operator for the City of Scottsdale in which this project resides. Cox Communications may be able to provide cable services or other required telecommunication services for this project, however, the final requirement of a service agreement will be necessary.

As you move forward with this project, please contact Angela Kiesgen, Cox Business Account Executive at (office) 623-322-7159 or (email) angela.kiesgen@cox.com who will be able to assist you with your telecommunications needs.

If you have any questions, please feel free to contact me.

Sincerely,

Annie Sandoval
Cox Business 623-328-2431

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A72
SEP 6, 2019
11 x 17 format

aps

P.O. Box 53933
Phoenix, AZ 85072

4/18/2018

Mr. Fred Fleet
Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, AZ 85014

Re: 7101 East Lincoln Drive

Dear Fred,

The above referenced project is located in Arizona Public Service Company's electric service area. The Company extends its lines in accordance with the "Conditions Governing Extensions of Electric Distribution Lines and Services," Schedule 3, and the "Terms and Conditions for the Sale of Electric Service," Schedule 1, on file with the Arizona Corporation Commission at the time we begin installation of the electric facilities.

Application for the Company's electric service often involves construction of new facilities for various distances and costs depending upon customer's location, load size and load characteristics. With such variations, it is necessary to establish conditions under which Arizona Public Service will extend its facilities.

The enclosed Schedule 3 policy governs the extension of overhead and underground electric facilities to customers whose requirements are deemed by Arizona Public Service to be usual and reasonable in nature.

Please give me a call at 602-493-4468 so that we may set up an appointment to discuss the details necessary for your project.

Sincerely,

Heather Legg
Customer Project Manager
Customer Construction East

Enclosure

SOUTHWEST GAS CORPORATION

April 19, 2018

Mr. Fred Fleet
Coe & Van Loo Consultants, Inc.
4550 North 12th Street
Phoenix, AZ 85014

RE: Natural Gas Service to: 7101 East Lincoln Drive in Paradise Valley, AZ 85253

Dear Mr. Fred Fleet:

Thank you for your inquiry regarding gas availability for the above referenced project. Southwest Gas has natural gas facilities available to serve this project and can be extended to serve your project in accordance with our Rule Six as filed with the Arizona Corporation Commission. Southwest Gas currently has a 2.5" Distribution Pressure Gas main running east and west on Lincoln Dr.

Without reviewing the preliminary engineering plans on the project we cannot determine what fees would be required.

Southwest Gas is very interested in serving this project with the preferred fuel ***natural gas,*** and I look forward to working with you as the project progresses.

If you should have any questions or require additional information, please contact me at 602/768-8146, or email me at Laurie.Cleland@swgas.com.

Sincerely,

Laurie Cleland
Energy Analyst
Energy Solutions Department
Central Arizona Division

1600 E. Northern Avenue / Phoenix, Arizona 85020-3982
P.O. Box 52075 / Phoenix, Arizona 85072-2075 / (877) 860-6020
www.swgas.com

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EXHIBIT

the smoke tree resort
7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A73
SEP 6, 2019
11 x 17 format

Affidavit of Notification
Notice of Citizen Review Meeting

Rezoning Application No.: SUP-18-5

Applicant Name: Gentree, LLC by Cassandra Ayres, Beus Gilbert PLLC

Location: 7101 E. Lincoln Drive, Paradise Valley, AZ 85253

I confirm that notice of the Citizen Review Meeting as required for the case noted above has been completed in accordance with Section 2-5-2(F) of the Town of Paradise Valley's Town Code.

_____ 2.6.19
Application/Representative Signature Date

This instrument was acknowledged before me on this 6th day of February, 2019, by Cassandra Ayres. In witness whereof, I hereunto set my hand and official seal.

WENDY PETERSON
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
September 14, 2020

Wendy Peterson
Notary Public

My commission expires: 9-14-2020

Affidavit of Notification(354183.1).docx

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A74
SEP 6, 2019
11 x 17 format

BEUS GILBERT
PLLC
ATTORNEYS AT LAW
701 NORTH 44TH STREET
PHOENIX, ARIZONA 85008-6504
FAX (480) 429-3100

Cassandra H. Ayres
DIRECT (480) 429-3010
E-Mail Address: cayres@beusgilbert.com

FILE NUMBER
39039.23

February 1, 2019

INVITATION TO CITIZEN REVIEW MEETING
SMOKE TREE RESORT
SPECIAL USE PERMIT – MAJOR AMENDMENT APPLICATION (SUP 18-05)

Dear Neighbor:

This letter is being sent to advise you that we will be hosting a citizen review meeting in connection with the Smoke Tree Resort Special Use Permit ("SUP") Major Amendment Application on **Monday, February 18, 2019 at 6:00 p.m. at the Smoke Tree Resort ("Resort") located at 7101 E. Lincoln Drive, Paradise Valley, Arizona 85253**. You are invited to attend to learn about the application and make your opinion known. Parking will be available in the Resort parking lot. If you have questions or comments, you may contact Cassandra Ayres, Beus Gilbert PLLC, at 480.429.3010 or cayres@beusgilbert.com.

The 5.36-acre Resort originally opened in 1966 and has operated continually since. Other than general maintenance and upkeep, the Resort has not had any significant upgrades since it first opened. The SUP proposes to take down the existing structures and construct a new 165-room, three-story resort hotel comprised of 120 hotel doors, 30 residential doors, and 15 lock-offs. The redevelopment also proposes resort related uses, such as a restaurant, event/meeting space, spa, pool, at grade and underground parking, and neighborhood market. The proposed maximum building heights of 24, 26, and 44 feet are to be tiered at various locations in order to protect adjacent neighbors and provide a buffer from typical sounds associated with resorts.

If you require additional information from the Town of Paradise Valley Planning and Development Department, please contact Jeremy Knapp, AICP, Community Development Director at 480.348.3522 or jknapp@paradisevalleyaz.gov. You may also contact the Town by writing to the Planning and Development Department at 6401 East Lincoln Drive, Paradise Valley, Arizona, 85253-4399, and referencing SUP 18-05. Your letter will be made part of the case file.

Please be advised that additional meetings and hearings before the Planning Commission and Town Council are planned to review this case on January 22, February 5, February 19, and March 5. The Planning Commission will make a recommendation on the SUP to the Town Council at the March 5 hearing. Town Council hearing dates to consider the Smoke Tree Resort have not been set yet.

Neighborhood Meeting Notification Letter(344790.1).docx

Smoke Tree Resort
Citizen Review Meeting
February 1, 2019

We look forward to maintaining an open and productive dialogue throughout this process. Thank you for your time and consideration. We look forward to seeing you.

Sincerely,

BEUS GILBERT PLLC

Cassandra H. Ayres

#344790v1<BeusGilbert> - Neighborhood Meeting Notification Letter

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A75
SEP 6, 2019
11 x 17 format

PUBLIC MAILING LIST

2012 REVOCABLE TRUST OF PAMELA K NOLAN
6166 N SCOTTSDALE RD UNIT C3002
SCOTTSDALE AZ 85253

3T PROPERTIES & INVESTMENT COMPANY LP
1137 ROOSEVELT AVE
TRACY CA 95376

6617 INVESTORS LLC
6617 N SCOTTSDALE RD STE 1-1
SCOTTSDALE AZ 85250

6909 QUAIL RUN LLC
6909 E LINCOLN DR
PARADISE VALLEY AZ 85253

ALLAN S AND PATRICIA F WALLACE REV TRUST
7319 E MARLETTE AVE
SCOTTSDALE AZ 85250

ANDREW B GREFSS AND WENDY J GREFSS TRUST
6314 N 73RD ST
SCOTTSDALE AZ 85250

THE ANN R DOVE REVOCABLE TRUST
20 MOULTON DR
SHELBYVILLE IL 62565

ARIZONA BANK
101 N TRYON ST
CHARLOTTE NC 28255

ARIZONA BOARD OF REGENTS
PO BOX 870401
TEMPE AZ 85287-0401

ARIZONA BOARD OF REGENTS
1125 N VINE AVE STE 103
TUCSON AZ 85721

AYRES MICHAEL O/DELYTE
BOX 59554
POTOMAC MD 20859

BAMBOO RANCH LIMITED LLC
6701 N SCOTTSDALE RD UNIT 32
SCOTTSDALE AZ 85250

BANKSON KEN J/MAUREEN A
6150 N SCOTTSDALE RD UNIT 6
PARADISE VALLEY AZ 85253

BARBARA ANN TRINEN REVOCABLE TRUST
2371 T A RIODAN
FLAGSTAFF AZ 86005

BARTHEL FAMILY TRUST/BARTHEL DONALD E/NANCY J
6166 N SCOTTSDALE AZ UNIT C2008
SCOTTSDALE AZ 85253

BAYSE MICHELLE MITCHELL/HAGEMANN BRUCE A
6817 COLUMBINE WY
PLANO TX 75093

BECKER ROGER P/LAURIE A
6166 N SCOTTSDALE RD UNIT C2004
SCOTTSDALE AZ 85253

BELL AND 63RD INVESTMENTS LLC
3641 N 39TH AVE
PHOENIX AZ 85019

BELLSTEDT NANCY JANE
5 PROSPECT CT
CANMORE AB
CANADA T1W2S4

BENADERET LINDA B
6166 N SCOTTSDALE RD UNIT A3003
SCOTTSDALE AZ 85253

BIRD RANDALL R
500 RED LANDS
NEWPORT BEACH CA 92663

BLAIK ROBERT M/DOROTHY E
6166 N SCOTTSDALE RD UNIT A2005
PARADISE VALLEY AZ 85253-5430

BONNEM KENNETH C/
FRIEDMAN MARTHA A
6825 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

BORGATA LLC
6621 NORTH SCOTTSDALE RD
SCOTTSDALE AZ 85250

BOWERS FAMILY REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT C3004
SCOTTSDALE AZ 85253

BOYNTON SALLY H
6701 N SCOTTSDALE RD UNIT 5
SCOTTSDALE AZ 85250

BRAGA REVOCABLE LIVING TRUST
25513 PASEO DE CUMBRE
MONTEREY CA 93940

BRAGA STANLEY A/
VALERIE A TR/ETAL
25513 PASEO DE CUMBRE
MONTEREY CA 93940

BRANCO TRUST
3201 SOUTH ST NO 181
LINCOLN NE 68502-3266

BRICK MICHELE/TIMOTHY P
6306 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

BROOKE JOHN B
(IMPROVEMENTS ONLY)
2628 GREENWICH ST
SAN FRANCISCO CA 94123

BROWNFIELD EDWARD H/
ROBERTA F
1126 DRYDEN LANE
CHARLOTTESVILLE VA 22903

BRUNACINI JEANNETTE L TR
1261 BONA TERRA LOOP NW
ALBUQUERQUE NM 87114-1984

BURKE JAMES F
8221 N 23RD PL
SCOTTSDALE AZ 85258

CAIRNS RICHARD A
6821 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

CAMERON DAVID (IMPROVEMENTS)
PO BOX 6458
SCOTTSDALE AZ 85261

CARROLL JENNIFER
6166 N SCOTTSDALE RD UNIT C2006
SCOTTSDALE AZ 85253

CASA DE VALLEY VISTA LLC
6818 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

CASABELLA ASSOCIATION
7255 E HAMPTON AVE STE 101
MESA AZ 85209

CASABELLA ASSOCIATION
7255 E HAMPTON AVE STE 101
MESA AZ 85209

CASEY ARTHUR M JR/
MARJORIE M TR LEASE
7326 E MARLETTE AVE
SCOTTSDALE AZ 85250

CHAPMAN CAROL A TR
7325 E CITRUS WY
SCOTTSDALE AZ 85250

CLARK FAMILY TRUST
6166 N SCOTTSDALE RD UNIT C3008
SCOTTSDALE AZ 85253

CLAYTON W COADY LIVING TRUST
6909 E LINCOLN DR
PARADISE VALLEY AZ 85253

COADY ENTERPRISES INC
6909 E LINCOLN DR
PARADISE VALLEY AZ 85253

COBB ALEXANDER M/CHRISTINE K
6805 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

COHEN S DAVID/DOROTHEE N
6166 N SCOTTSDALE RD UNIT C2005
SCOTTSDALE AZ 85253

COHILL SUSAN M TR
7316 E MCLELLAN BLVD
SCOTTSDALE AZ 85250

CONWAY DENNIS D/MARY C TR
585 3RD ST S
WISCONSIN RAPID WI 54494

CORVENT GROUP INC
3044 BLOOR ST W STE 256
TORONTO ON
CANADA M8X 1CA

CPVF III SCOTTSDALE FORUM LLC
(LEASE)
7600 N CAPITAL OF TEXAS HWY
AUSTIN TX 78731

CUERNAVACA HOMEOWNERS ASSOC INC
532 E MARYLAND AVE STE F
PHOENIX AZ 85012

DALLIS PETER N
7315 E MCLELLAN
SCOTTSDALE AZ 85253

DAVID WINOGRAD AND WENDY WINOGRAD 2011 REVOCABLE LIVING TRUST
6166 N SCOTTSDALE RD UNIT C2007
PARADISE VALLEY AZ 85253

DAVIS SANDRA C
650 54TH AVENUE CT
GREELEY CO 80634

DEIHL FAMILY TRUST
6166 N SCOTTSDALE RD B1005
SCOTTSDALE AZ 85253

DERRICO CELIA/MANERI CAMILLE A
8231 E APPALOOSA TRL
SCOTTSDALE AZ 85258

DEWEY DOUGLAS CRAIG/
SHELLEY KATHLEEN
689 TERRACE DR
LAKE OSWEGO OR 97034

DHILLON REVOCABLE LIVING TRUST
6166 N SCOTTSDALE RD UNIT A1002
PARADISE VALLEY AZ 85253

DIANE MAE CHOLAKIAN FAMILY TRUST
PO BOX 55833
VALENDIA CA 91385

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

EXHIBIT

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A76
SEP 6, 2019
11 x 17 format

REVISED FEBRUARY 12TH, 2019

PUBLIC MAILING LIST

DIETHRICH GLORIA B
6166 N SCOTTSDALE RD UNIT A1006
SCOTTSDALE AZ 85253

DLS REVOCABLE TRUST/ETAL
925 LAKE ST S UNIT 302
KIRKLAND WA 98033

DONALD W MADL AND CAROLYN M
MADL TRUST
6166 N SCOTTSDALE RD UNIT C3005
SCOTTSDALE AZ 85253

DONNA A STONE TRUST
6166 N SCOTTSDALE RD UNIT C3007
SCOTTSDALE AZ 85253

DOUGLAS ALAN COLE TRUST
6929 N HAYDEN RD SUITE C4-508
SCOTTSDALE AZ 85250

DOYLE D JAMES/PHYLLIS J TR
6807 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

DUNIK BRIAN R/CATHERINE F
6701 N SCOTTSDALE RD LOT 30
SCOTTSDALE AZ 85250

EDMUND G ZITO AND PATRICIA M
ZITO REV TRUST
6166 N SCOTTSDALE RD UNIT C 1006
SCOTTSDALE AZ 85253

EILTS PATRICIA S
6706 LUPINE CIR
ARVADA CO 80007

ELLEGARD KENNETH E/CHERYL O
6166 N SCOTTSDALE RD UNIT B2001
SCOTTSDALE AZ 85253-5434

ELLEGARD KENNETH E/CHERYL O
6166 N SCOTTSDALE RD UNIT B4003
SCOTTSDALE AZ 85253-5436

ELLIS MICHAEL/ANGELA
6166 N SCOTTSDALE RD UNIT C2001
SCOTTSDALE AZ 85251

ENCLAVE AT BORGATA COMMON
ELEMENT
2222 W PINNACLE PEAK RD STE 140
PHOENIX AZ 85027

ENCLAVE AT BORGATA LLC
2222 W PINNACLE PEAK RD STE 140
PHOENIX AZ 85027

ENCLAVE AT BORGATA LLC
6263 N SCOTTSDALE RD SUITE 216
SCOTTSDALE AZ 85250

EVERETT PROPERTIES LLC
3343 WYNDHAM CT
EUGENE OR 97408

FALCONE SONIA M
120 N LASALLE ST
CHICAGO IL 60602

FARRELLY JAMES K/STAPLES-
FARRELLY SHARON
6166 N SCOTTSDALE RD UNIT C4003
SCOTTSDALE AZ 85253

FASSERO JEFFREY/CATHY
7313 E CITRUS WY
SCOTTSDALE AZ 85250

FAUSTER III FAMILY TRUST
6701 N SCOTTSDALE RD LOT 9
SCOTTSDALE AZ 85250-4403

FIVE STAR LAND OWNER LLC
6720 N SCOTTSDALE RD STE 130
SCOTTSDALE AZ 85253

FIVE STAR RESORT OWNER LLC
6720 N SCOTTSDALE RD SUITE 130
SCOTTSDALE AZ 85253

FOUR E FAMILY LLC
10960 WILSHIRE BLVD 5TH FL
LOS ANGELES CA 90024

FOXBORO RANCH LLC
PO BOX 17331
MUNDS PARK AZ 86017

FRANK C SKRUPA RESIDENCE
TRUST/ETAL
6212 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

FRED AND COLLEEN STEINBERG
TRUST
6118 N QUAIL RUN RD
PARADISE VALLEY AZ 85253-5321

FREDRICKSON ROBERT J
7314 E CLAREMOUNT ST
SCOTTSDALE AZ 85250

GARREY D REID/PAMELA J
6611 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

GEE JILL S
6333 N SCOTTSDALE RD UNIT 1
SCOTTSDALE AZ 85250

GEGUZYS RONALD P JR/
LEATHA ANN
6341 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

GENTREE LLC
3620 E CAMPBELL AVE STE 8
PHOENIX AZ 85018

GIEDRAITIS JOHN B/
CATHERINE N TR
6305 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

GIESA MICHAEL W TR
1023 FALLS PARC DR UNIT 5
SHEBOYGAN FALLS WI 53085

GIRAUDO SHEELA/MARK
6844 E SOLCITO LN
PARADISE VALLEY AZ 85253

GOLDBERG LARRY
6166 N SCOTTSDALE RD UNIT A2003
SCOTTSDALE AZ 85253

GORDON ANDREW W/CAROL L TR
6837 E LINCOLN DR
PARADISE VALLEY AZ 85253

GRAYTON LESLIE/ROBERT/THOMAS
M/DEXTER STEVEN
12 TOMAH DR
PEABODY MA 01960

GRI LINCOLN VILLAGE LLC
4350 EAST-WEST HIGHWY STE 400
BETHESDA MD 20814

HADL JOHN/DIANA
3700 QUAIL CREEK CT
LAWRENCE KS 66047

HARKINS KAREN A
6226 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

HARMS ZUM SPRECKEL CORD/
JANE HARMS ZUM TR
19815 107TH AVE SW
VASHON WA 98070

HARRIS THOMAS J/MARILYN J
6150 N SCOTTSDALE RD UNIT 37
PARADISE VALLEY AZ 85253

HERD JAMES V/JANET/
WARE RAYMOND T/RENDA
2336 N ALDERCREST PL
EAGLE ID 83616

HILLIS JEFFREY W/JENNIFER ANN TR
6136 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

HOLLIS TROY L/DEBORAH M
6166 N SCOTTSDALE RD UNIT C1001
SCOTTSDALE AZ 85251

HOLMES BRIAN G
89 BRAID BEND
STOUFFVILLE ON
CANADA L4A1R8

HONORA E LOGAN FAMILY TRUST
3709 RANCH VIEW CT
RENO NV 89509

HOSKINS L JETT/LORETTA (LEASE)
7220 NE 14TH ST
VANCOUVER WA 98664

HOSKINS LIVING TRUST
7319 E CITRUS WY
SCOTTSDALE AZ 85250

HOWARD WEISS FAMILY TRUST
6166 N SCOTTSDALE RD UNIT B1004
SCOTTSDALE AZ 85253

HPTRI CORPORATION
PO BOX 579
LOUISVILLE TN 37777-0579

HRA LINCOLN SCOTTSDALE LP
2999 N 44TH ST STE 400
PHOENIX AZ 85018

HULICK EVELYN
7321 E SIRRA VISTA DR
SCOTTSDLAE AZ 85250

HURWORTH SAMUEL G
713 GASMAN
PORT ANGELES WA 98362

J AND D MARQUARDT FAMILY
TRUST
PO BOX 92621
ANCHORAGE AK 99509

J SCOTT PROPERTIES LLC
4111 E MADISON ST SUITE 438
SEATTLE WA 98112

JAMEL GREENWAY LLC
4771 N 20TH ST SUITE 22
PHOENIX AZ 85016

JANAS ROBERT
6166 N SCOTTSDALE RD UNIT C1008
SCOTTSDALE AZ 85253

JANET S PALMER TRUST
6150 N SCOTTSDALE RD 34
SCOTTSDALE AZ 85253

JAYE MICHAEL/REGINA
6166 N SCOTTSDALE RD UNIT B3003
SCOTTSDALE AZ 85253

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EXHIBIT

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PUBLIC MAILING LIST

JEFFREY A BEACH AND THERESA A BEACH LIV TRUST
13385 HIGHLANDS PL APT 1412
SAN DIEGO CA 92130

JILL A GOLD REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT A3007
SCOTTSDALE AZ 85253

JOEL LUTZ LIVING TRUST/
JUDITH LUTZ LIV TRUST
6150 N SCOTTSDALE RD UNIT 43
SCOTTSDALE AZ 85253

JOHN AND KELLY PARKER LIVING TRUST
6316 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

JOHNSTON STEVEN A/WENDY E
9311 OLYMPIC VIEW DR
EDMONDS WA 98020

JOSHUA AND LORIN SWIFT TRUST
5126 E FLOWER ST
PHOENIX AZ 85018

KAHLE MARK/MARILYN
19 BOBBIE LN
WILLIAMSVILLE NY 14221

KAREN K SCHWARTZ REV TR/GARY R SCHWARTZ REV T
6166 N SCOTTSDALE RD
SCOTTSDALE AZ 85253

KAREN MARIE LIERSCH LIVING TRUST
6701 N SCOTTSDALE RD UNIT 11
SCOTTSDALE AZ 85250

KAURA ASHWANI K
7815 N IRONWOOD DR
PARADISE VALLEY AZ 85253

KNOLL ALLAN/SANDRA
6166 N SCOTTSDALE RD UNIT B3006
SCOTTSDALE AZ 85253

KOE BETTY
6701 N SCOTTSDALE RD UNIT 29
SCOTTSDALE AZ 85250

KOSIEC RICHARD/RICHMOND ROSEMARY COLLEEN
6333 N SCOTTSDALE RD UNIT 5
SCOTTSDALE AZ 85250

LANHAM AND BONE DECENDENTS REVOCABLE TRUST
PO BOX 25
CRESSIN TX 76035

LARSON GREGG D/LISA
6166 N SCOTTSDALE RD UNIT B1006
SCOTTSDALE AZ 85253

LEGROW HAROLD R/MARY F
28 EDGEMERE RD
LYNNFIELD MA 1940

LEWIS JULIANNE N TR
6044 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

LILIEN BRIAN/DENISE
6166 N SCOTTSDALE RD UNIT A 2002
SCOTTSDALE AZ 85253

LINCOLN SCOTTSDALE BUILDING LLC
6607 N SCOTTSDALE RD STE H100
SCOTTSDALE AZ 85250

LINDA CHRISTIAN REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT C3003
SCOTTSDALE AZ 85253

LINSCOTT HOTEL CORP LEASE
6333 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

LIPPERT MORRIS OLINS
6225 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

LIVI ANGIOLO
6316 E QUAIL RUN
PARADISE VALLEY AZ 85253

LIVI PATRICIA
6316 E QUAIL RUN RD
PARADISE VALLEY AZ 85253

LIVI PATRICIA
6921 E QUAIL RUN RD
SCOTTSDALE AZ 85253

LMB II CONDO LLC
11615 MOHAWK LN
LEAWOOD KS 66211

LOANSTAR CAPITAL LLC
6619 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

LOVELADY TROY J
5808 E MORNING VISTA LN
CAVE CREEK AZ 85331

LYONS MARK K/BETHANN B
6166 N SCOTTSDALE RD UNIT B1001
PARADISE VALLEY AZ 85253

M PAMELA PENN REVOCABLE TRUST
PO BOX 24128
OKLAHOMA CITY OK 73124

M T OFFICE BUILDINGS LLC
6623 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

MADELAINE R BERG REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT B2004
PARADISE VALLEY AZ 85253

MAHAY HEIDI
7760 E GAINEY RANCH RD UNIT 24
SCOTTSDALE AZ 85258-1634

MAI JOHN
7301 E CLAREMONT ST
SCOTTSDALE AZ 85250

MAJORS K WAYNE II/OSWALT SANDRA C
6350 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

MANERI CAMILLE A/DERRICO CELIA
6150 N SCOTTSDLAE RD STE 35
SCOTTSDALE AZ 85253

MARK AND GLORIA CHANEY JOINT LIVING TRUST
6701 E SCOTTSDALE RD LOT 38
SCOTTSDALE AZ 85250

MARK DANIEL DETMER & SHELLY ANN DETMER TRUST
6826 E SOLCITO LN
PARADISE VALLEY AZ 85253

MARK H HOFFMAN AND DEBORAH M HOFFMAN REV TR
6166 N SCOTTSDALE RD UNIT B3002
SCOTTSDALE AZ 85253

MARLETTE 7313 LLC
7313 E MARLETTE AVE
SCOTTSDALE AZ 85250

MARSHA L FINCH GST TR/LESLIE J SAVANT GST TR
205 REGAL LN
EAST PEORIA IL 61611

MCCARTHY WILLIAM P/MCMULLEN ELIZABETH A TR
6309 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

MCLEES ROBERT E/NANCY R
6701 N SCOTTSDALE RD - LOT 12
SCOTTSDALE AZ 85250

MENSCH KATHRYN G
6126 N SCOTTSDALE RD NO 7
PARADISE VALLEY AZ 85253

MERKOS CHABAD-LUBAVITCH ORGANIZATION INC
6201 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

MICHAEL AND KATHLEEN DEGROFF FAMILY TRUST
6701 N SCOTTSDALE RD LOT 28
SCOTTSDALE AZ 85250

MICHAEL L SHOEN FAMILY TRUST
6719 E MALCOMB DR
PARADISE VALLEY AZ 85253

MICHAEL T HOGAN LIVING TRUST
6166 N SCOTTSDALE RD UNIT A2006
SCOTTSDALE AZ 85253-5430

MICHAELS JAMES/LINDA F
6166 N SCOTTSDALE RD UNIT A2001
PARADISE VALLEY AZ 85253

MICHAUD JANETTE M/JOSEPH E (LEASE)
7308 E ROSE LN
SCOTTSDALE AZ 85253

MICHELLE D SCHECHNER REVOCABLE TRUST
6116 N SCOTTSDALE RD UNIT C1002
PARADISE VALLEY AZ 85253

MILLER SCOTT E/PHYLLIS P (LEASE)
7307 E CLAREMONT ST
SCOTTSDALE AZ 85250

MILNE FAMILY TRUST
6166 N SCOTTSDALE RD UNIT B2006
SCOTTSDALE AZ 85253

MONTENEGRINO VINCENT J/ NATALIE
6740 E LINCOLN DR
PARADISE VALLEY AZ 85253

MONTOPOLI DUANE C/BARBARA P
108 CAMPION ROAD
NORTH ANDOVER MA 01845-1221

MOORE LAURA E
9400 N FRYER RD
PEORIA IL 61615

MURPHY MICHAEL T/NANNEN DAWN M TR
2543 E 21ST ST
FREMONT NE 68025

MYKOL DOUGLAS B/DORENE E
222-A W BAY DR NW
OLYMPIA WA 98502

NANCY A SOPER REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT B2007
SCOTTSDALE AZ 85253

NARAZONA CORPORATION
PO BOX 61655
PHOENIX AZ 85082-1655

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NARNIA II LLC
6621 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

NARNIA LLC
6621 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

NEWELL FAMILY TRUST
6166 N SCOTTSDALE RD UNIT C4001
SCOTTSDALE AZ 85253

NICASTRO CHERISSE M
6206 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

NORMAN WILLIAM FAIN II AND
NANCY LEE FAIN REVOCABLE
TRUST
6166 N SCOTTSDALE RD UNIT A3004
SCOTTSDALE AZ 85253

NOSTRAND ROBERT D/
SUZANNE KNIGHT
251 STEELE ST
DENVER CO 80206

NOWAK JOYCE L LOMBARDO TR
P O BOX 50786
MENDOTA MN 55150

OKINOW SANDRA L
11472 FAIRFIELD RD WEST UNIT 402
MINNETONKA MN 55305

OMEARA FAMILY TRUST
6701 N SCOTTSDALE RD UNIT 3
SCOTTSDALE AZ 85250

ONEIL MICHAEL
50 VANDERBILT MOTOR PKWY
COMMACK NY 11725

ORVIS PAUL W JR & CELIA C
234 FIDDLERS POINT DR
ST AUGUSTINE FL 32080

PALMER JANET S TR
6150 N SCOTTSDALE RD 34
SCOTTSDALE AZ 85253

PARADISE VALLEY WATER CO
2355 W PINNACLE PEAK RD STE 300
PHOENIX AZ 85027

PARADISE VILLAGE ENTERPRISES LLC
6818 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

PARFET WILLIAM M/GENE V/MARK E
6701 N SCOTTSDALE RD UNIT 41
SCOTTSDALE AZ 85253

PATEL PRATAP P/KATIE P
284 ASHAROKEN AVE
NORTHPORT NY 11768

PEGGY KEALEY OUSLEY TRUST
6166 N SCOTTSDALE RD UNIT 3008
SCOTTSDALE AZ 85253

PETER BLACK LIVING TRUST
6166 N SCOTTSDALE RD UNIT A1003
PARADISE VALLEY AZ 85253-5429

PFITZER KARL F/VICKIE RAE
6808 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

PLONE BARBARA A
100 LAKESHORE DR APT 551
NORTH PALM BEACH FL 33408

PNEUM INVESTMENTS LLC
6619 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

PRENTICE TAMALEE G
7314 E MALCOMB DR NO 3
SCOTTSDALE AZ 85260

PV HOTEL VENTURE SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

PV SCOTTSDALE HOTEL OWNER SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

RANDALL E BROWN AND
ELIZABETH D BROWN JOINT
REVOCABLE TRUST
38167 WEST DR UNIT 719
REHOBOTH BEACH DE 19971-1773

RANDOLPH SCOTT MAHONEY
LIVING TRUST
6166 N SCOTTSDALE RD UNIT B3008
SCOTTSDALE AZ 85253

RANUCCI ROBERT J
6701 N SCOTTSDALE RD 39
SCOTTSDALE AZ 85250

RASMUSSEN LIVING TRUST
6102 N QUAIL RUN RD
SCOTTSDALE AZ 85253

RED HILTON VILLAGE LLC (LEASE)
ONE E WASHINGTON ST STE 300
PHOENIX AZ 85004

REED BRADFORD CUTLER LIVING
TRUST
7349 N VIA PASEO DEL SUR STE 515
SCOTTSDALE AZ 85258

REICHLER FAMILY LIVING TRUST
6166 N SCOTTSDALE RD UNIT C1003
SCOTTSDALE AZ 85253

RHUART SUSAN JANE
7321 E MCLELLAN BLVD
SCOTTSDALE AZ 85250

RICHARD C CARR TRUST
1418 N LAKESHORE DRIVE APT H9
CHICAGO IL 60610

RICHARD G LAVIGNE TRUST
2523 HAVERTON RD
SAINT PAUL MN 55120

RICHARD T WINTERMANTEL
REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT A1008
SCOTTSDALE AZ 85253-5429

RINK GLENN R
6028 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

RN PROPERTIES LINCOLN PLAZA LLC
2021 E CAMELBACK STE A38
PHOENIX AZ 85016

ROBERT LEVIN REVOCABLE TRUST
3001 RIDGE RD
HIGHLAND PARK IL 60035

ROBERT ONG HING AND ALICE Y
HING FAMILY TRUST
6145 E JOSHUA TREE LN
PARADISE VALLEY AZ 85253

ROBERT SARVER TRUST
5710 N YUCCA RD
PARADISE VALLEY AZ 85253

RODIN RICHARD S/ELLEN S
5610 WISCONSIN AVE UNIT 806
CHEVY CHASE MD 20815

ROGERS DAVID J/CAROLYN M TR
2745 HIGHLAND TRR
SHEBOYGAN WI 53083

ROSS GENO G
6806 E HAPPY VISTA LN
PARADISE VALLEY AZ 85253

RUTTLE CURT J/MARIA D H TR
6316 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

SANCHEZ JAIME & ASELA M DE
6823 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

SANDRALOU HATKOFF REVOCABLE
TRUST
7320 E CLAREMONT
SCOTTSDALE AZ 85253

SANDS RESIDENTIAL LLC
8605 SANTA MONICA BLVD
SUITE 7838
LOS ANGELES CA 90069

SANFORD ED R/
BROTMAN JUDITH ANN
6166 N SCOTTSDALE RD UNIT A2008
SCOTTSDALE AZ 85253

SANTELER RAYMOND III/GAIL
6166 N SCOTTSDALE RD UNIT C2002
BLDG C
SCOTTSDALE AZ 85253-5439

SAVAGE FAMILY PARTNERSHIP
LTD/SAVAGE JACK W
4037 COTSWALD CT
DALLAS TX 75220

SCHIFFMAN FAMILY TRUST
7316 E SIERRA VISTA DR
SCOTTSDALE AZ 85250

SCHROECKENSTEIN DAVID
C/CHRISTINE H
5000 FRANCE AVE SOUTH UNIT 26
EDINA MN 55410

SCOTT THOMAS E/JUNE L (LEASE)
7314 E MARLETTE AVE
SCOTTSDALE AZ 85250

SCOTT WRIGHT SMITH REVOCABLE
TRUST
6810 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

SCOTTSDALE CITY OF
7447 E INDIAN SCHOOL RD STE 205
SCOTTSDALE AZ 85251

SCOTTSDALE SPECTRUM LLC
6730 N SCOTTSDALE RD
SCOTTSDALE AZ 85253

SCRIBNER FAMILY TRUST
6166 N SCOTTSDALE RD UNIT A3002
PARADISE VALLEY AZ 85253-5431

SHARPLES COLIN
POUNSLEY MILL BARN
EAST SUSSEX
ENGLAND TN22 5HP

SHELDON HEIDI
6701 N SCOTTSDALE RD UNIT 7
SCOTTSDALE AZ 85250

SHRIMPLIN MALCOLM R
6130 N SCOTTSDALE RD STE 15
SCOTTSDALE AZ 85250

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the smoke tree resort
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SMF REVOCABLE TRUST
6701 N SCOTTSDALE RD NO 40
SCOTTSDALE AZ 85250

SMITH LIVING TRUST
7322 E SIERRA VISTA DR
SCOTTSDALE AZ 85250

SNOWDEN JAMES PATRICK
8514 E SAN BRUNO DR
SCOTTSDALE AZ 85258

SOLE AND SEPARATE LLC/ETAL
6809 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

SPIGNER BRUCE A/GENEVA MARIE
6748 E HORSESHOE LN
PARADISE VALLEY AZ 85253

ST BARNABAS OF THE DESERT
6715 N MOCKINGBIRD LN
SCOTTSDALE AZ 85253

STEVEN E SIVERSON AND MICHELE SIVERSON TRUST
9600 N 96TH ST APT 208
SCOTTSDALE AZ 85258

SUD ROHIT/PRITI
6835 E SOLCITO LN
PARADISE VALLEY AZ 85253

SUNCHASE CENTURY LLC
5665 N SCOTTSDALE RD STE 135
SCOTTSDALE AZ 85250

SUNCHASE HOLDINGS INC
5665 N SCOTTSDALE RD STE 135
SCOTTSDALE AZ 85250

SUSAN MOORE SALTER SEPARATE PROPERTY TRUST
7328 E SIERRA VISTA DR
SCOTTSDALE AZ 85250

SYLVIA L SHINE REVOCABLE TRUST
PO BOX 737
SPENCER IA 51301

THIRD AVENUE INVESTMENTS LLC
51 S MAIN ST
SALT LAKE CITY UT 84111

THOMAS CRAMSIE TRUST/CRAMSIE JANICE E
6166 N SCOTTSDALE RD UNIT C3006
SCOTTSDALE AZ 85253

THOMAS H KENNEDY AND DIANNE M KENNEDY TRUST
7327 E SIERRA VISTA DR
SCOTTSDALE AZ 85250

TIOA MASTER LIMITED PARTNERSHIP LEASE
6333 W SCOTTSDALE RD
SCOTTSDALE AZ 85250

TOOFAN MARC P/KERIC NATASHA
6802 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

VAN BERKEL FAMILY REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT B4001
SCOTTSDALE AZ 85253

VANMOORLEHEM CHAD
7313 E CLAREMONT ST
SCOTTSDALE AZ 85250

VERMA AVTAR C/SATYA P
PO BOX 28330
TEMPE AZ 85285

VICTOR C FARACI TRUST/DIANNE C FARRACI TRUST
6166 N SCOTTSDALE RD UNIT B3004
SCOTTSDALE AZ 85253

VIKKI L RASKIN REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT B3005
SCOTTSDALE AZ 85253

W J SMALL GRANDCHILDRENS TRUST/ETAL
14100 N 83RD AVE STE 200
PEORIA AZ 85381

WALKER ANDREW J/ELIZABETH A
6150 N SCOTTSDALE RD 49
PARADISE VALLEY AZ 85253

WARREN F AND NANCY J BRYANT TRUST
6846 E SOLCITO LN
PARADISE VALLEY AZ 85253

WEBER WINSTON D/PHYLLIS D TR
16140 KENNEDY RD
LOS GATOS CA 95032

WEISSBLUTH JOY
6264 N 73RD ST
SCOTTSDALE AZ 85250

WERNER HENRY H/SARA M
7302 E ROSE LN
SCOTTSDALE AZ 85250

WEST ROBIN J
6701 N SCOTTSDALE RD NO 8
SCOTTSDALE AZ 85250

WILLLIAM C WEESE TRUST
6166 N SCOTTSDALE RD UNIT B1002
SCOTTSDALE AZ 85253

WILSON LIVING TRUST
6166 N SCOTTSDALE RD UNIT A1001
SCOTTSDALE AZ 85253

WITHERS ROBERT E/PEGGY P
6166 N SCOTTSDALE RD UNIT A1005
SCOTTSDALE AZ 85253

WOLFF JUDITH JOY TR
6701 N SCOTTDALE RD NO 37
SCOTTSDALE AZ 85250

WOOKEY BRENT A/CHRISTIE L
1617 12TH AVE NE
WATERTOWN SD 57201

WOOLDRIK JOHN G/CAROLE
6166 N SCOTTSDALE RD UNIT C4005
SCOTTSDALE AZ 85253

WUNDERLICH LOUIS J/FRANCES L TR
6816 E VALLEY VISTA LN
PARADISE VLY AZ 85253

YAMASHIRO DANIEL/KRISTINE
6812 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

YEUNG CHRISTOPHER/HELEN
6845 E SOLCITO LN
PARADISE VALLEY AZ 85253

ZAIS FAMILY TRUST
6252 N 73RD ST
SCOTTSDALE AZ 85250

ZOE THAIS
7904 E CHAPARRAL RD STE A110-259
SCOTTSDALE AZ 85250

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EXISTING SITE IMAGE

N

NOT TO SCALE

PHX ARCHITECTURE
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BEUS GILBERT
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CVL CONSULTANTS
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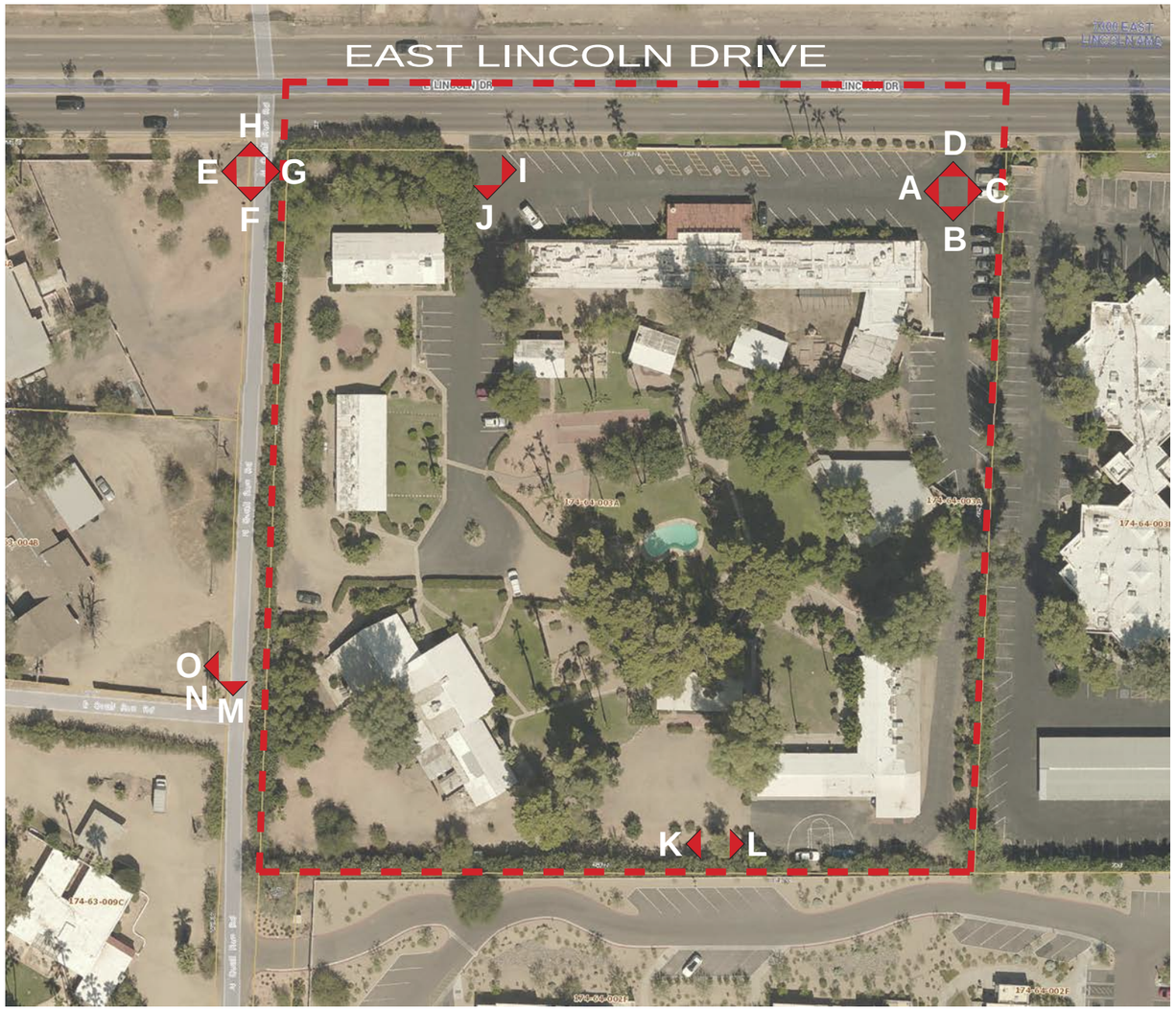
EXISTING SITE AERIAL - KEY MAP



N

0' 40' 80' 160'

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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EXISTING SITE PHOTOS

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EXISTING SITE PHOTOS

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
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the smoke tree resort

CVL CONSULTANTS

CREATIVE DESIGNS IN LIGHTING

GREEY|PICKETT

PHX ARCHITECTURE

TOWN OF Paradise Valley ARIZONA

GH

BEUS GILBERT

Kimley»Horn

MEMORANDUM

To: Paul Mood, Town Engineer
Paradise Valley, AZ

From: Kim Carroll, P.E., PTOE
Sr. Traffic Engineer
Kimley-Horn and Associates, Inc.

Date: July 29, 2020

Subject: Parking Study for Smoke Tree Resort – Paradise Valley, AZ

INTRODUCTION

The purpose of this study is to project peak parking demands of the site upon completion based on industry-standard data adjusted to localized conditions and Urban Land Institute (ULI) Shared Parking methodologies, accounting for the multiple land uses and for the ability to share parking throughout the day. Kimley-Horn and Associates, Inc. (Kimley-Horn) utilized the Urban Land Institute, Shared Parking Model, Version 1.1, released March 2020. The site is expected to park itself, meaning all parking demands generated by its uses will park on-site. This memorandum provides a summary of conclusions, methodology used to make these conclusions, detailed parking demand calculations, as well as a discussion of other considerations.

Per a conference call held with the Town of Paradise Valley, CivTech Inc., Geneva Holdings, LLC., and Kimley-Horn on July 28, 2020, the proposed land use densities, captive ratios, and site management assumptions were established, as summarized in Table 1 and Table 2. These baseline assumptions were used to project peak parking demand for the Smoke Tree Resort Hotel. Based on these assumptions, the site is expected to generate a peak demand of 187 parking spaces during its weekday peak at 6 PM in March and 178 parking spaces during its weekend peak at 8 PM in March. Using the revised land use densities and assumptions, the parking supply of 199 spaces under a valet managed parking operation will be sufficient to meet the projected parking demand. The model developed by Kimley-Horn uses the ULI Shared Parking model and provides a conservative approach to projecting future parking supply and demand.

Table 1: Proposed Land Use Densities

Land Use	Density	Site Plan Reference
Hotel	122 Keys	N. Resort Suites & P. Luxury Suites
Hotel Event Space	4,200 SF	E. Event Lawn*
Health Club	2,000 SF	Not Shown on Site Plan
Fast Casual/Fast Food	1,500 SF	H. Market (1,000 SF) & I. Coffee Shop (500 SF)
Fine/Casual Dining	3,200 SF	G. Restaurant
Retail	1,000 SF	H. Market (1,000 SF)

*Outdoor lawn and pavilion evaluated as meeting/banquet space for the hotel. Area stipulated not be used at the same time as other event area.

Table 2: Assumptions and Management Practices per the July 28, 2020 Conference Call	
Stated Management Practices and Assumptions	**Impact on Model**
Per the Market and Café GLA Exhibit - Smoke Tree Resort (7/23/2020), all square footage labeled as Back of House (B) will be for the exclusive use of storage for the hotel.	All square footage associated with the Back of House area (B) is allocated as an accessory to the Hotel.
Per the Market and Café GLA Exhibit - Smoke Tree Resort (7/23/2020), the Back of House area (B) will not be leased or used, in part or in whole, to any third-party operators.	
Per the Market and Café GLA Exhibit - Smoke Tree Resort (7/23/2020), the Coffee Shop (A) will not use, in part or in whole, the Back of House area (B) for food and beverage preparation, sales, storage, and/or for any other purposed.	Gross Leasable Area reduced from 1,800 SF to 500 SF.
Per the Market and Café GLA Exhibit - Smoke Tree Resort (7/23/2020), the Market (including E, F, G, and H) will not use, in part or in whole, the Back of House area (B) for food and beverage preparation, sales, storage, and/or for any other purposed.	Gross Leasable Area reduce from 4,000 SF to 2,000 SF
Per the Market and Café GLA Exhibit - Smoke Tree Resort (7/23/2020), the Market (including E, F, G, and H) the modeled land use will include retail as well as food and beverage sales.	Land use revised to Retail (1,000 SF) and Fast Casual/Fast Food (1,000 SF)
Per the Elevations A18 – Smoke Tree Resort (7/24/2020) there will be no internal or external signage marketing the Coffee Shop (A) or the Market (including E, F, G, and H) to Lincoln Road.	The non-captive ratio for the Coffee Shop (A) and the Market (including E, F, G, and H) was reduced from 75% to 50%.
At the time of peak parking demand, all vehicles on the site, including visitors to the Coffee Shop and Market will be required to valet their vehicle.	

If the land use densities, captive ratios, and/or management operations vary from the assumptions detailed in Table 1 and Table 2, the projected parking demand is expected to differ from this shared parking study.

METHODOLOGY

There are two fundamental components of the parking demand model used for this analysis: first is the determination of parking ratios to be applied to generate parking demand estimates, second is the shared parking methodology.

Parking Ratio Determination

Parking demand is typically calculated separately for each land use within a development. Table 3 shows the parking requirements for each land use in the proposed resort as required by Paradise Valley special use permit parking requirements. Based on localized zoning requirements, the minimum number of parking spaces are shown in Table 3.

Table 3: Paradise Valley Special Use Permit Parking Requirements

Land Use	Subcategory	Density (USF)*	Minimum Ratio	Minimum Spaces
Hotel	Hotel, Keys	122 Keys	1.20 Spaces/Key	147
	Hotel Meeting/Banquet	4,200 SF	20 spaces/1,000 SF	84
Health Club	N/A	2,000 SF	3 .33 spaces/1,000 SF	7
Fast Casual/Fast Food (Coffee Shop & Market)	N/A	1,500 SF **	20 spaces/1,000 SF	30
Fine/Casual Dining (Restaurant – Standalone)	N/A	3,200 SF**	20 spaces/1,000 SF	64
Retail	N/A	1,000 SF**	3.33 spaces/1,000 SF	5
			Total	337

*Special Use Permit Parking Requirements use Usable Square Footage (USF) as the density unit.

**USF Density reported by CivTech.

The Paradise Valley zoning requires a minimum of 337 parking spaces for the Smoke Tree Resort development. This shared parking analysis goes into a further level of detail to evaluate the actual conditions of parking on the site where the uses share parking throughout the day. This shared parking analysis uses the ULI's suggested parking ratios as a baseline for determining the projected parking demand. The baseline ratios for hotel, restaurant, and event space were adjusted to reflect the localized minimum parking requirements. Table 4 provides the base parking ratios used to develop the parking demands for the proposed development.

Land use types were selected to best reflect the nature of the proposed development.

- The hotel land use was modeled as a leisure/resort hotel rather than Downtown or Airport hotel types, which helps to reflect the intended boutique nature of the hotel. Hotel demand was projected using the number of keys. Hotel event/meeting space was projected using the GLA.
- Fitness and health club land use varies in the ITE to ULI model but are essentially the same land use. The internal capture of the health club is 90% to model as hotel-oriented fitness center.
- Market was divided into Retail (1,000 SF) and Fast Casual/Fast Food (1,000 SF) to reflect the various sales options provided in the market.
- Coffee Shop was modeled as Fast Casual/Fast Food (500 SF).

Table 4: ULI Base Parking Ratios

Land Use	Weekday		Weekend	
	Visitor/Customer	Employee	Visitor/Customer	Employee
Hotel	1.00 spaces/Key	0.15 spaces/Key	1.00 spaces/Key	0.15 spaces/Key
Hotel Meeting/Banquet	25.19 spaces/1,000 SF	1.76 spaces/1,000 SF	15.19 spaces/1,000 SF	1.76 spaces/1,000 SF
Health Club	6.60 spaces/1,000 SF	0.40 spaces/1,000 SF	5.50 spaces/1,000 SF	0.25 spaces/1,000 SF
Fast Casual/Fast Food	12.40 spaces/1,000 SF	2.00 spaces/1,000 SF	12.70 spaces/1,000 SF	2.00 spaces/1,000 SF
Fine/Casual Dining	13.25 spaces/1,000 SF	2.25 spaces/1,000 SF	15.25 spaces/1,000 SF	2.50 spaces/1,000 SF
Retail	2.90 spaces/1,000 SF	0.70 spaces/1,000 SF	3.20 spaces/1,000 SF	0.80 spaces/1,000 SF

Shared Parking Methodologies

The ULI Shared Parking Model is a tool used to determine cumulative parking demand for developments with multiple land uses. The model considers that while each land use generates demand for a certain number of parking spaces, these parking demands fluctuate hour-by-hour, day-by-day, and month-by-month. Because individual land uses may not experience peak parking demand at the same time, the model seeks to share parking between these land uses to minimize the amount of space and resources devoted to parking. Additionally, the ULI Shared Parking Model allows for non-vehicular mode (trips such as walking, biking, transit, and rideshare) and non-captive ratio (trips between land uses internal to the site, between office and restaurant for instance) adjustments to be made for mixed-use developments to account for trips generated by the site that don't require parking.

Mode and Non-Captive Adjustments

Given the location of the proposed development and surrounding land uses, the site is expected to yield few commutes by foot, bike and transit. The Smoke Tree Resort is located approximately 15 miles from the Phoenix Sky Harbor International airport and would require a 20-minute drive/rideshare ride. It is anticipated that most mode adjustments will occur due to customers and employees utilizing ride-share services such as Lyft and Uber. The proposed development includes a variety of land uses that are intended to serve the hotel population. Therefore, the parking demand will be reduced by those who are parking once and frequenting multiple locations. This is referred to as a non-captive adjustment. Table 5 lists the assumptions used regarding the percent of trips discounted (reduced) due to non-vehicular modes and non-captive (movement between uses on-site) interactions. These assumptions reduce overall parking demand and are applied to the base parking ratios to create an adjusted rate.

Table 5: Mode Adjustments and Non-Captive Adjustments

	Mode Adjustment (% trips reduced from parking demand)				Non-Captive Adjustment (% trips reduced from parking demand)			
Land Use	Weekday		Weekend		Weekday		Weekend	
	Day	Night	Day	Night	Day	Night	Day	Night
Hotel Visitors	-25%	-25%	-25%	-25%	0%	0%	0%	0%
Hotel Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Hotel Meetings / Banquet	-25%	-25%	-25%	-25%	-25%	-25%	-25%	-25%
Health Club, Visitors	0%	0%	0%	0%	-90%	-100%	-90%	-100%
Health Club, Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Fast Casual/Fast Food, Visitors	0%	0%	0%	0%	-50%	-50%	-50%	-50%
Fast Casual/Fast Food, Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Fine/Casual Dining, Visitors	0%	0%	0%	0%	-35%	-25%	-40%	-25%
Fine/Casual Dining, Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Retail, Visitors	0%	0%	0%	0%	-20%	-35%	-15%	-30%
Retail, Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%

It bears noting that CivTech capture ratios are 67% - 85% and 10% for market and coffee shop, respectively. It is Kimley-Horn's professional opinion that that the coffee shop capture ratio be analyzed as 50% rather than 90% to account for the parking anticipated to be necessary. This capture ratio is based on orientation and location of with respect to the resort rooms.

PROJECTED PARKING DEMAND

Projected parking demand is based on the land uses detailed in Table 1, base parking ratios detailed in Table 4, and the mode adjustments and non-captive ratio detailed in Table 5. When factoring the sharing of a common parking supply across land uses, the site is expected to generate a maximum of 187 parking spaces during its weekday peak at 6 PM in March and 178 parking spaces during its weekend peak at 8 PM in March. When compared to the Special Use Permit parking requirements, this shared parking methodology yields a 45% and 48% reduction in parking, respectively. Parking rates, assumptions, and resulting calculations are shown in Table 6.

Table 6: Shared Parking Demand Summary

Average Month: March											
		Weekday (6 PM)					Weekend (8 PM)				
Land Use	Quantity	Base Rate	Mode Adj.	Non-Captive Ratio	Adj. Rate	Est. Parking Demand	Base Rate	Mode Adj.	Non-Captive Ratio	Adj. Rate	Est. Parking Demand
Hotel, Visitor	122 Keys	1.00	0.75	1.00	0.75	78	1.00	0.75	1.00	0.75	82
Hotel, Employee		0.15	0.90	1.00	0.14	7	0.15	0.90	1.00	0.14	3
Hotel Meeting / Banquet, Visitors	4,200 SF	25.19	0.75	0.60	11.34	48	15.19	0.75	0.70	7.98	34
Hotel Restaurant / Meeting, Employees		1.76	0.90	1.00	1.58	4	1.76	0.90	1.00	1.58	7
Health Club Visitors	2,000 SF	6.60	1.00	0.00	0.66	-	5.50	1.00	0.00	0.00	-
Health Club Employees		0.40	0.90	1.00	0.40	1	0.25	0.90	1.00	0.23	-
Fast Casual/Fast Food, Visitor	1,500 SF	12.40	1.00	0.50	6.20	8	12.70	1.00	0.75	6.35	5
Fast Casual/Fast Food, Employee		2.00	0.90	1.00	1.80	2	2.00	0.90	1.00	1.80	2
Fine/Casual Dining, Visitor	3,200 SF	13.25	1.00	0.75	9.94	30	15.25	1.00	0.75	11.44	36
Fine/Casual Dining, Employee		2.25	0.90	1.00	2.03	7	2.50	0.90	1.00	2.25	7
Retail, Visitors	1,000 SF	2.90	1.00	0.65	1.89	1	3.20	1.00	0.70	2.24	1
Retail, Employees		0.70	0.90	1.00	0.63	1	0.80	0.90	1.00	0.72	1
			Customer/Guest			165	Customer/Guest				158
			Employee			22	Employee				20
			Total			187	Total				178

As seen in Figure 1 the projected weekday peak parking demand does not exceed the projected valet parking supply of 199 spaces. Additionally, the projected weekend peak parking demand does not exceed the projected valet parking supply, as shown in Figure 2.

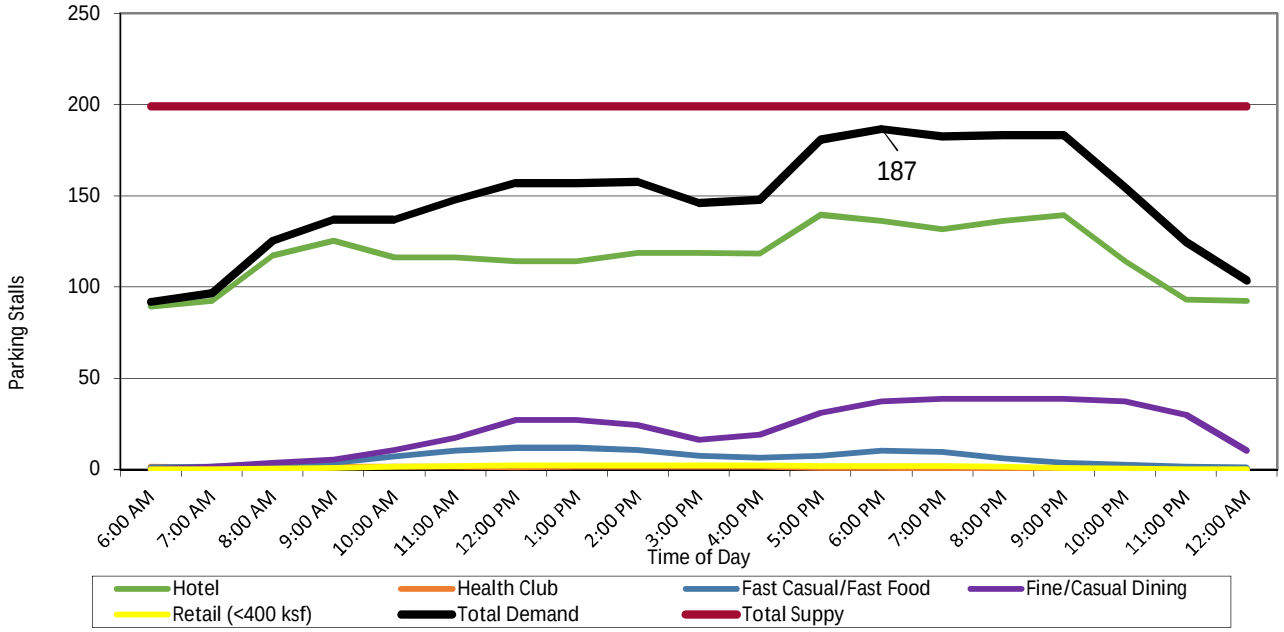


Figure 1. Projected Weekday Peak Parking Demand

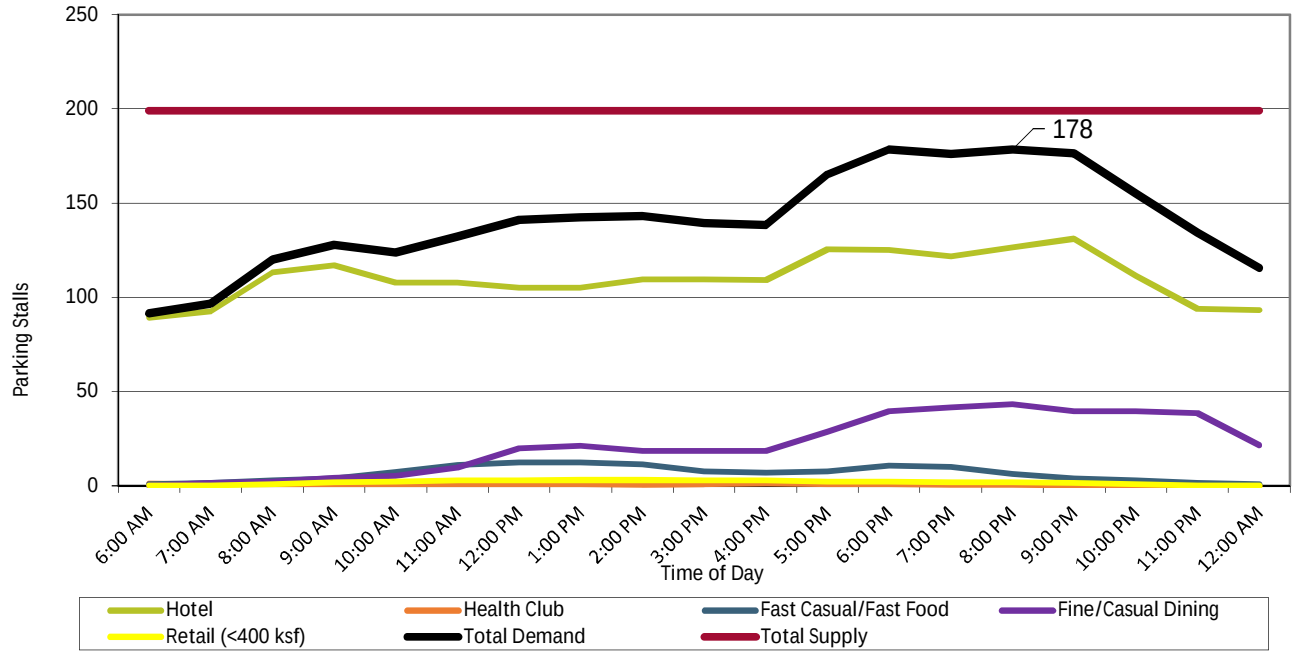
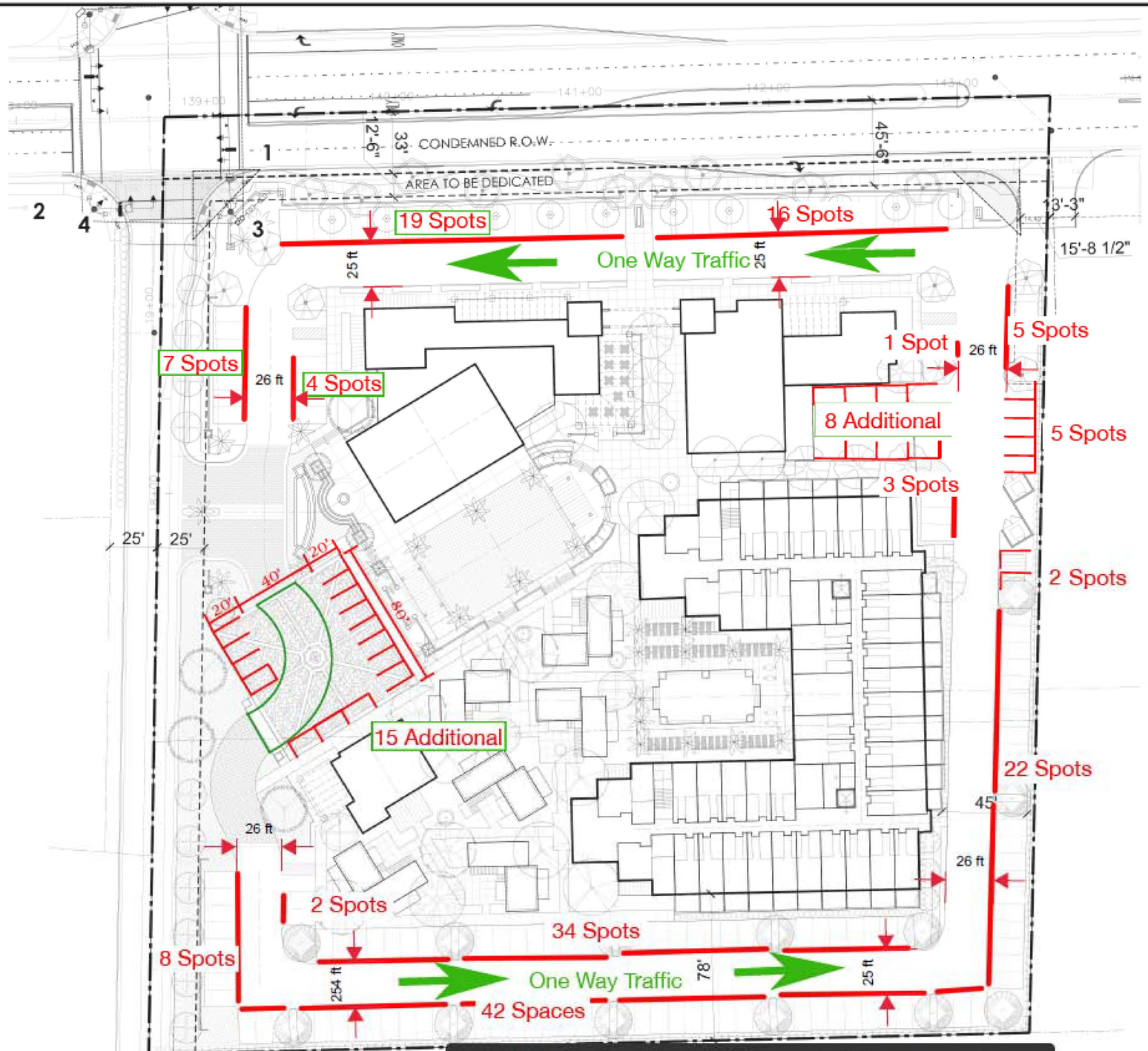


Figure 2. Projected Weekend Peak Parking Demand

*Total parking supply is based on the number of spaces provided under a valet operation. Parking demand that is not managed by a valet operation may lead to a deficit of parking spaces and parking spill over.

The projected parking demand is contingent upon the land use densities and assumptions detailed in this report. If the Back of House (B) is used for purposes other than the main resort and included as a part of the Coffee Shop and Market, the site is expected to generate 207 parking spaces during its weekday peak at 6 PM in March and 199 parking spaces during its weekend peak at 6 PM in March. This projected parking demand would exceed the on-site parking supply and require additional off-site parking.



Legend

1. Electric Box
2. Proposed Electric Box Location
3. Traffic Control
4. Proposed Traffic Control

Total Number of Spots Excluding Handicap = 193

Main Level Floor Plan

esc. 1" = 120'

PHX ARCHITECTURE

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CivTech

July 23, 2020

Taylor Robinson
Gentree, LLC
3620 East Campbell Ave, Suite B
Phoenix, AZ 85018

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 7.23.2020
ARIZONA, U.S.A.

RE: PARKING MANAGEMENT PLAN FOR THE SMOKETREE RESORT PROJECT – PARADISE VALLEY, ARIZONA

Dear Mr. Robinson:

Thank you for retaining CivTech to provide a Parking Management Plan for Smoketree Resort ("Project"). The Project is located at 7101 E. Lincoln Drive, Scottsdale, AZ 85253; south of Lincoln Drive and east of Quail Run Road in Paradise Valley, Arizona and will redevelop the existing resort.

PROJECT UNDERSTANDING AND PURPOSE

The purpose for a parking management plan is to provide the number of parking spaces required for the Project during its peak operations on a weekday and weekend during the peak season. The resort uses will be considered at different occupancy rates and varying internal capture rates to indicate when valet operations would be triggered within each combination. CivTech prepared a parking study for the Smoketree Resort in Section 4 of the SUP guidelines effective July of 2017. The parking study had been reviewed by the Town's consultant and Peer Reviewed by Walker Parking. The CivTech parking requirement, 199 spaces, is lower than the number of spaces suggested by the Town's consultant (210-230 spaces) and higher than the number of spaces suggested by the peer review (revised version indicates 181 spaces). Therefore, the parking management plan will reflect the same rates as within the CivTech parking study.

PROPOSED PROJECT

The proposed project will consist of a resort hotel with 122 dedicated resort hotel rooms. The 122 dedicated hotel rooms will be considered "hotel keys" under the Special Use Permit. The resort hotel also includes an event space, retail, market, restaurant, and coffee shop uses. **Figure 1** shows the location of the project at 7101 E. Lincoln Drive, Scottsdale, AZ 85253; south of Lincoln Drive and east of Quail Run Road in Paradise Valley, Arizona.

FIGURE 1 – PROJECT LOCATION MAP

The resorts hotel will include fitness and amenities within the primary resort building. These uses will be available to guests only and therefore do not impact the parking requirements of the Smoketree Resort. The proposed development land uses and quantities are summarized within **Table 1**. The proposed project will provide 170 traditional parking spaces. An exhibit illustrating the provided parking is provided in **Attachment A**.

TABLE 1 – PROPOSED LAND USES AND QUANTITIES

(1) SUP	Land Use	Quantities
i.	Hotel Key	122 Keys
vi	Executive Office	250 SF
vi	HR/Accounting Office	250 SF
vi	Sales Office	250 SF
	(3) Front Desk	250 SF
vi	Misc Office	250 SF
	Lobby	1,800 SF
iv.	(2) Pavilion	4,000 SF
iv.	(2) Event Lawn	4,200 SF
	(3) Valet/Bag+Bell	600 SF
	(3) Housekeeping	2,300 SF
iii.	(4) Stand-Alone Food and Beverage – Restaurant	(6) 2,100 SF
iii.	(4) Guest Oriented Retail/Coffee – Restaurant	(7) 500 SF
v.	(5) Guest Oriented Retail/Coffee – Retail	(8) 2,000 SF
vi.	Fitness	2,000 SF

(1) See Table 2 for category description.
(2) Pavilion not used simultaneously with the Event Lawn due to parking supply limitations; therefore, the land use with the higher SF was used within the analysis.
(3) Areas considered back of house were not included in the parking generation.
(4) Restaurant seating area square footage excluding storage, kitchen, restrooms, etc.
(5) Usable area square footage of retail space.
(6) The gross square footage for the Stand-Alone Food and Beverage – Restaurant is 3,200 square feet.
(7) The gross square footage for the Guest Oriented Retail/Coffee – Restaurant is 1,800 square feet.
(8) The gross square footage for the Guest Oriented Retail/Coffee – Retail is 4,000 square feet.

TOWN OF PARADISE VALLEY CODE PARKING REQUIREMENTS

The Town of Paradise Valley provides parking ratios in their Special Use Permit (SUP) Guidelines. **Table 2** summarizes the parking ratio requirements for each component of a resort hotel.

TABLE 2 – PARKING REQUIREMENTS PER THE TOWN SUP GUIDELINES

SUP	Category	Parking Requirement
i.	Each Hotel Key	1.2 spaces
iii.	Restaurant	1 space per 50 SF of net dining area
iv.	Meeting Rooms/Auditoriums/Group Assembly	1 space per two seats of public area (assumed to be 50 square feet)
v.	Retail	1 space per 300 SF of net sales area
vi.	Office/Service Establishment/ Spa/Fitness/Sales Establishments	1 space per 300 SF of net occupied space

PROJECT PARKING GENERATION ANALYSIS

REQUIRED PARKING PER SUP GUIDELINES

The Town of Paradise Valley SUP parking ratios Guidelines have been applied to the proposed land uses to determine the maximum parking required for each use within the resort without the consideration of shared parking by time of day and without the consideration of internal capture (captive market). **Table 3** provides a summary of required parking per the SUP Guidelines for the Project excluding any reduction.

TABLE 3 – PROJECT PARKING REQUIRED PER THE TOWN SUP GUIDELINES

SUP	Town SUP Category	Land Use	Town SUP Parking Requirement	Parking Demand without Internal Capture Reduction (1)
i.	Each Hotel Key	Resort Keys	1.2 spaces	147
iii.	Restaurant	Resort Food & Beverage (Stand-alone)	1 space per 50 SF of net dining area	42
		Resort Food & Beverage (Guest Oriented)		10
iv.	Meeting Rooms/Auditoriums/ Group Assembly	Resort Meeting/Banquet Space (2)	1 space per two seats of public area (assumed to be 50 square feet)	84
v.	Retail	Resort Retail	1 space per 300 SF of net sales area	7
vi.	Office/Service Establishment/ Spa/Fitness/Sales Establishments	Resort Employee Office	1 space per 300 SF of net occupied space	5
		Resort Fitness		7
Total Parking Requirement per the Town SUP				302

(1) Each calculated value should be rounded up to a full parking space because there cannot be part of a required space for a vehicle to park.
(2) Pavilion not used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.

Per Paradise Valley's SUP Guidelines, the proposed Project has a total parking demand of 302 parking spaces before consideration of shared parking by time of day.

COMPARISON OF PARKING RATES AND AMENITY INVENTORY

A comparison of parking calculated at other Resorts within the Town of Paradise Valley was requested during a meeting with Town of Staff on January 13, 2020. The results of this analysis are provided in **Table 4**. Parking at resorts within Paradise Valley vary widely and some were calculated using standards which were in effect prior to the Town's 2005 SUP Guidelines. While the standard of

comparing the amount of parking provided on a per key basis is often applied, it does not fit the context of resort hotel properties within the Town of Paradise Valley which neither limit themselves to business uses or provide a consistent application of amenities per room. Assessing the parking supply on a comparative per key basis would grossly over predict the amount of parking necessary to support the Smoketree Resort due to the limited amenities and meeting space available to the public. **Table 4** also compares parking per square feet of amenity use as other resorts as shown within their parking studies. Actual amenity rates likely exceed what is shown in Table 4 except for that shown for Smoketree which matches the current site plan. Thus, the comparison is conservative in its comparison which indicates that Smoketree is actually providing more parking on a per square foot of amenity basis than other Town of Paradise Valley Resorts.

TABLE 4 –PROJECT COMPARISON OF PARKING RATES AND AMENITY INVENTORY(1)

Resort	Size (Acres)	Guest Units	Facilities (SF)								Parking Provided	Spaces per Key	SF Ancillary Uses	SF Ancillary/ Key
			Restaurant	Meeting Space	Spa	Tennis Courts	Ballroom/ Banquet	Retail	Event	Fitness				
Hermosa Inn	6.4	35	2,677	4,424	2,000						111	3.17	9,101	260
Sanctuary	53	125	13,254	7,248	12,272	1,000					369	2.95	32,774	262
Camelback Inn	117	453		127,500							1,157	2.55	127,500	281
Ritz Carlton (Proposed)	110	225	5,850	3,320			17,800				480	2.13	26,970	120
Montelucia	28	293	5,100					31,608			610	2.08	36,708	125
Mountain Shadows	8.4	183	6,052	13,214				1,998		4,525	305	1.67	29,175	159
Doubletree Paradise Valley	20	378		8,232			21,075		10,000		559 on-site 45 off-site	1.6	39,307	104
Smoketree Resort	**5**	**122**	**2,100**	**4,000**				**2,500**		**2,000**	**170**	**1.39**	**10,600**	**87**
Scottsdale Plaza	36.5	404		50,000			10,000				403	1.00	60,000	149
Andaz Resort	27.5	145	5,500	2,000	7,200	4 courts					145	1.00	14,700	101

(1) Square footage of uses provided at other resorts was applied from parking studies or information provided on their website. This table does not present a full accounting of other resorts but does include all of the uses anticipated at Smoketree. If more uses are available at other resorts it would have the net effect of increasing their ancillary use per parking space thus validating the need for less parking at the Smoketree Resort due to the limited amount of ancillary space provided.

The results of the comparison show that the parking per square foot of ancillary use for the Smoketree Resort exceeds the supply at any other resort shown within **Table 4**. When reviewing the parking spaces per key, the Project exceeds the Andaz Resort and Scottsdale Plaza. This further indicates that parking cannot be provided on a one size fits all basis. Each resort, with a unique number of keys and amenities, has an individual parking demand since the parking is used differently. Thus, the need for a parking study to help determine the actual parking demand is critical to meet environmental concerns of overparking and neighborhood concern of under-parking the Project. As part of the CivTech parking study, the Smoketree Resort has also agreed to restrict simultaneous usage of their two event spaces.

VALET PARKING

The Project provides a specific area designed for drop-off and bell service for convenience of the guests. When necessary, the resort will operate using a valet only scenario that Epic Valet created which provides up to 199 parking spaces. There have been questions about the availability of the 5 spaces near the dumpsters and the 5 spaces near the shared drive. A review of the CAD plan indicates that these are all available and usable spaces for valet. The spaces near the dumpsters will require coordination between the Smoketree operators and their chosen waste management provider. The 5 spaces near the shared drive are actual parking spaces being provided in the plan for use in either a self-park or valet only scenario.

The operation in a valet scenario will have guests entering/departing at the Quail Run Road access to drop-off/pick-up their vehicles at the bell service location where the valet employees will circulate the vehicles in a counter clockwise direction around the site. An exhibit illustrating the valet parking operations and parking spaces is provided in **Figure 2** and can be seen in **Attachment B**.

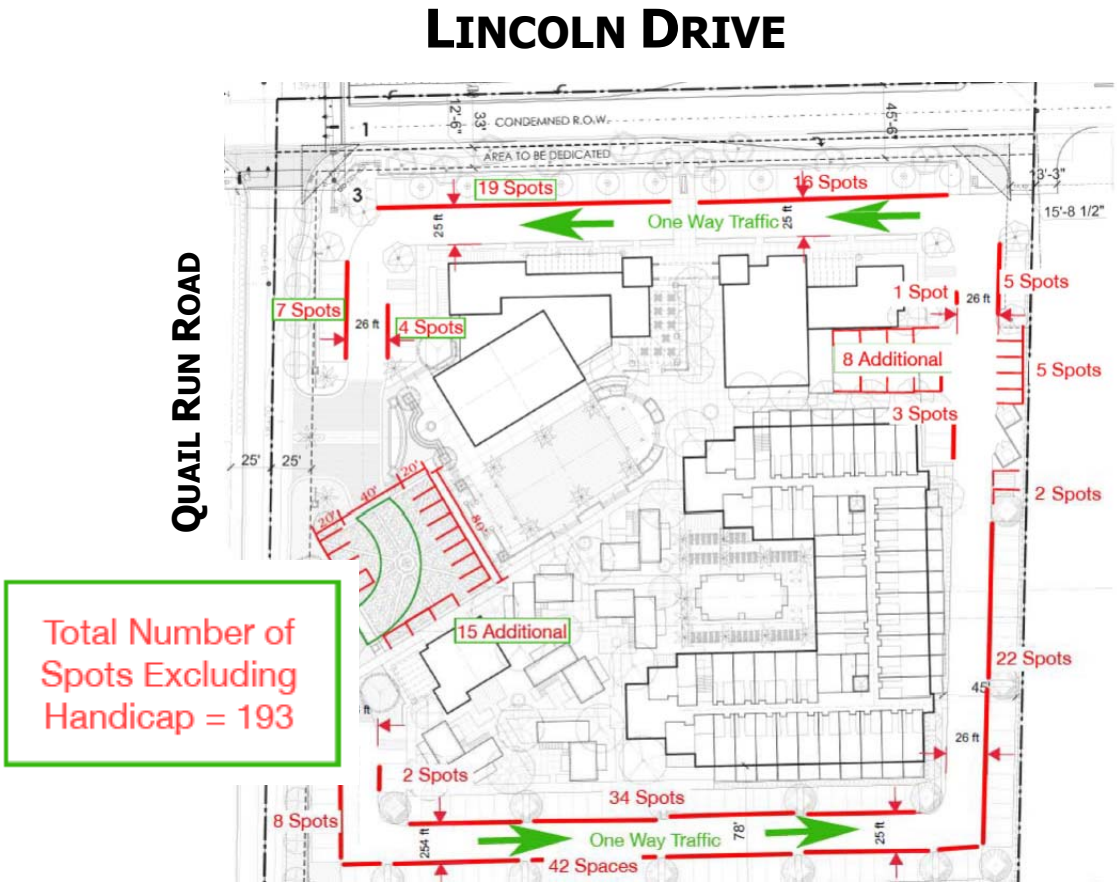

FIGURE 2 – VALET PLAN

REQUIRING VALET TRANSITION

The Smoketree Resort will be considered at different occupancy rates and the event space at varying internal capture rates to indicate when valet operations would be triggered within each combination. The resort will track information about the patrons staying at the Smoketree and their utilization of event space. To provide guidance to the operators about the need to switch to a valet only plan, the hotel and event space internal capture rates have been varied while all other uses stay constant as calculated in the parking study. The ITE time-of-day distributions were applied consistently with those shown in the Parking Study. The hotel use occupancy percentage was assumed to start at 60% and increase in 5% increments while the internal capture for the event space starts at 0% and increases in 10% increments. **Table 5** provides the variations between the occupancy of the hotel and the internal capture of the event space indicting in light blue when valet operations would be triggered within each combination.

TABLE 5 – REQUIRED VALET TRANSITION

Hotel Occupancy	Internal Capture (Event Space (1))										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
60%	177	169	161	152	144	137	132	127	122	117	112
65%	184	176	168	159	151	145	140	135	130	125	120
70%	177	183	175	166	158	152	147	142	137	132	127
75%	197	189	181	172	164	159	154	149	144	139	134
80%	204	196	188	179	172	167	162	157	152	147	142
85%	210	202	194	185	179	174	169	164	159	154	149
90%	216	208	200	191	186	181	176	171	166	161	156
95%	223	215	207	199	194	189	184	179	174	169	164
100%	229	221	213	206	201	196	191	186	181	176	171

(1) Pavilion not used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.

A valet service is required when the combination of hotel occupancy and event internal capture exceeds the proposed 170 spaces. During non-event/non-peak times, the resort will provide sufficient parking to meet its demand. The hotel will know in advance when it will be at full occupancy and transition into valet only parking 24 hours before.

Using a valet only operation to meet peak demand will allow the Smoketree Resort to respond to the anticipated change in parking rates over time without overbuilding parking. Parking rates for all uses are declining and are predicted to continue to decline with rideshare options such as Uber and Lyft.

OFF-SITE PARKING

Should a peak event occur, ride hailing for employees could be provided as a precaution if there is a concern that the parking demand could exceed the parking supply. This could provide in excess of 35 additional spaces available for guests on-site using the ULI 3rd Edition rates for resort employees and time-of-day percentages. ULI provides parking rates for employees of resort hotel uses where ITE remains silent on employee related parking. Therefore, the ULI standard was applied to determine when other transportation options for employees should be considered. Employees will be provided with alternate transportation options once the project requires more than the proposed valet number of 199 spaces. **Table 6** provides the variations between the occupancy of the hotel and the internal capture of the event space indicting in light blue when alternate parking options for employees would be triggered within each combination.

TABLE 6 – REQUIRED OFFSITE PARKING

Hotel Occupancy	Internal Capture (Event Space [1])										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
60%	177	169	161	152	144	137	132	127	122	117	112
65%	184	176	168	159	151	145	140	135	130	125	120
70%	177	183	175	166	158	152	147	142	137	132	127
75%	197	189	181	172	164	159	154	149	144	139	134
80%	204	196	188	179	172	167	162	157	152	147	142
85%	210	202	194	185	179	174	169	164	159	154	149
90%	216	208	200	191	186	181	176	171	166	161	156
95%	223	215	207	199	194	189	184	179	174	169	164
100%	229	221	213	206	201	196	191	186	181	176	171

(1) Pavilion not used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.

Employees should be notified 24-hours in advance of any off-site parking or other transportation options are provided or expected to be utilized.

LOADING

General loading activity information was provided by Smoketree Resort. Typical loading activity has been identified, detailing the number of loadings per day, size of trucks, and duration of loading activities. **Table 7** summarizes the typical loading activities that are proposed to occur at the Project.

TABLE 7 – TYPICAL LOADING ACTIVITY AT SMOKETREE RESORT

Type of Delivery/Service	Frequency	Loading Location	Duration of Loading Activity	Truck Size
United States Postal Service	M-Sat	Hotel Lobby	<5 mins	Box Truck
Federal Express (FedEx)	2/wk	Hotel Lobby	<5 mins	Box Truck
United Parcel Service (UPS)	4/wk	Hotel Lobby	<5 mins	Box Truck
Grainger	1/mo	Service Entry	10 mins	Van
Vistar	1/mo	Service Entry	15 mins	Van
Office Depot (merged with sysco)	1/mo	Service Entry	<5 mins	Van
HD Supply	1/mo	Service Entry	10 mins	Box Truck
Southern Wine & Spirits	1/wk	Service Entry	20 mins	Box Truck
Ecolab	2/mo	Service Entry	10 mins	Van
Sysco	1/wk	Service Entry	20 mins	27' Trailer Truck
Specialty Food & Other	1/wk	Service Entry	10 mins	Box Truck
Amazon	4/wk	Hotel Lobby	<5 mins	Van

As shown in **Table 7**, most of the daily loading activity will occur at the front door of the hotel lobby and involves short-term loading/unloading. The only regular daily deliveries involve post and package handling such as USPS, FedEx, UPS, OnTrac, Amazon and DHL deliveries, and approximately six total daily postal/package deliveries occur, six day a week. Other intermittent deliveries that occur at the front door involve office supplies (Office Depot) and MRO (maintenance, repair and operations) supply deliveries (Grainger, Vistar). Loading activity at the service entry is projected to be much less frequent, with approximately 16 deliveries occurring in a month (roughly one every other business day). The types of deliveries the resort receives are mostly via vans and box trucks.

LARGE EVENT ATTENDANCE

A question has been presented about the parking requirements if a large 200 person event is held at the Smoketree Resort. The answer for the parking demand in a large event situation has been provided in **Tables 5** and **6** within the Parking Management Plan.

The Smoketree Resort indicates a parking need of 84 spaces to support the event space should all of the attendees be arriving from off-site and not staying at the resort. The number of parking spaces required during the event is largely dependent on the number of hotel rooms occupied along with the number of people attending the event that are also staying within the resort (occupying one of the available rooms). The 2009 Federal Highway Administration (FHWA) *National Household Transportation Survey* (NHTS) suggests an average vehicle occupancy of 2.2 persons for social trips. According to the 2017 FHWA NHTS, the **average** light **vehicle occupancy** in 2017 remained unchanged. The FHWA Operations Publication *Managing Travel for Special Planned Special Events* suggests a range of 2.2 to 2.8 persons per vehicle; the variance in the range would depend on local factors.

Utilizing 84 spaces as required by the Town Guidelines for the event space with no internal capture and accommodating a 200-person event in the same space would yield a vehicle occupancy of 2.38 persons per vehicle, which is conservatively in line the FHWA and NHTS suggestions.

Both **Table 5** and **Table 6** provide guidance on when operations must be moved from self-park to valet only, and when additional accommodations must also be provided. Resort operators know in advance how many attendees will be at the event, the time of the event, and how many rooms are occupied by the attendees of the event. These tables will allow the operator to facilitate parking under applicable parking scenarios.

CONCLUSIONS

From the above, the following can be concluded:

- The purpose for a parking management plan is to provide the number of parking spaces required for the Project during its peak operations on a weekday and weekend during the peak season. The resort uses will be considered at different occupancy rates and varying internal capture rates to indicate when valet operations would be triggered within each combination.

- The results of the comparison of parking rates and amenity inventory show that the parking calculated for the Project exceeds the Andaz Resort and Scottsdale Plaza.

    - Valet service is required when the combination of hotel occupancy and event internal capture exceeds the proposed 170 spaces. During non-event/non-peak times, the resort will provide sufficient parking to meet its demand. The hotel will know in advance when it will be at full occupancy and transition into valet only parking 24 hours before.

    - Using a valet only operation to meet peak demand will allow the Smoketree Resort to respond to the anticipated change in parking rates over time without overbuilding parking. Parking rates for all uses are declining and are predicted to continue to decline with rideshare options such as Uber and Lyft.

- Should a peak event occur and there is concern that parking demand could exceed parking supply, employees would be required to use ride-hailing as provided by the resort. This could provide in excess of 35 additional spaces available for guests on-site using the ULI 3rd Edition rates and time-of-day percentages. Employees will park offsite once the project requires more than the proposed valet number of 199 spaces.

    - Employees should be notified 24-hours in advance of any off-site parking or other transportation options are provided or expected to be utilized.

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

CivTech

Dawn Cartier, P.E., PTOE
President

Attachments (3)

A. Site Plan
B. Valet Plan
C. Parking Rates and Amenity Inventory Calculations

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#
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#
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#
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[illegible]

Attachment A - Site Plan

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

Total Self-Park Spaces = 170
Dimensions: 9' x 18' + 2' overhang

or

Total Valet Spaces = 196

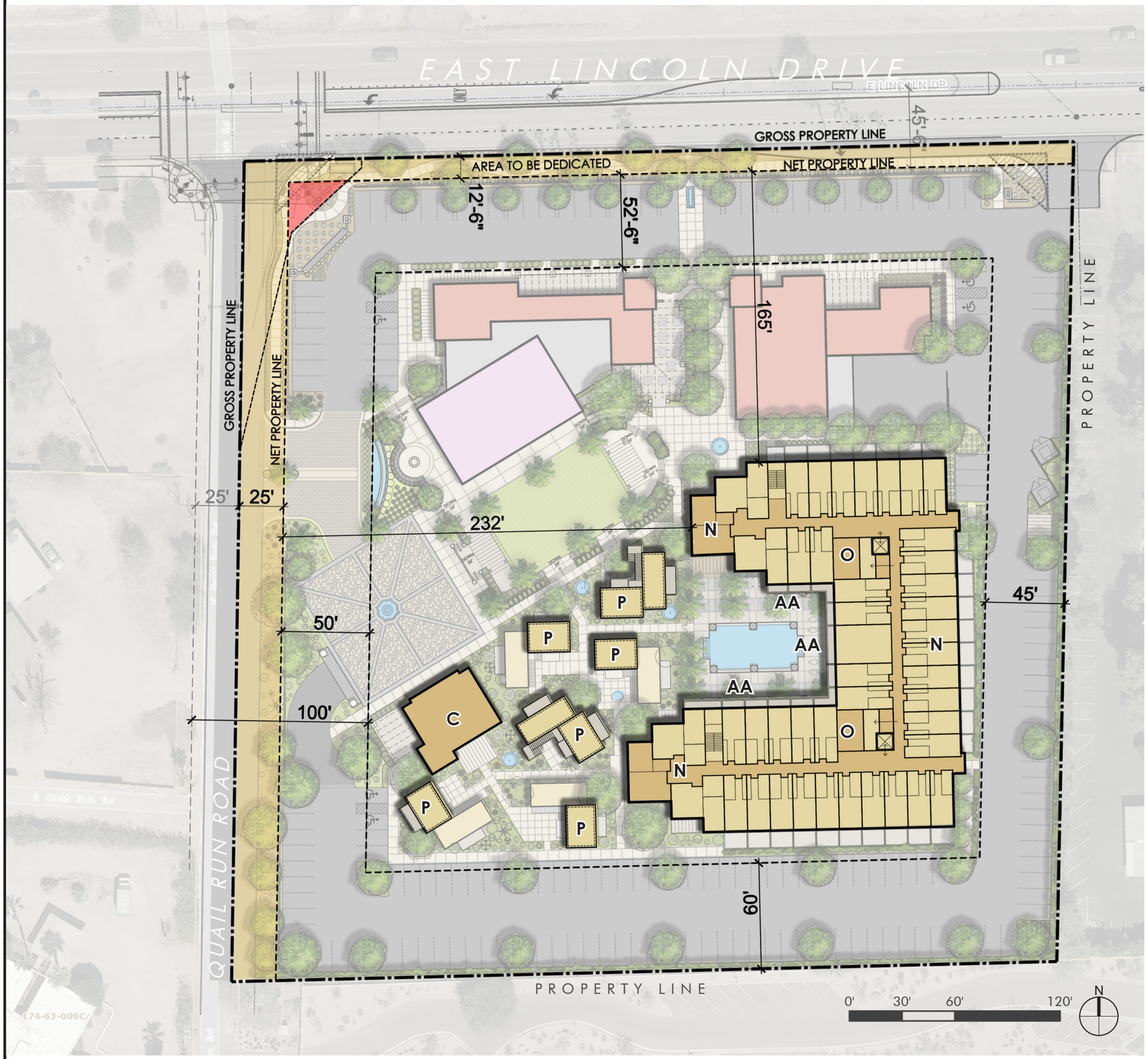
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED SITE PLAN - GROUND LEVEL

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A8

SEP 6, 2019
11 x 17 format
REVISED
JULY 20, 2020



PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

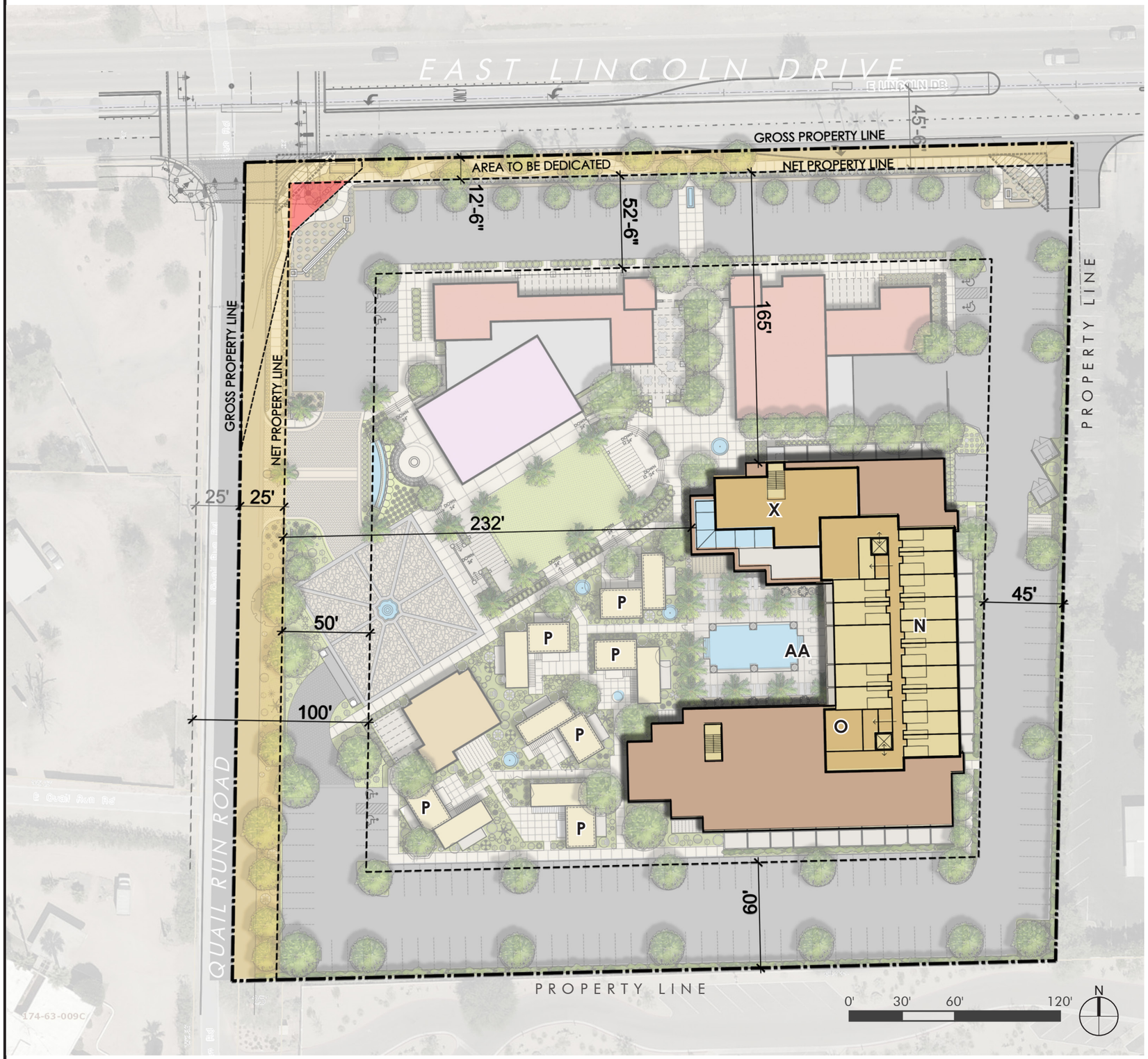
PROPOSED SITE PLAN - SECOND LEVEL

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A9

SEP 6, 2019
11 x 17 format
REVISED
JULY 20, 2020



PROGRAM:

N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
X. Resort Guest Amenity
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - THIRD LEVEL

The smoke tree resort

7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A10

SEP 6, 2019
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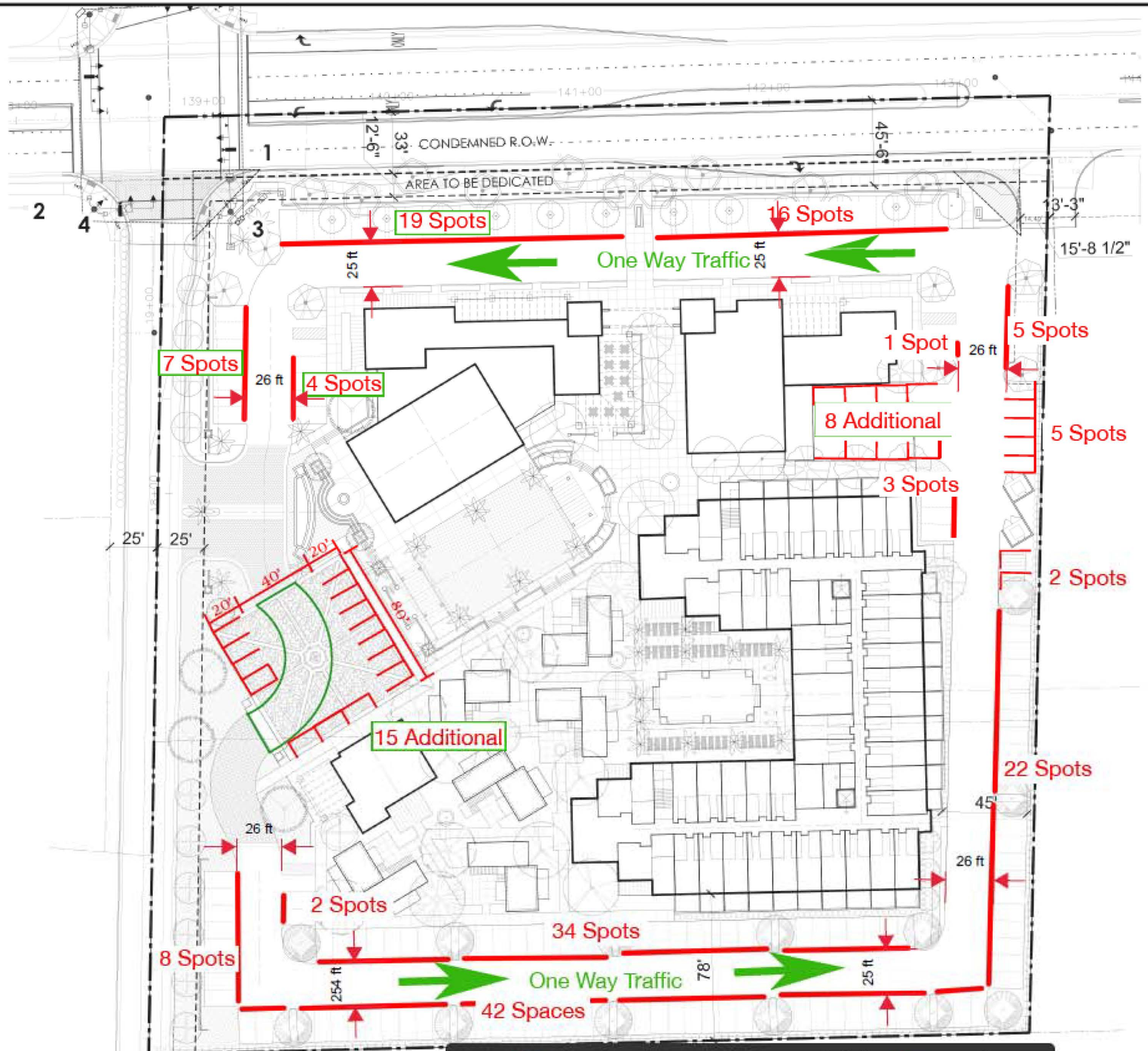
REVISED
JULY 20, 2020



Legend

1. Electric Box
2. Proposed Electric Box Location
3. Traffic Control
4. Proposed Traffic Control

Total Number of Spots Excluding Handicap = 193

Main Level Floor Plan

esc. 1" = 120'

PHX ARCHITECTURE

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ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (60% Hotel Occupancy & 0% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	60%																		
Internal Capture			0%		60%		50%		65%		0%		90%						
Parking Demand	88 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		84 Spaces		1 Spaces		121				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	71.28	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	74	170	96	199	125
7:00 AM	82%	72.16	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	81	170	89	199	118
8:00 AM	89%	78.32	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	25.20	0%	0.00	125	170	45	199	74
9:00 AM	100%	88.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	50.40	20%	0.20	162	170	8	199	37
10:00 AM	97%	85.36	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	50.40	62%	0.62	161	170	9	199	38
11:00 AM	91%	80.08	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	50.40	55%	0.55	157	170	13	199	42
12:00 PM	86%	75.68	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	54.60	44%	0.44	160	170	10	199	39
1:00 PM	81%	71.28	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	54.60	41%	0.41	153	170	17	199	46
2:00 PM	83%	73.04	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	54.60	36%	0.36	148	170	22	199	51
3:00 PM	79%	69.52	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	54.60	41%	0.41	141	170	29	199	58
4:00 PM	81%	71.28	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	54.60	69%	0.69	143	170	27	199	56
5:00 PM	75%	66.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	54.60	96%	0.96	142	170	28	199	57
6:00 PM	73%	64.24	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	84.00	100%	1.00	172	170	-2	199	27
7:00 PM	75%	66.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	84.00	85%	0.85	171	170	-1	199	28
8:00 PM	87%	76.56	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	84.00	50%	0.50	177	170	-7	199	22
9:00 PM	90%	79.20	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	84.00	0%	0.00	175	170	-5	199	24
10:00 PM	95%	83.60	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	42.00	0%	0.00	131	170	39	199	68
11:00 PM	96%	84.48	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	89	170	81	199	110
MIDNIGHT	95%	83.60	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	86	170	84	199	113
															177		-7.00		22.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (65% Hotel Occupancy & 10% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	65%																		
Internal Capture			0%		60%		50%		65%		10%		90%						
Parking Demand	96 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		76 Spaces		1 Spaces		129				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	77.76	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	80	170	90	199	119
7:00 AM	82%	78.72	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	88	170	82	199	111
8:00 AM	89%	85.44	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	22.80	0%	0.00	130	170	40	199	69
9:00 AM	100%	96.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	45.60	20%	0.20	165	170	5	199	34
10:00 AM	97%	93.12	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	45.60	62%	0.62	164	170	6	199	35
11:00 AM	91%	87.36	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	45.60	55%	0.55	159	170	11	199	40
12:00 PM	86%	82.56	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	49.40	44%	0.44	161	170	9	199	38
1:00 PM	81%	77.76	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	49.40	41%	0.41	154	170	16	199	45
2:00 PM	83%	79.68	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	49.40	36%	0.36	149	170	21	199	50
3:00 PM	79%	75.84	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	49.40	41%	0.41	142	170	28	199	57
4:00 PM	81%	77.76	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	49.40	69%	0.69	144	170	26	199	55
5:00 PM	75%	72.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	49.40	96%	0.96	143	170	27	199	56
6:00 PM	73%	70.08	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	76.00	100%	1.00	170	170	0	199	29
7:00 PM	75%	72.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	76.00	85%	0.85	169	170	1	199	30
8:00 PM	87%	83.52	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	76.00	50%	0.50	176	170	-6	199	23
9:00 PM	90%	86.40	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	76.00	0%	0.00	174	170	-4	199	25
10:00 PM	95%	91.20	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	38.00	0%	0.00	135	170	35	199	64
11:00 PM	96%	92.16	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	97	170	73	199	102
MIDNIGHT	95%	91.20	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	94	170	76	199	105
															176		-6.00		23.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (70% Hotel Occupancy & 20% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	70%																		
Internal Capture			0%		60%		50%		65%		20%		90%						
Parking Demand	103 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		68 Spaces		1 Spaces		136				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	83.43	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	86	170	84	199	113
7:00 AM	82%	84.46	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	93	170	77	199	106
8:00 AM	89%	91.67	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	20.40	0%	0.00	133	170	37	199	66
9:00 AM	100%	103.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	40.80	20%	0.20	168	170	2	199	31
10:00 AM	97%	99.91	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	40.80	62%	0.62	166	170	4	199	33
11:00 AM	91%	93.73	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	40.80	55%	0.55	161	170	9	199	38
12:00 PM	86%	88.58	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	44.20	44%	0.44	162	170	8	199	37
1:00 PM	81%	83.43	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	44.20	41%	0.41	155	170	15	199	44
2:00 PM	83%	85.49	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	44.20	36%	0.36	150	170	20	199	49
3:00 PM	79%	81.37	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	44.20	41%	0.41	143	170	27	199	56
4:00 PM	81%	83.43	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	44.20	69%	0.69	145	170	25	199	54
5:00 PM	75%	77.25	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	44.20	96%	0.96	143	170	27	199	56
6:00 PM	73%	75.19	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	68.00	100%	1.00	167	170	3	199	32
7:00 PM	75%	77.25	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	68.00	85%	0.85	166	170	4	199	33
8:00 PM	87%	89.61	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	68.00	50%	0.50	175	170	-5	199	24
9:00 PM	90%	92.70	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	68.00	0%	0.00	172	170	-2	199	27
10:00 PM	95%	97.85	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	34.00	0%	0.00	138	170	32	199	61
11:00 PM	96%	98.88	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	104	170	66	199	95
MIDNIGHT	95%	97.85	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	101	170	69	199	98
															175		-5.00		24.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (75% Hotel Occupancy & 30% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	75%																		
Internal Capture			0%		60%		50%		65%		30%		90%						
Parking Demand	110 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		59 Spaces		1 Spaces		143				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	89.10	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	92	170	78	199	107
7:00 AM	82%	90.20	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	99	170	71	199	100
8:00 AM	89%	97.90	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	17.70	0%	0.00	137	170	33	199	62
9:00 AM	100%	110.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	35.40	20%	0.20	169	170	1	199	30
10:00 AM	97%	106.70	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	35.40	62%	0.62	168	170	2	199	31
11:00 AM	91%	100.10	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	35.40	55%	0.55	162	170	8	199	37
12:00 PM	86%	94.60	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	38.35	44%	0.44	162	170	8	199	37
1:00 PM	81%	89.10	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	38.35	41%	0.41	154	170	16	199	45
2:00 PM	83%	91.30	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	38.35	36%	0.36	150	170	20	199	49
3:00 PM	79%	86.90	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	38.35	41%	0.41	142	170	28	199	57
4:00 PM	81%	89.10	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	38.35	69%	0.69	144	170	26	199	55
5:00 PM	75%	82.50	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	38.35	96%	0.96	142	170	28	199	57
6:00 PM	73%	80.30	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	59.00	100%	1.00	163	170	7	199	36
7:00 PM	75%	82.50	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	59.00	85%	0.85	162	170	8	199	37
8:00 PM	87%	95.70	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	59.00	50%	0.50	172	170	-2	199	27
9:00 PM	90%	99.00	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	59.00	0%	0.00	169	170	1	199	30
10:00 PM	95%	104.50	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	29.50	0%	0.00	140	170	30	199	59
11:00 PM	96%	105.60	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	111	170	59	199	88
MIDNIGHT	95%	104.50	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	107	170	63	199	92
															172		-2.00		27.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (80% Hotel Occupancy & 40% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	80%																		
Internal Capture			0%		60%		50%		65%		40%		90%						
Parking Demand	118 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		51 Spaces		1 Spaces		151				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	95.58	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	98	170	72	199	101
7:00 AM	82%	96.76	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	106	170	64	199	93
8:00 AM	89%	105.02	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	15.30	0%	0.00	142	170	28	199	57
9:00 AM	100%	118.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	30.60	20%	0.20	172	170	-2	199	27
10:00 AM	97%	114.46	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	30.60	62%	0.62	171	170	-1	199	28
11:00 AM	91%	107.38	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	30.60	55%	0.55	164	170	6	199	35
12:00 PM	86%	101.48	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	33.15	44%	0.44	164	170	6	199	35
1:00 PM	81%	95.58	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	33.15	41%	0.41	156	170	14	199	43
2:00 PM	83%	97.94	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	33.15	36%	0.36	151	170	19	199	48
3:00 PM	79%	93.22	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	33.15	41%	0.41	143	170	27	199	56
4:00 PM	81%	95.58	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	33.15	69%	0.69	146	170	24	199	53
5:00 PM	75%	88.50	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	33.15	96%	0.96	143	170	27	199	56
6:00 PM	73%	86.14	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	51.00	100%	1.00	161	170	9	199	38
7:00 PM	75%	88.50	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	51.00	85%	0.85	160	170	10	199	39
8:00 PM	87%	102.66	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	51.00	50%	0.50	171	170	-1	199	28
9:00 PM	90%	106.20	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	51.00	0%	0.00	169	170	1	199	30
10:00 PM	95%	112.10	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	25.50	0%	0.00	143	170	27	199	56
11:00 PM	96%	113.28	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	118	170	52	199	81
MIDNIGHT	95%	112.10	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	115	170	55	199	84
															172		-2.00		27.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (85% Hotel Occupancy & 50% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	85%																		
Internal Capture			0%		60%		50%		65%		50%		90%						
Parking Demand	125 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		42 Spaces		1 Spaces		158				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	101.25	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	104	170	66	199	95
7:00 AM	82%	102.50	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	111	170	59	199	88
8:00 AM	89%	111.25	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	12.60	0%	0.00	145	170	25	199	54
9:00 AM	100%	125.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	25.20	20%	0.20	174	170	-4	199	25
10:00 AM	97%	121.25	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	25.20	62%	0.62	172	170	-2	199	27
11:00 AM	91%	113.75	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	25.20	55%	0.55	165	170	5	199	34
12:00 PM	86%	107.50	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	27.30	44%	0.44	164	170	6	199	35
1:00 PM	81%	101.25	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	27.30	41%	0.41	155	170	15	199	44
2:00 PM	83%	103.75	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	27.30	36%	0.36	151	170	19	199	48
3:00 PM	79%	98.75	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	27.30	41%	0.41	143	170	27	199	56
4:00 PM	81%	101.25	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	27.30	69%	0.69	145	170	25	199	54
5:00 PM	75%	93.75	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	27.30	96%	0.96	142	170	28	199	57
6:00 PM	73%	91.25	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	42.00	100%	1.00	157	170	13	199	42
7:00 PM	75%	93.75	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	42.00	85%	0.85	156	170	14	199	43
8:00 PM	87%	108.75	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	42.00	50%	0.50	168	170	2	199	31
9:00 PM	90%	112.50	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	42.00	0%	0.00	166	170	4	199	33
10:00 PM	95%	118.75	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	21.00	0%	0.00	145	170	25	199	54
11:00 PM	96%	120.00	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	125	170	45	199	74
MIDNIGHT	95%	118.75	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	121	170	49	199	78
															174		-4.00		25.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (90% Hotel Occupancy & 70% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	90%																		
Internal Capture			0%		60%		50%		65%		70%		90%						
Parking Demand	132 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		26 Spaces		1 Spaces		165				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	106.92	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	110	170	60	199	89
7:00 AM	82%	108.24	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	117	170	53	199	82
8:00 AM	89%	117.48	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	7.80	0%	0.00	147	170	23	199	52
9:00 AM	100%	132.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	15.60	20%	0.20	171	170	-1	199	28
10:00 AM	97%	128.04	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	15.60	62%	0.62	169	170	1	199	30
11:00 AM	91%	120.12	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	15.60	55%	0.55	162	170	8	199	37
12:00 PM	86%	113.52	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	16.90	44%	0.44	160	170	10	199	39
1:00 PM	81%	106.92	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	16.90	41%	0.41	151	170	19	199	48
2:00 PM	83%	109.56	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	16.90	36%	0.36	147	170	23	199	52
3:00 PM	79%	104.28	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	16.90	41%	0.41	138	170	32	199	61
4:00 PM	81%	106.92	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	16.90	69%	0.69	141	170	29	199	58
5:00 PM	75%	99.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	16.90	96%	0.96	137	170	33	199	62
6:00 PM	73%	96.36	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	26.00	100%	1.00	146	170	24	199	53
7:00 PM	75%	99.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	26.00	85%	0.85	146	170	24	199	53
8:00 PM	87%	114.84	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	26.00	50%	0.50	158	170	12	199	41
9:00 PM	90%	118.80	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	26.00	0%	0.00	156	170	14	199	43
10:00 PM	95%	125.40	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	13.00	0%	0.00	144	170	26	199	55
11:00 PM	96%	126.72	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	132	170	38	199	67
MIDNIGHT	95%	125.40	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	128	170	42	199	71
															171		-1.00		28.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (100% Hotel Occupancy & 100% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	100%																		
Internal Capture			0%		60%		50%		65%		100%		90%						
Parking Demand	147 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		0 Spaces		1 Spaces		180				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	119.07	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	122	170	48	199	77
7:00 AM	82%	120.54	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	129	170	41	199	70
8:00 AM	89%	130.83	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	0.00	0%	0.00	152	170	18	199	47
9:00 AM	100%	147.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	0.00	20%	0.20	171	170	-1	199	28
10:00 AM	97%	142.59	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	0.00	62%	0.62	168	170	2	199	31
11:00 AM	91%	133.77	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	0.00	55%	0.55	160	170	10	199	39
12:00 PM	86%	126.42	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	0.00	44%	0.44	156	170	14	199	43
1:00 PM	81%	119.07	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	0.00	41%	0.41	146	170	24	199	53
2:00 PM	83%	122.01	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	0.00	36%	0.36	142	170	28	199	57
3:00 PM	79%	116.13	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	0.00	41%	0.41	133	170	37	199	66
4:00 PM	81%	119.07	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	0.00	69%	0.69	136	170	34	199	63
5:00 PM	75%	110.25	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	0.00	96%	0.96	132	170	38	199	67
6:00 PM	73%	107.31	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	0.00	100%	1.00	131	170	39	199	68
7:00 PM	75%	110.25	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	0.00	85%	0.85	131	170	39	199	68
8:00 PM	87%	127.89	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	0.00	50%	0.50	145	170	25	199	54
9:00 PM	90%	132.30	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	0.00	0%	0.00	144	170	26	199	55
10:00 PM	95%	139.65	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	0.00	0%	0.00	145	170	25	199	54
11:00 PM	96%	141.12	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	146	170	24	199	53
MIDNIGHT	95%	139.65	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	142	170	28	199	57
															171		-1.00		28.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (95% Hotel Occupancy & 80% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	95%																		
Internal Capture			0%		60%		50%		65%		80%		90%						
Parking Demand	140 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		17 Spaces		1 Spaces		173				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	113.40	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	116	170	54	199	83
7:00 AM	82%	114.80	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	124	170	46	199	75
8:00 AM	89%	124.60	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	5.10	0%	0.00	151	170	19	199	48
9:00 AM	100%	140.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	10.20	20%	0.20	174	170	-4	199	25
10:00 AM	97%	135.80	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	10.20	62%	0.62	172	170	-2	199	27
11:00 AM	91%	127.40	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	10.20	55%	0.55	164	170	6	199	35
12:00 PM	86%	120.40	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	11.05	44%	0.44	161	170	9	199	38
1:00 PM	81%	113.40	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	11.05	41%	0.41	151	170	19	199	48
2:00 PM	83%	116.20	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	11.05	36%	0.36	148	170	22	199	51
3:00 PM	79%	110.60	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	11.05	41%	0.41	139	170	31	199	60
4:00 PM	81%	113.40	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	11.05	69%	0.69	141	170	29	199	58
5:00 PM	75%	105.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	11.05	96%	0.96	137	170	33	199	62
6:00 PM	73%	102.20	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	17.00	100%	1.00	143	170	27	199	56
7:00 PM	75%	105.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	17.00	85%	0.85	143	170	27	199	56
8:00 PM	87%	121.80	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	17.00	50%	0.50	156	170	14	199	43
9:00 PM	90%	126.00	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	17.00	0%	0.00	154	170	16	199	45
10:00 PM	95%	133.00	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	8.50	0%	0.00	147	170	23	199	52
11:00 PM	96%	134.40	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	139	170	31	199	60
MIDNIGHT	95%	133.00	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	136	170	34	199	63
															174		-4.00		25.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (80% Hotel Occupancy & 0% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	80%																		
Internal Capture			0%		60%		50%		65%		0%		90%						
Parking Demand	118 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		84 Spaces		1 Spaces		151				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	95.58	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	98	170	72	199	101
7:00 AM	82%	96.76	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	106	170	64	199	93
8:00 AM	89%	105.02	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	25.20	0%	0.00	152	170	18	199	47
9:00 AM	100%	118.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	50.40	20%	0.20	192	170	-22	199	7
10:00 AM	97%	114.46	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	50.40	62%	0.62	191	170	-21	199	8
11:00 AM	91%	107.38	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	50.40	55%	0.55	184	170	-14	199	15
12:00 PM	86%	101.48	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	54.60	44%	0.44	185	170	-15	199	14
1:00 PM	81%	95.58	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	54.60	41%	0.41	177	170	-7	199	22
2:00 PM	83%	97.94	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	54.60	36%	0.36	173	170	-3	199	26
3:00 PM	79%	93.22	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	54.60	41%	0.41	165	170	5	199	34
4:00 PM	81%	95.58	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	54.60	69%	0.69	167	170	3	199	32
5:00 PM	75%	88.50	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	54.60	96%	0.96	164	170	6	199	35
6:00 PM	73%	86.14	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	84.00	100%	1.00	194	170	-24	199	5
7:00 PM	75%	88.50	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	84.00	85%	0.85	193	170	-23	199	6
8:00 PM	87%	102.66	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	84.00	50%	0.50	204	170	-34	199	-5
9:00 PM	90%	106.20	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	84.00	0%	0.00	202	170	-32	199	-3
10:00 PM	95%	112.10	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	42.00	0%	0.00	160	170	10	199	39
11:00 PM	96%	113.28	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	118	170	52	199	81
MIDNIGHT	95%	112.10	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	115	170	55	199	84
															204		-34.00		-5.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (85% Hotel Occupancy & 10% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	85%																		
Internal Capture			0%		60%		50%		65%		10%		90%						
Parking Demand	125 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		76 Spaces		1 Spaces		158				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	101.25	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	104	170	66	199	95
7:00 AM	82%	102.50	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	111	170	59	199	88
8:00 AM	89%	111.25	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	22.80	0%	0.00	155	170	15	199	44
9:00 AM	100%	125.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	45.60	20%	0.20	194	170	-24	199	5
10:00 AM	97%	121.25	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	45.60	62%	0.62	193	170	-23	199	6
11:00 AM	91%	113.75	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	45.60	55%	0.55	186	170	-16	199	13
12:00 PM	86%	107.50	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	49.40	44%	0.44	186	170	-16	199	13
1:00 PM	81%	101.25	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	49.40	41%	0.41	178	170	-8	199	21
2:00 PM	83%	103.75	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	49.40	36%	0.36	173	170	-3	199	26
3:00 PM	79%	98.75	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	49.40	41%	0.41	165	170	5	199	34
4:00 PM	81%	101.25	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	49.40	69%	0.69	168	170	2	199	31
5:00 PM	75%	93.75	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	49.40	96%	0.96	164	170	6	199	35
6:00 PM	73%	91.25	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	76.00	100%	1.00	191	170	-21	199	8
7:00 PM	75%	93.75	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	76.00	85%	0.85	190	170	-20	199	9
8:00 PM	87%	108.75	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	76.00	50%	0.50	202	170	-32	199	-3
9:00 PM	90%	112.50	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	76.00	0%	0.00	200	170	-30	199	-1
10:00 PM	95%	118.75	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	38.00	0%	0.00	162	170	8	199	37
11:00 PM	96%	120.00	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	125	170	45	199	74
MIDNIGHT	95%	118.75	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	121	170	49	199	78
															202		-32.00		-3.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (90% Hotel Occupancy & 20% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	90%																		
Internal Capture			0%		60%		50%		65%		20%		90%						
Parking Demand	132 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		68 Spaces		1 Spaces		165				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	106.92	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	110	170	60	199	89
7:00 AM	82%	108.24	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	117	170	53	199	82
8:00 AM	89%	117.48	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	20.40	0%	0.00	159	170	11	199	40
9:00 AM	100%	132.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	40.80	20%	0.20	197	170	-27	199	2
10:00 AM	97%	128.04	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	40.80	62%	0.62	195	170	-25	199	4
11:00 AM	91%	120.12	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	40.80	55%	0.55	187	170	-17	199	12
12:00 PM	86%	113.52	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	44.20	44%	0.44	187	170	-17	199	12
1:00 PM	81%	106.92	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	44.20	41%	0.41	178	170	-8	199	21
2:00 PM	83%	109.56	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	44.20	36%	0.36	174	170	-4	199	25
3:00 PM	79%	104.28	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	44.20	41%	0.41	166	170	4	199	33
4:00 PM	81%	106.92	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	44.20	69%	0.69	168	170	2	199	31
5:00 PM	75%	99.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	44.20	96%	0.96	164	170	6	199	35
6:00 PM	73%	96.36	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	68.00	100%	1.00	188	170	-18	199	11
7:00 PM	75%	99.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	68.00	85%	0.85	188	170	-18	199	11
8:00 PM	87%	114.84	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	68.00	50%	0.50	200	170	-30	199	-1
9:00 PM	90%	118.80	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	68.00	0%	0.00	198	170	-28	199	1
10:00 PM	95%	125.40	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	34.00	0%	0.00	165	170	5	199	34
11:00 PM	96%	126.72	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	132	170	38	199	67
MIDNIGHT	95%	125.40	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	128	170	42	199	71
															200		-30.00		-1.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (95% Hotel Occupancy & 20% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	95%																		
Internal Capture			0%		60%		50%		65%		20%		90%						
Parking Demand	140 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		68 Spaces		1 Spaces		173				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	113.40	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	116	170	54	199	83
7:00 AM	82%	114.80	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	124	170	46	199	75
8:00 AM	89%	124.60	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	20.40	0%	0.00	166	170	4	199	33
9:00 AM	100%	140.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	40.80	20%	0.20	205	170	-35	199	-6
10:00 AM	97%	135.80	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	40.80	62%	0.62	202	170	-32	199	-3
11:00 AM	91%	127.40	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	40.80	55%	0.55	195	170	-25	199	4
12:00 PM	86%	120.40	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	44.20	44%	0.44	194	170	-24	199	5
1:00 PM	81%	113.40	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	44.20	41%	0.41	184	170	-14	199	15
2:00 PM	83%	116.20	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	44.20	36%	0.36	181	170	-11	199	18
3:00 PM	79%	110.60	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	44.20	41%	0.41	172	170	-2	199	27
4:00 PM	81%	113.40	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	44.20	69%	0.69	174	170	-4	199	25
5:00 PM	75%	105.00	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	44.20	96%	0.96	170	170	0	199	29
6:00 PM	73%	102.20	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	68.00	100%	1.00	194	170	-24	199	5
7:00 PM	75%	105.00	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	68.00	85%	0.85	194	170	-24	199	5
8:00 PM	87%	121.80	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	68.00	50%	0.50	207	170	-37	199	-8
9:00 PM	90%	126.00	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	68.00	0%	0.00	205	170	-35	199	-6
10:00 PM	95%	133.00	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	34.00	0%	0.00	173	170	-3	199	26
11:00 PM	96%	134.40	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	139	170	31	199	60
MIDNIGHT	95%	133.00	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	136	170	34	199	63
															207		-37.00		-8.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

ATTACHMENT D – SHARED PARKING

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY (100% Hotel Occupancy & 40% Event Space Internal Capture)

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant (4)		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)		Hotel Fitness[6]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Quantities	122 Keys		1,250 SF		500 SF		2,100 SF		2,000 SF		4,200 SF		2,000 SF						
Parking Rate	1.2 Key Per	1 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces	1 SF Per	50 Spaces	1 SF Per	300 Spaces					
Occupancy	100%																		
Internal Capture			0%		60%		50%		65%		40%		90%						
Parking Demand	147 Spaces		5 Spaces		4 Spaces		21 Spaces		3 Spaces		51 Spaces		1 Spaces		180				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	PEAK Parking Demand				
6:00 AM	81%	119.07	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	122	170	48	199	77
7:00 AM	82%	120.54	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	129	170	41	199	70
8:00 AM	89%	130.83	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	15.30	0%	0.00	167	170	3	199	32
9:00 AM	100%	147.00	88%	4.40	63%	2.52	72%	15.12	53%	1.59	60%	30.60	20%	0.20	201	170	-31	199	-2
10:00 AM	97%	142.59	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	30.60	62%	0.62	199	170	-29	199	0
11:00 AM	91%	133.77	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	30.60	55%	0.55	191	170	-21	199	8
12:00 PM	86%	126.42	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	33.15	44%	0.44	189	170	-19	199	10
1:00 PM	81%	119.07	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	33.15	41%	0.41	179	170	-9	199	20
2:00 PM	83%	122.01	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	33.15	36%	0.36	175	170	-5	199	24
3:00 PM	79%	116.13	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	33.15	41%	0.41	166	170	4	199	33
4:00 PM	81%	119.07	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	33.15	69%	0.69	169	170	1	199	30
5:00 PM	75%	110.25	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	33.15	96%	0.96	165	170	5	199	34
6:00 PM	73%	107.31	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	51.00	100%	1.00	182	170	-12	199	17
7:00 PM	75%	110.25	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	51.00	85%	0.85	182	170	-12	199	17
8:00 PM	87%	127.89	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	51.00	50%	0.50	196	170	-26	199	3
9:00 PM	90%	132.30	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	51.00	0%	0.00	195	170	-25	199	4
10:00 PM	95%	139.65	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	25.50	0%	0.00	171	170	-1	199	28
11:00 PM	96%	141.12	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	146	170	24	199	53
MIDNIGHT	95%	139.65	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	142	170	28	199	57
															201		-31.00		-2.00

1. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 310 (Hotel, Suburban).
2. *ITE Parking Generation, 4th Edition ITE Code 701 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are assumed based on an estimate the developer provided regarding operation hours for the employees.
4. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday at a Family Restaurant)
5. Hourly percentages are from ITE Parking Generation, 4th Edition for ITE Code 814 (Variety Store)
6. Hourly percentages are from *ITE Parking Generation, 4th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

DATE:	July 23, 2020
TO:	Mr. Taylor Robinson, Project Manager
COMPANY:	Gentree, LLC
ADDRESS:	3620 East Campbell Avenue, Suite B
CITY/STATE:	Phoenix, AZ 85018
FROM:	Jeff Weckstein, Sue Thompson
PROJECT NAME:	SmokeTree Resort Parking Needs Analysis
PROJECT NUMBER:	23-008039.00

Gentree, LLC and CivTech engaged Walker Consultants ("Walker") to conduct a parking needs analysis, utilizing the 3rd Edition of the Urban Land Institute Shared Parking Model for the proposed SmokeTree Resort redevelopment at 7101 E. Lincoln Drive in the Town of Paradise Valley. A summary of Walker's findings includes the following, with detailed findings contained in the body of this memo:

Summary of Findings

Land Use Assumptions

- SmokeTree Resort
  - 122-key hotel
  - 3,200 square foot restaurant
  - 500 square foot coffee shop
  - 2,000 square foot retail/hotel sundry shop
  - 2,000 square foot fitness center
  - 4,000 square foot pavilion
  - 4,200 square foot event lawn
  - On-site parking supply:
    - 170 striped self-park spaces
    - 29 valet spaces
    - TOTAL = 199 On-site spaces

Parking Needs Analysis (Shared Parking Analysis)

- Peak parking demand is anticipated to occur at 9 p.m. on weekdays with a recommended supply of 181± spaces.
- The weekend peak is anticipated to occur at 8 p.m. with a recommended supply of 175± spaces.
- With plans to provide 170 striped parking spaces, and the ability to park 199 vehicles on site through utilization of valet parking, the proposed parking supply exceeds the recommended parking supply of 181± parking spaces.

Shared Parking Analysis

To provide an understanding of how much parking would be needed to adequately accommodate the proposed project, a parking needs analysis was conducted using the shared parking methodology.

The shared parking methodology was developed in the 1980s and has been a widely accepted industry standard for rightsizing parking facilities over the past 30+ years. Applied to mixed-use development and cities throughout the U.S., and codified in zoning ordinances as an acceptable practice, shared parking is endorsed by the Urban Land Institute (ULI), the American Planning Association (APA), the National Parking Association (NPA), and the International Council of Shopping Centers (ICSC) as an acceptable method of parking planning and management.

The key goal of a shared parking analysis is to find the balance between providing adequate parking to support a development from a commercial and operational standpoint and protect the interests of neighboring property owners while minimizing the negative aspects of excessive land area or resources devoted to parking. The ultimate goal of a shared parking analysis is to find a peak period, reasonably predictable worst-case scenario, or design day condition.

Shared parking allows for the sharing of parking spaces among uses in a mixed-use environment—instead of providing a minimum number of parking spaces for each use. Shared parking commonly results in a reduction of needed and required parking spaces. This reduction, which is sometimes significant, depends on the quantities and mix of uses and local code requirements.

Shared parking considers the parking demand for more than 45 different land uses; the availability and use of alternative modes of transportation; captive market effects[1]; and daily, hourly, and seasonal variations. A shared parking model generates 456 parking demand computations as follows:

- 19 hours during a day, beginning at 6:00 a.m. and concluding at 1:00 a.m.
- 2 days per week, a weekday and a weekend day
- 12 months of the year
- 19 x 2 x 12 = 456 different calculations

The recommended parking capacity is derived based on the highest figure generated from these 456 computations.

For most land uses, shared parking is based on the 85th percentile of peak-hour observations, a standard espoused by the ITE, the NPA's Parking Consultants Council, and renowned parking planners. Therefore, the intent is to design for the busiest hour of the year, the busiest day of the year, and the busiest month of the year, at an 85th percentile level relative to similar properties.

This 85th percentile is a significant and high threshold to meet in terms of supplying parking capacity in that it provides a parking supply that will not be needed by most developments. The 85th percentile recommendation is informed by field data counts in the fifth edition of ITE's *Parking Generation*[2] and this threshold represents the 85th percentile of peak-hour observations supplied during the study. The latest edition of ULI's *Shared Parking*

[1] Recognition of a user group already on site for another primary purpose and not generating incremental parking demand for an accessory use. For example, a sandwich shop located in an office tower generates very little, if any, outside parking demand. Since the parking demand for the office tower tenants has already been accounted for, to avoid double counting, a non-captive adjustment factor is applied to the parking demand calculation for the sandwich shop. In this extreme example, the non-captive ratio may be 0 percent.
[2] Parking Generation, Fifth Edition. Washington DC: Institute of Transportation Engineers, 2019.

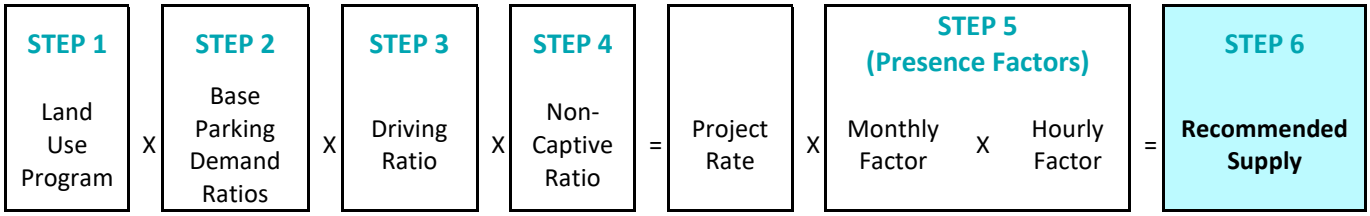
publication represents the latest thinking, best practices and recommendations espoused by parking industry. leaders and is intended to facilitate a 'just enough, no regrets' parking supply for mixed-use projects being developed in the foreseeable future.[3]

A shared parking analysis begins first by taking the land use quantities of the project, e.g., the number of hotel rooms, and multiplying by a base parking demand ratio and monthly and hourly adjustment factors. All base ratios and hourly and monthly adjustments are industry standards that are based on thousands of parking occupancy studies, vetted by leading parking consultants and real estate professionals, and documented within the Third Edition of ULI/ICSC's *Shared Parking*.

Walker, in accordance with standard shared-parking methodology, applies two additional adjustments to the base parking demand ratios, one to reflect an estimate of the local transportation modal split (called the driving ratio) and another to account for the best estimate of captive market effects[4] (called the non-captive ratio).

The following graphic, Figure 1, provides an illustrative view of the steps involved in the shared parking analysis. This graphic is used within this document to help the reader understand the shared parking process and to also assist in communicating the step of the analysis that is being described within. The shared parking analysis process follows this graphic in consecutive order, moving from left to right.

Figure 1: Steps of Shared Parking Analysis



Source: *Walker Consultants*, 2020

Land Use Program

Based on development assumptions provided by Gentree, LLC and available at the time of this study, the land use program presented in Table 1 was used for this analysis.

Table 1: SmokeTree Resort Land Use Program

Land Use	Quantity
Hotel Rooms	122 Keys
Hotel Fitness Center	2,000 square feet
Restaurant	3,200 square feet
Coffee Shop	500 square feet
Pavilion	4,000 square feet
Sundry/Gift Shop (Retail)	2,000 square feet
Event Lawn	4,200 square feet

Source: Gentree, LLC, 2020

[3] Shared Parking, 3rd Edition (Urban Land Institute, 2020)
[4] Captive market means attendees who are on-site for more than one reason and are not creating additive parking demand.

This shared parking analysis includes only the 4,200 square foot Event Lawn, the largest contiguous meeting/event space on the site. It is Walker's understanding that Gentree, LLC has agreed to a condition prohibiting concurrent use of both event spaces by separate parties.

Other areas within the hotel, such as storage space, offices, the front desk, lobby, valet/bag & bell area, pool deck, and housekeeping areas are considered ancillary land uses that do not generate additional parking demand on their own. The potential parking demand generated by hotel employees, and the space they occupy, are accounted for in the hotel employee base parking ratio, discussed below.

Base Parking Ratios

The second step of the shared parking analysis is to start with the type and quantity of land use to be analyzed. Each land use has a specific metric considered by the parking industry to be a reliable measure of the parking demand for that use. For hotel and resorts, that metric is the number of keys (hotel rooms). The parking demand is divided by the quantity for each metric to generate a base parking ratio for each land use based on that metric (i.e. for hotels the ratio is presented as "spaces per key").

Additionally, these rates are informed by thousands of field parking occupancy studies performed by parking and transportation professionals over decades. These ratios have been vetted by a team of consultants who specialize in parking demand analyses and who mutually agreed upon the use of these ratios prior to the publication of the Third Edition of *Shared Parking*.

Simply put, the base parking demand ratios represent how many parking spaces should be supplied if the spaces are unshared, and the project is in a suburban context where the driving ratio, or the number of people driving to the site, is at or near 100 percent.

Table 2 displays the base parking demand ratios used for this analysis.

Table 2: ULI Base Parking Ratios

Land Use	Base Ratio	
	Weekday	Weekend
Retail		
Customer	2.90	3.20
Employee	0.70	0.80
Fine/Casual Dining[1]		
Customer	13.25	15.25
Employee	2.25	2.50
Fast Casual/Fast Food		
Customer	12.40	12.70
Employee	2.00	2.00
Fitness Center		
Customer	6.60	5.50
Employee	0.40	0.25
Hotel		
Guest	1.00	1.00
Employee	0.15	0.15
Hotel Meeting/Event Space		
Customer	25.19	15.19
Employee	1.76	1.76

[1]For restaurants with a bar, the fine/casual dining category was used in the Shared Parking Model as this land uses more accurately reflects restaurants with bars.
Source: *Walker Consultants*, 2020

To present a more conservative analysis, both the restaurant and coffee shop spaces were analyzed as external restaurants rather than as 'hotel restaurant,' and the retail space was analyzed as an external use as opposed to an entirely internal hotel sundry shop.

Drive Ratio Adjustment

A driving ratio adjustment is the percentage of patrons and employees that are projected to drive to the site in a personal vehicle expressed as a ratio. This excludes all non-driving modes of transportation including public transportation, walking, bicycling, taxi, ride-hailing (Lyft/Uber), and carpooling passengers.

Employees

Driving-ratio adjustments for employees were made to the base ratios based on U.S. Census data (2012-2016 American Community Survey). Approximately 85 percent of those who work within the census tract the SmokeTree Resort is located drive alone to work when single occupant vehicles and drivers of carpools are combined.

Approximately 15% of employees working within the census tract bike, walk, ride transit, or carpool to work, with carpooling being the predominant form of non-single occupant vehicle commuting to work in the tract. A 10% drive ratio reduction was applied to the drive ratio for retail, restaurant, and hotel employees based on this data.

Hotel Guests

For the hotel use, *Shared Parking*, provides extensive guidance on drive ratios based on the many studies and discussions related to this frequently studied land use. For Resort Hotels, the guidance is a 50% drive ratio, as many guests arrive via taxi, shuttle, hired vehicle (limo, black car), or ridehailing service (Uber, Lyft). For business hotels in suburban locations, the guidance in the 3rd Edition of *Shared Parking* is a 59% drive ratio on weekdays and a 69% drive ratio on weekdays. This guidance includes a 10% reduction in drive ratios from the 2nd Edition of shared parking to account for the advent and increased use of app-based ridehailing services that has occurred in the past decade. The recommendation in the Shared Parking Model is to reduce hotel drive ratios even further for ridehailing use as appropriate. Data and information collected by CivTech at other resorts in Paradise Valley suggest that 25-40% of resort guests utilize ride-hailing services to access the sites.[5] Walker heard anecdotally in the City Council Work Session on June 11, 2020 that there is a feeling that hotels in Paradise Valley, due to its location, would have drive-in rates higher than normal. To present a conservative analysis, Walker has utilized a 75% drive ratio for hotel guests in this parking needs analysis, which is above the recommendation in *Shared Parking*.

Hotel Event Space Patrons

Similarly, *Shared Parking* provides extensive guidance on drive ratios for hotel meeting/event space. For Resort Hotels, the guidance is a 50% drive ratio, as many event attendees arrive via taxi, shuttle, hired vehicle (limo, black car), or ridehailing service (Uber, Lyft). For business hotels in suburban locations, the guidance in the 3rd Edition of *Shared Parking* is a 68% drive ratio. This guidance includes a 10% reduction in drive ratios from the 2nd Edition of shared parking to account for the advent and increased use of app-based ridehailing services that has occurred in the past decade. The recommendation in the Shared Parking Model is to reduce hotel drive ratios even further for ridehailing use as appropriate. Similar to the hotel guest drive-in rate, Walker has utilized a 75% drive ratio, which is above the recommendation in *Shared Parking*, for hotel event patrons to present a conservative analysis.

Retail/Dining Customers

A 100% drive ratio for retail/dining, and miscellaneous customers was assumed in the analysis.

A summary of the drive ratios used for this analysis is provided in Table 3.

[5] Parking Study for SmokeTree Resort, Civtech (May 22, 2020)

Table 3: Drive Ratio Assumptions

Land Use	Drive Ratio	
	Weekday	Weekend
Retail, Dining & Fitness		
Customer	100%	100%
Employee	90%	90%
Hotel Rooms		
Customer	75%	75%
Employee	90%	90%
Hotel Event Space		
Visitor	75%	75%
Employee	90%	90%

Source: Walker Consultants, 2020

Non-Captive Adjustments

A shared parking analysis recognizes that people often visit two or more land uses housed within the same development site, without increasing their on-site parking use. For example, a hotel guest who has lunch at the project's restaurants and arrived by automobile creates parking demand for one, not two parking spaces. A non-captive ratio allows for an adjustment to the parking needs analysis by taking into account the portion of on-site visitors who are already accounted for as hotel demand and are therefore not creating additional parking demand. This double counting is avoided by applying what is referred to as a "non-captive ratio," the inverse of a captive ratio, and which therefore only counts those cars parked specifically for the intended uses.

Non-captive ratios can vary from one property to the next and from one function to the next within the same property. Typically, a reduction ranging from 20 to 70 percent has been used by parking and transportation professionals to fine-tune the parking requirements for mixed-use projects with primary attractors and secondary attractors.

Retail/Restaurant

The 3rd Edition of the shared parking model includes a non-captive adjustment subroutine model which calculates the non-captive ratio for several secondary land uses. Walker utilized the results of this subroutine for the restaurant and retail spaces.

Fitness Center

A hotel fitness center is typically considered an entirely captive land use since, typically, only hotel guests have access to the fitness center via keycard. For this analysis, a 90% non-captive ratio was utilized to account for the slim possibility that an external visitor might come to the SmokeTree Resort to use the fitness center with a registered guest.

Hotel Meeting/Event Space

Similar to the drive ratio, the shared parking model provides guidance on non-captive assumptions for hotel meeting/event space. For a resort hotel, the suggested non-captive ratio is 25%, for a typical business hotel in a suburban location, the suggested non-captive ratio is 60% on weekdays and 70% on weekends. This analysis has utilized the suggested non-captive factors for business hotels in a suburban location for the SmokeTree Resort.

Table 4: Non-Captive Ratio Assumptions

Land Use	Drive Ratio			
	Weekday Daytime	Weekday Evening	Weekend Daytime	Weekend Evening
Retail				
Customer	78%	67%	85%	71%
Employee	100%	100%	100%	100%
Fine/Casual Restaurant				
Customer	66%	73%	58%	76%
Employee	100%	100%	100%	100%
Fast/Casual Restaurant (Coffee Shop)				
Customer	10%	10%	10%	10%
Employee	100%	100%	100%	100%
Fitness Center				
Customer	10%	10%	10%	10%
Employee	100%	100%	100%	100%
Hotel Rooms				
Customer	100%	100%	100%	100%
Employee	100%	100%	100%	100%
Hotel Event Space				
Visitor	60%	60%	70%	70%
Employee	100%	100%	100%	100%

Source: Walker Consultants, 2020

Presence Factors

After the land use has been quantified and base parking ratios have been applied, adjustments are made to account for parking demand variability by the hour of day and month of the year. These time-based adjustments are referred to as a “presence” adjustment.

Presence is expressed as a percentage of the peak hour demand on a design day (a typical day) for both time of day and month of the year. The 3rd Edition of *Shared Parking* provides these presence factors for the proposed project land uses which were used for this analysis.

Shared Parking Analysis Results

The SmokeTree Resort is projected to experience the period of peak parking demand at approximately 9:00 p.m. on weekdays. The recommended parking supply to serve the project at this time is 181± spaces. On weekends, the peak is expected to occur at approximately at 8:00 p.m., with a recommended supply of 175± spaces.

The proposed SmokeTree resort redevelopment plans include 170 striped parking spaces on-site, with the ability to park 199 vehicles on-site through the use of valet parking and stacking of vehicles in drive aisles when necessary.

The results of this analysis are shown in Table 5 and Table 6.

Table 5: SmokeTree Resort Weekday Peak Recommended Parking Supply

Land Use	Project Data		Weekday					Weekday		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 9 PM	Peak Mo Adj March	Estimated Parking Demand
Retail (<400 ksf)	2,000	sf GLA	2.90	100%	67%	1.95	ksf GLA	45%	70%	1
Employee			0.70	90%	100%	0.63		60%	79%	1
Fine/Casual Dining	3,200	sf GLA	13.25	100%	73%	9.67	ksf GLA	100%	98%	31
Employee			2.25	90%	100%	2.03		100%	100%	7
Fast Casual/Fast Food (Coffee Shop)	500	sf GLA	12.40	100%	10%	1.24	ksf GLA	30%	97%	-
Employee			2.00	90%	100%	1.80		40%	100%	-
Fitness Center	2,000	sf GLA	6.60	100%	10%	0.66	ksf GLA	70%	85%	1
Employee			0.40	90%	100%	0.36		20%	95%	-
Hotel-Leisure	122	keys	1.00	75%	100%	0.75	key	95%	100%	87
Hotel Employees	122	keys	0.15	90%	100%	0.14	key	20%	100%	3
Meeting/Banquet	4,200	sf GLA	25.19	75%	60%	11.34	ksf GLA	100%	100%	48
Meeting/Banquet Employees	4,200	sf GLA	1.76	90%	100%	1.58	ksf GLA	20%	100%	2
								Customer/Visitor		168
								Employee		13
								Total		181

Source: *Walker Consultants*, 2020

Table 6: SmokeTree Resort Weekend Peak Recommended Parking Supply

Land Use	Project Data		Weekend					Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit For Ratio	Peak Hr Adj 8 PM	Peak Mo Adj March	Estimated Parking Demand
Retail (<400 ksf)	2,000	sf GLA	3.20	100%	71%	2.27	ksf GLA	65%	70%	2
Employee			0.80	90%	100%	0.72		75%	79%	1
Fine/Casual Dining	3,200	sf GLA	15.25	100%	76%	11.57	ksf GLA	100%	98%	36
Employee			2.50	90%	100%	2.25		100%	100%	7
Fast Casual/Fast Food (Coffee Shop)	500	sf GLA	12.70	100%	10%	1.27	ksf GLA	50%	97%	-
Employee			2.00	90%	100%	1.80		60%	100%	1
Fitness Center	2,000	sf GLA	5.50	100%	10%	0.55	ksf GLA	30%	85%	-
Employee			0.25	90%	100%	0.23		50%	95%	-
Hotel-Leisure	122	keys	1.00	75%	100%	0.75	key	90%	100%	83
Hotel Employees	122	keys	0.15	90%	100%	0.14	key	20%	100%	4
Meeting/Banquet	4,200	sf GLA	15.19	75%	70%	7.98	ksf GLA	100%	100%	34
Meeting/Banquet Employees	4,200	sf GLA	1.76	90%	100%	1.58	ksf GLA	100%	100%	7
								Customer		155
								Employee		20
								Total		175

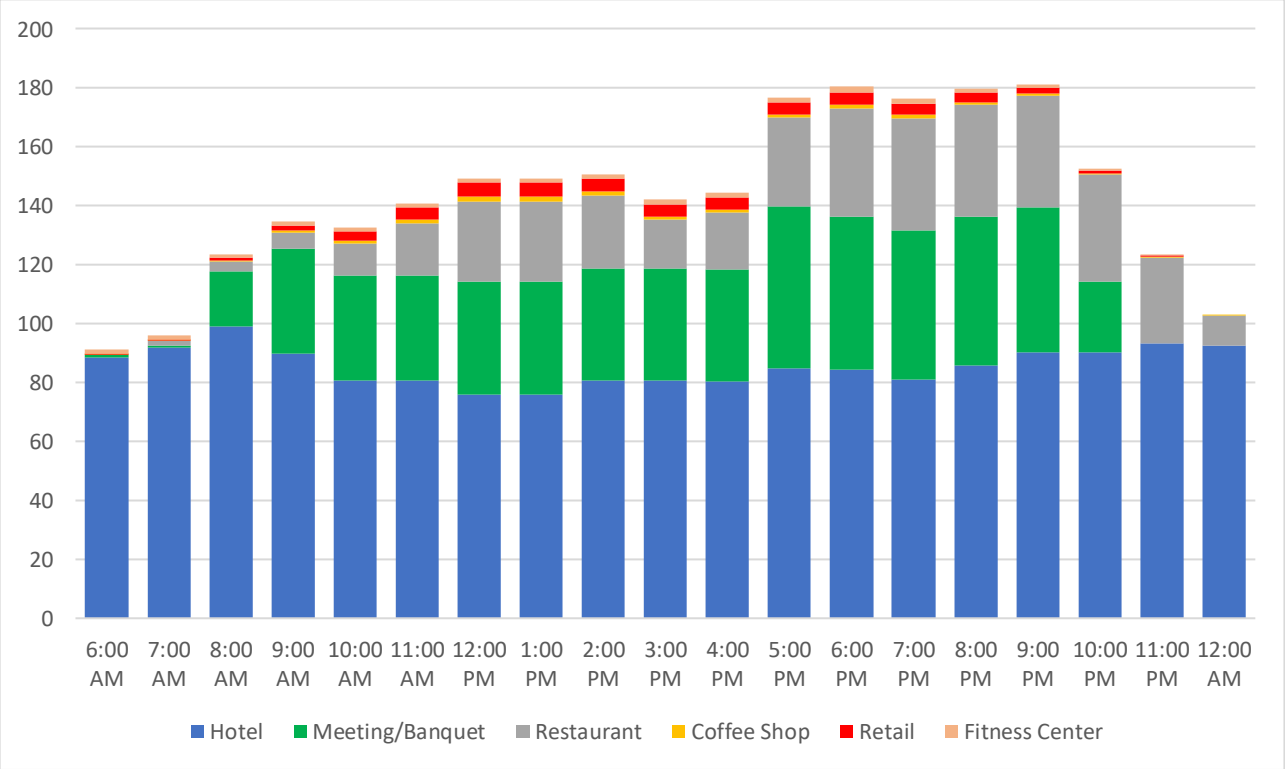
Source: *Walker Consultants*, 2020

With plans to provide 170 striped parking spaces, and the ability to park 199 vehicles on site through utilization of valet attendants and stacked parking, the proposed parking supply exceeds the recommended parking supply.

This analysis utilized the gross leasable area for the project's commercial uses, consistent wit the ULI Shared Parking methodology for such uses. If the gross square footage of the retail/sundry shop (4,000 square feet) and Coffee Shop (1,800 square feet) were utilized instead, the recommended parking supply would increase from 181± spaces to 190± spaces.

Figure 2 shows projected parking accumulation by hour on weekdays.

Figure 2: SmokeTree Resort – Weekday Parking Accumulation by Hour



Source: *Walker Consultants*, 2020

CivTech

July 23, 2020

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 7.23.2020
ARIZONA, U.S.A.

Mr. Paul Mood
Town Engineer
Engineering Department
6401 E. Lincoln Drive
Paradise Valley, AZ 85253

RE: Response to Comments Provided by Kimley Horn on July 13, 2020 and Question Raised at Planning Commission on July 21, 2020

Mr. Mood:

We have carefully reviewed the comments provided by the Town's consultant on the parking study by CivTech and the peer review provided by Walker Parking. We respectfully request your review of these responses as they pertain to the resubmittal of requested information and provide additional documentation on the validity of the methodology and differences as noted in the review.

Comment 1: The Walker Consultants review does not provide a peak projected parking demand. This review evaluated the methodology of CivTech but does not independently project parking demand for the site.

Response: *Walker Parking has completed a full study using the ULI model to help show the needed parking when using the ULI methodology. According to their study, a total peak parking demand of 181 spaces is calculated. This is less than the 199 spaces calculated using the ITE methodology for parking along with the internal capture percentages within the Civtech model.*

Comment 2: The industry best practice is to calculate parking demand based on Gross Square Footage (GSF). This methodology addresses the demand generated by visitors as well as employees.

Response: *The Town of Paradise Valley parking rates, which CivTech was directed by Kimley Horn to adhere to in previous comments, are based on net square footage (NSF). The Town rates are often in excess of the ULI rates to account for the difference between NSF and GLA. ULI rates are based on Gross Leasable Area (GLA) and when that is unknown, GSF is often substituted. Using GSF results in a more conservative measure than using GLA. The CivTech parking study continues to use*

Town parking rates and Town guidelines for NSF while the parking study provided by Walker Parking using the ULI methodology applied GLA where given and GSF in areas where GLA is unknown.

Comment 3: Land uses do not include 1,800 SF of meeting space.

Response: *As clarified previously, and again in response to the latest comments from Kimley Horn, the 1,800 square feet identified in the guest building as potential area available to meet IS NOT meeting space and is Resort Guest Flex Space. The site plan label has been updated for clarification. It is our understanding this has now been removed from the Kimley Horn ULI model to accurately reflect the meeting space planned within the Smoketree Resort.*

Comment 4: Internal capture reductions assume that 50% of restaurant stand along demand come from the hotel, however, this restaurant is considered to be a stand-alone establishment that is outward facing to the public. Thus, the internal capture rate in the within the Kimley Horn parking model reduced the internal capture ratio to 25% the better reflect the nature of this stand-alone use.

Response: *In determining internal capture rates, in depth questions are reviewed by the developer or hotel operator providing details of the resort vision and hotel operation. The internal capture utilized in the CivTech report reflect this information provided by the developer.*

Comment 5: Internal capture reductions assume that 60% of restaurant guest-oriented demand comes from the hotel. Based on the site plan, the guest-oriented restaurant is an outward facing restaurant/coffee shop. The internal capture ratio was reduced to 25% to better reflect demand that comes from off-site customers.

Response: *In determining internal capture rates, in depth questions are reviewed by the developer or hotel operator providing details of the resort vision and hotel operation. The internal capture utilized in the CivTech report reflect this information provided by the developer.*

Comment 6: Internal capture reductions assume that 50% of the parking demand for the event lawn, pavilion and meeting rooms will come from the hotel. Because the event lawn and Pavilion are assumed to host both internal and external events, the internal capture for this land use was reduced to 25%. Events such as weddings will attract parking demand from people who are not staying on-site.

Response: *Please refer to the parking management plan. Trigger points are identified in Table 5 and Table 6 of the parking management plan which provide guidance to the operator on parking*

based on the hotel occupancy and percentage of attendees at an event which are also staying in one of the resort rooms. Tables 5 and 6 do not account for smaller events and are intended to be implemented when larger events could reach the peak parking demand.

Comment 7: Internal capture reductions assumed that 65% of the parking demand for retail is guest oriented and will come from the hotel. Based on the site plan, the guest-oriented retail is a market that is outward facing. The internal capture was reduced to 25% to reflect the demand from off-site customers.

Response: *Based on conversations with the developer of the Smoke Tree Resort, the market will be limited to items that service the needs of guests staying at the resort. Typical items would include forgotten incidentals such as a toothbrush and a place to purchase small packaged snacks. A use of this type in a resort setting would typically be considered an ancillary use with an internal capture rate of 100%. Because this use was detached, CivTech applied an internal capture rate of 65% accounting for a very small minority that could visit this resort-oriented retail space.*

Comment 8: The land use densities provided by CivTech do not reflect the total land uses on the site plan, which result in an undercounting of spaces. The SUP Guidelines reflects the local requirements of usable square footage.

Response: *CivTech's report uses both Town parking rates and the Town SUP Guidelines of usable square footage. Usable square footage <u>is not</u> the same as gross square footage, as suggested by Kimley Horn, since 100% of the built space cannot be used. The correlation between the gross square footage as shown in the Smoke Tree site plan and the usable square footage as applied to CivTech's parking model is footnoted in Parking Study Table 1 in order to help provide the requested correlation for the reviewer. However, requesting that Town rates which are based on NSF should be applied to GSF would result in an unnecessary over building of required parking, additional hardscape, increased heat island and less amenities available to attract customers to the Smoketree Resort.*

Comment 9: Operating at a potential 3 space surplus or full capacity is acceptable under valet operations. Parking facilities that operate above effective capacity result in searching for parking. Effective capacity is typically set at 85%-95% of the total supply.

Response: *With valet, the effective capacity is 100%, valet does not need to search to find a space. The effective capacity would only be applied in a self-park operation and is an older standard which is no longer used in most jurisdictions. In addition, the 3rd edition ULI's Shared Parking does not endorse effective supply and states the results of the analysis is the recommended supply.*

Comment 10: Ride hailing will reduce the parking demand by 30%-40%. Drive-along rate assumptions and the impact of ride hailing were included in the Kimley Horn Parking Study. Due to the limited connectivity of the site, the drive-alone rate was reduced to 75%. This assumes 1 out of 4 guests will arrive by ride hailing services.

Response: *The CivTech parking model and resulting parking recommendations did not account for ride-hailing and did not apply a ride-hail reduction. In addition, the reviewer has also ignored other methods of arrival such as taxi, limo, and shuttles. The 3rd edition of the ULI Shared Parking recommend 50% for a for a resort hotel and 59%-69% for a suburban business hotel. By reducing the rate to 25% the reviewer has taken a very conservative approach in their model which results in an overpredicted parking demand.*

Comment 11: The total parking supply available at the resort includes 170 parking spaces, as few as 26 and as many as 29 valet spaces, 25 spaces shared from the adjacent Lincoln Medical Center, and 30 spaces secured offsite for employees if needed. This results in a total parking supply of 251 spaces. Ride hailing could also be utilized for employees to increase available parking supply should an off-site location not be available. Ride haling assumptions are already include in the drive-alone rates and expecting additional reductions due to ride hailing can result in an under counting of parking demand. Providing parking through a combination of on-site and off-site parking should eb sufficient to meet projected demand.

Response: *Please see the Parking Management Plan provided which provides guidance on the use of ride-hailing for employees. As noted earlier by the reviewer, their model reduced the ride hailing rate to 25%. The resort can require employees to arrive by different means. This suggests in a scenario where employees are not able to park on-site, ride hailing or another arrival method such as drop off would be used by 100% of the employees (not 75% as suggested in the model), leaving more spaces available on-site for use by guests (to be parked by valet).*

Additional Comment from Planning Commision: Discuss how a large event with 200 attendees will be handled.

Response: *Please refer to the guidance provided in the Parking Management Plan as summarized following.*

The Smoketree Resort indicates a parking need of 84 spaces to support the event space should all of the attendees be arriving from off-site and not staying at the resort. The number of parking spaces required during the event is largely dependent on the number of hotel rooms occupied along with the number of people attending the event that are also staying within the resort (occupying one of

the available rooms). The 2009 Federal Highway Administration (FHWA) National Household Transportation Survey (NHTS) suggests an average vehicle occupancy of 2.2 persons for social trips. According to the 2017 FHWA NHTS, the average light vehicle occupancy in 2017 remained unchanged. The FHWA Operations Publication Managing Travel for Special Planned Special Events suggests a range of 2.2 to 2.8 persons per vehicle; the variance in the range would depend on local factors. Utilizing 84 spaces as required by the Town Guidelines for the event space with no internal capture and accommodating a 200-person event in the same space would yield a vehicle occupancy of 2.38 persons per vehicle, which is conservatively in line the FHWA and NHTS suggestions.

*Both **Table 5** and **Table 6** provide guidance on when operations must be moved from self-park to valet only, and when additional accommodations must also be provided. Resort operators know in advance how many attendees will be at the event, the time of the event, and how many rooms are occupied by the attendees of the event. These tables will allow the operator to facilitate parking under most parking scenarios.*

Thank you for reviewing the provided information. Please feel free to call me should you have any questions or wish additional documentation.

Respectfully,

CivTech

Dawn Cartier, P.E., PTOE
President

Kimley»Horn

MEMORANDUM

To: Paul Mood, Town Engineer
Paradise Valley, AZ

From: Kim Carroll, P.E., PTOE
Sr. Traffic Engineer
Kimley-Horn and Associates, Inc.

Date: July 13, 2020

Subject: Parking Study for Smoketree Resort – Paradise Valley, AZ

INTRODUCTION

The purpose of this study is to project peak parking demands of the site upon completion based on industry-standard data adjusted to localized conditions and Urban Land Institute (ULI) Shared Parking methodologies, accounting for the multiple land uses and for the ability to share parking throughout the day. Kimley-Horn utilized the Urban Land Institute, Shared Parking Model, Version 1.1, released March 2020. The site is expected to park itself, meaning all parking demands generated by its uses will park on-site. This memorandum provides a summary of conclusions, methodology used to make these conclusions, detailed parking demand calculations, as well as a discussion of other considerations.

Table 1: Proposed Land Use Densities

CivTech Land Use	CivTech Density (USF)	KH Land Use	KH Density (GSF)
Hotel Key	122 Keys	Hotel (Key)	122 Keys
Hotel – Executive Office	250 SF		
Hotel – HR/Accounting Office	250 SF		
Hotel – Sales Office	250 SF		
Hotel – Front Desk	250 SF		
Hotel – Misc. Office	250 SF		
Hotel – Lobby	1,800 SF		
Hotel – Valet/Bag + Bell	600 SF		
Hotel – Housekeeping	2,300 SF		
Hotel - Pavilion	4,000 SF	Hotel – Meeting/Banquet*	6,000 SF
Hotel – Event Lawn	4,200 SF		
Hotel – Missing Meeting Space	1,800 SF		
Fitness	2,000 SF	Health Club	2,000 SF
Stand-Alone Food and Beverage - Restaurant	2,100 SF	Family Restaurant	3,200 SF
Guest Oriented Retail/Coffee - Restaurant	500 SF	Retail	1,800 SF
Guest Oriented Retail/Coffee - Retail	2000 SF	Supermarket	4,000 SF

*Outdoor lawn and pavilion evaluated as meeting/banquet space for the hotel.

METHODOLOGY

There are two fundamental components of the parking demand model used for this analysis: first is the determination of parking ratios to be applied to generate parking demand estimates, second is the shared parking methodology.

Parking Ratio Determination

Parking demand is typically calculated separately for each land use within a development. Table 2 shows the parking requirements for each land use in the proposed resort as required by Paradise Valley special use permit parking requirements. Based on localized zoning requirements, the minimum number of parking spaces are shown in Table 2.

Table 2: Paradise Valley Special Use Permit Parking Requirements

Land Use	Subcategory	Density (USF)*	Minimum Ratio	Minimum Spaces
Supermarket/Grocery	N/A	2,000 SF **	3 .33 spaces/1,000 SF	7
Restaurant – Stand alone	N/A	2,100 SF**	20 spaces/1,000 SF	42
Retail	N/A	500 SF**	20 spaces/1,000 SF	10
Hotel	Hotel, Units	122 Units	1.20 Spaces/Key	147
	Hotel Meeting/Banquet	6,000 SF	20 spaces/1,000 SF	120
Health Club	N/A	2,000 SF	3 .33 spaces/1,000 SF	7
			Total	333

*Special Use Permit Parking Requirements use Usable Square Footage (USF) as the density unit. | **USF Density reported by CivTech.

The Paradise Valley zoning requires a minimum of 333 parking spaces for the Smoketree Resort development. This shared parking analysis goes into a further level of detail to evaluate the actual conditions of parking on the site where the uses share parking throughout the day. This shared parking analysis uses the ULI's suggested parking ratios as a baseline for determining the projected parking demand. The baseline ratios for hotel, restaurant, and event space were adjusted to reflect the localized minimum parking requirements. Table3 provides the base parking ratios used to develop the parking demands for the proposed development.

Land use types were selected to best reflect the nature of the proposed development.

- The hotel land use was modeled as a leisure/resort hotel rather than Downtown or Airport hotel types, which helps to reflect the intended boutique nature of the hotel. Hotel demand was projected using the number of keys. Hotel event/meeting space was projected using the GSF.
- Hotel missing meeting space was identified on the site plan and calculated in the ULI model.
- Supermarket/Grocery was selected as the land use type for the proposed market rather than the discount stores/superstores. As a specialty market, this proposed land use may attract trips external to the site resulting in additional parking demand.
- Fitness and health club land use varies in the ITE to ULI model but are essentially the same land use. The internal capture of the health club is 90% to model as hotel-oriented fitness center.
- Guest Oriented Retail/Coffee shown in the site plan has two different spaces for market and coffee. These land uses were evaluated separately because they will generate demand at different rates.

Table 3: ULI Base Parking Ratios

Land Use	Weekday		Weekend	
	Visitor/Customer	Employee	Visitor/Customer	Employee
Supermarket/Grocery	4.00 spaces/1,000 SF	0.75 spaces/1,000 SF	4.00 spaces/1,000 SF	0.75 spaces/1,000 SF
Restaurant	17.00 spaces/1,000 SF	3.00 spaces/1,000 SF	17.00 spaces/1,000 SF	3.00 spaces/1,000 SF
Retail	2.90 spaces/1,000 SF	0.70 spaces/1,000 SF	3.20 spaces/1,000 SF	0.80 spaces/1,000 SF
Hotel	1.00 spaces/Key	0.2 spaces/Key	1.00 spaces/Key	0.2 spaces/Key
Hotel Meeting / Banquet	25.19 spaces/1,000 SF	1.76 spaces/1,000 SF	15.19 spaces/1,000 SF	1.76 spaces/1,000 SF
Health Club	6.60 spaces/1,000 SF	0.40 spaces/1,000 SF	5.50 spaces/1,000 SF	0.25 spaces/1,000 SF

*Base parking ratios were adjusted to reflect localized minimum parking requirements.

Shared Parking Methodologies

The ULI Shared Parking Model is a tool used to determine cumulative parking demand for developments with multiple land uses. The model considers that while each land use generates demand for a certain number of parking spaces, these parking demands fluctuate hour-by-hour, day-by-day, and month-by-month. Because individual land uses may not experience peak parking demand at the same time, the model seeks to share parking between these land uses to minimize the amount of space and resources devoted to parking. Additionally, the ULI Shared Parking Model allows for non-vehicular mode (trips such as walking, biking, transit, and rideshare) and non-captive ratio (trips between land uses internal to the site, between office and restaurant for instance) adjustments to be made for mixed-use developments to account for trips generated by the site that don't require parking.

Mode and Non-Captive Adjustments

Given the location of the proposed development and surrounding land uses, the site is expected to yield few commutes by foot, bike and transit. The Smoketree Resort is located approximately 15 miles from the Phoenix Sky Harbor International airport and would require a 20-minute drive/rideshare ride. It is anticipated that most mode adjustments will occur due to customers and employees utilizing ride-share services such as Lyft and Uber. The proposed development includes a variety of land uses that are intended to serve the hotel population. Therefore, the parking demand will be reduced by those who are parking once and frequenting multiple locations. This is referred to as a non-captive adjustment. Table4 lists the assumptions used regarding the percent of trips discounted (reduced) due to non-vehicular modes and non-captive (movement between uses on-site) interactions. These assumptions reduce overall parking demand and are applied to the base parking ratios to create an adjusted rate.

Table 4: Mode Adjustments and Non-Captive Adjustments

	Mode Adjustment (% trips reduced from parking demand)				Non-Captive Adjustment (% trips reduced from parking demand)			
Land Use	Weekday		Weekend		Weekday		Weekend	
	Day	Night	Day	Night	Day	Night	Day	Night
Supermarket/Grocery, Visitors	0%	0%	0%	0%	-25%	-25%	-25%	-25%
Supermarket/Grocery, Employees	0%	0%	0%	0%	0%	0%	0%	0%
Restaurant, Visitors	0%	0%	0%	0%	-25%	-25%	-25%	-25%
Restaurant, Employees	0%	0%	0%	0%	0%	0%	0%	0%
Retail, Visitors	0%	0%	0%	0%	-25%	-25%	-25%	-25%
Retail, Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Hotel Visitors	-25%	-25%	-25%	-25%	0%	0%	0%	0%
Hotel Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Hotel Meetings / Banquet	-25%	-25%	-25%	-25%	-25%	-25%	-25%	-25%
Hotel Restaurant/ Meeting Employees	-10%	-10%	-10%	-10%	0%	0%	0%	0%
Health Club, Visitors	0%	0%	0%	0%	-90%	-100%	-90%	-100%
Health Club, Employees	0%	0%	0%	0%	0%	0%	0%	0%

PROJECTED PARKING DEMAND

Projected parking demand is based on the land uses detailed in Table 1, base parking ratios detailed in Table 3, and the mode adjustments and non-captive ratio detailed in Table 4. When factoring the sharing of a common parking supply across land uses, the site is expected to generate a maximum of 226 parking spaces during its weekday peak at 5 PM in March and 184 parking spaces during its weekend peak at 12 PM in March. This shared parking methodology yields a 41% and 43% reduction in parking, respectively. Parking rates, assumptions, and resulting calculations are shown in Table5.

Table 5: Phase 2 Parking Demand Summary

Average Month: March

		Weekday (5 PM)					Weekend (12 PM)				
Land Use	Quantity	Base Rate	Mode Adj.	Non-Captive Ratio	Adj. Rate	Est. Parking Demand	Base Rate	Mode Adj.	Non-Captive Ratio	Adj. Rate	Est. Parking Demand
Retail, Visitors	1,800 SF	2.90	1.00	1.00	2.90	4	3.20	1.00	1.00	3.20	4
Retail, Employees		0.70	0.90	1.00	0.63	1	0.80	0.90	1.00	0.72	1
Supermarket/Grocery, Visitor	4,000 SF	4.00	1.00	0.75	3.00	11	4.00	1.00	0.75	3.00	11
Supermarket/Grocery, Employee		0.75	1.00	1.00	0.75	3	0.75	1.00	1.00	0.75	3
Family Restaurant, Visitor	2,100 SF	17.00	1.00	0.75	12.75	30	17.00	1.00	0.75	12.75	40
Family Restaurant, Employee		3.00	1.00	1.00	3.00	10	3.00	1.00	1.00	3.00	10
Hotel, Visitor	122 Keys	1.00	0.75	1.00	0.75	73	1.00	0.75	1.00	0.75	59
Hotel, Employee		0.20	0.90	1.00	0.18	15	0.20	0.90	1.00	0.18	22
Hotel Meeting / Banquet, Visitors	6,000 SF	20.27	0.75	0.75	11.40	69	10.27	0.75	0.75	5.78	23
Hotel Restaurant / Meeting, Employees		1.51	0.90	1.00	1.36	9	1.51	0.90	1.00	1.36	9
Health Club Visitors	2,000 SF	6.60	1.00	0.10	0.66	-	5.50	1.00	0.10	0.55	-
Health Club Employees		0.40	1.00	1.00	0.40	1	0.25	1.00	1.00	0.25	-
			Customer/Guest			187		Customer/Guest			138
			Employee			39		Employee			46
			Total			226		Total			184

Based on the site plan, 169 spaces are available on site. An additional 23 spaces are projected to be available with the proposed valet plan for a total supply 192 spaces*. As seen in Figure 1 the projected weekday peak parking demand exceeds the projected supply. The projected weekend peak parking demand exceeds the projected supply of 169 spaces. The addition of 23 projected valet parking spaces results in 192 parking spaces that would accommodate weekend peak parking demand, see Figure 2.

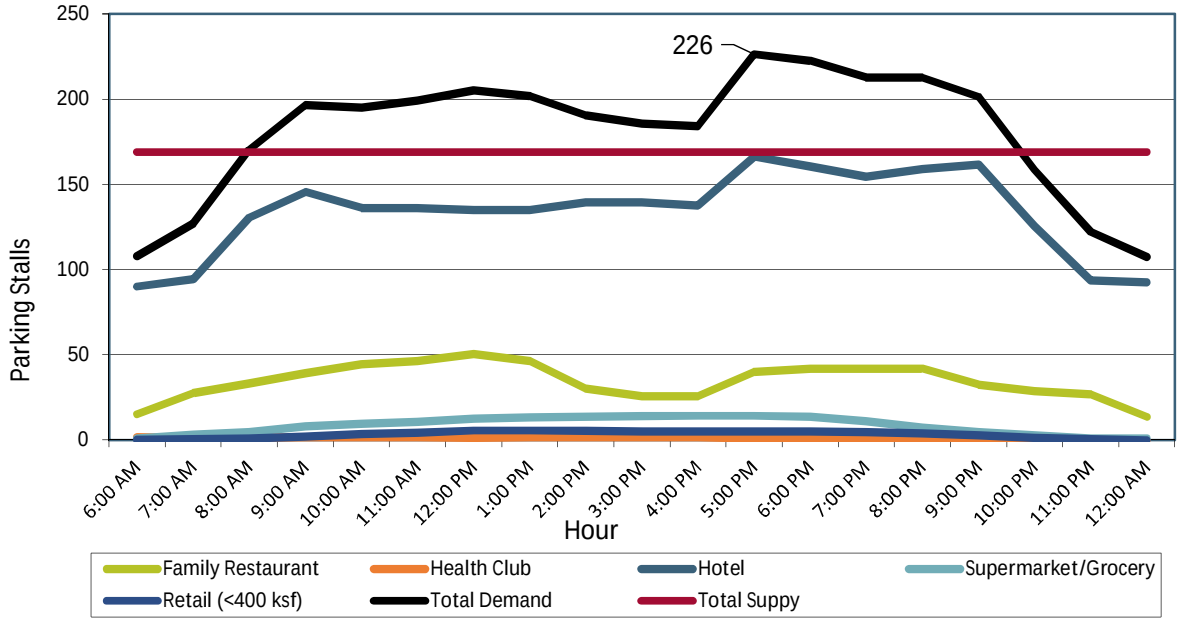


Figure 1. Projected Weekday Peak Parking Demand

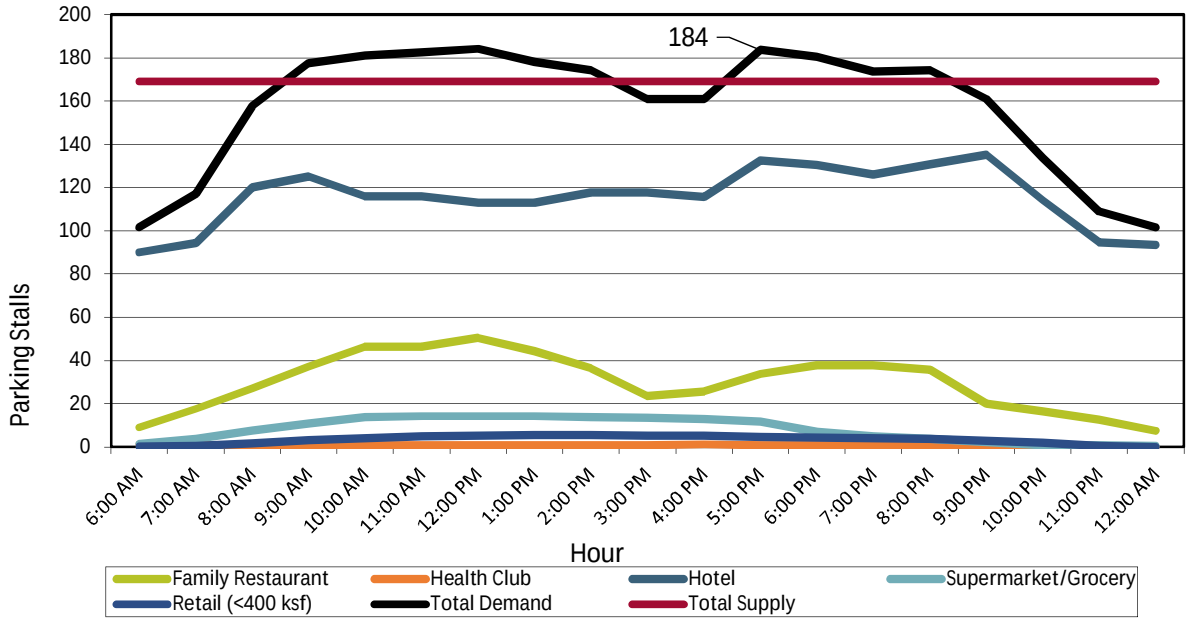


Figure 2. Projected Weekend Peak Parking Demand

**Based on the latest CivTech report and site plan, the parking supply appears to be 169 spaces plus 23 valet spaces. As previously commented, confirmation is still necessary on the parking supply as well as consistency across the report, site plan, and valet plan are needed.*

Page Ref #	CivTech Parking Study, 05/22/2020 Statements/Assumptions	KH Feedback & ULI Model Assumptions July 2020
1	Statement: The review indicates that Walker Parking's calculations result in slightly less parking demand than shown herein.	Feedback: The Walker Consultants review does not provide a peak projected parking demand. This review evaluates the methodology of CivTech but does not independently project parking demand for the site.
2	Assumption - Table 1: Land uses evaluate usable/net square footage (SF)	ULI Model: The industry best practice is to calculate parking demand based on Gross Square (GSF) Footage. This methodology addresses demand generated by visitors as well as employees. *See Table 1 of the Kimley-Horn Parking Study Memo.*
2	Assumptions - Table 1: Land uses do not include 1,800 SF of meeting space	Feedback: This is a repeat comment/statement. ULI Model: Land uses were placed into categories based on the updated ULI Model and reflect all land use densities, including an 1,800 SF of meeting space and gross square footage. *See Table 1 of the Kimley-Horn Parking Study Memo.*
3	Assumptions - Table 3: Internal capture reductions assume that 50% of restaurant stand-alone demand comes from the hotel, however, this restaurant is considered to be a stand-alone establishment that is outward facing to the public.	ULI Model: The internal capture ratio for restaurant stand-alone was reduced to 25% to better reflect the independent nature of this stand-alone land use. *See Table 4 of the Kimley-Horn Parking Study Memo.*
3	Assumptions - Table 3: Internal capture reductions assume that 60% of restaurant guest-oriented demand comes from the hotel.	Feedback: This is a repeat comment/statement. Based on the site plan, the Guest-Oriented restaurant (Site Plan Reference I) is an outward facing restaurant/coffee shop. ULI Model: The internal capture ratio was reduced to 25% to better reflect demand that comes from off-site customers.

Page Ref #	CivTech Parking Study, 05/22/2020 Statements/Assumptions	KH Feedback & ULI Model Assumptions July 2020
3	Assumptions - Table 3: Internal capture reductions assume that 50% of the parking demand for the event lawn, pavilion, and meeting rooms will come from the hotel.	ULI Model: Because the event lawn and Pavilion are assumed to host both internal and external events, the internal capture for this land use was reduced to 25%. Events such as weddings will attract parking demand from people who are not staying on-site.
3	Assumptions - Table 3: Internal capture reductions assume that: 65% of the parking demand for retail: guest-oriented will come from the hotel.	Feedback: This is a repeat comments/statement. Based on the site plan, the Guest-Oriented retail (Site Plan Reference H) is a market that is outward facing. ULI Model: The internal capture was reduced to 25% to reflect the demand from off-site customers.
4	Assumptions - Table 4: The Land Use densities provided in the study	Feedback: This is a repeat comment/statement. The land use densities provided by CivTech do not reflect the total land uses on the site plan, which results in an under counting of spaces. The SUP Guidelines reflects the local requirements of usable square footage.
6	Assumptions - Table 6: Operating at a potential 3 space surplus or full capacity is acceptable under valet operations	Feedback: Parking facilities that operate above effective capacity result in searching for parking. Effective capacity is typically set at 85% - 95% of the total supply.
6	Assumption - Parking Trends - Drive in Rate: Ride hailing will reduce the parking demand by 30% - 40%.	Feedback: Drive-alone rate assumptions and the impact of ride hailing were included in the Kimley-Horn Parking Study. ULI Model: Due to the limited connectivity of the site, the drive-alone rate was reduced to 75%. This assumes 1 our of 4 guest will arrive by a ride hailing service.
7	Statement - The total parking supply available at the Smoketree Resort includes 170 parking spaces, as few as 26 to as many as 29 valet spaces, 25 spaces shared from the adjacent Lincoln Medical Center and 30 spaces secured offsite for employees if needed. This results in a total parking supply of 251 spaces. Ride hailing could also be utilized for employees to increase available parking supply should and offsite location not be available.	Feedback: This is a repeat comments/statement. Ride hailing assumptions are already included in the drive-alone rates and expecting additional reductions due to ride hailing can result in an under counting of parking demand. Providing parking through a combination of on-site and off-site parking should be sufficient to meet projected demand.

CivTech

May 22, 2020

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 5-22-2020
ARIZONA, U.S.A.

Taylor Robinson
Geneva Holdings, LLC
3620 East Campbell Ave, Suite B
Phoenix, AZ 85018

RE: Parking Study for Smoketree Resort – Paradise Valley, Arizona

Dear Mr. Robinson:

CivTech has been retained to prepare a parking study for Smoketree Resort which will be redeveloped. The site is located at 7101 E. Lincoln Drive, Scottsdale, AZ 85253; south of Lincoln Drive and east of Quail Run Road. The project is the first step in revitalizing the resort.

The project is submitting for a Special Use Permit (SUP) within The Town of Paradise Valley. This SUP anticipates the preparation of a parking study prepared and sealed by a licensed engineer that will consider, among other things, internal capture and time-of-day usage. The information herein provides the parking requirements for the Smoketree Resort during its peak operations on a weekday and on a weekend. Peak operations are defined as the number of parking spaces required during the peak season when all of the resort uses are at full occupancy.

CivTech has completed a parking study to determine the number of spaces required compared to the number of spaces provided at the resort. The results of this analysis are documented herein.

In addition, this parking study was reviewed by Walker Parking to determine if the internal capture and shared parking methodology applied met the industry standard of care and standard practice of application. The review indicates that Walker Parking's calculations result in slightly less parking demand than shown herein. It also states that "Based on our review of the January 2020 Parking Study, we have determined that the materials were prepared in a professional manner and follow (sic) applicable standards of care. The proposed parking supply is projected to exceed the Project's parking needs based on ITE and ULI methodologies and standards. The operational recommendations provided within the report are sound and follow industry best practices." Significantly, the peer review specifically concluded that the methodology used in the CivTech analysis was correct and indeed even somewhat conservative.

CivTech Inc. • 10605 North Hayden Road • Suite 140 • Scottsdale, AZ 85260
Office 480-659-4250 • Fax 480-659-0566

PROPOSED DEVELOPMENT

The proposed project will consist of a resort hotel with 122 dedicated resort hotel rooms. The 122 dedicated hotel rooms will be considered "hotel keys" under the Special Use Permit. The resort hotel also includes a stand-alone retail, market, restaurant, and coffee shop. The resorts hotel will include fitness and event/meeting amenities within the primary resort building. The proposed development land uses and quantities are summarized within **Table 1**. The proposed project will provide 170 traditional parking spaces. An exhibit illustrating the provided parking is provided in **Attachment A**.

When necessary, the resort will operate using a valet only scenario which provides up to 199 parking spaces including the area in front of the garbage dumpsters. The analysis will consider a minimum of 196 valet spaces with as many as 199 valet spaces with the potential to park in front of the dumpsters.

Table 1: Proposed Land Uses and Quantities

(1) SUP	Land Use	Quantities
i.	Hotel Key	122 Keys
vi	Executive Office	250 SF
vi	HR/Accounting Office	250 SF
vi	Sales Office	250 SF
	(3) Front Desk	250 SF
vi	Misc Office	250 SF
	Lobby	1,800 SF
iv.	(2) Pavilion	4,000 SF
iv.	(2) Event Lawn	4,200 SF
	(3) Valet/Bag+Bell	600 SF
	(3) Housekeeping	2,300 SF
iii.	(4) Stand-Alone Food and Beverage – Restaurant	(6) 2,100 SF
iii.	(4) Guest Oriented Retail/Coffee – Restaurant	(7) 500 SF
v.	(5) Guest Oriented Retail/Coffee – Retail	(8) 2,000 SF
vi.	Fitness	2,000 SF

(1) See Table 2 for category description.
(2) Pavilion not used simultaneously with the Event Lawn due to parking supply limitations; therefore, the land use with the higher SF was used within the analysis.
(3) Areas considered back of house were not included in the parking generation.
(4) Restaurant seating area square footage excluding storage, kitchen, restrooms, etc.
(5) Usable area square footage of retail space.
(6) The gross square footage for the Stand-Alone Food and Beverage – Restaurant is 3,200 square feet.
(7) The gross square footage for the Guest Oriented Retail/Coffee – Restaurant is 1,800 square feet.
(8) The gross square footage for the Guest Oriented Retail/Coffee – Retail is 4,000 square feet.

PARADISE VALLEY PARKING REQUIREMENTS

The Town of Paradise Valley provides parking ratios in their Special Use Permit Guidelines. **Table 2** summarizes the parking ratio requirements for each component of a resort hotel.

Table 2: Parking Requirements per the Town SUP Guidelines

SUP	Category	Parking Requirement
i.	Each Hotel Key	1.2 spaces
iii.	Restaurant	1 space per 50 SF of net dining area
iv.	Meeting Rooms/Auditoriums/Group Assembly	1 space per two seats of public area (assumed to be 50 square feet)
v.	Retail	1 space per 300 SF of net sales area
vi.	Office/Service Establishment/ Spa/Fitness/Sales Establishments	1 space per 300 SF of net occupied space

INTERNAL CAPTURE – PARKING UTILIZATION

The determination of parking requirements for a resort should also consider the utilization of many uses within the resort by the same patron staying in the resort. To consider this, parking required for each use is prorated by assigning a percentage indicating the overlap from guests already staying within the resort ("on-site demand") vs. drawing new trips (vehicles) from outside the resort ("off-site demand"). All parking for guest rooms and employees were determined to be completely "off-site". Parking generated by all other uses was assumed to be used by patrons already staying at the resort ("on-site") and non-Resort occupants ("off-site"). Therefore, percentages were applied to these uses to account for the "on-site" occupants who will already be parked as part of the resort guest room rate. This occurrence is known as internal capture. **Table 3** summarizes the internal capture reduction for each use based on conversation with the developer about the resort operation and internal capture rates applied at other resorts within the Town. As requested by the Town, the internal capture percentages applied at other resorts within the Town are summarized in **Attachment B**.

Table 3: Internal Capture Reduction

SUP	Category	Internal Capture Reduction
i.	Guest Unit	0%
ii.	Restaurant: Stand-Alone	50%
iii.	Restaurant: Guest Oriented	60%
iv.	*Meeting Rooms	50%
v.	Retail: Guest Oriented	65%
vi-a.	Office/Service Area-Employee	0%
vi-b.	Office/Service Area-Public	100%
vi-c.	Office/Service Area-Fitness	90%

** Pavilion not used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.*

The internal capture percentages are based on the operation of the Smoketree resort shown in **Table 3** above and are supported by internal capture percentages applied to previous approved

resorts in the Paradise Valley area. A detailed summary of the parking demand based on the requirements within the Town's Special Use Permit Guidelines and the applied internal capture for each use is shown in the **Attachment C**. **Table 4** summarizes the parking demand per land use.

Table 4: Parking Demand Summary per Town of PV SUP Guidelines

Category	Parking Demand without Internal Capture Reduction	Internal Capture Reduction Percentages	Parking Demand with Internal Capture Reduction	Parking Demand with Internal Capture Reduction Rounded Up (1)
Resort Keys	147.00	0%	146.40	147
Resort Employee Office	5.00	0%	4.15	5
Resort Meeting/Banquet Space (2)	84.00	50%	42.00	42
Resort Food & Beverage (Stand-Alone)	42.00	50%	21.00	21
Resort Food & Beverage (Guest Oriented)	10.00	60%	4.00	4
Resort Fitness	7.00	90%	0.67	1
Resort Retail	7.00	65%	2.33	3
TOTAL	**302**	**-**	**-**	**223**

(1) Each calculated value should be rounded up to a full parking space because there cannot be part of a required space for a vehicle to park.
(2) Pavilion not used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.

Per Paradise Valley's SUP Guidelines and applied reductions, the proposed Smoketree resort has a total parking demand of 223 parking spaces before consideration of shared parking by time of day. A shared parking analysis evaluating the hourly parking demand on a weekday and a weekend day has been conducted and is described in the following section.

SHARED PARKING ANALYSIS

For projects with a variety of land uses, the parking demand for each land use would peak at different hours. Therefore, the actual number of spaces needed at a given hour is less than cumulative parking demand. *Shared Parking* Urban Land Institute [ULI] states, "Shared parking is defined as a parking space that can be used to serve two or more individual land uses without conflict or encroachment. The opportunity to implement shared parking is the result of two conditions:

- Variations in the peak accumulation of parked vehicles as the result of different activity patterns of adjacent or nearby land uses (by hour, by day, by season)

- Relationships among land use activities that result in people's attraction to two or more land uses on a single auto trip to a given area or development"

Parking hourly percentages have been established for the weekday and weekend for the different land uses within the proposed Smoketree Resort. *ITE Parking Generation* manual is the primary source for the hourly percentages. Hourly percentages from *ITE Parking Generation, 5th Edition* were utilized when available. The sources utilized for the hourly percentages in the shared parking model are summarized in **Table 5**.

Table 5: Hourly Percentages utilized for the Shared Parking Model

Land Use	Source for Hourly Percentages
Resort Guest Rooms	Averaged hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 310 (Hotel, Suburban) & ITE Code 330 (Resort Hotel).
Resort Employee/ Office	ITE Parking Generation, 5th Edition ITE Code 710 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.
Stand-Alone Restaurant	Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 936 (Coffee/Donut Shop without Drive-through Window, Weekday).
Guest Oriented Restaurant	Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday Family Breakfast, lunch, and dinner).
Guest Oriented Retail	Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 814 (Variety Store, Weekday).
Resort Meetings/Conference	ITE Parking Generation, 5th Edition does not provide hourly percentages for conference/meeting space. Hourly percentages from Urban Land Institute's Shared Parking, 2nd Edition for Hotel Conference/Banquet were utilized.
Resort Fitness	Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 492 (Health/Fitness Club, Weekday).

Detailed worksheets with the shared parking analyses for the weekday and weekend are included as **Attachment D**.

To help validate the increased amount of parking available due to valet only operations, a valet plan was provided by Epic Valet. The valet plan prepared utilizing the current Smoketree Resort site plan showing 170 parking spaces indicates the ability to park 193 spaces excluding the 6 ADA spaces. The valet plan is provided in **Attachment E**.

During the peak demand, the resort will operate in a valet only scenario which provides as few as 196 and as many as 199 parking spaces. Per the analysis, the peak parking demand on a weekday is estimated to be 196 spaces at 9:00 AM, resulting in a surplus of 3 parking spaces. The peak parking demand on the weekend is estimated to be 199 spaces at 9:00 PM, resulting in full utilization of parking. The shared parking results are summarized within **Table 6**.

While the current plan indicates there will be as few as 196 and as many as 199 parking spaces available when operating in a valet only mode and which is more than sufficient to meet the

resort's needs as validated by the Walker Peer Review, there is also an option to share parking with other adjacent uses that may not need parking when the resort reaches its peak demand.

Table 6: Peak Shared Parking Results

Scenario	Weekday Peak Time	Excess Weekday Spaces	Weekend Peak Time	Excess Weekend Spaces
Non-valet	9:00 AM	-26	9:00 PM	-29
Valet-only	9:00 AM	3	9:00 PM	0

HOTEL OCCUPANCY HISTORY

Data compiled from Smith Research Travel for Paradise Valley hotels include historical occupancy rates from 2009 to May 2015. A table with the data is included as **Attachment F**. Per the table, the maximum occupancy occurred in March 2013 and was 92.7%. March is historically the highest month with an average of 86.9% over the 7 years of data. The data also include average occupancy rates per the day of week. February and March are the only months that had a day of week average occupancy greater than 90%. In February, it was only on Wednesday (91%). March had average occupancies of 91.6%, 94.0%, and 92.0% on Wednesday, Thursday and Saturday respectively. Therefore, the occupancy on the remaining days of the year is expected to be less than 90% with a 61% average occupancy during the summer months (June through September). The shared parking analysis is based on 100% occupancy, and therefore represents the worst-case scenario.

PARKING TRENDS – DRIVE IN RATE

Many travelers to resorts are opting to use ride services such as Uber and Lyft in addition to Taxi's. Ride hailing services have become more predictable and easier to use. As a greater shift in personal travel is switching to ride hailing, the need for parking spaces at retail, hotel, and other venues is decreasing. While there is no specific rate for the number of travelers which choose ride hailing, most resorts suggest that it could be as high as 30-40 percent. Data collected at the Biltmore Resort suggests that 40 percent of their patrons arrive via ride hailing services. Just over 25 percent of the patrons of the Phoenician Resort arrive via ride hailing services. While the long-term trend indicates that fewer patrons will drive and park, opting for other ride hailing services, it is difficult to predict the percentage reduction in parking. To be conservative, a reduction to the parking rate has not been considered within this study.

CONCLUSIONS

- A peer review of this study was completed by Walker Parking which validated the parking demand and supply recommendations noted herein.
- The proposed project will consist of a resort hotel with 122 keys (unit), a restaurant in a stand-alone building and a retail/coffee area in a stand-alone building. The principal resort hotel building will include fitness and event/meeting amenities.
- The Pavilion will not be used simultaneously with the Event Lawn; therefore, the land use with the higher SF was used within the analysis.
- 170 parking spaces are provided on-site, including ADA required parking spaces.
- A valet plan prepared for the Smoketree Resort site plan showing 170 parking spaces indicates the ability to park 193 spaces excluding the 6 ADA spaces. This provides as few as 196 and as many as 199 parking spaces in the valet only scenario with the use of space in front of the dumpsters if needed.
- Per Paradise Valley's SUP Guidelines and applied reductions using the internal capture established with the Town as well as industry standard practices and the shared parking analysis, the peak parking demand on a weekday is estimated to be 196 spaces at 9:00 AM, resulting in a surplus of 3 parking spaces in the valet only scenario. The peak parking demand on the weekend is estimated to be 199 spaces at 9:00 PM, resulting in full utilization of the parking in the valet only scenario.
- A valet service is required during the peak event to meet the parking demand. The peak event assumes full occupancy of the hotel. During non-event/non-peak times, the resort will provide sufficient parking to meet its demand. The hotel will know in advance when it will be at full occupancy and transition into valet only parking 24 hours before.
- Should a peak event occur, offsite parking for employees could be secured, or ride hailing for employees could be provided, as a precaution if there is a concern that the parking demand could exceed the parking supply. This could provide in excess of 30 additional spaces available for guests on-site.
- The total parking supply available at the Smoketree Resort includes 170 parking spaces, as few as 26 to as many as 29 valet spaces, 25 spaces shared from the adjacent Lincoln Medical Center and 30 spaces secured offsite for employees if needed. This results in a total parking supply of 251 spaces. Ride hailing could also be utilized for employees to increase available parking supply should and offsite location not be available.
- Using a valet only operation to meet peak demand will allow the Smoketree Resort to respond to the anticipated change in parking rates over time without overbuilding parking. Parking rates for all uses are declining and are predicted to continue to decline with rideshare options such at Uber and Lyft.

- The typical monthly and daily occupancies will not necessitate a 100% valet operation.

- While the long-term trend indicates that fewer patrons will drive and park, opting for other ride hailing services, it is difficult to predict the percentage reduction in parking from these users. To be conservative, a reduction to the parking rate for ride hail services was not considered within this study.

Should you wish to discuss this information further, please contact me at (480) 659-4250.

Sincerely,

CivTech

Dawn D. Cartier, P.E., PTOE
Project Engineer

Attachments:
Attachment A - Site Plan
Attachment B – Internal Capture
Attachment C - Parking Demand
Attachment D - Shared Parking Analysis
Attachment E - Valet Parking Exhibit
Attachment F – Comment Responses
Attachment G – Walker Parking Peer Review of January 2020 Smoketree Resort Parking Study

Attachment A - Site Plan

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

Total Self-Park Spaces = 170
Dimensions: 9' x 18' + 2' overhang

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED SITE PLAN - GROUND LEVEL

The smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A8

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - SECOND LEVEL

the smoke tree resort

7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A9

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

PROGRAM:

N. Resort Suites (guest rooms)
O. Meeting Room
X. Lounge
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - THIRD LEVEL

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A10

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

ATTACHMENT B – INTERNAL CAPTURE PERCENTAGE DATA

This summation has been prepared to document the reasoning for internal capture percentages presented as part of the Smoketree Resort parking study. Several parking studies for resorts in the Town of Paradise Valley have been prepared; many at existing locations where actual data was provided. The procedure for internal capture at many of the resorts was a result of negotiation with the Town's Planning Commission which was documented as the approved percentages within each of the previous parking studies however, there is not formal documentation of how the percentages were developed.

The Smoketree Resort internal capture percentages represent the likely operations of the hotel once it is constructed. While there is not a hotel operator selected, the size and scale of the hotel limit the potential operators and suggests a boutique resort can be assumed. Discussions with the developer to understand their vision for the resort help guide the research and application of internal capture. These internal capture rates are then compared to rates that have been applied at other resorts within the Town with similar characteristics to verify if the assumption is reasonable.

Discussions with the developer and a comparison to other similar resorts suggests that the internal restaurant will be less likely to attract non-guests while the external restaurant would be more likely to attract non-guests. The rates chosen are similar to Mountain Shadows and provide for more utilization by off-site patrons than Ritz Carlton or the Sanctuary. The guest-oriented retail internal capture percentage was discussed during a meeting on Monday, January 13th, 2020 with the Town of Paradise Valley. Based on the meeting a guest-oriented retail internal capture of 65% has been utilized within the TIA and also applied within the parking study.

The parking study for the Ritz Carlton Resort evaluated 200 hotel keys, 120 villa units, and 151,000 square feet of retail/restaurant. The percentages applied to the uses were originally determined from data provided by Marriott International for their resort at Camelback Inn and a verification by The Ritz Carlton Hotel Company, LLC. In subsequent parking evaluations within the Town of Paradise Valley, the assumptions have been refined to reflect the character and demographics of a typical resort user.

The parking study for the Mountain Shadows Resort evaluated a hotel with 183 key units, a condominium hotel building with 45 owned units, golf course, fitness center, and event/meeting space. The internal capture percentages were assumed for this development based upon previous studies and operations at other resorts within the Town of Paradise Valley.

A parking study was prepared for the Sanctuary Resort in February 2012 when they proposed an expansion of 20 additional guest rooms and 1,350 SF of spa area. The Sanctuary Resort is slightly different from the other resorts in the sense that has a large spa that attracts guests not staying at the resort. The internal capture percentages utilized for their February 2012 parking study were provided by the Sanctuary, using data from the daily operations of the existing resort.

A parking study was prepared for the Hermosa Inn Resort in June 2018. Hermosa Inn is proposing to reallocate approved event space with some new construction while not exceeding the existing approved square footage. With a 49-room boutique resort hotel, 2,177 square feet of net indoor dining area, 3,800 square feet of outdoor patios for the Last Drop Bar and Lon's, 4,424 square feet of exclusive use meeting space, and 2,000 square feet of spa. The internal capture percentages utilized were based upon their daily operations of the existing resort.

Please refer the table below summarizing interaction at Smoketree Resort and at other resorts.

Internal Capture Percentages

	Restaurant (Guest Oriented)	Restaurant (Stand Alone)	Retail (Guest Oriented)	Retail (Stand Alone)	Spa	Fitness	Meeting Space	Event Space
Smoketree	**50%**	**60%**	**65%**	**-**	**90%**	**90%**	**50%**	**50%**
Ritz Carlton	75%	75%	-	90%	90%	100%	75%	75%
Mountain Shadows	60%	50%	100%	50%	90%	90%	50%	75%
Sanctuary	75%	75%	60%	75%	60%	-	10%	10%
Hermosa Inn	25%	25%	-	-	90%	90%	75%	75%

Attachment C - Parking Requirements

18-0550 **9/5/2019**

SUP	CATEGORY	Parking Requirement [1]	Keys/Units	NET INTERIOR (SF)	Internal Capture[2]	Net Parking Spaces after Internal Capture Reduction
Hotel						
i	Guestrooms	1.20 spaces per 1 Unit	122		0%	146.40
		Total	**122**			**147.00**
Administrative						
vi-a	Executive Office	1 spaces per 300 SF	-	250	0%	0.83
vi-a	HR/Accounting Office	1 spaces per 300 SF	-	250	0%	0.83
vi-a	Sales Office	1 spaces per 300 SF	-	250	0%	0.83
vi-a	Front Desk	1 spaces per 300 SF	-	250	0%	0.83
vi-a	Misc Office	1 spaces per 300 SF	-	250	0%	0.83
		Total	**0**	**1,250**		**5.00**
Lobby/Public Areas						
vi-b	Lobby	0 spaces per 50 SF	-	1,800	100%	0.00
		Total	**0**	**1,800**		**0.00**
Meeting Space						
iv	Pavilion	1 spaces per 50 SF	-	4,000	100%	0.00
		Total	**0**	**4,000**		**0.00**
Outdoor Event Space (100% capture rate, since it's used in conjunction with meeting space)						
iv	Event Lawn - Venue 1	1 spaces per 50 SF	-	4,200	50%	42.00
		Total	**0**	**4,200**		**42.00**
Back of House						
	Valet/Bag+Bell	0 spaces per 0 SF	-	600	0%	0.00
	Housekeeping	0 spaces per 0 SF	-	2,300	0%	0.00
		Total	**0**	**2,900**		**0.00**
Stand Alone Food and Beverage						
iii	Restaurant	1 spaces per 50 SF	-	2,100	50%	21.00
		Total	**0**	**2,100**		**21.00**
Guest Oriented Retail/Coffee						
iii	Restaurant	1 spaces per 50 SF	-	500	60%	4.00
v	Retail	1 spaces per 300 SF	-	2,000	65%	2.33
		Total	**0**	**2,500**		**7.00**
Fitness						
vi-c	Fitness	1 spaces per 300 SF	-	2,000	90%	0.67
		Total	**0**	**2,000**		**1.00**
					GRAND TOTAL	**223**

1. Parking Ratios from Table 1 of Town of Paradise Valley Ordinance & Revised rates per ITE Parking Generation

2. Internal Capture Percentages from other similar operating resorts

ATTACHMENT D – SHARED PARKING

18-0550

PEAK USE SHARED PARKING CALCULATIONS-WEEKDAY

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant [4]		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)[6]		Hotel Fitness[7]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Parking Demand	**147.00**		**5.00**		**4.00**		**21.00**		**3.00**		**42.00**		**1.00**		**223**				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	**PEAK Parking Demand**				
6:00 AM	81%	119.07	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	122	170	48	199	77
7:00 AM	82%	120.54	13%	0.65	73%	2.92	25%	5.25	4%	0.12	0%	0.00	0%	0.00	130	170	41	199	70
8:00 AM	89%	130.83	48%	2.40	100%	4.00	68%	14.28	20%	0.60	30%	12.60	0%	0.00	165	170	5	199	34
9:00 AM	**100%**	**147.00**	**88%**	**4.40**	**63%**	**2.52**	**72%**	**15.12**	**53%**	**1.59**	**60%**	**25.20**	**20%**	**0.20**	196	**170**	**-26**	**199**	**3**
10:00 AM	97%	142.59	100%	5.00	57%	2.28	77%	16.17	55%	1.65	60%	25.20	62%	0.62	194	170	-24	199	5
11:00 AM	91%	133.77	100%	5.00	42%	1.68	83%	17.43	56%	1.68	60%	25.20	55%	0.55	185	170	-15	199	14
12:00 PM	86%	126.42	85%	4.25	39%	1.56	100%	21.00	67%	2.01	65%	27.30	44%	0.44	183	170	-13	199	16
1:00 PM	81%	119.07	84%	4.20	27%	1.08	91%	19.11	69%	2.07	65%	27.30	41%	0.41	173	170	-3	199	26
2:00 PM	83%	122.01	93%	4.65	27%	1.08	56%	11.76	80%	2.40	65%	27.30	36%	0.36	170	170	0	199	29
3:00 PM	79%	116.13	94%	4.70	27%	1.08	42%	8.82	67%	2.01	65%	27.30	41%	0.41	161	170	10	199	39
4:00 PM	81%	119.07	85%	4.25	27%	1.08	42%	8.82	68%	2.04	65%	27.30	69%	0.69	163	170	7	199	36
5:00 PM	75%	110.25	56%	2.80	27%	1.08	64%	13.44	100%	3.00	65%	27.30	96%	0.96	159	170	11	199	40
6:00 PM	73%	107.31	20%	1.00	27%	1.08	87%	18.27	87%	2.61	100%	42.00	100%	1.00	173	170	-3	199	26
7:00 PM	75%	110.25	11%	0.55	27%	1.08	79%	16.59	48%	1.44	100%	42.00	85%	0.85	173	170	-3	199	26
8:00 PM	87%	127.89	11%	0.55	27%	1.08	65%	13.65	37%	1.11	100%	42.00	50%	0.50	187	170	-17	199	12
9:00 PM	90%	132.30	11%	0.55	27%	1.08	42%	8.82	29%	0.87	100%	42.00	0%	0.00	186	170	-16	199	13
10:00 PM	95%	139.65	11%	0.55	10%	0.40	21%	4.41	10%	0.30	50%	21.00	0%	0.00	166	170	4	199	33
11:00 PM	96%	141.12	11%	0.55	1%	0.04	21%	4.41	0%	0.00	0%	0.00	0%	0.00	146	170	24	199	53
MIDNIGHT	95%	139.65	11%	0.55	1%	0.04	10%	2.10	0%	0.00	0%	0.00	0%	0.00	142	170	28	199	57
															196.00		-26.00		3.00

1. Averaged hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 310 (Hotel, Suburban) & ITE Code 330 (Resort Hotel) .
2. *ITE Parking Generation, 5th Edition ITE Code 710 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 936 (Coffee/Donut Shop without Drive-through Window, Weekday)
4. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekday Family Breakfast, lunch, and dinner)
5. Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 814 (Variety Store,Weekday)
6. ITE Parking Generation, 5th Edition does not provide hourly percentages for conference/meeting space. Hourly percentages from Urban Land Institute's Shared Parking, 2nd Edition for Hotel Conference/Banquet were utilized.
7. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 492 (Health/Fitness Club, Weekday).

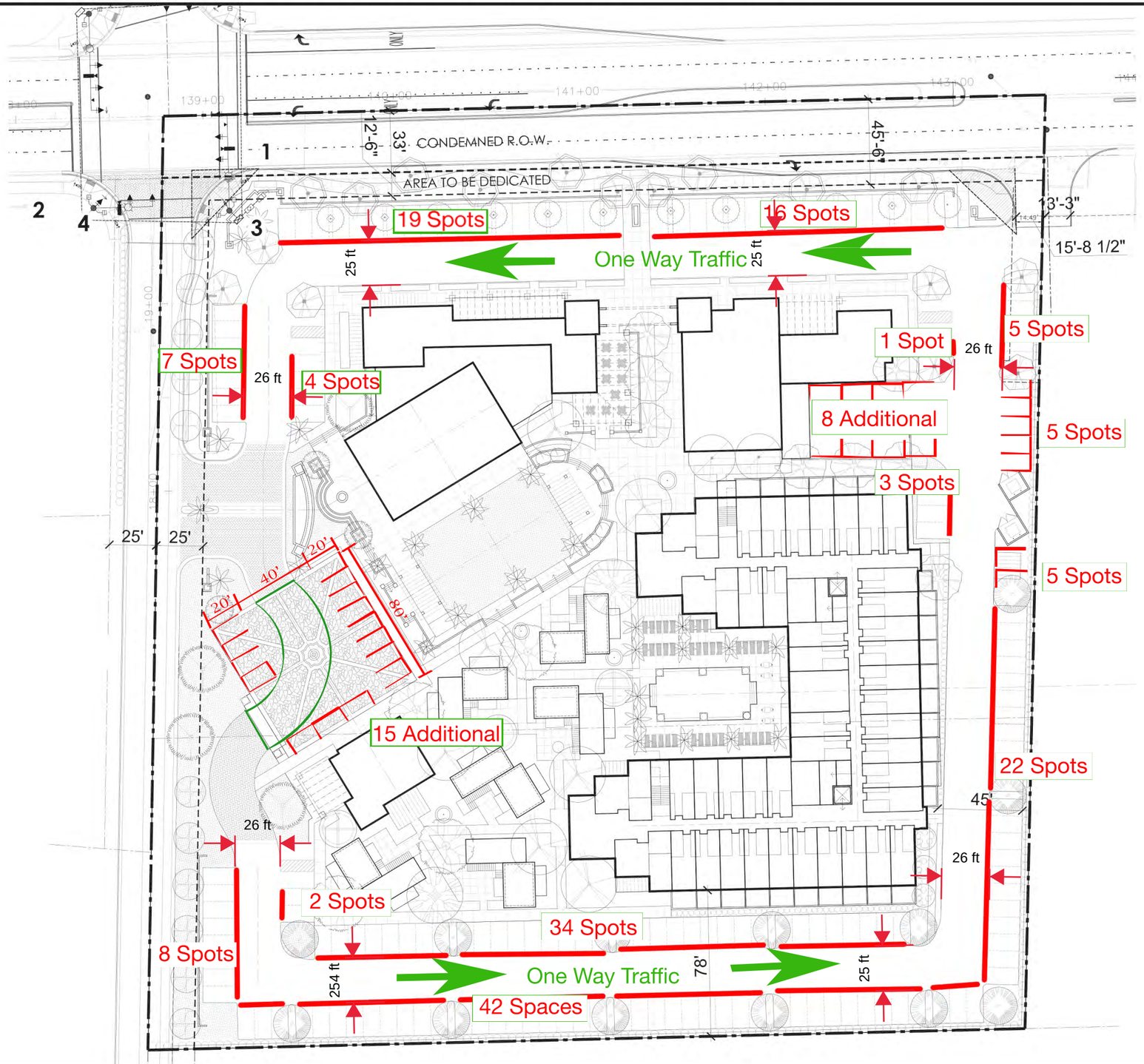
ATTACHMENT D – SHARED PARKING

18-0550

PEAK USE SHARED PARKING CALCULATIONS-WEEKEND

Land Use	Hotel Guest Rooms[1]		Administrative [2]		Guest Oriented Restaurant[3]		Stand Alone Restaurant [4]		Guest Oriented Retail [5]		Event Space (Wedding Lawn & Event Deck)[6]		Hotel Fitness[7]		NET Parking Demand	Parking available at full occupancy and peak events (no valet)	Parking Surplus/ Shortage at full occupancy (no valet)	Parking available at full occupancy and peak events with Valet (196 Spaces Based on EpicValet)	Parking Surplus/ Shortage with Valet for Emp at full occupancy with Valet
Parking Demand	**147.00**		**5.00**		**4.00**		**21.00**		**3.00**		**42.00**		**1.00**		**223**				
Time of Day	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	% of Peak	# of Spaces	**PEAK Parking Demand**				
6:00 AM	60%	88.20	11%	0.55	1%	0.04	15%	3.15	0%	0.00	0%	0.00	0%	0.00	92	170	78	199	107
7:00 AM	60%	88.20	13%	0.65	100%	4.00	28%	5.88	4%	0.12	30%	12.60	0%	0.00	112	170	59	199	88
8:00 AM	68%	99.96	48%	2.40	90%	3.60	52%	10.92	20%	0.60	60%	25.20	80%	0.80	144	170	27	199	56
9:00 AM	70%	102.90	88%	4.40	80%	3.20	75%	15.75	53%	1.59	60%	25.20	100%	1.00	154	170	16	199	45
10:00 AM	68%	99.96	100%	5.00	65%	2.60	91%	19.11	55%	1.65	60%	25.20	100%	1.00	155	170	15	199	44
11:00 AM	69%	101.43	100%	5.00	62%	2.48	100%	21.00	56%	1.68	65%	27.30	97%	0.97	160	170	10	199	39
12:00 PM	69%	101.43	85%	4.25	40%	1.60	90%	18.90	67%	2.01	65%	27.30	79%	0.79	156	170	14	199	43
1:00 PM	64%	94.08	84%	4.20	32%	1.28	80%	16.80	69%	2.07	65%	27.30	81%	0.81	147	170	23	199	52
2:00 PM	59%	86.73	93%	4.65	32%	1.28	67%	14.07	80%	2.40	65%	27.30	73%	0.73	137	170	33	199	62
3:00 PM	57%	83.79	94%	4.70	32%	1.28	45%	9.45	67%	2.01	65%	27.30	71%	0.71	129	170	41	199	70
4:00 PM	61%	89.67	85%	4.25	32%	1.28	39%	8.19	68%	2.04	65%	27.30	70%	0.70	134	170	37	199	66
5:00 PM	63%	92.61	56%	2.80	32%	1.28	40%	8.40	100%	3.00	100%	42.00	65%	0.65	151	170	19	199	48
6:00 PM	73%	107.31	20%	1.00	32%	1.28	40%	8.40	87%	2.61	100%	42.00	62%	0.62	163	170	7	199	36
7:00 PM	86%	126.42	11%	0.55	32%	1.28	58%	12.18	48%	1.44	100%	42.00	30%	0.30	184	170	-14	199	15
8:00 PM	96%	141.12	11%	0.55	32%	1.28	40%	8.40	37%	1.11	100%	42.00	0%	0.00	195	170	-25	199	5
9:00 PM	**100%**	**147.00**	**11%**	**0.55**	**32%**	**1.28**	**35%**	**7.35**	**29%**	**0.87**	**100%**	**42.00**	**0%**	**0.00**	199	**170**	**-29**	**199**	**0**
10:00 PM	96%	141.12	11%	0.55	32%	1.28	33%	6.93	10%	0.30	50%	21.00	0%	0.00	171	170	-1	199	28
11:00 PM	88%	129.36	11%	0.55	1%	0.04	15%	3.15	0%	0.00	0%	0.00	0%	0.00	133	170	37	199	66
MIDNIGHT	79%	116.13	11%	0.55	1%	0.04	15%	3.15	0%	0.00	0%	0.00	0%	0.00	120	170	50	199	79
															199.00		-29.00		0.00

1. Averaged hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 310 (Hotel, Suburban) & ITE Code 330 (Resort Hotel) .
2. *ITE Parking Generation, 5th Edition ITE Code 710 (Office, Weekday) modified to ensure at least 1 available space after typical work hours.*
3. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 936 (Coffee/Donut Shop without Drive-through Window, Weekend)
4. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 932 (High-Turnover Sit-Down Restaurant, Weekend Family Breakfast, lunch, and dinner)
5. Hourly percentages are from ITE Parking Generation, 5th Edition for ITE Code 814 (Variety Store,Weekday because there is no Weekend)
6. ITE Parking Generation, 5th Edition does not provide hourly percentages for conference/meeting space. Hourly percentages from Urban Land Institute's Shared Parking, 2nd Edition for Hotel Conference/Banquet were utilized.
7. Hourly percentages are from *ITE Parking Generation, 5th Edition* for ITE Code 492 (Health/Fitness Club, Weekend).



Legend

1. Electric Box
2. Proposed Electric Box Location
3. Traffic Control
4. Proposed Traffic Control

Total Number of Spots Excluding Handicap = 193

Main Level Floor Plan

esc. 1" = 120'

PHX ARCHITECTURE
LIVING • ARCHITECTURE

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JANUARY 13, 2020 MEETING COMMENT – PARKING COMPARISON AT ADJACENT RESORTS IN PARADISE VALLEY

A comparison of parking provided at other Resorts within the Town of Paradise Valley was required during a meeting with Town of Staff on January 13, 2020. The results of this analysis are provided in the table below. Parking at resorts within Paradise Valley vary widely and some were calculated using standards which were in effect prior to the Town's 2005 SUP Guidelines. The results of the comparison show that the parking calculated for Smoketree exceeds the Renaissance Scottsdale Resort and Scottsdale Plaza.

The Smoketree Resort has some different characteristics than other resorts can offer based on its location. Smoketree is immediately adjacent to commercial uses and is walking distance to several restaurants. It is also walking distance to the new Ritz Carlton Resort that is being constructed adjacent to the Smoketree Resort across Lincoln Drive. With these location characteristics, Smoketree may justify a lower rate with more guests utilizing alternative modes and walking to the near by commercial, restaurant, and resort uses.

Comparison of Parking Provided at Town Resorts

Resort	Size (Acres)	Guest Units	Other Facilities	Parking Provided	Spaces per Key
Hermosa Inn	6.4	35	Restaurant & Meeting Space	111	3.17
Sanctuary	53	125	Restaurant, Meeting Space, Spa, & Tennis Courts	369	2.95
Camelback Inn	117	453	Restaurant, Conference, & Spa	1157	2.55
Ritz Carlton (Proposed)	110	225	Restaurant, Ballroom/Banquet, & Meeting Space	480	2.13
Montelucia	28	293	Retail & Restaurant	610	2.08
Doubletree Paradise Valley	20	378	Retail, Restaurant, Ballroom, & Meeting Space	559 on-site 45 off-site	1.60
Smoketree Resort	**5**	**122**	**Event/Meeting space, Restaurant, & Retail**	**170**	**1.39**
Renaissance Scottsdale Resort	22.75	171	Restaurant, Meeting/Banquet, & Tennis Courts	230	1.35
Scottsdale Plaza	36.5	404	Restaurant, Ballroom/Banquet, & Meeting Space	403	1.00
Average for Other Resorts	**46.7**	**234**	**-**	**448**	**1.91**

4th Submittal

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
Town of Paradise Valley		
a.	Provide written responses to Kimley Horn comments dated February 7, 2020.	Written responses to Kimley Horn comments dated February 7, 2020 can be found below.
b.	Reorganize "Comparison of Parking Provided at Town Resorts" Table from high to low and insert the Smoke Tree Resort Spaces per Key quantity in the appropriate row.	The comparison of parking provided at "Comparison of Parking Provided at Town Resorts" Table has been reorganized from highest to lowest with Smoketree in the appropriate location. This is provided as a separate attachment from the Parking Study.
c.	Add "Coffee Shop" to Proposed Development section of the cover letter.	Coffee shop has been added to the Proposed Development section of the cover letter.
d.	Table 1 – Proposed Land Use Quantities: Confirm square foot assumptions for resort uses with developer. These square foot quantities should be consistent throughout all SUP documents. All Provide table showing proposed land use, quantities, parking requirement and total parking required.	The square footage for the Smoketree project uses have been confirmed with the developer.
e.	Table 4: Show required parking, percent reduction for internal capture rates in table.	The percent reduction for internal capture rates are shown in Table 3 and applied in Table 4 within the parking study. They can also be seen in the parking calculation provided in the Appendix.
f.	Table 5: is the Market and Coffee Shop included in this table?	The market is refereed to as guest oriented retail and the coffee shop is refereed to as guest oriented restaurant.
g.	Internal Capture – Parking Utilization: Clarify statement that "All parking for guestrooms and employees were determined to be completely off-site. Parking generated by all other uses was assumed to be used by Resort occupants (on-site) and none-Resort occupants (off-site).	The internal capture section has been discussed more clearly. It states "The determination of parking requirements for a resort should also consider the utilization of many uses within the resort by the same patron staying in the resort. To consider this, parking required for each use is prorated by assigning a percentage indicating the overlap from guests already staying within the resort ("on-site demand") vs. drawing new trips (vehicles) from non-guests ("off-site demand"). All parking for guest rooms and employees were determined to be completely "off-site demand" meaning that there was no internal capture reduction taken. Parking generated by all other uses was assumed to be used by Resort occupants ("on-site demand") and non-Resort occupants ("off-site demand"). Therefore, overlap percentages were applied to these uses to account for the "on-site" occupants who will already be parked as part of the resort guest room rate.

Reviewed Date: 02/07/2020
CivTech Received Date: 02/20/2020
CivTech Entered Date: 02/27/2020
CivTech Response Date: 05/14/2020

4th Submittal

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
Town of Paradise Valley		
h.	The last paragraph on page 5 of 7 states that" there is also an option to share parking with other adjacent uses that may not need parking when the resort reaches its peak demand". Please provide more information on proposed shared parking location and peak demand times when the shared parking may be subject to contract directly concrete contract directly with him or without utilized.	25 spaces have been secured with the adjacent Lincoln Medical Center on an as-needed basis. Peak times are typically related to events which tend to occur on nights and weekends (as noted in the guidance provided by both ITE and ULI). As noted in both Walker Parking Review and the CivTech Parking Study, there is sufficient parking without the need for supplemental spaces through a shared parking agreement.
i.	Table 4: Show required parking, percent reduction for internal capture rates in table.	Addressed in comment e.
j.	Valet Plan: Show drive isle widths. Plan does not show isle widths to maintain 24'.	Fire drive aisle is now depicted in the valet plan.
k.	Valet Plan: The 5 valet parking spaces near the northeast corner of the property may be in conflict with the shared entrance/drive isle needed for the Lincoln Medical Center.	Fire drive aisle at the shared access is now depicted in the valet plan. The 5 valet parking spaces near the northeast corner of the property do not conflict with the 24' fire drive aisle.
Kimley-Horn Comments		
1.	The included site plan provides 163 traditional parking spaces. The report utilizes 170 traditional parking spaces in the analysis. Which number is correct?	The most recent site plan obtained by CivTech indicates 170 traditional parking spaces which include 164 non-ADA spaces and 6 ADA spaces. Both types of spaces are considered to be traditional as long as they can be used by a personal vehicles without being impeded by other vehicles requiring special coordination such as valet and tandem. While valet parking and tandem parking increase the parking yield, they are considered to be non-traditional within the definition of this report.
2.	Per previous review comments, please show how fire access is maintained with the valet parking exhibit. Provide a typical section or dimension that shows that the 24-foot fire lane/emergency access is provided between the 13 parallel spots and standard parking stalls/landscape median. Please show how 8 additional spaces can be provided at the resort reception entry plaza while maintaining an appropriate turning path for fire.	The 24' drive aisle is not impleaded by the valet parking.

Reviewed Date: 02/07/2020
CivTech Received Date: 02/20/2020
CivTech Entered Date: 02/27/2020
CivTech Response Date: 05/14/2020

4th Submittal

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
Town of Paradise Valley		
3.	Attachment B shows the meeting space internal interaction assumption. However, the meeting rooms are not included in the parking calculation. Please include the meeting rooms in the parking calculations.	In the site plan there are areas designated 'O' within the lobby and labeled as meeting. This/these area(s) are not intended to facilitate formal meetings and are open space that will not be available to anyone other than guests. Other event areas are within the Smoketree PUD; Smoketree will propose a stipulation that the meeting space (Event Lawn and Pavilion) will never be used at the same time. To be conservative, the larger of the two meeting spaces was used to calculate the parking required and the other was 100% internally captured.
4.	Document how internal capture rates versus external utilization rates were determined for the event space, standalone restaurant, coffee shop, and retail market facilities.	This was determined by discussing the operations of the resort with Smoketree and applying the appropriate factors. The table presented in the comment responses has been attached to the report with a discussion about each use and the type of activity anticipated and what the developer envisions as the end use or user to help document how these rates were applied. A peer review of this study completed by Walker Parking (and using information published in conjunction with Kimley Horn) further validates the results of the anticipated parking demand.
o	Observations:	
	· The parking requirement prior to taking reductions and without considering meeting rooms is 302 parking spaces, which would be a 44% parking reduction request. Refer to attached calculation based on information provided within the Parking Study for reference.	This is correct and as can be seen by using the ratio of parking spaces to the number of rooms as used in the table ranking other resorts in the Town, this would result in a large overage of parking spaces at 2.48 spaces per room. This would put Smoketree at the top of the table with one of the largest ratio's and yet a resort with one of the smallest amounts of meeting space. The same over parking results were noted when preparing the Mountain Shadows Resort parking analysis with OZ Architects. That is when the methodology that is now applied was developed with a previous Planning Commissioner. The Town had prepared their own parking rates within the SUP Guidelines using the largest rations obtained from surrounding area agencies. This methodology was given much consideration as the Town, Developer and CivTech evaluated various options. After the time spent evaluating a methodology that would allow the SUP Guidelines to stay in place, this same type of calculation was used for the other area resorts as they redeveloped. A peer review of this study completed by Walker Parking (and using information published in conjunction with Kimley Horn) further validates the results of the anticipated parking demand.
	· The Comparison of Parking Provided at Town Resorts table that was included with the comment responses indicates that the proposed parking provided is well below the average of parking provided at other resorts within the Town. The table is attached for reference.	Yes, and because of the lower parking availability, the Smoketree resort is not able to utilize one of their event areas simultaneously with their meeting space. This type of restriction HAS NOT been applied at any other resort in the Town. The restriction of the event space allows the parking supply to meet the parking demand noted in the study without requiring the utilization of off site parking or overflow parking.

Reviewed Date: 02/07/2020
CivTech Received Date: 02/20/2020
CivTech Entered Date: 02/27/2020
CivTech Response Date: 05/14/2020

4th Submittal

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
Town of Paradise Valley		
5.	Use the current edition of ITE Parking Generation. ITE Parking Generation 4th Edition was used within the Parking Study. Please use ITE Parking Generation 5th Edition, which was published in January 2019.	The ITE Parking Generation 5th Edition is now used in the Parking Study.
6.	It appears that the internal capture percentages for guest-oriented restaurant and standalone restaurant were switched in the Appendix B summary and Attachment C. Table 3, within the study, provides different percentages. Please update for consistency and confirm the correct percentages were utilized in the analysis.	This has been revised.
7.	Per previous Parking Study review comment regarding the shared parking calculations, please provide data to support the hourly percentages for administrative employees. Hotel employees generally hold office positions consistently throughout the day.	The ITE Parking Generation, 5th Edition ITE Code 710 (Office, Weekday) was utilized and modified where data was not given to ensure at least 1 available space after typical work hours.
8.	Page 7 of the Parking Study talked about potential off-site parking for employees that would provide in excess of 30 additional spaces available for guests on-site. Is an agreement in place for off-site parking?	30 spaces could be procured for employees if needed. Because employees could be transported via bus or van, the proximity to the resort is not critical. If these spaces are ever needed (both the CivTech and Walker parking studies suggest they will not be needed, this is instead addressing questions that have arisen through comments to the study), and cannot be procured, Smoketree Resort could use ride hailing services to provide transportation to their employees without creating parking demand.

Reviewed Date: 02/07/2020
CivTech Received Date: 02/20/2020
CivTech Entered Date: 02/27/2020
CivTech Response Date: 05/14/2020

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Greenwood Village, CO 80111

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Peoria, AZ 85383

303.694.6622
503.720.4486
walkerconsultants.com

April 23, 2020

Mr. Taylor Robinson
Project Manager
Geneva Holdings, LLC
3620 East Campbell Avenue, Suite B
Phoenix, AZ 85018

Re: Parking Study Peer Review
Parking Study for SmokeTree Resort – Paradise Valley, AZ

Dear Mr. Robinson:

Walker Consultants has completed a review of CivTech's *Parking Study for SmokeTree Resort – Paradise Valley, AZ* dated January 20, 2020 in support of the proposed renovation of the SmokeTree Resort located at 7101 East Lincoln Drive in Paradise Valley, Arizona (hereafter referred to as the "Resort" or the "Project").

Based on Walker's review of the January 2020 Parking Study, review of the proposed uses at the renovated SmokeTree Resort, and work with and experience in preparing parking needs analyses for hotels of all types across the county, it is our opinion that the proposed striped parking supply of 170 parking spaces, and stacked parking supply of 196 spaces, are projected to exceed the Resort's parking needs.

At the behest of the Town of Paradise Valley's (the "Town") third-party reviewer, Kimley-Horn and Associates, the analysis was prepared using the Institute of Traffic Engineers (ITE) Parking Generation publication. This is an acceptable methodology to determine potential parking needs for the Project, though not the industry standard methodology for parking needs analysis, which would be to utilize the Urban Land Institute's (ULI) *Shared Parking* publication and Shared Parking Model. This analysis relies on data from the Institute of Transportation Engineer's *Parking Generation* publication for parking generation rates and time of day factors, which is typically viewed as an acceptable backup data source if data is not available in *Shared Parking*. Again, the method utilized is still considered a valid method to use within the analysis.

The parking analysis utilizes several assumptions that can be construed as conservative, thus overstating parking needs for the Resort, including the following:

- **No mode choice reductions were taken within the analysis for the resort hotel rooms or meeting/banquet/event facilities.** Referred to as "on-site demand" in this analysis (or "drive ratio" in *Shared Parking*), it reflects users arriving via different modes than a single occupancy vehicle. As stated in the analysis, no reduction from a 100% drive ratio was taken. The recommended drive ratio in *Shared Parking* is 59% on weekdays and 69% on weekends for suburban business hotels and 50% for resort hotels, before accounting for additional drive ratio reductions attributable to the use of ride-hailing services (Uber, Lyft, et. al.) in certain markets. Similarly, the recommended drive ratio for hotel meeting/banquet/event facilities is 68% before accounting for further reductions that may be attributable to the use of ride hailing.

- **Providing analysis of hotel employee parking demand separately from the hotel rooms, utilizing office parking generation ratios**. The data reported in ITE's *Parking Generation* for hotels includes parking demand from all user groups including hotel employees, meaning the calculation of a separate employee parking demand number is a double counting of employee parking generation.
- **There is no resort in the Town that provides a similar breakdown of uses which renders that comparative data inapplicable when looking at the needs of the SmokeTree Resort.**
  In general, other resorts in the area have many more hotel rooms, and a greater amount of ancillary activities such as meeting/banquet room space, day spas, and recreational opportunities such as tennis courts.
- **ITE's Parking Generation publication was utilized instead of ULI's Shared Parking Model**. The 3rd Edition of the Urban Land Institute's *Shared Parking* publication and 3rd Edition Shared Parking Model was released in February 2020. The new publication, whose main author is Mary Smith of Walker Consultants and the new shared parking model workbook, which was developed by Kimley-Horn and Associates, Inc. with input and final testing by Walker Consultants, represents the latest data and parking planning practices endorsed by leaders throughout the parking industry. Adopted by cities throughout the U.S., and codified in zoning ordinances as an accepted practice, shared parking is endorsed by the Urban Land Institute (ULI), the American Planning Association (APA), the National Parking Association (NPA), and International Council of Shopping Centers (ICSC), as an acceptable method of parking planning and management.

  Within the new Shared Parking publication there is an extensive discussion of hotel land use, and its ancillary uses, including:
  - Discussion of changes to meeting/banquet/event parking ratios, since newer data showed that too much parking was being recommended for these uses.
  - Discussion of the impacts of Transportation Network Companies (TNC's), such as Uber and Lyft, on hotel parking demand in particular. The impact of TNCs has been a reduction in parking demand at hotels which is expected to continue and intensify with greater acceptance of TNCs and also the eventual introduction of autonomous vehicles.
  - In the 3rd Edition of the Shared Parking Model, the hotel restaurant and hotel meeting/banquet uses have had their base ratios split into employee and patron ratios for greater clarity.

Again, the ITE Parking Generation publication method used for the parking analysis is valid. After Walker reviewed that methodology and analysis results, we input the proposed program data for the SmokeTree Resort into the 3rd Edition Shared Parking model as a comparison - utilizing conservative assumptions such as classifying the hotel as a suburban business hotel instead of a resort hotel, and taking no additional drive ratio reduction for TNCs and no drive ratio reduction for employees. The recommended parking supply for the SmokeTree Resort in this scenario is 170 parking spaces, which is in line with the proposed parking supply before the added capacity of valet stacking is accounted for.

Walker researched United States Census Journey to Work data for the area around the SmokeTree Resort. The drive ratio, when driving alone and carpooling is combined is 91%, indicating that a small drive ratio reduction for employee parking needs would be justified, though this was not taken in the comparison model Walker created. The project site has a walk score of 58 (somewhat walkable) and a bike score of 58 (somewhat bikeable). There are nearby retail and fine dining opportunities well within acceptable walking distance to the SmokeTree Resort, which is additional justification for drive ratio reduction for the hotel rooms as guests can arrive without a vehicle and still enjoy nearby shopping, dining, and recreational opportunities.

Based on our review of the January 2020 Parking Study, we have determined that the methods and information utilized for the parking analysis followed generally accepted industry practices and if anything, presented a conservative analysis of the parking needs for the SmokeTree Resort.

The proposed parking supply meets and potentially exceeds the parking supply recommended using best practice espoused by ITE and the ULI, the most current and accepted methodologies for determining a recommended parking supply.

Walker also reviewed the operational recommendations contained within the Parking Study. Following are our comments on the review of these recommendations:

Review of Operational Recommendations from Parking Study:

- Walker reviewed the valet plan prepared by Epic Valet and agree that the information and recommendations provided within the valet plan are acceptable based on the plans provided.
- The proposed use of valet during peak periods is a standard parking industry practice in environments where parking can be somewhat constrained. The use of parking offsite for valet vehicles– in this case at the adjacent Lincoln Medical Center- allows for guest and visitor parking to be accommodated, while allowing for valet parking within close proximity to the resort. As the need for these additional parking spaces is not constant and will only occur during some peak periods, it would be considered best practice to pursue an agreement with Lincoln Medical Center allowing for the use of their parking spaces on evenings and weekends/holidays only on an as needed basis. Activating the valet on this as needed basis, based on information from hotel occupancy trends and upcoming events, is common practice and using the spaces only during certain peak periods/events, and paying for that as needed use, is an operationally and financially sound practice that is in line with parking industry best practices.
- Securing off-site parking for employees during peak events is also a common parking industry practice that could help with parking demand during peak periods.
- Walker agrees with the recommendation that the Pavilion should not be used simultaneously with the Event Lawn for events based on the potential parking demand caused by use of two event venues at the same time. This type of recommendation – only using a certain amount of event space at a time as a means to manage parking demand- is a recommendation that Walker has provided to, as well as seen in use by, our clients.
- As stated in the previous section, we believe that not including TNC usage within the model provides for a conservative approach in relation to potential parking needs.

In addition to the above recommendations that are already contained within the Parking Study, the following recommendations could also be considered. However, even without the following recommendations, Walker believes that the projected parking supply is adequate to meet the Project's needs.

Further Potential Operational Recommendations:

Potential Operations Recommendations:

- Incorporate communications to guests regarding alternative modes of transportation available to and from the airport and available during their stay at the resort. In an effort reduce the use of vehicles and

the need for parking, communicate with guests their alternative transportation options to and from the airport and for local destinations, including: TNC's shuttles, taxis, town car services, public bus service, and any shuttle service the Resort might offer (if applicable). Additionally, providing information on shared bicycle programs and location of bike lanes as well as walkability with suggested routes may help alleviate some of the need for guest parking.

- The type of communications stated above should also be provided to event attendees as a means to reduce the potential need for parking for events.

In an effort to assure the Town that the Project can adequately meet their parking needs, the following monitoring recommendations could be considered:

Potential Monitoring Recommendations:

- As a means to help assure the Town that the planned parking supply is indeed sufficient to cover the Resort's operational needs, the Resort could submit to the Town a monitoring report, prepared by a qualified professional, after the first and second year following the certificate of occupancy for the building. During the first two years following the certificate of occupancy for the building, the Resort could track parking-related complaints, and evaluate parking including the needs for event parking, valet parking, and use of parking at Lincoln Medical Center.

- To ensure parking is indeed sufficient for the first two years, based on the results of the monitoring reports, the Town and the resort could work in partnership to modify the parking plan as needed.

Conclusion:

Based on our review of the January 2020 Parking Study, we have determined that the materials were prepared in a professional manner and following applicable standards of care. The proposed parking supply is projected to exceed the Project's parking needs based on both ITE and ULI methodologies and standards. The operational recommendations provided within the report are sound and follow industry best practices. The additional potential recommendations provided could be considered by the SmokeTree Resort but are not necessary to meet the parking needs stated in the report.

We appreciate the opportunity to work with you on the SmokeTree Resort Peer Review Project. Please let us know if you have any questions or comments.

Sincerely,

WALKER CONSULTANTS

Sue Thompson
Consultant

Jeff Weckstein
Consultant

PARKING AGREEMENT

7125 E. Lincoln Drive, Paradise Valley, AZ

This Parking Agreement ("Parking Agreement") is entered into this 12 day of May, 2020, between JAMEL GREENWAY, LLC, an Arizona limited liability company, ("Landlord") and GENTREE LLC, an Arizona limited liability company ("Tenant").

WHEREAS, Landlord desires to lease to Tenant and Tenant desires to lease from Landlord, for Tenant's use during designated hours, certain parking spaces for its employees and valet parking for its customers in certain areas of the parking lot of the building located at 7125 E. Lincoln Drive, Paradise Valley, Arizona, 85253 (the "LPMC Property") as designated by Landlord.

NOW THEREFORE, in consideration of good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. Parking Space Usage: Tenant shall have the right to use the parking spaces assigned by Landlord to Tenant for employee parking and valet customer parking under the terms of this Parking Agreement. Tenant shall provide Landlord with a plan showing the planned parking space usage prior to the Commencement Date and in the case of valet parking, the valet circulation plan. Landlord will identify the location of the assigned spaces (the "Parking Area") which can be changed by Landlord from time to time at its discretion. Tenant shall be responsible for identifying the valet parking area during the designated hours of use and providing adequate safety conditions. All identification signs and materials must be removed during non-designated hours of use and cannot be stored at the LPMC Property. The assigned parking spaces will not be made available to any outside parties during the designated hours of use.

2. Parking Space Number: The number of parking spaces assigned to Tenant shall be as designated by Landlord from time to time. The initial number of assigned parking spaces shall be 25. Landlord shall give Tenant ten (10) days' advance written notice of changes in the number and location of assigned parking spaces. Such notice shall be by mail and email to Tenant's designated representative(s) as provided to Landlord by Tenant.

3. Parking Space Designated Hours of Use: The assigned parking spaces shall be available for Tenant's use at the following times: (a) 5:30 pm through 4:30 am Monday through Thursday, and (b) 5:30 pm Friday through 4:30 am Monday of each week.

4. Term: The term of this Agreement shall be month-to-month commencing on September 1, 2022 (the "Commencement Date"). Landlord and Tenant shall each have the right to terminate this Agreement upon thirty (30) days' written notice to the other party.

5. Rent: Tenant shall pay to Landlord on the first day of each month, the sum of Forty and No/100 Dollars ($40.00) per parking space assigned to Tenant during the previous month plus applicable transaction privilege tax. In the event the Commencement Date shall commence on a day other than the first day of a month, the Rent for the first month shall be prorated accordingly using actual days. In the event the number of parking spaces available to Tenant is changed effective on a date other than the first day of the month, the amount due will be prorated accordingly using actual days. This is a gross lease and Tenant shall have no obligation to reimburse Landlord any amounts for maintenance, taxes, insurance or other financial obligations incurred by Landlord except as further identified in Paragraph 6 of this Agreement.

6. Maintenance and Responsibilities:

A. Landlord shall maintain the Parking Area and access thereto from Lincoln Drive in good condition and repair at Landlord's sole cost and expense. Upon the construction of a shared access drive utilized by Landlord and Tenant, the maintenance responsibilities for the drive from Lincoln Drive and the costs for this maintenance shall be dictated by the shared access agreement between Landlord and Tenant.

B. Landlord shall ensure that the Parking Area is illuminated from dusk to 5:00 a.m. daily at its sole cost and expense.

C. Tenant shall be responsible to ensure the Parking Area is not damaged and remains in the same condition existing prior to its use each day, including the following: (i) Prior to 7:00 a.m. each day, Tenant shall remove all trash which has accumulated in the Parking Area during Tenant's designated hours of use. (ii) Tenant shall repair, at its sole cost and expense, any damage to the

Parking Area caused by Tenant's employees, vendors or customers within three (3) business days of written notice by Landlord to Tenant of such damage. Tenant will report to Landlord any damage reported to Tenant by its employees, customers and vendors within forty-eight (48) hours of notification of such incident. (iii) Prior to 6:00 a.m. each day or as soon as possible after notification from Landlord, Tenant shall remove vehicles left by Tenant's employees, customers or vendors ("Abandoned Vehicles").

D. Landlord shall have the right to remove Abandoned Vehicles left in the Parking Area after 6:00 a.m.

E. The Parking Area shall not be utilized by Tenant's employees, customers or vendors for overnight parking. Any vehicles left overnight shall be considered Abandoned Vehicles

F. Tenant acknowledges that the LPMC Property and the Parking Area are not monitored by Landlord and Landlord does not provide security services in the Parking Area. Tenant acknowledges and agrees to advise its employees, customers and vendors that the Landlord is not responsible for any damage to vehicles or incidents related to security which may occur in the LPMC Building or the Parking Area.

G. In the event that Tenant's use of the Parking Area results in security issues at the LPMC Building, Landlord shall have the right to require Tenant to provide security services during its designated hours of use at Tenant's sole cost and expense.

H. Tenant acknowledges that outside vendors providing maintenance, repair, and cleaning services for the LPMC Property will be accessing the Parking Area and the LPMC Property during the designated hours of use. Tenant agrees to cooperate with such vendors when necessary for the vendors to perform their duties, such as, but not limited to ensuring trash collection vehicles have access to the trash enclosure.

I. Landlord and Tenant shall perform an inspection prior to the Commencement Date to establish the condition of the Parking Area.

5. Insurance: Tenant shall provide to Landlord a certificate of insurance providing general liability coverage in the amount of Five Million and No/100 Dollars ($5,000,000.00) on the Parking Area and listing Landlord as an additional insured on the certificate of insurance.

6. Notices: Notices and demands required, or permitted, to be sent to those listed hereunder shall be sent by certified mail, return receipt requested, postage prepaid, or by FedEx or other reputable overnight courier service and shall be deemed to have been delivered on the date that is (a) one (1) business day following deposit with FedEx or other reputable overnight courier service, or (b) three (3) days following deposit in the United States Mail if sent by certified mail, to address shown below:

LANDLORD:

Jamel Greenway, LLC
Attn: James Shough
4771 N. 20th Street, Suite B22
Phoenix, AZ 85016
Email: jmscapital @aol.com
CC: lynn@tandcshops.com

TENANT:

Gentree, LLC
Attn: Taylor Robinson
3620 E. Campbell Ave,
Suite B
Phoenix, AZ 85018
Email: taylor@generaaz.com

7. Indemnification:

A. Tenant hereby indemnifies and holds Landlord harmless from and against any and all claims, demands, liabilities, and expenses, including attorney's fees, arising from any breach or default by Tenant of this Agreement, or the negligent or willful misconduct of Tenant or its agents, employees or contractors in or about the Parking Area, except to the extent caused by Landlord's negligence or willful misconduct. In the event any action or proceeding shall be brought against Landlord by reason of any such claim, Tenant shall defend the same at Tenant's expense by counsel reasonably satisfactory to Landlord.

B. Landlord hereby indemnifies and holds Tenant harmless from and against any and all claims, demands, liabilities, and expenses, including attorney's fees, arising from any breach or default by Landlord of this Agreement, or the use, operation or maintenance of the Parking Area, except to the extent caused by the willful misconduct or negligence of Tenant occurring at the Parking Area. In the event any action or proceeding shall be brought against Tenant by reason of any such claim, Landlord shall defend the same at Landlord's expense by counsel reasonably satisfactory to Tenant.

8. Assignment and Subletting: Tenant shall not have the right to assign or sublet its interest in this Parking Agreement to any assignee, subtenant or transferee without Landlord's consent.

9. Entire Agreement. This Parking Agreement contains all of the agreements of the parties hereto with respect to matters covered or mentioned herein and no prior agreement, letters, representations, warranties, promises, or understandings pertaining to any such matters shall be effective for any such purpose. This Agreement may be amended or added to only by an agreement in writing signed by the parties hereto or their respective successors in interest.

IN WITNESS WHEREOF, the parties hereto have executed this Parking Agreement on the day and year first mentioned, the corporate party or parties by its or their proper officers thereto duly authorized.

TENANT:

GENTREE, LLC
an Arizona limited liability company

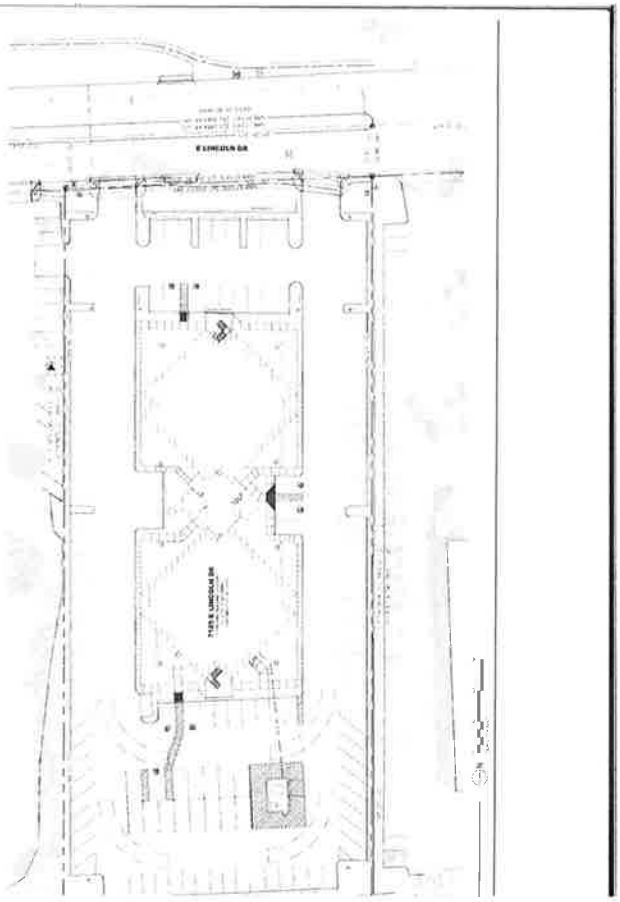
By: _____
Name: Taylor Robinson
Authorized Agent

LANDLORD:

JAMEL GREENWAY, LLC,
an Arizona limited liability company

By: _____
James M. Shough,
Authorized Signer

EXHIBIT A



Smoke Tree Resort

Traffic Impact Analysis

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

May 2020
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

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

Registered Professional Engineer (Civil)
CERTIFICATE NO. 35879
DAWN D. CARTIER
Date Signed 5.14.2020
ARIZONA, U.S.A.

May 2020

CivTech Project No. 18-0550

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EXECUTIVE SUMMARY

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

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

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

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 754 external weekday daily trips, with 51 external trips occurring in the AM peak hour and 77 external trips occurring in the PM peak hour.

Existing Conditions

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

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

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

Opening Year 2021

- The results of the Scenario 1 and 2 2021 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2021. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the

intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 11.0 seconds per vehicle and 1.3 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2021. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 56.8 seconds per vehicle to 53.9 seconds per vehicle and the westbound delay would decrease from 60.2 seconds per vehicle to 57.2 seconds per vehicle.
    - During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the westbound phase be increased from 13 seconds to 17 seconds. With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.4 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 72.6 seconds per vehicle to 58.6 seconds per vehicle, which is almost an acceptable level of service.

Horizon year 2026

- The results of the Scenario 1 and 2 2026 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2026. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times

will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 12.7 seconds per vehicle and 1.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2026. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the eastbound delay from 55.7 seconds per vehicle to 51.0 seconds per vehicle and reduce the westbound delay from 57.4 seconds per vehicle to 54.7 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 70.7 seconds per vehicle to 53.3 seconds per vehicle. The westbound approach delay is anticipated to remain the same, however, the delay on the westbound approach is anticipated to be 59.3 seconds per vehicle, which is very close to the threshold for an acceptable level of service, 55 seconds per vehicle.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2026 using the total traffic projections.

  - The westbound left turn lane proposed for Scenario 1 at Smoke Tree Access A on Lincoln Drive has previously been discussed the Town of Paradise Valley as well as their reviewing consultant. It was decided that a maximum of 50 feet with a 60 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. Scenario 2 will consist of a single right in/right out driveway and will not require a westbound left turn lane.
  - For scenario 1, Smoke Tree Resort is requesting full access. Scenario 2 will consist of a single access to Smoke Tree with right in/right out access only. With the exception of the westbound left turn at the Smoke Tree driveway on Lincoln Drive, both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at the Smoke Tree driveway, whether it is shared with the Lincoln Medical Center or not. 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. After discussions with the Town staff, it was decided that a storage length of 100 feet will be provided for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 100 foot storage length, 75 feet would be an acceptable storage length.

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

INTRODUCTION

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

Study Requirements

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

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

Study Area

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

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

Horizon Years

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

For purposes of this study, the development will be assumed fully built out by 2021. Therefore, the analysis years to be analyzed for this study include opening year 2021 and horizon year 2026. A location map of the study area is provided in **Figure 1**.

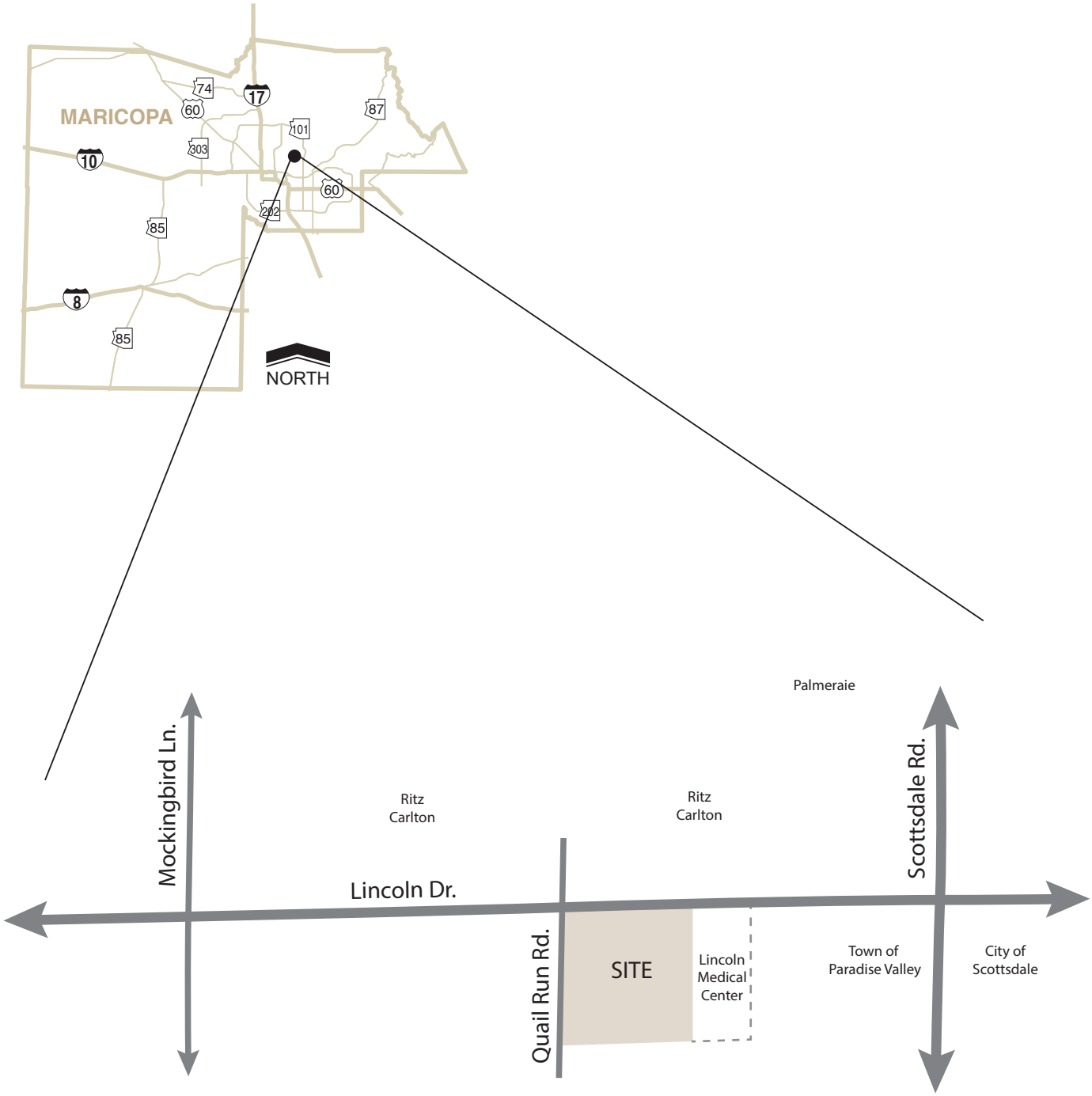


Figure 1: Vicinity Map

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**.

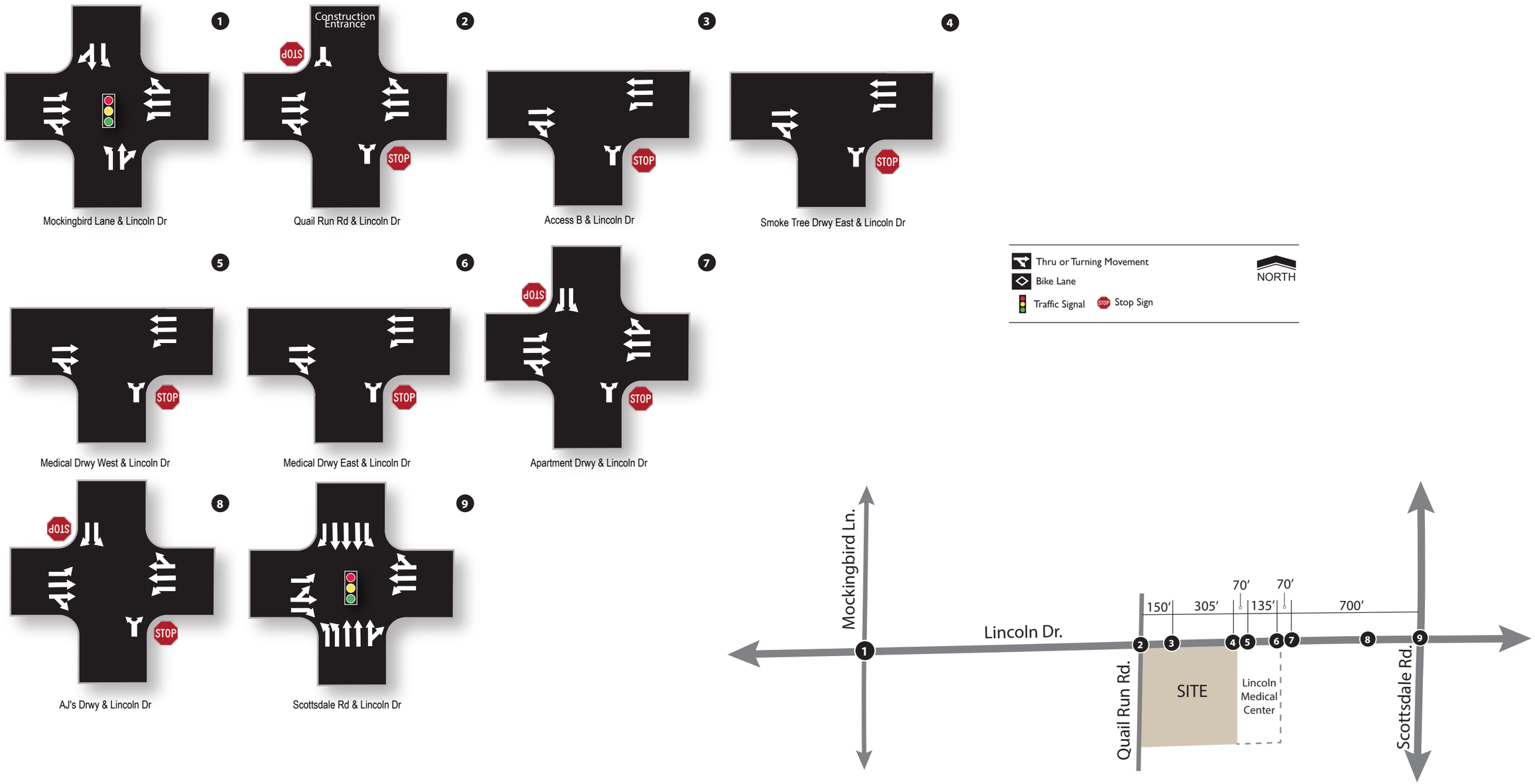


Figure 2: Existing Lane Configurations and Traffic Controls

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**.

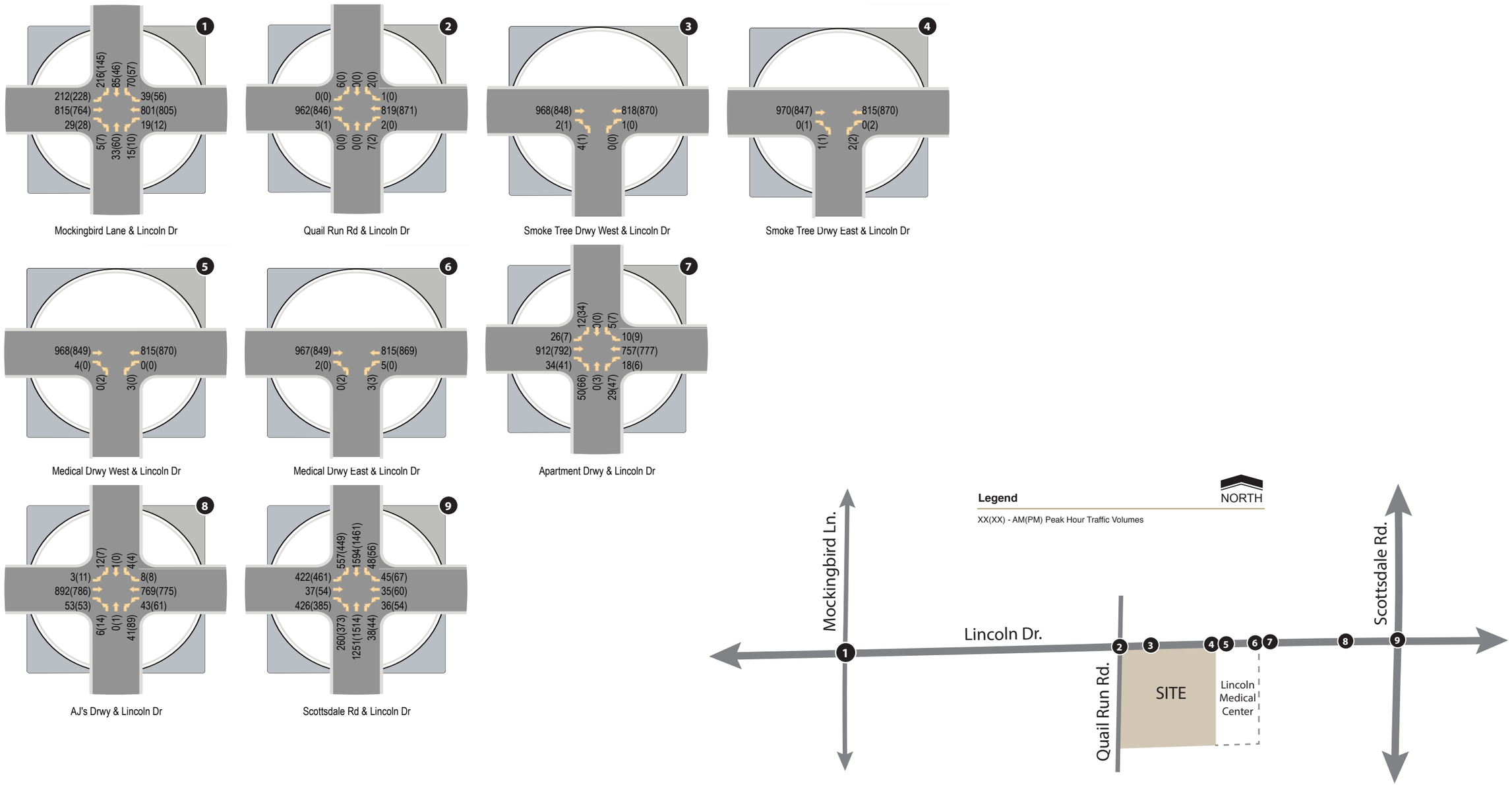


Figure 3: Seasonally Adjusted Existing Traffic Volumes

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

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

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

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

The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delay on the eastbound and westbound approaches during both the AM and PM peak hours. Although mitigation is not typically recommended for existing conditions, since this stretch of Lincoln Drive is currently under construction, recommendations will be made in order to minimize the current delay. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 17 seconds. This mitigation measure is anticipated to decrease the eastbound delay from 56.3 seconds per vehicle to 53.9 seconds per vehicle. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed to allow for more vehicles to pass through the intersection without the light changing from green to yellow, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by them.

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

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

PROPOSED DEVELOPMENT

SITE LOCATION

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

SITE ACCESS

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

Scenario 1

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

- *Access A* is a proposed full movement access point on Lincoln Drive located at the Smoke Tree Resort eastern property line; this will be a shared access with the Lincoln Medical Plaza bordering Smoke Tree to the east. The two existing access points to the site will be removed and replaced with this single access. The two Lincoln Medical driveways will also be removed in this scenario. After discussion with Paul Mood at the Town of Paradise Valley, it was concluded that this is the most likely scenario for the redevelopment of Smoke Tree. The location of this intersection is shown in Figure 4 along with the scenario 2 option. For both scenarios, a dedicated eastbound right turn lane will be constructed on Lincoln Drive.

- *Access B* is a proposed access from Quail Run Road to the Smoke Tree site. The intersection of Quail Run Road and Lincoln Drive will be signalized by 2020 and it is expected that some vehicles will utilize Quail Run Road to access the Smoke Tree site. This access will be a full movement access on the western border of the site approximately 215 south of Lincoln Drive.

The two existing Smoke Tree Driveways, intersections 3 and 4, will both be removed by opening year 2021 and replaced with a single, full movement access located west of the eastern property line.

Scenario 2

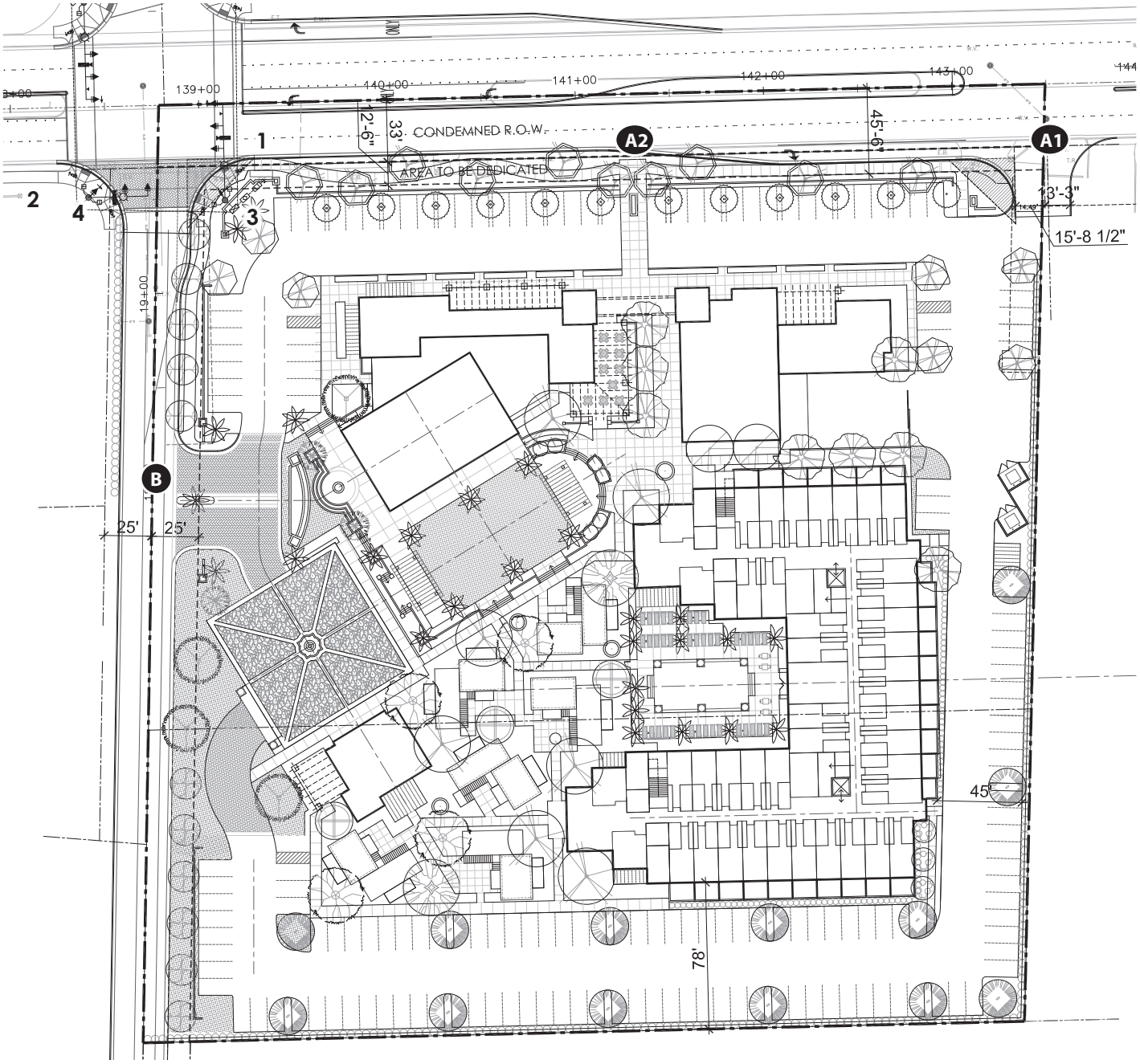
There are two access points proposed for this development, described as follows:

- *Access A* is a proposed right in/right out access point on Lincoln Drive located west of the eastern Smoke Tree property line. The two existing access points to the site will be removed and replaced with this single access. The final location of this access point will be close to the midpoint of the Smoke Tree frontage on Lincoln Drive. A median is currently being constructed on Lincoln Drive, which would prevent any left-in or left-out movements at this location. For both

scenarios, a dedicated eastbound right turn lane will be constructed on Lincoln Drive.

- *Access B* is a proposed access from Quail Run Road to the Smoke Tree site. The intersection of Quail Run Road and Lincoln Drive will be signalized by build out year 2021, and it is expected that some vehicles will utilize Quail Run Road to access the Smoke Tree site. This access will be a full movement access on the western border of the site approximately 215 feet south of Lincoln Drive.

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



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

A1 - Represents approximate location of Access if cross access with Lincoln Medical is available.

A2 - Represents approximate location of Access if no cross access with Lincoln Medical is available.

Figure 4: Site Plan and Access

TRIP GENERATION

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

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

The proposed development will consist of maximum of 102 standard hotel rooms, 6 for rent hotel resort villas, 4 of which will have 3 keys each and the remaining 2 will have 4 keys each for a total of 20 keys. The resort villas are rentable rooms, not for sale units. Additionally, the Smoke Tree Resort will provide a 3,200 square foot quality restaurant, a 4,000 square foot market and a 1,800 SF coffee shop, all of which will be open to the public as well as resort guests. The market and coffee shop will be combined into a single “shopping center” land use (land use code 820) since the two buildings are connected. An event space and other hotel amenities for guests will be provided but are not anticipated to generate any off-site trips.

Since this boutique resort does not fully comply with the definition of a standard hotel or a resort hotel, a combination of the two was used. The weighted averages from the Resort Hotel, LUC 330, and the fitted curves from the standard Hotel, LUC 310, were averaged and utilized in order to determine the number of trips generated by the Smoke Tree Resort. Additionally, an internal capture percentage was applied to the external restaurant trips, and market/coffee shop trips because it is assumed that not all trips to and from these areas will be external. For the quality restaurant, it is anticipated that 50% of the trips will be arriving externally and the other 50% will be hotel guests. For the market/coffee shop, it is assumed that 65% of the trips will be from resort guests and the remaining 35% will be external 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
Main Hotel/ Resort Villas	310/330	122	Rooms	544	28	20	48	29	28	57
Quality Restaurant	931	3,200	SF	268	2	0	2	17	8	25
Market/Coffee Shop	820	5,800	SF	218	3	2	5	11	11	22
			Total Trips	1,030	33	22	55	57	47	104
			Internal Capture Reduction (Quality Restaurant 50%)	*(134)*	*(1)*	*(0)*	*(1)*	*(9)*	*(4)*	*(13)*
			Internal Capture Reduction (Market/Coffee Shop 65%)	*(142)*	*(2)*	*(1)*	*(3)*	*(7)*	*(7)*	*(14)*
			Subtotals	**754**	**30**	**21**	**51**	**41**	**36**	**77**

As shown in **Table 3**, the proposed development is anticipated to generate approximately 754 external weekday daily trips, with 51 external trips occurring in the AM peak hour and 77 external trips occurring in the PM peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

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

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

Table 4 – Site Trip Distribution

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

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

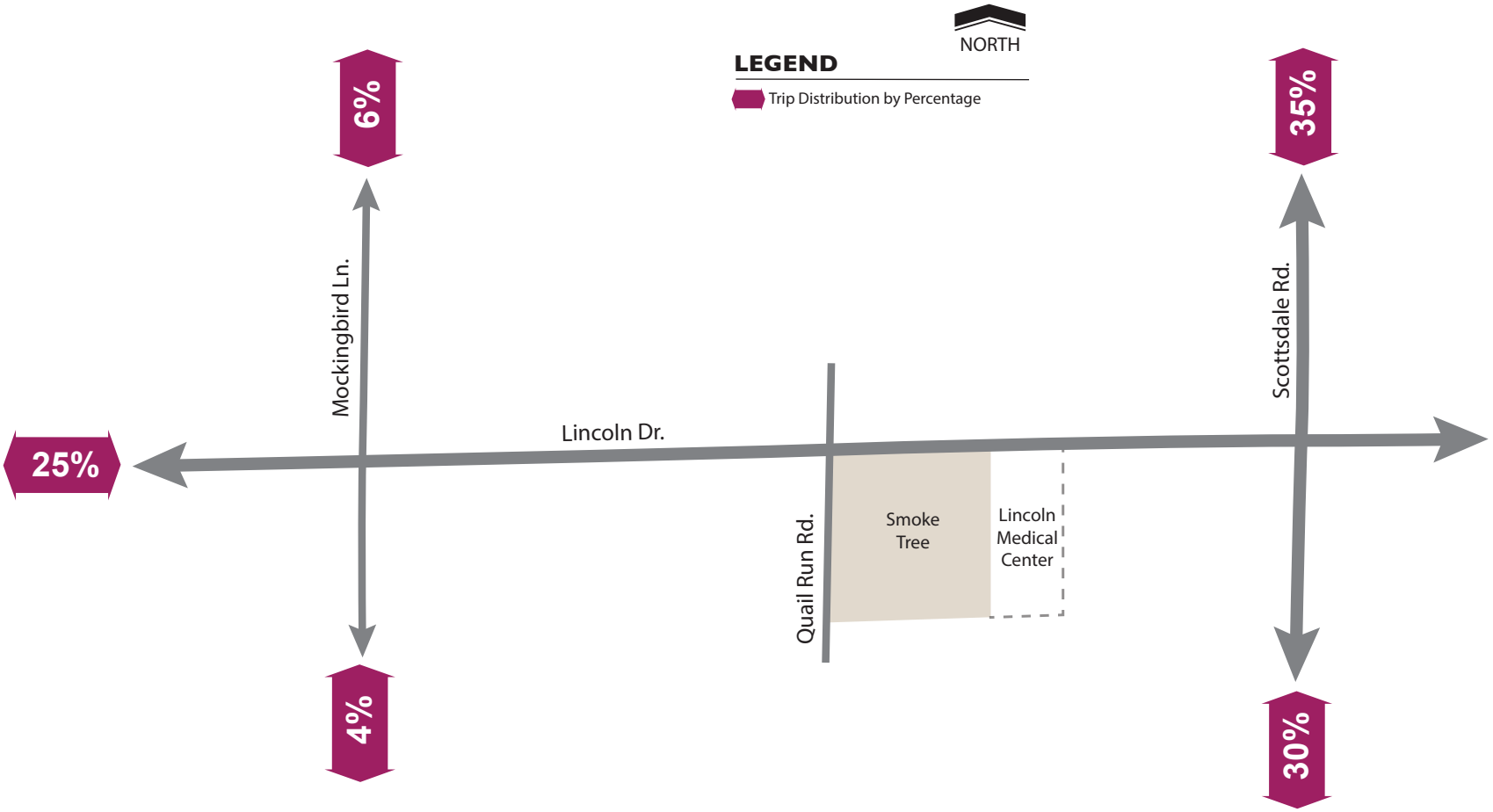
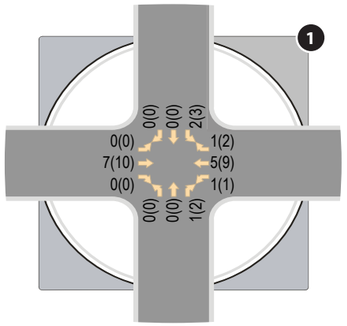
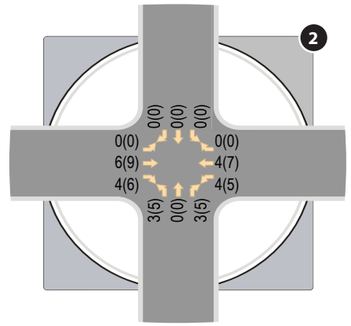


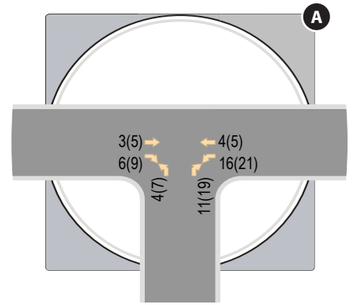
Figure 5: Trip Distribution



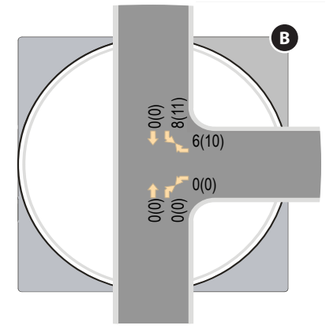
Mockingbird Lane & Lincoln Dr



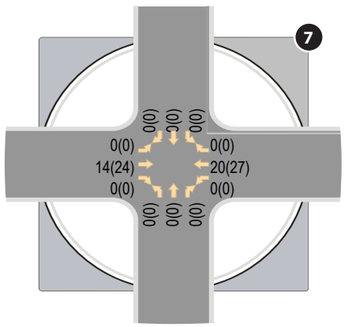
Quail Run Rd & Lincoln Dr



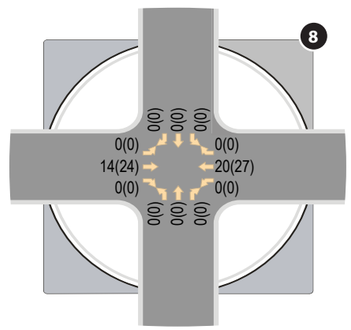
Smoke Tree Drwy A/Medical Access A & Lincoln Dr



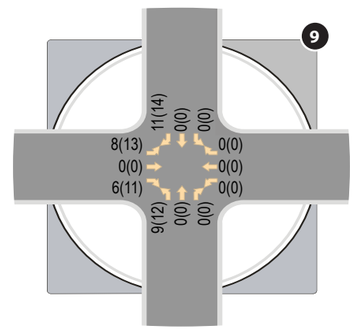
Quail Run Rd & Accss B



Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr

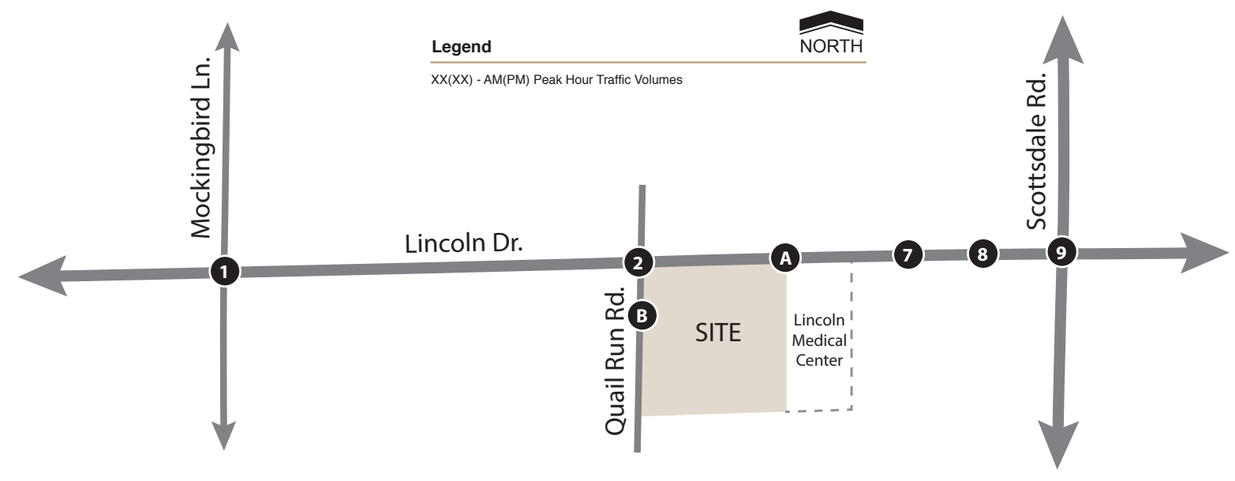


Figure 6: Scenario 1 - Site Generated Traffic Volumes

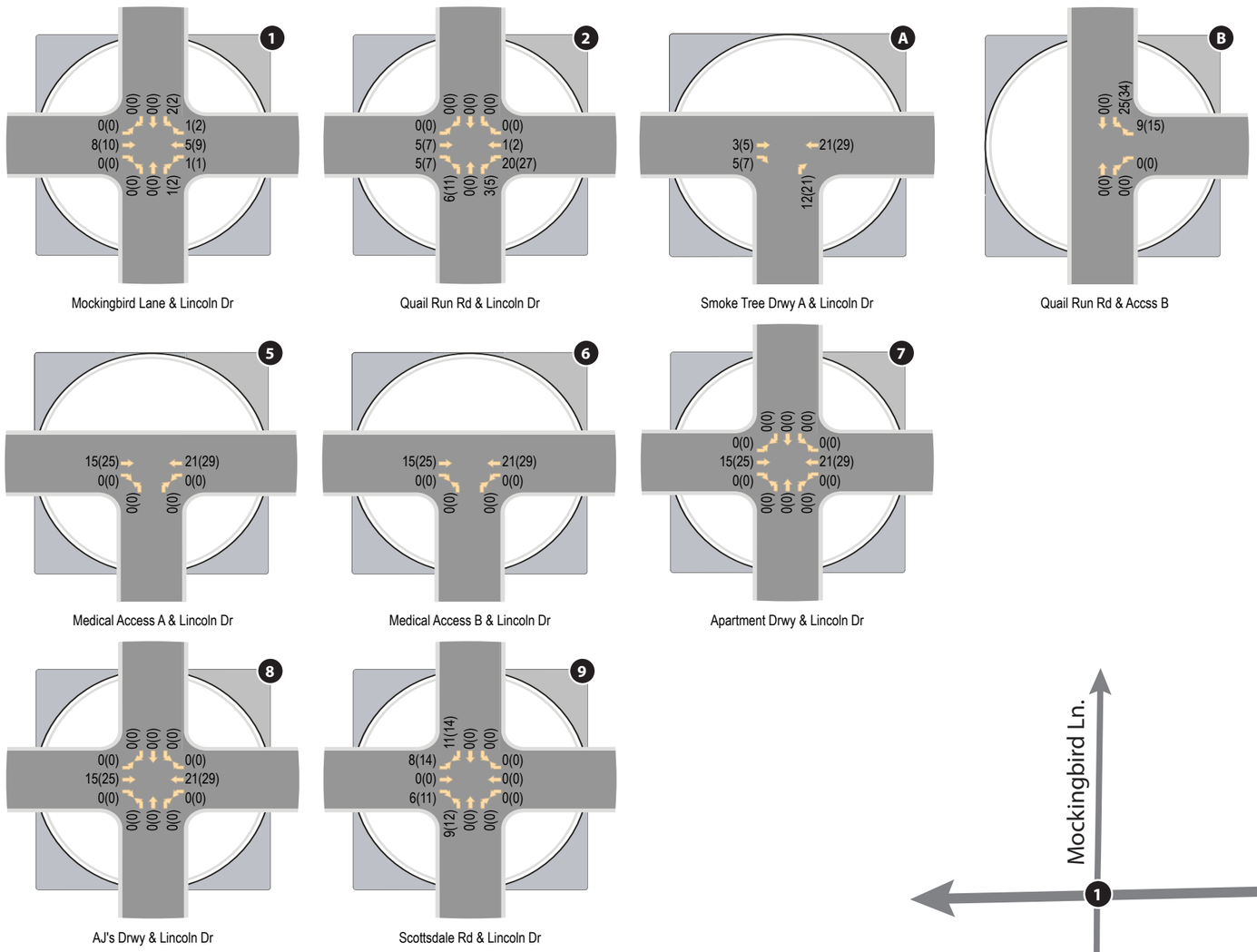


Figure 7: Scenario 2 - Site Generated Traffic Volumes

FUTURE BACKGROUND TRAFFIC

CivTech applied a growth rate to the seasonally adjusted traffic counts for this study in order to obtain the background traffic volumes along the adjacent roadway network. In reviewing the City of Scottsdale Traffic Counts Map, a 1.7% average growth rate was found within the proposed study area. **Table 5** shows the expansion factors used for the proposed opening year 2021 and horizon year 2026.

Table 5 – Growth Rate Expansion Factors

Horizon Year	Expansion Factor
2021	1.052
2026	1.144

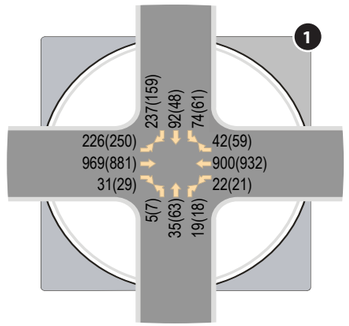
Applying the growth rate expansion factors to the seasonally adjusted existing traffic volumes predicts the volume of traffic anticipated on the surrounding area roads for opening year 2021 and horizon year 2026. Directly north of the proposed Smoke Tree Resort is the new Ritz Carlton Resort. Phase 1 of that development is expected to be open by 2021, 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 2021 and 2026 were added to the grown existing volumes. Directly east of the proposed site is another proposed development, Lincoln Medical Center. For Scenario 1 in this TIA, all four existing driveways will be removed and replaced with a single shared driveway on the boundary line of Smoke Tree and Lincoln Medical Center. For Scenario 2, the Lincoln Medical Center access points will remain as-is and the two Smoke Tree access points will be removed and replaces with a single access centered on their Lincoln Drive frontage. These two access scenarios are represented in the 2021 and 2026 background volumes.

The future signal at the intersection of Quail Run Road and Lincoln Drive will be constructed by the Ritz Carlton developer. This signal is anticipated to be operational by the buildout year of the Smoke Tree Resort, 2021. By the horizon year 2026, this intersection will provide a dedicated southbound right turn lane striped at 300 feet. These two improvements have been included in the analysis for the opening year 2021 and the horizon year 2026.

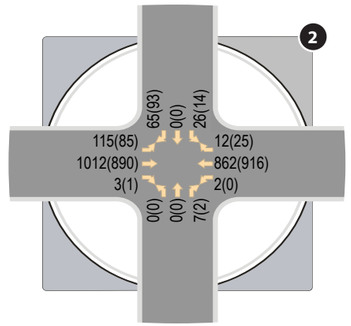
Calculated background traffic for Scenario 1 and Scenario 2 for opening year 2021 are presented in **Figure 8** and **Figure 9,** respectively. Calculated background traffic for Scenario 1 and Scenario 2 for the horizon year 2026 are presented in **Figure 10** and **Figure 11,** respectively. Ritz Carlton site volumes, and more detailed background traffic calculations are included in **Appendix F**.

TOTAL TRAFFIC

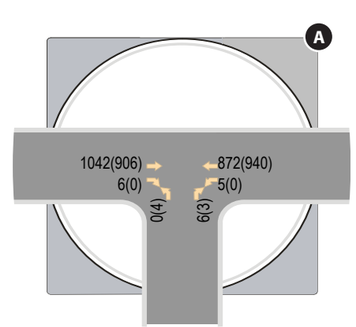
Total traffic was determined by adding the site generated traffic to the projected background traffic. Total peak hour traffic volumes for the opening year 2021 are shown in **Figure 12** and **Figure 13** for scenario 1 and scenario 2, respectively. Total Peak hour traffic volumes for the horizon year 2026 are shown in **Figures 14** and **Figure 15** for scenario 1 and scenario 2 respectively.



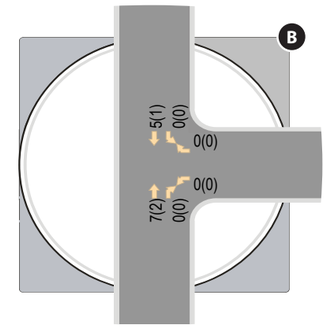
Mockingbird Lane & Lincoln Dr



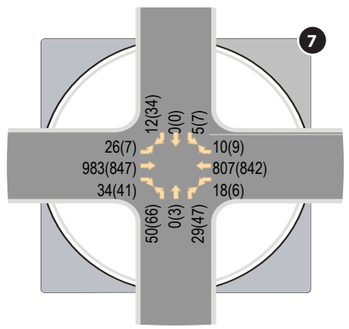
Quail Run Rd & Lincoln Dr



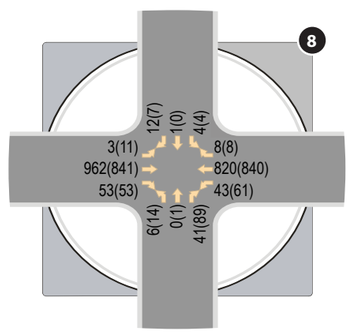
Smoke Tree Drwy A/Medical Access A & Lincoln Dr



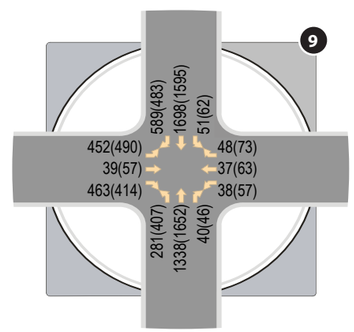
Quail Run Rd & Accss B



Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr

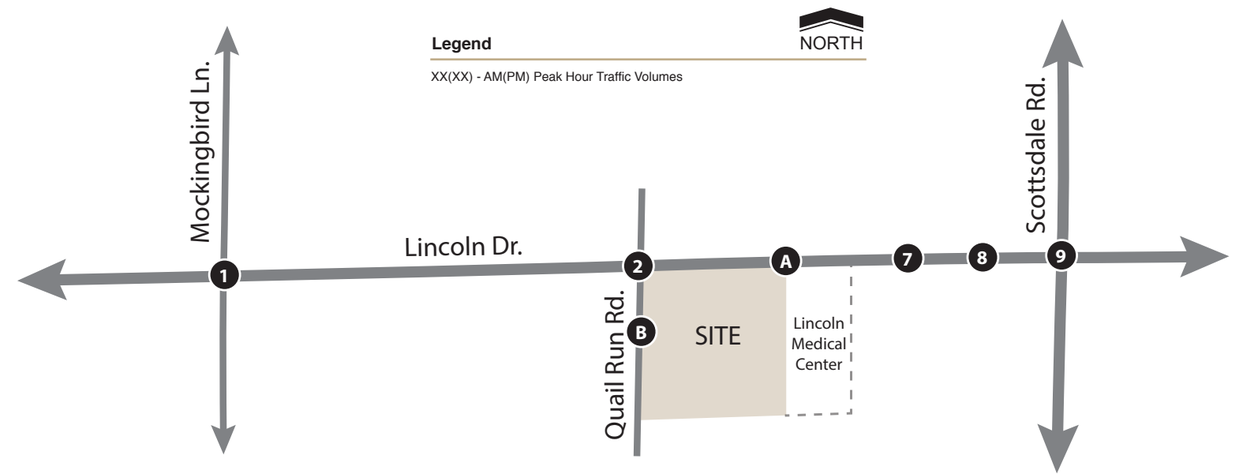


Figure 8: Scenario 1- 2021 Background Traffic Volumes

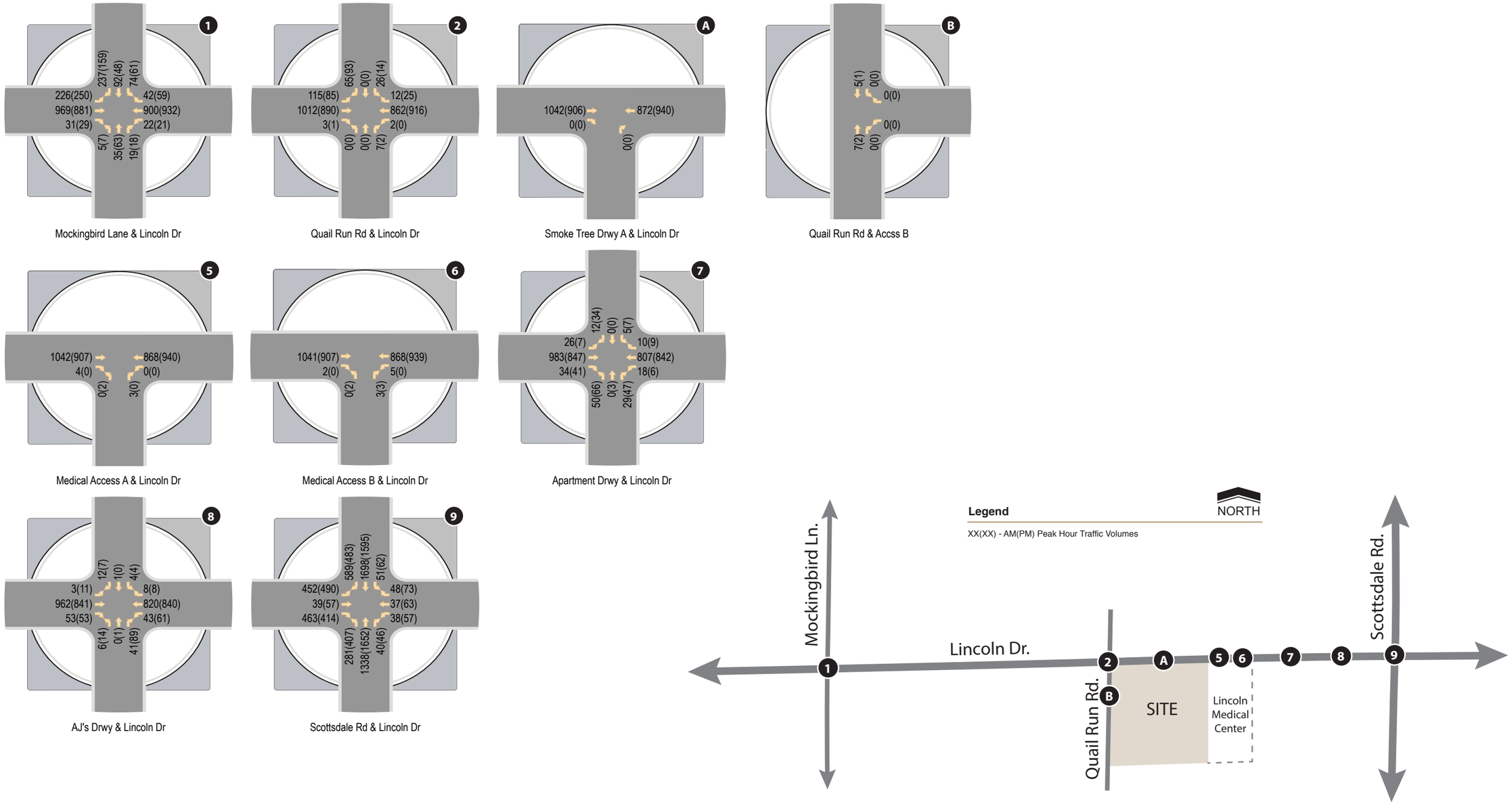
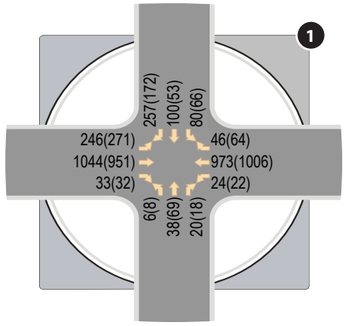
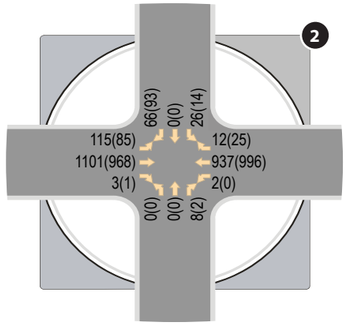


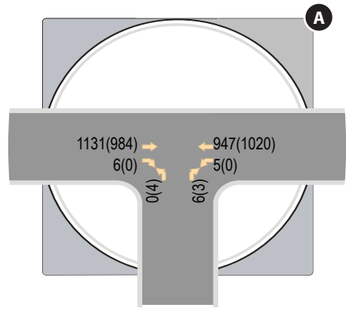
Figure 9: Scenario 2 - 2021 Background Traffic Volumes



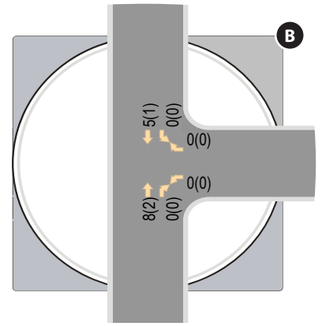
Mockingbird Lane & Lincoln Dr



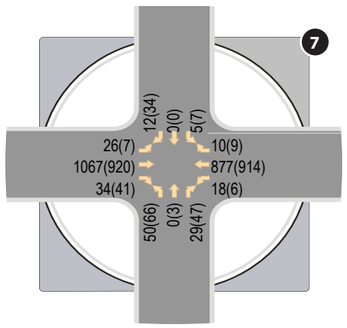
Quail Run Rd & Lincoln Dr



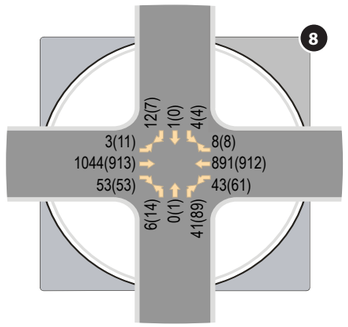
Smoke Tree Drwy A/Medical Access A & Lincoln Dr



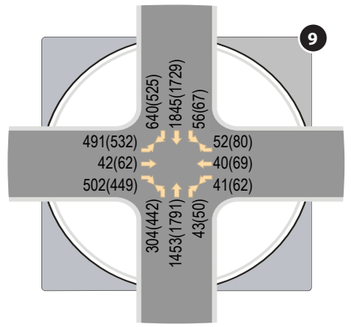
Quail Run Rd & Accss B



Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr

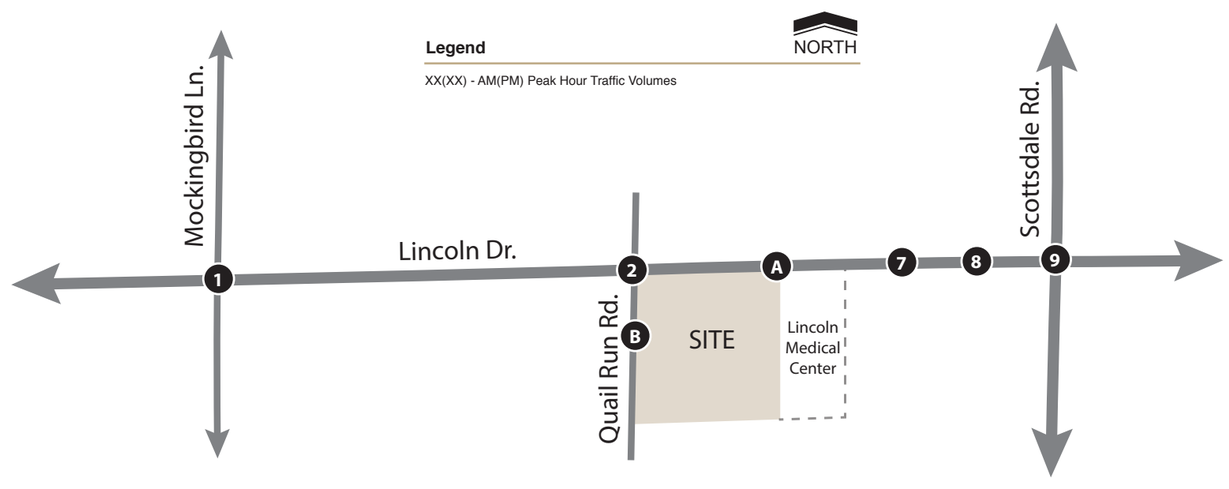


Figure 10: Scenario 1- 2026 Background Traffic Volumes

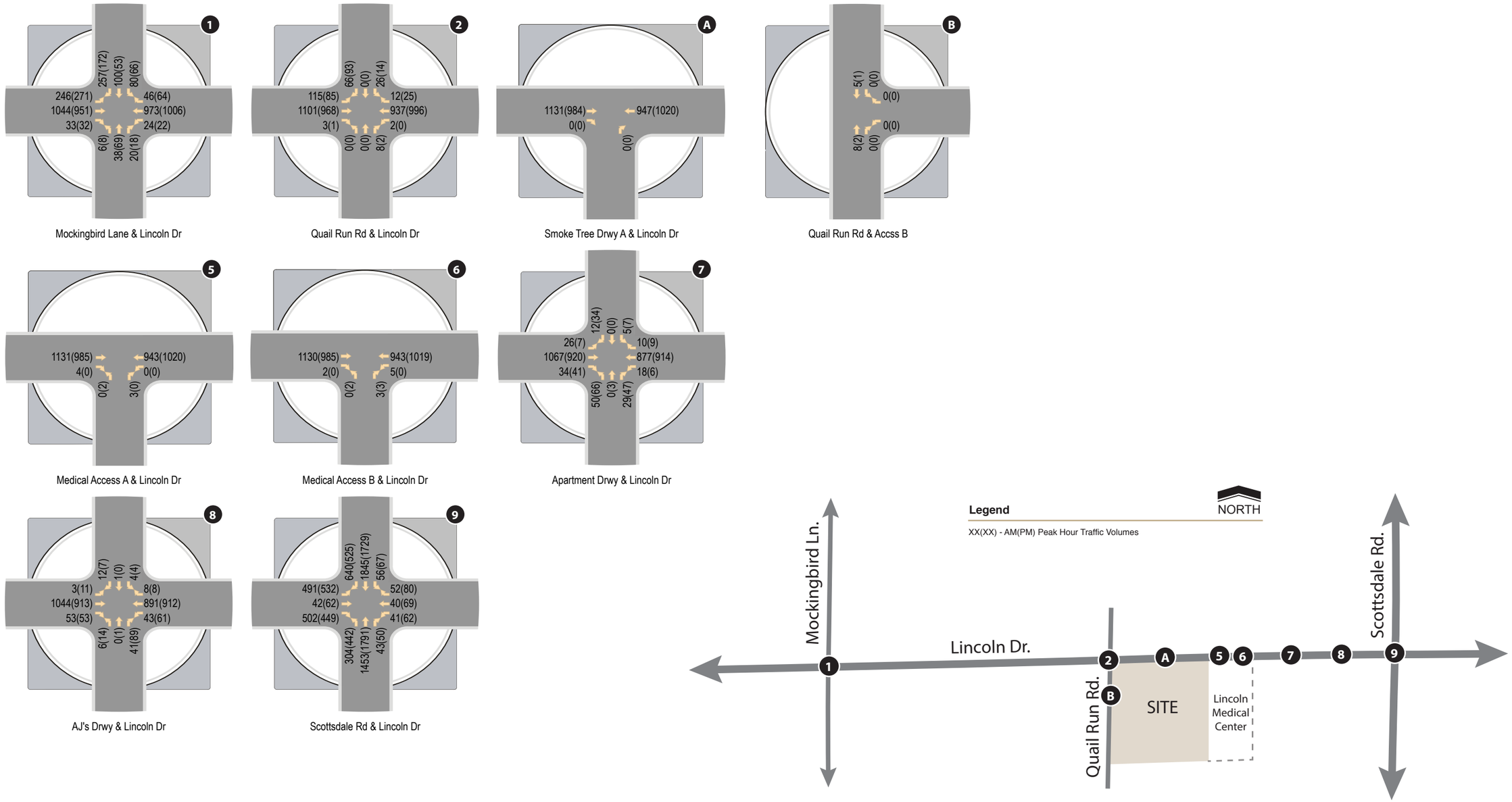


Figure 11: Scenario 2- 2026 Background Traffic Volumes

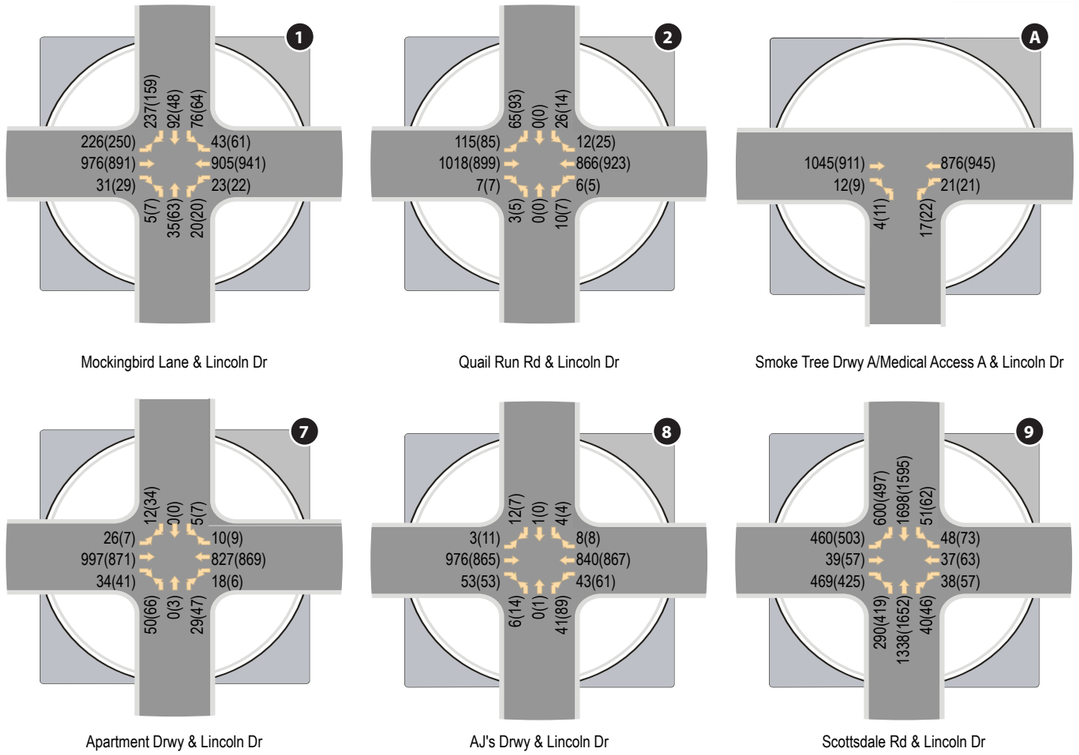


Figure 12: Scenario 1- 2021 Total Traffic Volumes

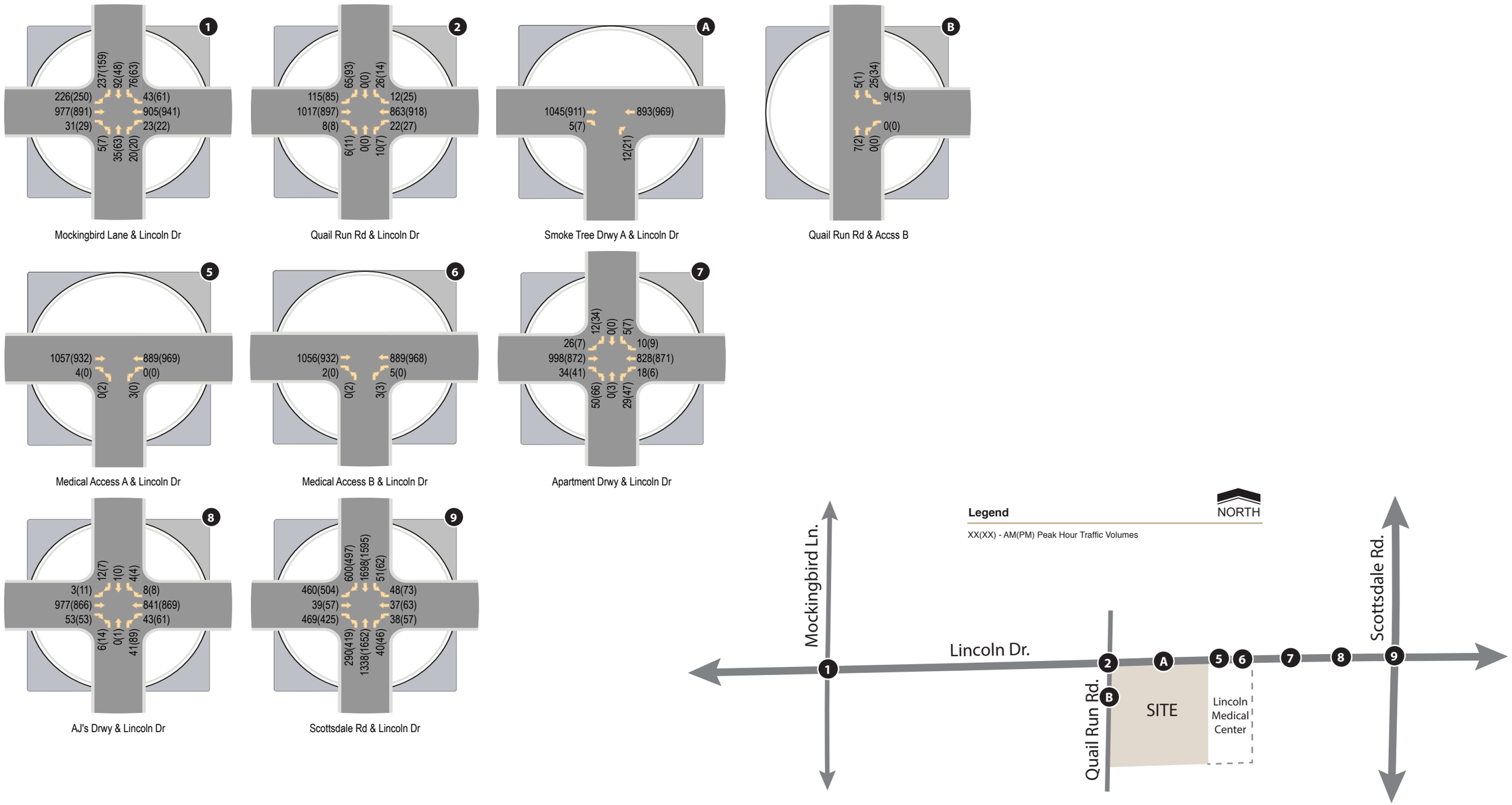
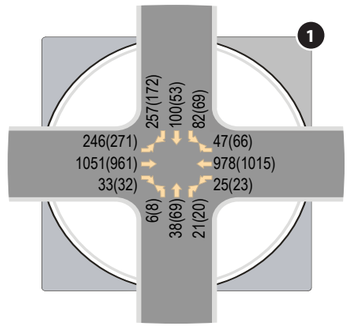
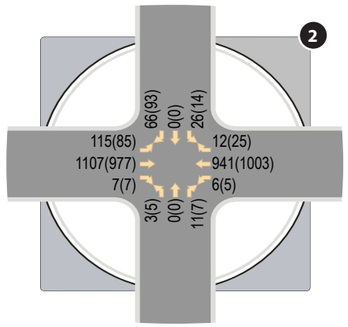


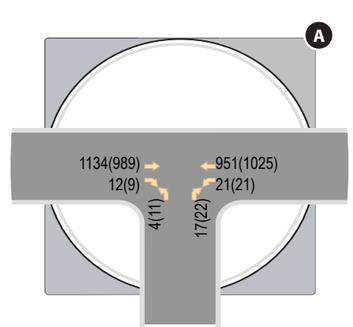
Figure 13: Scenario 2 - 2021 Total Traffic Volumes



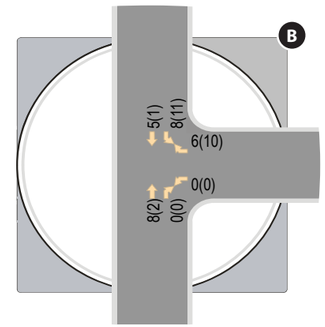
Mockingbird Lane & Lincoln Dr



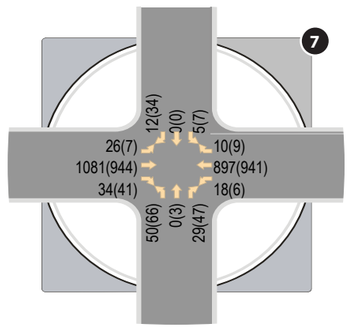
Quail Run Rd & Lincoln Dr



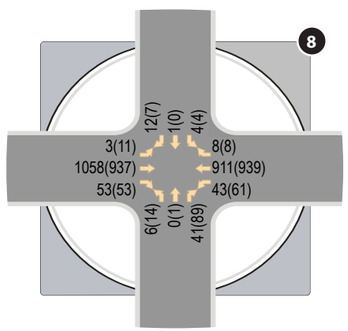
Smoke Tree Drwy A/Medical Access A & Lincoln Dr



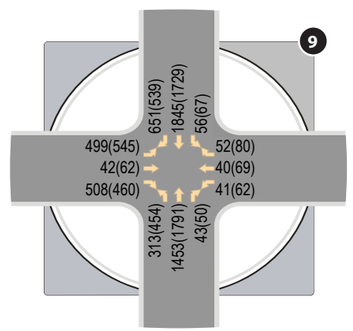
Quail Run Rd & Accss B



Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr

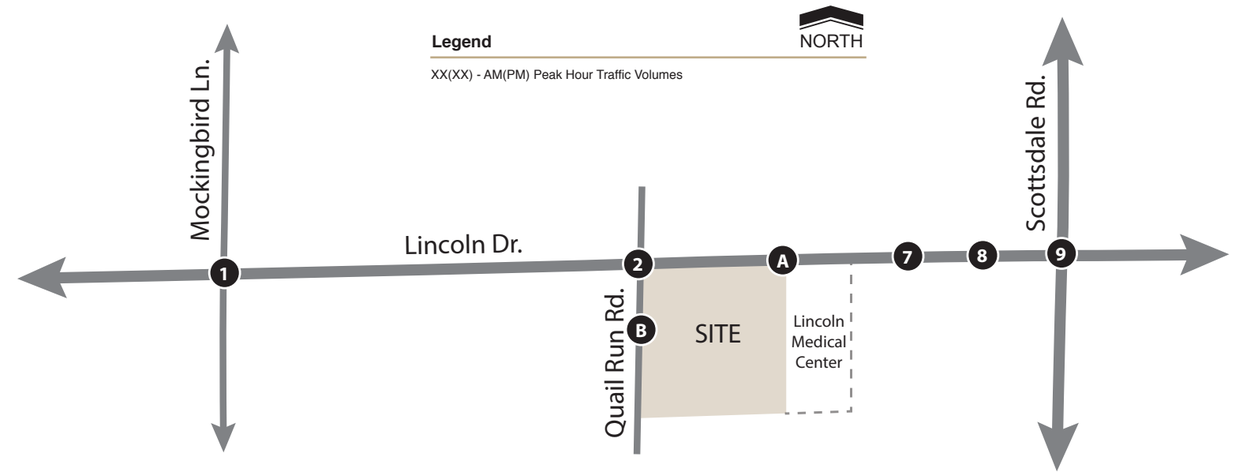


Figure 14: Scenario 1- 2026 Total Traffic Volumes

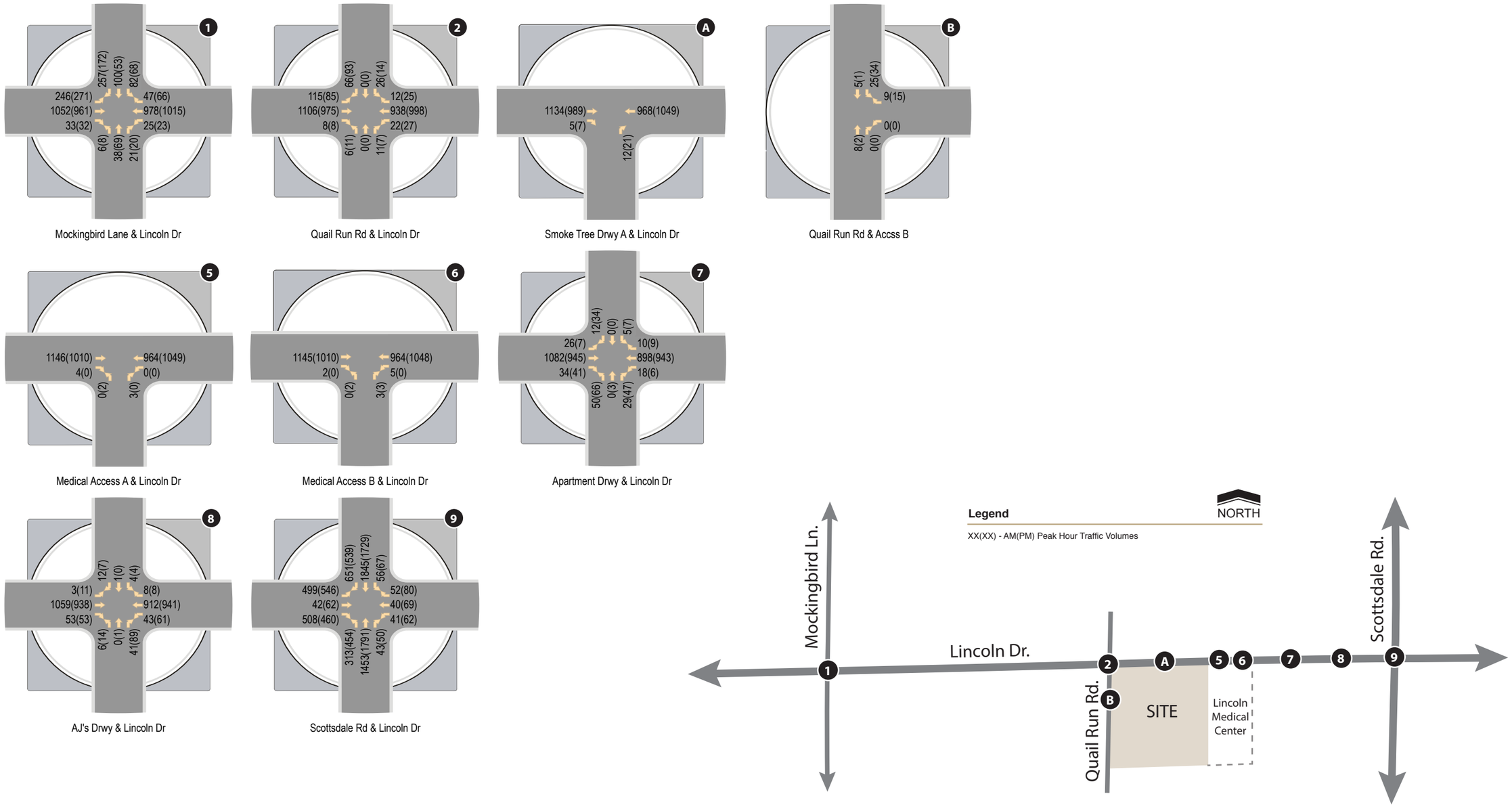


Figure 15: Scenario 2- 2026 Total Traffic Volumes

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 2021 opening year and **Table 7** for the 2026 horizon for both Scenario 1 and 2. Detailed analysis worksheets can be found in **Appendix G** for 2021 Scenario 1, **Appendix H** for 2021 Scenario 2, **Appendix I** for 2026 Scenario 1 and **Appendix J** for 2026 Scenario 2.

Table 6 – 2021 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/ Movement	2021 LOS AM(PM)					
				Scenario 1			Scenario 2		
				No-Build	Build	Mitigated	No-Build	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB SB EB WB **Overall**	D(**E**) **E**(**E**) B(A) A(A) **B(B)**	D(**E**) **E**(**E**) B(A) A(A) **B(B)**	[Not Mitigated]	**E**(**E**) **E**(**E**) A(A) A(A) **B(B)**	**E**(**E**) **E**(**E**) A(A) A(A) **B(B)**	[Not Mitigated]
2	Quail Run Rd & Lincoln Dr	Signal	NB SB EB WB **Overall**	A(A) B(B) A(A) A(A) **A(A)**	B(A) B(B) A(A) A(A) **A(A)**	[Not Mitigated]	A(A) B(B) A(A) A(A) **A(A)**	B(A) B(B) A(A) A(A) **A(A)**	[Not Mitigated]
5	Medical Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	N/A	N/A	N/A	B(C) A(A)	B(C) A(A)	[Not Mitigated]
6	Medical Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	N/A	N/A	N/A	B(B) A(A)	B(B) A(A)	[Not Mitigated]
7	Apartment Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	C(C) C(C) A(B) A(A) A(A)	C(C) C(C) B(B) A(A) A(A)	[Not Mitigated]	C(C) C(C) A(B) A(A) A(A)	C(C) C(C) B(B) A(A) A(A)	[Not Mitigated]
8	AJ's Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	B(B) C(C) B(A) A(A) A(A)	B(B) C(C) B(B) A(A) A(A)	[Not Mitigated]	B(B) C(C) B(A) A(A) A(A)	B(B) C(C) B(B) A(A) A(A)	[Not Mitigated]
9	Scottsdale Rd & Lincoln Dr	Signal	NB SB EB WB **Overall**	C(C) D(D) **E**(**E**) **E**(**E**) **D(D)**	C(C) D(D) **E**(**E**) **E**(**E**) **D(D)**	C(D) D(D) D(D) **E**(**E**) **D(D)**	C(C) D(D) **E**(**E**) **E**(**E**) **D(D)**	C(C) D(D) **E**(**E**) **E**(**E**) **D(D)**	C(D) D(D) **E**(D) **E**(**E**) **D(D)**
A	Access A & Lincoln Dr	1-way stop (WB)	NB Shared WB Left	B(B) A(A)	B(B) A(A)	[Not Mitigated]	A(A) -(-)	B(B) -(-)	[Not Mitigated]

Table 6 – 2021 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/ Movement	2021 LOS AM(PM)					
				Scenario 1			Scenario 2		
				No-Build	Build	Mitigated	No-Build	Build	Mitigated
B	Quail Run Rd & Access B	1-way stop (NB)	SB Left WB Shared	A(A) A(A)	A(A) A(A)	[Not Mitigated]	A(A) A(A)	A(A) A(A)	[Not Mitigated]

Note: Scenario 1 Access A is shared access between Lincoln Medical Office and Smoke Tree Resort. Scenario 2 Access A is a right in/right out driveway exclusively for Smoke Tree Resort.

The results of the Scenario 1 and 2 2021 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2021. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 11.0 seconds per vehicle and 1.3 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2021. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 56.8 seconds per vehicle to 53.9 seconds per vehicle and the westbound delay would decrease from 60.2 seconds per vehicle to 57.2 seconds per vehicle.

During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the westbound phase be increased from 13 seconds to 17 seconds. With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.4 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 72.6 seconds per vehicle to 58.6 seconds per vehicle, which is almost an acceptable level of service.

The signal timing proposed for the 2021 mitigated scenario was applied to the 2026 horizon year.

Table 7 – 2026 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/ Movement	2026 LOS AM(PM)					
				Scenario 1			Scenario 2		
				No-Build	Build	Mitigated	No-Build	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB	D(**E**)	D(**E**)	[Not Mitigated]	D(**E**)	D(**E**)	[Not Mitigated]
			SB	**E**(**E**)	**E**(**E**)		**E**(**E**)	**E**(**E**)	
			EB	B(A)	B(A)		A(A)	A(A)	
			WB	A(A)	A(A)		A(A)	A(A)	
			Overall	**B(B)**	**B(B)**		**B(B)**	**B(B)**	
2	Quail Run Rd & Lincoln Dr	Signal	NB	B(A)	B(B)	[Not Mitigated]	B(B)	B(B)	[Not Mitigated]
			SB	B(B)	B(B)		B(B)	B(B)	
			EB	A(A)	A(A)		A(A)	A(A)	
			WB	A(A)	A(A)		A(A)	A(A)	
			Overall	**A(A)**	**A(A)**		**A(A)**	**A(A)**	
5	Medical Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	N/A	N/A	N/A	B(C) A(A)	B(C) A(A)	[Not Mitigated]
6	Medical Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared/Right WB Left	N/A	N/A	N/A	B(B) A(A)	B(B) A(A)	[Not Mitigated]
7	Apartment Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	C(C)	C(C)	[Not Mitigated]	C(C)	C(C)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	C(C)	
			SB Right	B(B)	B(B)		B(B)	B(B)	
			EB Left	A(A)	A(A)		A(A)	A(A)	
			WB Left	A(A)	A(A)		A(A)	A(A)	
8	AJ's Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	B(B)	B(B)	[Not Mitigated]	B(B)	B(B)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	C(C)	
			SB Right	B(B)	B(B)		B(B)	B(B)	
			EB Left	A(A)	A(A)		A(A)	A(A)	
			WB Left	A(A)	A(A)		A(A)	A(A)	
9	Scottsdale Rd & Lincoln Dr	Signal	NB	C(D)	C(D)	C(D)	C(D)	D(E)	C(D)
			SB	**E**(D)	D(**E**)	D(D)	**E**(D)	**E**(**E**)	D(D)
			EB	**E**(**E**)	**E**(D)	D(D)	**E**(**E**)	**E**(D)	D(D)
			WB	**E**(**F**)	**E**(**E**)	D(**E**)	**E**(**F**)	**E**(**E**)	D(**E**)
			Overall	**D(D)**	**D(E)**	**D(D)**	**D(D)**	**D(E)**	**D(D)**
A	Access A & Lincoln Dr	1-way stop (WB)	NB Shared WB Left	B(B) A(A)	B(B) A(A)	[Not Mitigated]	A(A) -(-)	B(B) -(-)	[Not Mitigated]
B	Quail Run Rd & Access B	1-way stop (NB)	SB Left WB Shared	A(A) A(A)	A(A) A(A)	[Not Mitigated]	A(A) A(A)	A(A) A(A)	[Not Mitigated]

Note: Scenario 1 Access A is shared access between Lincoln Medical Office and Smoke Tree Resort. Scenario 2 Access A is a right in/right out driveway exclusively for Smoke Tree Resort.

The results of the Scenario 1 and 2 2026 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2026. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the

cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 12.7 seconds per vehicle and 1.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2026. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the eastbound delay from 55.7 seconds per vehicle to 51.0 seconds per vehicle and reduce the westbound delay from 57.4 seconds per vehicle to 54.7 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 70.7 seconds per vehicle to 53.3 seconds per vehicle. The westbound approach delay is anticipated to remain the same, however, the delay on the westbound approach is anticipated to be 59.3 seconds per vehicle, which is very close to the threshold for an acceptable level of service, 55 seconds per vehicle.

The proposed lane configurations for Scenario 1 and Scenario 2 are presented in **Figure 16** and **Figure 17**, respectively.

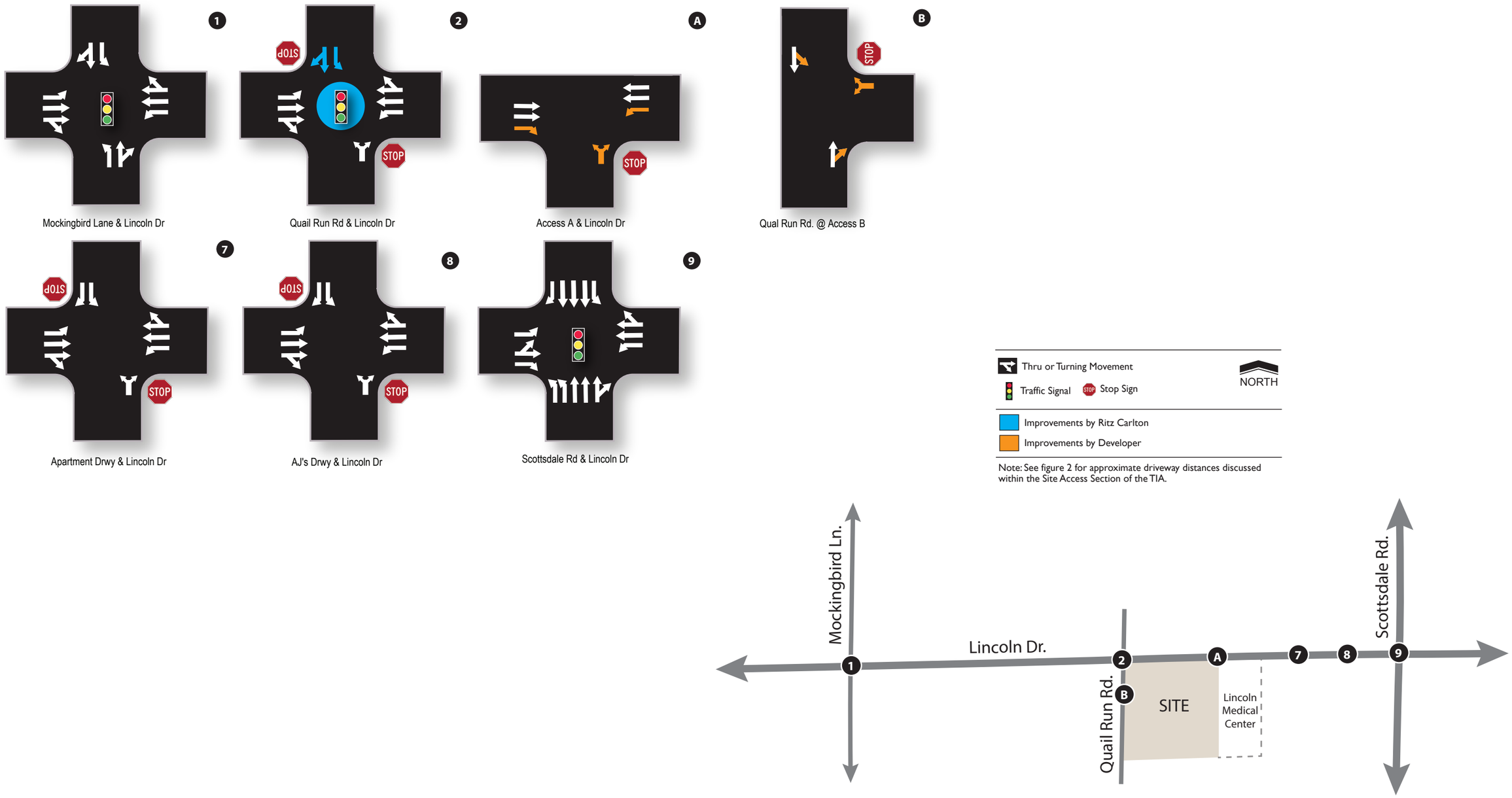
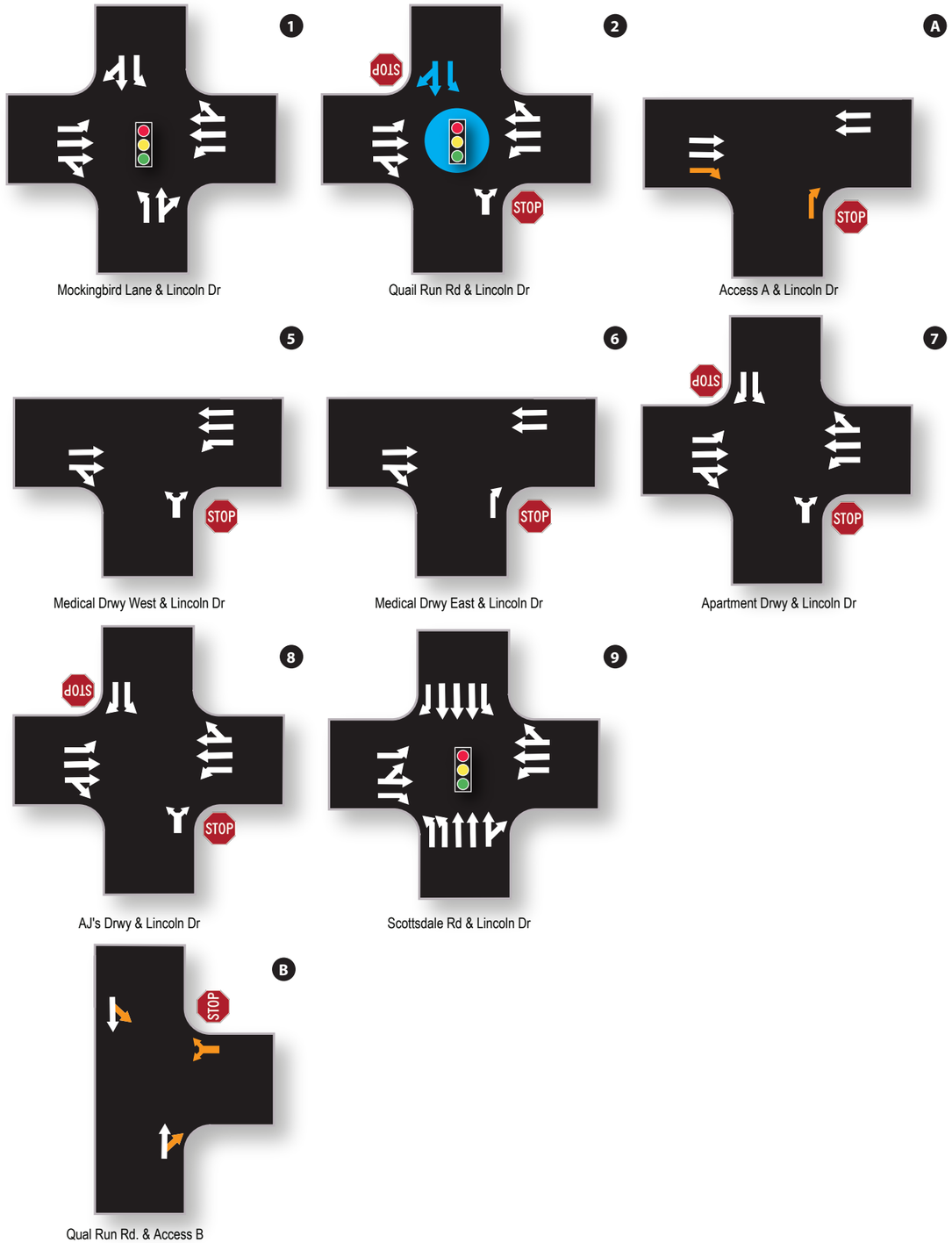


Figure 16: Scenario 1 - Proposed Lane Configurations and Traffic Controls



Thru or Turning Movement

Traffic Signal

Stop Sign

NORTH

Improvements by Ritz Carlton

Improvements by Developer

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

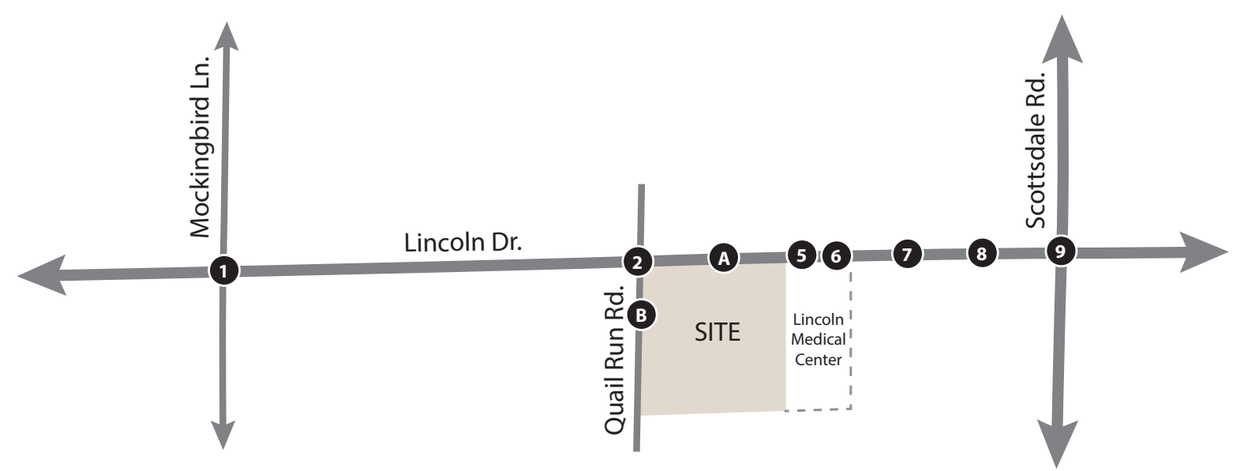


Figure 17: Scenario 2 - Proposed Lane Configurations and Traffic Controls

QUEUE LENGTH ANALYSIS

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

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

Storage Length = [2 x (veh/hr)/(cycles/hr)] x 25 feet

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

Storage Length = [2 x (veh/hr)/(30 periods/hr)] x 25 feet

Using the traffic volumes and lane configurations projected for the 2026 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 K.**

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

Table 8 – Queue Storage Lengths

ID	Intersection	Scenario	Intersection Control	Movement	Queue Storage			
					Existing (1)	AASHTO	95th Percentile	Recommended
1	Mockingbird Lane & Lincoln Dr	(6) S1 & S2	Signalized	NB Left	85’	25'	25'	85’
				SB Left	130’	150'	100'	130’
				EB Left	145’	500'	215'	(4) 145’
				WB Left	100’	50'	45'	100’
2	Quail Run Rd & Lincoln Dr	S1	Signalized	EB Left	-	225'	170'	(5) 150’
				WB Left	-	25'	25'	150’
		S2		EB Left	-	225'	170'	(5) 150’
				WB Left	-	50'	25'	150’
9	Scottsdale Rd & Lincoln Dr	(6) S1 & S2	Signalized	NB Left	(2) 550'	(2) 825'	(2) 360'	(2) 550'
				SB Left	185’	125'	145'	185’
				EB Left	175’	1,000'	450'	(4) 175’
				WB Left	90’	100'	110'	110’
				SB Right	315’	1,200'	360'	320’
				EB Right	175’	925'	615'	(4) 175’
A	Access A & Lincoln Drive	S1	1-way stop (NB)	WB Left	-	25’	25’	50’
				EB Right	-	25’	25’	100’
		S2		EB Right	-	25’	25’	100’

(1) Measured from stop bar to end of storage length
(2) Dual left turn lanes. Queue storage includes total storage length of both lanes
(3) Max storage length recommended for signalized intersection
(4) Extending this turn will interfere with left turns into AJ’s Fine Foods driveway
(5) Not the responsibility of the developer
(6) The volumes are the same in both scenarios at this intersection.

According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. The recommended storage lengths in **Table 8** are provided for horizon year 2026 using the total traffic projections.

The westbound left turn lane proposed for Scenario 1 at Smoke Tree Access A on Lincoln Drive has previously been discussed the Town of Paradise Valley as well as their reviewing consultant. It was decided that a maximum of 50 feet with a 60 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. Scenario 2 will consist of a single right in/right out driveway and will not require a westbound left turn lane.

For scenario 1, Smoke Tree Resort is requesting full access. Scenario 2 will consist of a single access to Smoke Tree with right in/right out access only. With the exception of the westbound left turn at the Smoke Tree driveway on Lincoln Drive, both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at the Smoke Tree driveway, whether it is shared with the Lincoln Medical Center or not. 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. After discussions

with the Town staff, it was decided that a storage length of 100 feet will be provided for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 100 foot storage length, 75 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 Town Code, standard details and development services guidelines. The Town of Paradise Valley measures sight distance using AASHTO methodology except that the sight triangle from the driveway is measured from the center of the egress lane, 14.5 feet back from the curb return line. Sight distance calculations according to AASHTO guidelines are summarized in **Table 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)
Scenario 1					
Access A & Lincoln Dr	40	45	400’	465’	335’
Quail Run Rd & Access B	-	30	265’	310’	225’
Scenario 2					
Access A & Lincoln Dr	40	45	400’	-	-
Quail Run Rd & Access B	-	30	265’	310’	225’

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 developer 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 L**.

CONCLUSIONS

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 754 external weekday daily trips, with 51 external trips occurring in the AM peak hour and 77 external trips occurring in the PM peak hour.

Existing Conditions

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

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

Opening Year 2021

- The results of the Scenario 1 and 2 2021 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2021. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 11.0 seconds per vehicle and 1.3 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.
    - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2021. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 56.8 seconds per vehicle to 53.9 seconds per vehicle and the westbound delay would decrease from 60.2 seconds per vehicle to 57.2 seconds per vehicle.
        - During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the westbound phase be increased from 13 seconds to 17 seconds.

With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.4 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 72.6 seconds per vehicle to 58.6 seconds per vehicle, which is almost an acceptable level of service.

Horizon year 2026

- The results of the Scenario 1 and 2 2026 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2026. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 12.7 seconds per vehicle and 1.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.
    - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2026. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the eastbound delay from 55.7 seconds per vehicle to 51.0 seconds per vehicle and reduce the westbound delay from 57.4 seconds per vehicle to 54.7 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 70.7 seconds per vehicle to 53.3 seconds per vehicle. The westbound approach delay is anticipated to remain the same, however, the delay on the westbound approach is anticipated to be 59.3 seconds per vehicle, which is very close to the threshold for an acceptable level of service, 55 seconds per vehicle.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2026 using the total traffic projections.
    - The westbound left turn lane proposed for Scenario 1 at Smoke Tree Access A on Lincoln Drive has previously been discussed the Town of Paradise Valley as well as their reviewing consultant. It was decided that a maximum of 50 feet with a 60 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. Scenario 2 will consist of a single right in/right out driveway and will not require a westbound left turn lane.
    - For scenario 1, Smoke Tree Resort is requesting full access. Scenario 2 will consist of a single access to Smoke Tree with right in/right out access only. With the exception of the westbound left turn at the Smoke Tree driveway on Lincoln Drive, both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at the Smoke Tree driveway, whether it is shared with the Lincoln Medical Center or not. 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. After discussions with the Town staff, it was decided that a storage length of 100 feet will be provided for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 100 foot storage length, 75 feet would be an acceptable storage length.
- There are no existing obstructions to sight distance within the project intersections or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development
    - The developer should ensure that sight visibility is provided at all proposed intersections according to the distances and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations.

LIST OF REFERENCES

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

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

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

Trip Generation Manual, 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:	**2021 PEAK HOUR ANALYSIS SCENARIO 1**
APPENDIX H:	**2021 PEAK HOUR ANALYSIS SCENARIO 2**
APPENDIX I:	**2026 PEAK HOUR ANALYSIS SCENARIO 1**
APPENDIX J:	**2026 PEAK HOUR ANALYSIS SCENARIO 2**
APPENDIX K:	**QUEUE STORAGE ANALYSIS**
APPENDIX L:	**SIGHT DISTANCE ANALYSIS**

APPENDIX A

REVIEW COMMENTS AND RESPONSES

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

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

Item	Review Comment	(Code) & Response
a.	Provide written responses to Kimley Horn comments dated February 7, 2020.	(3) CivTech has resolved all Kimley Horn comments at this time.
b.	Confirm square footage assumptions for resort uses with developer. These square footage quantities should be consistent throughout all SUP documents.	(2) Square footage has been confirmed with the developer
c.	The shared access at the Resort's eastern property line with the Lincoln Medical Center will require an approved shared access agreement by the two property owners prior to SUP approval.	(3) The shared access between Lincoln Medical Center and Smoke Tree Resort has been approved at this time.
d.	Executive Summary: In the first paragraph confirm the restaurant square footage and update as required.	(2) Restaurant square footage has been confirmed with the developer. Text has been added to the report to distinguish between gross and net square footage.
e.	Executive Summary: In the second paragraph scenario two analyzes the Resort with its own exclusive full access entrance (left-in/left-out) along Lincoln Drive. This may not be possible if a full access entrance (left-in/left-out) is approved for the Lincoln Medical Center.	(3) CivTech is aware that if Smoke Tree Resort had its own exclusive access it would not be a full movement access. However, at this time the shared access between Lincoln Medical Center and Smoke Tree Resort has been approved, meaning that this second scenario is no longer applicable.
f.	Page 2, paragraph: The report recommends changes to the signal timing at Scottsdale Road and Lincoln Drive. Since this intersection is controlled by the City of Scottsdale please provide documentation that they are agreeable to the recommended changes.	(1) CivTech will share the recommendations to signal timing changes with the City of Scottsdale upon completion of the TIA with the February 2020 report comments from the Town of Paradise Valley incorporated.
g.	The traffic impact analysis assumes an opening year of 2020. This does not appear to be realistic and should be updated. Any traffic projections should be updated as required also.	(1) Opening year has been updated to 2021 and horizon year has been updated to 2026.
h.	Page 4, Queue storage and Sight distance: The westbound turn lane to Access A on Lincoln Drive has a 60' taper and a 50' storage line per previous discussions with the Town council. Please revise accordingly.	(1) The queue storage length recommendation has been updated to recommend a 50 foot turn lane and a 60 foot taper.

Reviewed Date: 02/18/2020
CivTech Received Date: 02/18/2020
CivTech Entered Date: 02/18/2020
CivTech Response Date: 05/11/2020

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
l.	Page 5: Replace the word "contractor" with "developer"	(1) Text has been updated accordingly.
j.	Page 6, Horizon Years: It is assumed that the developer will open in October of 2020. Please revise accordingly.	(1) Opening year has been updated to 2021 and horizon year has been updated to 2026.
k.	Vicinity Map: Label Palmeraie Blvd.	(1) Palmeraie Boulevard has been labeled on the vicinity map.
l.	Page 15: The report recommends changes to the signal timing at Scottsdale Road and Lincoln Drive. Since this intersection is controlled by the City of Scottsdale, please provide documentation that they are agreeable to the recommended changes.	(1) CivTech will share the recommendations to signal timing changes with the City of Scottsdale upon completion of the TIA with the February 2020 report comments from the Town of Paradise Valley incorporated.
m.	Page 17, Site Access, Scenario 1, Access A: The shared access at the Resort's eastern property line with Lincoln Medical Center will require and approved shared access agreement by the two property owners prior to SUP approval.	(3) The shared access between Lincoln Medical Center and Smoke Tree Resort has been approved at this time.
n.	Page 17, Site Access, Scenario 2, Access B: this section states that the intersection of Quail Run Road and Lincoln Drive will be signalized by buildout year 2020. The Town's Lincoln Drive improvement project should be completed by the summer of 2021. Update buildout year of 2020 as needed.	(1) Buildout year has been updated to 2021. Reference to the Quail Run Road and Lincoln Drive signal has been updated to indicate the signal will be operation by 2021, the new buildout year of the site.
o.	Page 20, paragraph 3: confirm square foot assumptions for resort use with the developer. These square foot quantities should be consistent throughout all SUP documents.	(2) Square footage has been confirmed with the developer. Text has been added to distinguish between gross and net square footage.
p.	Page 21, Trip Generation summary, Table 3: Event space and meeting areas were omitted. Provide clarification or include as needed.	(2) Event space and meeting areas are included in the land use for a standard hotel, but they are not included in the land use for a resort hotel. The proposed Smoke Tree resort uses a blended rate between the two; the event space and meeting area is not likely to impact the trips generated during the peak hour and since it is included in the rates for a standard hotel, including it again separately would double count the anticipated trips.
q.	Page 25, Table 5, Growth Rate Expansion factor: update horizon year 2020 and 2025 as need to align with realistic construction completion and resort opening.	(1) Opening year has been updated to 2021 and horizon year has been updated to 2026. Growth rates have been updated accordingly.

Reviewed Date: 02/18/2020
CivTech Received Date: 02/18/2020
CivTech Entered Date: 02/18/2020
CivTech Response Date: 05/11/2020

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
r.	Page 37, paragraph 1: Is the 300' dedicated right turn lane from southbound Mockingbird Lane to westbound Lincoln drive included in the 2025 intersection level of service analysis?	(1) The southbound right turn lane from Mockingbird Lane to Lincoln Drive has now been included in the 2025 background and total analysis.
s.	Page 42, Sight distance analysis: Change the word "city" to "town".	(1) Text has been updated accordingly.
t.	Page 42, Table 9: changed posted speed limits from 35 mph to 40 mph. Update sight distance data as needed.	(1) The speed limit has been changed from 35 mph to 40 mph for the sight distance calculations. The table has been updated accordingly.
u.	Page 42, Last paragraph: change the word "contractor" to "developer".	(1) Text has been updated accordingly.
v.	Page 46, Bullet #1: Revise left turn lane to 50' storage and 60' taper (see "h" above). In bullet #4 change the word "contractor" to "developer".	(1) The queue storage length recommendation has been updated to recommend a 50 foot turn lane and a 60 foot taper. Also, the text has been changed from "contractor" to "developer".

Reviewed Date: 02/18/2020
CivTech Received Date: 02/18/2020
CivTech Entered Date: 02/18/2020
CivTech Response Date: 05/11/2020

4th Submittal

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

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

Item	Review Comment	(Code) & Response
2.	**Page 18, Site Access - provide spacing of access points from the adjacent signalized itnersesections and driveways for each scenario** **Although comment responses in Appendix A indicate that this comment has been addressed, we are of the opinion that it has not been fully addressed. The updated traffic report indicates that the site access locations are unknown. See Scenario 1 and Scenario 2 response on the following page. There are minimum spacing requirements for the driveways, which is 250 feet. The spacing is also subject to the geometry turn lane (queue length storage and taper) requirements.**	(2) After discussion with Geneva Holdings, CivTech was informed that they had met with Paul Mood at the Town of Paradise Valley and come to an agreement on the access configuration. A shared access with Lincoln Medical Center, directly to the east, will be constructed along with the redevelopment of the Smoke Tree Resort. CivTech and the Town acknowledge that the shared access do not explicitly meet the guidelines mentioned by Kimley Horn, however it does meet the restricted requirements put forth by Paul Mood. Both Scenario 1 and Scenario 2 are presented in the analysis since the shared access agreement has not been approved at the time of this submittal, however, Scenario 1 (shared access scenario) is likely the scenario that will be decided upon.
5.	**Trip Generation, Page 20 - the proposed development description discusses a market. The layout of the market on the site plan and location should be calculated out separately (like the restaurant) as it will attract non-resort trips.** **Comment responses in Appendix A indicate the market will not generate off-site trips. Kimley Horn does not agree with this response. The overall orientation and location of the market (detached from hotel/registration area, access location and faces Lincoln Drive) indicates this specialty market will generate its own trips and expect this should be treated separately from the hotel.**	(1) Information provided by the client indicates that the main purpose of the market is to provide services to the guests of the resort. The market will be more of a small shop to purchase items the patron may have forgotten, or quick packaged snacks. It will not be restricted to guest use only, however, and it is anticipated that very few external vehicles will be utilizing this market. A line in the trip generation was added showing the market and coffee shop as a retail land use with a 65% internal capture rate to account for the majority of visitors to the market being hotel guests. Scenario 1 and Scenario 2 site volumes have been updated accordingly.
7.	**Review of the Synchro HCS output shows a multi-stage maneuver for the northbound traffic exiting the Smoke Tree Access points in either scenario. The median is not wide enough to allow for a two-stage maneuver. We recommend the Synchro HCS output to be revised for a single maneuver.** **Comment responses in Appendix A indicates that two stage maneuvers were only modeled for AJ Driveway. See clip below from the Synchro output for Scenario 1 Driveway from SmokeTree onto Lincoln. This comment has not been addressed.**	(2) Extensive research was done to verify the one-stage left turn analysis for the Smoke Tree access point on Lincoln Drive. Per the Synchro user guide page 15-30 (included in Appendix A) if the "Vehicles in median storage" line in Synchro is set to "0" then the left turn will not be modeled as a two-stage left. The values highlighted by Kimley Horn regarding the two-stage left turn factors are what the factors would be if a two-stage left was used for analysis. Hand calculations were completed in order to verify that the 1-stage left turn factors, shown just above each of the highlighted lines, were used to determine the level of service for the northbound left turning movements at the driveway.

Reviewed Date: 10/25/2019
CivTech Received Date: 01/08/2020
CivTech Entered Date: 01/10/2020
CivTech Response Date: 01/10/2020

Smoke Tree Resort **CivTech, Inc.** **Review Comments & Responses**

March 1, 2019 Review

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

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

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

CivTech

Reviewed Date: 3/1/2019
CivTech Received Date: 3/13/2019
CivTech Entered Date: 9/5/2019
CivTech Response Date: 9/5/2019

Smoke Tree Resort **CivTech, Inc.** **Review Comments & Responses**

2ns Submittal

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

November 1, 2018 Review

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

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

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

Reviewed Date: 11/1/2018
CivTech Received Date: 11/2/2018
CivTech Entered Date: 9/6/2019
CivTech Response Date: 11/6/2018

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

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

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

Reviewed Date: 11/1/2018
CivTech Received Date: 11/2/2018
CivTech Entered Date: 9/6/2019
CivTech Response Date: 11/6/2018

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

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

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

Reviewed Date: 11/1/2018
CivTech Received Date: 11/2/2018
CivTech Entered Date: 9/6/2019
CivTech Response Date: 11/6/2018

APPENDIX B

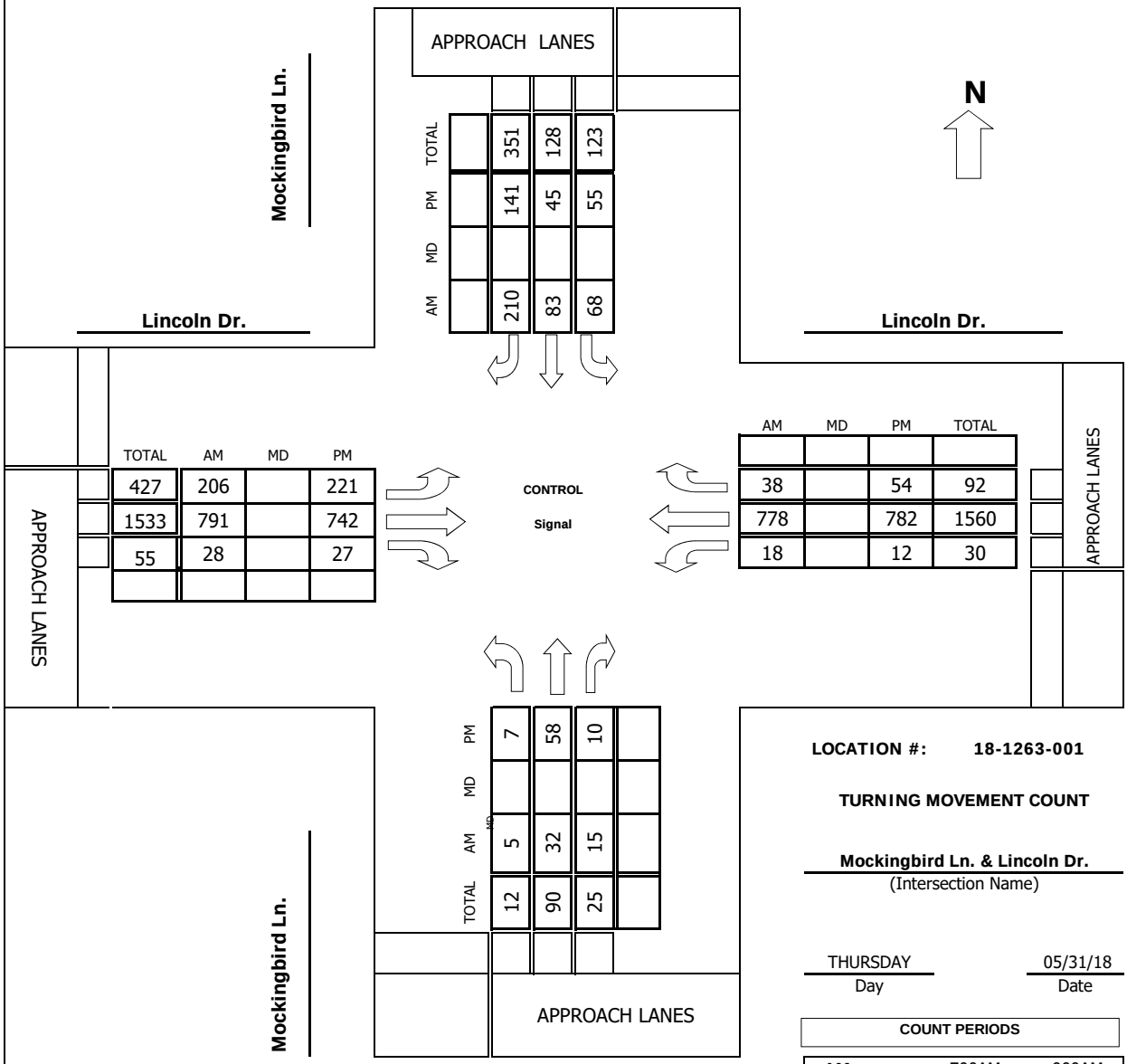
EXISTING TRAFFIC COUNTS

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:

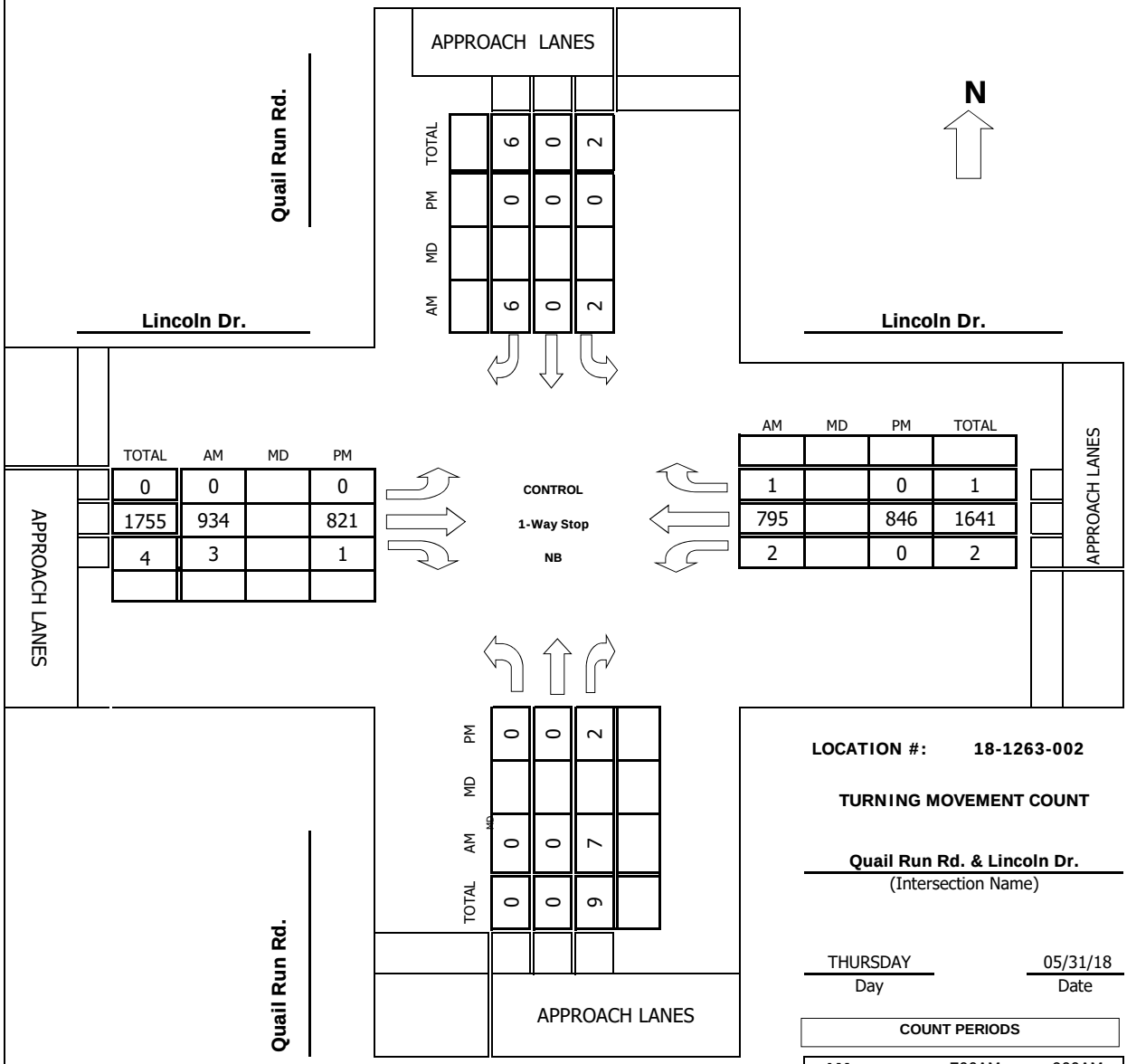
PM PEAK HOUR: 430 PM

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:

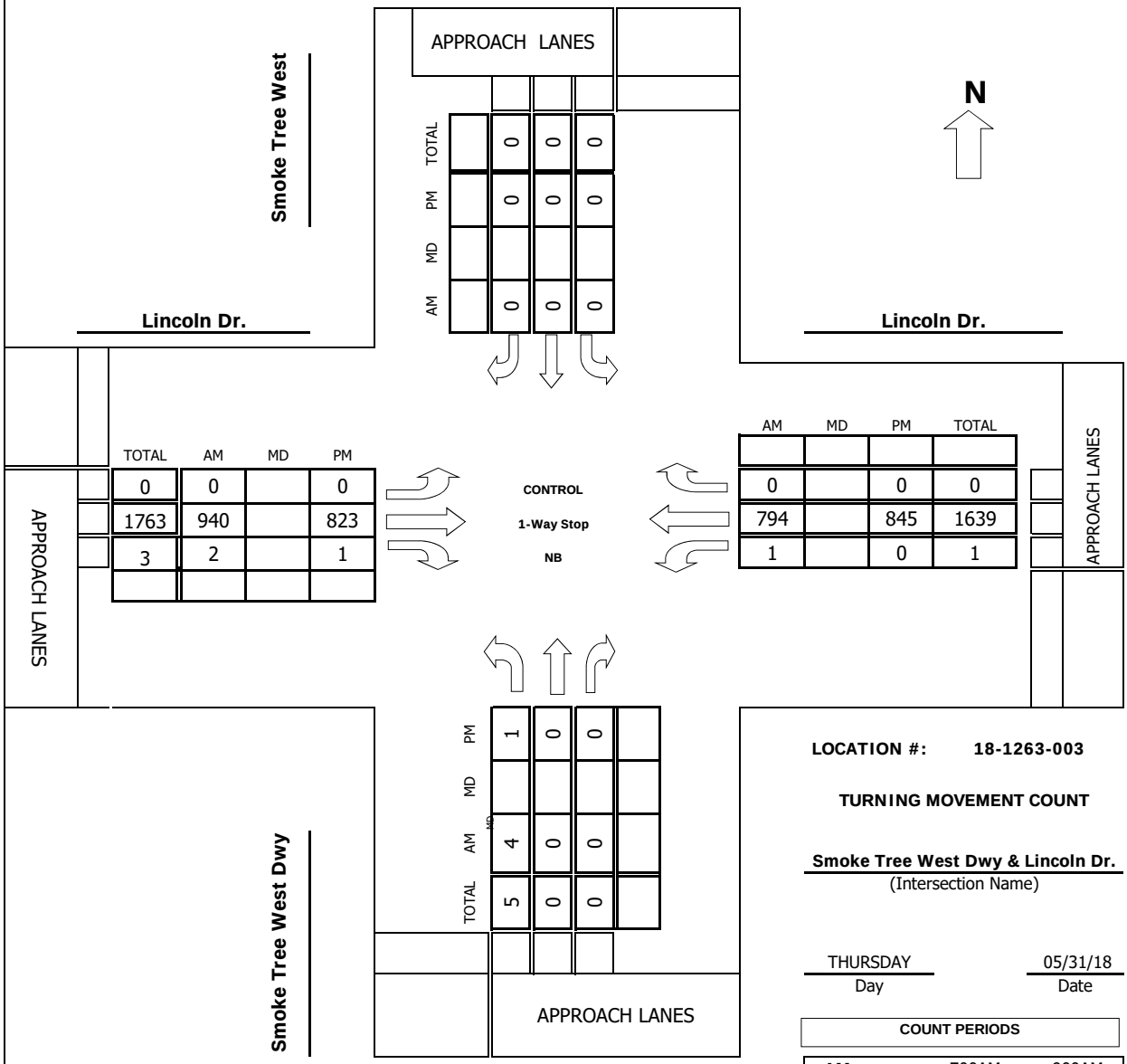
PM PEAK HOUR: 445 PM

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:

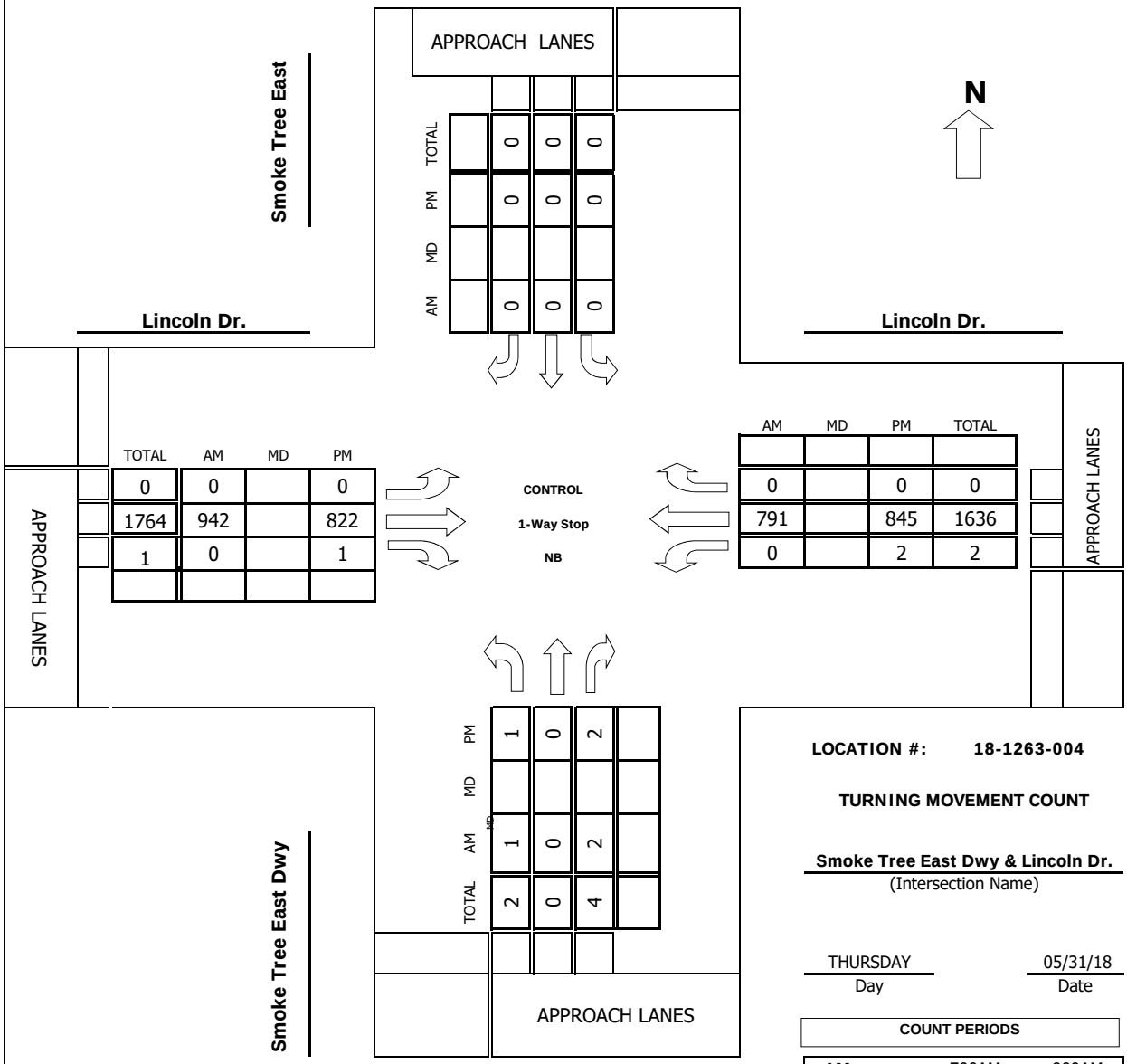
PM PEAK HOUR: 445 PM

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.



	AM	MD	PM	TOTAL
	0		0	0
	0		0	0
	0		0	0

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

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

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

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:

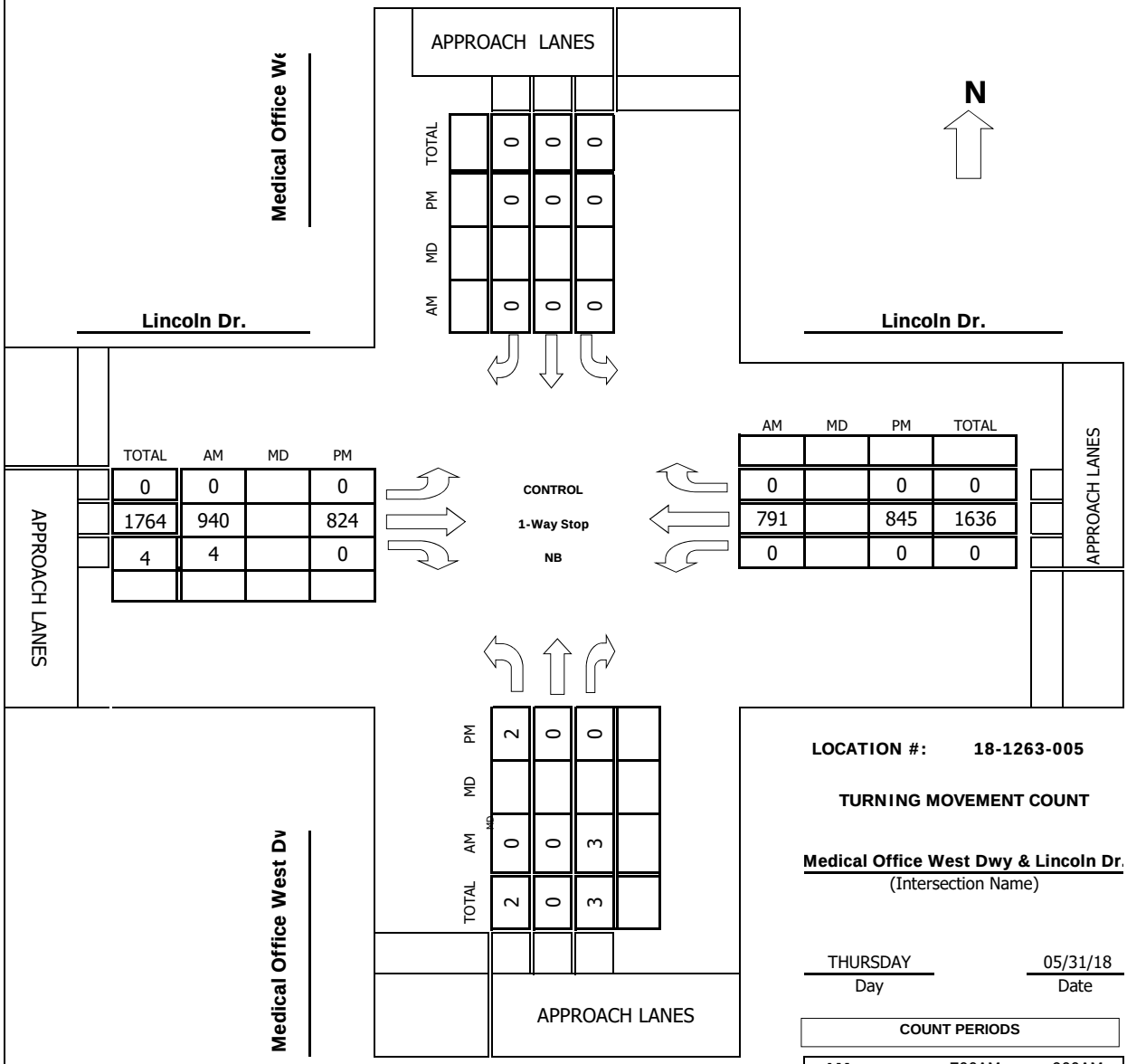
PM PEAK HOUR: 445 PM

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:

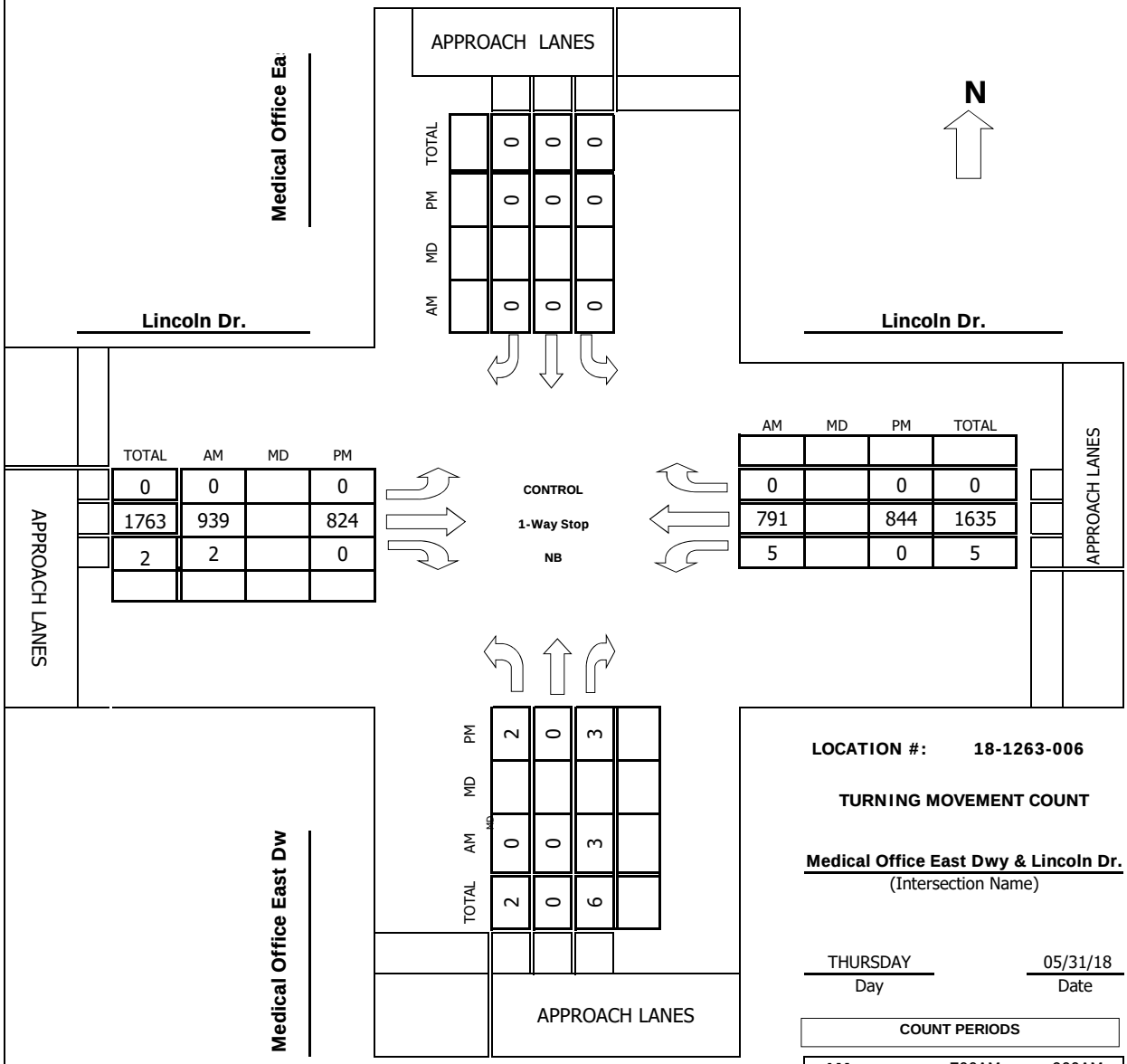
PM PEAK HOUR: 445 PM

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:

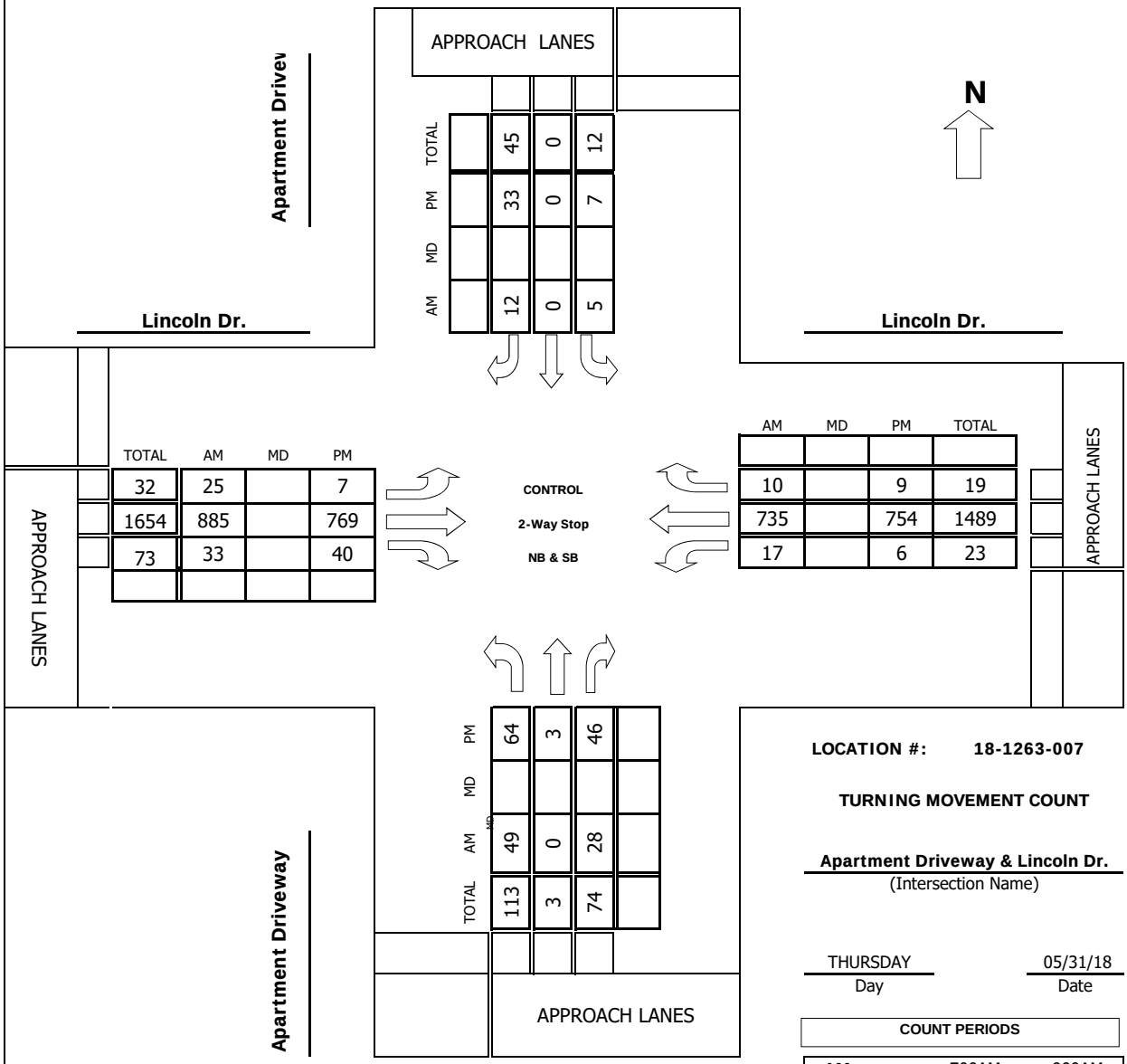
PM PEAK HOUR: 445 PM

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:

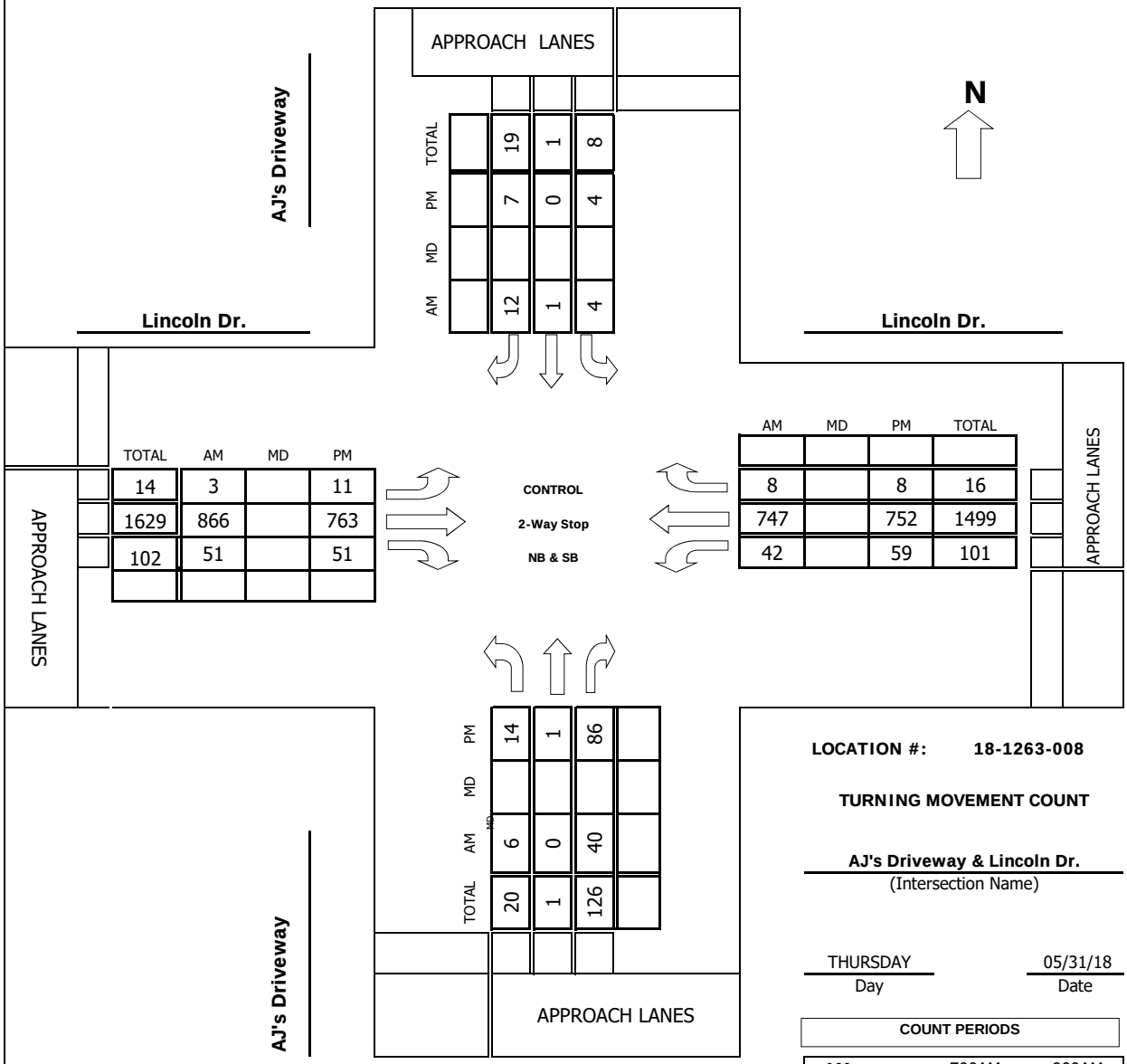
PM PEAK HOUR: 430 PM

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.



	AM	MD	PM	TOTAL
	12		7	19
	1		0	1
	4		4	8

	TOTAL	AM	MD	PM
	14	3		11
	1629	866		763
	102	51		51

	AM	MD	PM	TOTAL
	8		8	16
	747		752	1499
	42		59	101

	TOTAL	AM	MD	PM
	20	6		14
	1	0		1
	126	40		86

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:

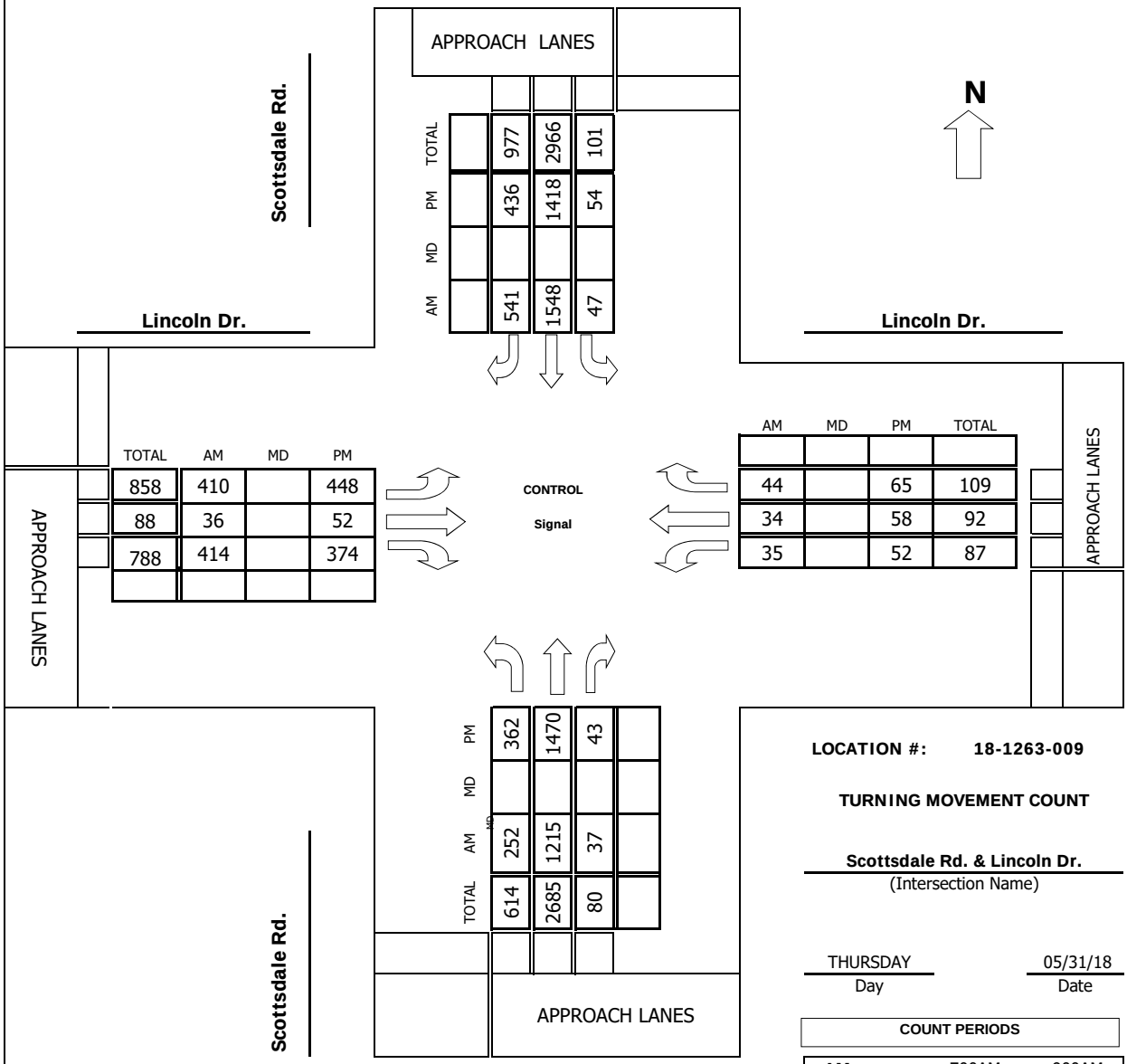
PM PEAK HOUR: 430 PM

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)	96.1	94.1	74.9	74.9	16.2	16.2	25.9	23.4
Actuated g/C Ratio	0.74	0.72	0.58	0.58	0.12	0.12	0.20	0.18
v/c Ratio	0.53	0.35	0.07	0.44	0.11	0.22	0.34	0.82
Control Delay	10.5	7.8	18.3	18.5	51.6	37.6	45.5	50.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	7.8	18.3	18.5	51.6	37.6	45.5	50.3
LOS	B	A	B	B	D	D	D	D
Approach Delay		8.3		18.5		39.0		49.4
Approach LOS		A		B		D		D

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

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	236	906	21	21	890	26	6	37	10	78	94	129
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	482	2824	65	434	2460	72	84	118	32	192	111	153
Arrive On Green	0.06	0.76	0.76	0.66	0.66	0.66	0.08	0.08	0.08	0.04	0.15	0.15
Sat Flow, veh/h	1688	3737	87	572	3711	108	1097	1493	403	1688	752	1031
Grp Volume(v), veh/h	236	453	474	21	449	467	6	0	47	78	0	223
Grp Sat Flow(s),veh/h/ln	1688	1870	1953	572	1870	1949	1097	0	1896	1688	0	1783
Q Serve(g_s), s	5.5	10.2	10.2	1.7	13.8	13.8	0.7	0.0	3.0	5.0	0.0	15.8
Cycle Q Clear(g_c), s	5.5	10.2	10.2	1.7	13.8	13.8	7.5	0.0	3.0	5.0	0.0	15.8
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.21	1.00		0.58
Lane Grp Cap(c), veh/h	482	1414	1476	434	1240	1292	84	0	149	192	0	264
V/C Ratio(X)	0.49	0.32	0.32	0.05	0.36	0.36	0.07	0.00	0.31	0.41	0.00	0.84
Avail Cap(c_a), veh/h	675	1414	1476	434	1240	1292	314	0	547	192	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	5.1	5.1	7.7	9.7	9.7	62.0	0.0	56.6	51.8	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.6	0.6	0.2	0.8	0.8	0.4	0.0	1.2	1.4	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.8	3.9	0.2	5.8	6.0	0.2	0.0	1.5	2.4	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	5.7	5.7	7.9	10.5	10.5	62.3	0.0	57.7	53.2	0.0	61.2
LnGrp LOS	A	A	A	A	B	B	E	A	E	D	A	E
Approach Vol, veh/h		1163			937			53			301	
Approach Delay, s/veh		6.1			10.5			58.3			59.1	
Approach LOS		A			B			E			E	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.1	92.2	9.0	16.7		104.3		25.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	7.5	15.8	7.0	9.5		12.2		17.8
Green Ext Time (p_c), s	0.6	6.9	0.0	0.2		7.4		1.4

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

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	*1106	-	-	*1034	-	-	*321	*106	*691	*406	*105	*739
Stage 1	-	-	-	-	-	-	*652	*571	-	*697	*611	-
Stage 2	-	-	-	-	-	-	*697	*611	-	*652	*571	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1106	-	-	*1034	-	-	*318	*106	*691	*401	*105	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*318	*106	-	*401	*105	-
Stage 1	-	-	-	-	-	-	*652	*571	-	*697	*610	-
Stage 2	-	-	-	-	-	-	*689	*610	-	*644	*571	-

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

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

Notes

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

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	-	-	*1034	-	*218	*691
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1034	-	*218	*691
Mov Cap-2 Maneuver	-	-	-	-	*407	-
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-

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

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

Notes

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

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	-	-	*1034	-	*469	*691
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1034	-	*469	*691
Mov Cap-2 Maneuver	-	-	-	-	*521	-
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-

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

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

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

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	-	-	*1034	-	*389	*691
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1034	-	*389	*691
Mov Cap-2 Maneuver	-	-	-	-	*485	-
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-

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

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

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

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	-	-	*1034	-	*328	*691
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*698	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1034	-	*326	*691
Mov Cap-2 Maneuver	-	-	-	-	*454	-
Stage 1	-	-	-	-	*648	-
Stage 2	-	-	-	-	*698	-

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

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

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

Intersection	
Int Delay, s/veh	0.9

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	852	0	0	1051	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	*1142	-	-	1028	-	-	*373	249	*715	*373	0	*763
Stage 1	-	-	-	-	-	-	*585	532	-	*718	0	-
Stage 2	-	-	-	-	-	-	*720	625	-	*674	0	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1		1
Mov Cap-1 Maneuver	*1142	-	-	1028	-	-	*354	238	*715	*344	-	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*439	359	-	*452	-	-
Stage 1	-	-	-	-	-	-	*570	518	-	*700	-	-
Stage 2	-	-	-	-	-	-	*693	613	-	*628	-	-

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

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

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

Intersection	
Int Delay, s/veh	0.6

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	863	0	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	*1142	-	-	1029	-	-	*373	246	*715	*373	225	*763
Stage 1	-	-	-	-	-	-	*664	584	-	*632	572	-
Stage 2	-	-	-	-	-	-	*720	570	-	*674	559	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1142	-	-	1029	-	-	*352	234	*715	*336	214	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*465	362	-	*429	338	-
Stage 1	-	-	-	-	-	-	*662	582	-	*630	545	-
Stage 2	-	-	-	-	-	-	*673	543	-	*630	558	-

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

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

Notes

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

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	251	40	39	33	289	1390	31	53	1771	375
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	572	0	414	94	102	77	348	2357	53	68	2015	880
Arrive On Green	0.16	0.00	0.16	0.05	0.05	0.05	0.10	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1931	1454	3456	5139	115	1781	5106	1585
Grp Volume(v), veh/h	498	0	251	40	35	37	289	921	500	53	1771	375
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1609	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	17.7	0.0	18.1	2.8	2.5	2.9	10.7	26.1	26.1	3.8	41.8	17.9
Cycle Q Clear(g_c), s	17.7	0.0	18.1	2.8	2.5	2.9	10.7	26.1	26.1	3.8	41.8	17.9
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	572	0	414	94	94	85	348	1561	848	68	2015	880
V/C Ratio(X)	0.87	0.00	0.61	0.42	0.38	0.43	0.83	0.59	0.59	0.78	0.88	0.43
Avail Cap(c_a), veh/h	671	0	458	101	101	92	651	1762	958	119	2015	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	0.0	42.1	59.6	59.5	59.7	57.4	26.1	26.1	62.0	36.5	16.9
Incr Delay (d2), s/veh	9.6	0.0	1.1	1.1	0.9	1.3	2.0	0.2	0.4	6.9	5.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	7.2	1.3	1.2	1.2	4.8	10.6	11.5	1.9	18.2	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	0.0	43.3	60.8	60.4	60.9	59.3	26.3	26.5	68.8	42.3	18.4
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		749			112			1710			2199	
Approach Delay, s/veh		56.3			60.7			31.9			38.9	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	65.3		26.4	18.6	57.0		12.5
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4
Max Q Clear Time (g_c+I1), s	5.8	28.1		20.1	12.7	43.8		4.9
Green Ext Time (p_c), s	0.0	2.0		0.8	0.4	2.5		0.1

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

Notes

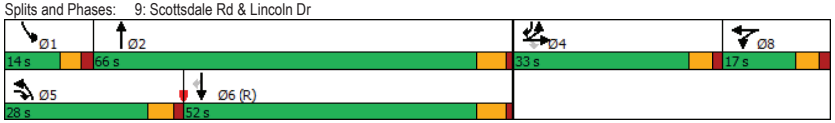
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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)	33.0	33.0	28.0	17.0	17.0	28.0	66.0	14.0	52.0	33.0
Total Split (%)	25.4%	25.4%	21.5%	13.1%	13.1%	21.5%	50.8%	10.8%	40.0%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	40.2	8.1	8.1	15.7	69.5	7.9	59.5	89.6
Actuated g/C Ratio	0.19	0.19	0.31	0.06	0.06	0.12	0.53	0.06	0.46	0.69
v/c Ratio	0.80	0.81	0.83	0.36	0.36	0.70	0.53	0.50	0.76	0.52
Control Delay	69.0	69.3	32.8	67.5	32.4	63.8	22.0	74.2	33.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	69.3	32.8	67.5	32.4	63.8	22.0	74.2	33.5	6.4
LOS	E	E	C	E	C	E	C	E	C	A
Approach Delay		51.6			43.3		29.0		27.5	
Approach LOS		D			D		C		C	

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 32.9 — Intersection 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	251	40	39	33	289	1390	31	53	1771	341
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	578	0	417	94	102	77	347	2158	48	68	1819	822
Arrive On Green	0.16	0.00	0.16	0.05	0.05	0.05	0.10	0.42	0.42	0.04	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1931	1454	3456	5139	115	1781	5106	1585
Grp Volume(v), veh/h	498	0	251	40	35	37	289	921	500	53	1771	341
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1609	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	17.7	0.0	18.0	2.8	2.5	2.9	10.7	28.0	28.0	3.8	44.4	17.2
Cycle Q Clear(g_c), s	17.7	0.0	18.0	2.8	2.5	2.9	10.7	28.0	28.0	3.8	44.4	17.2
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	578	0	417	94	94	85	347	1429	777	68	1819	822
V/C Ratio(X)	0.86	0.00	0.60	0.42	0.38	0.43	0.83	0.64	0.64	0.78	0.97	0.41
Avail Cap(c_a), veh/h	754	0	495	156	156	141	598	1579	858	119	1819	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	42.0	59.6	59.5	59.7	57.4	30.0	30.0	62.0	41.3	19.2
Incr Delay (d2), s/veh	6.6	0.0	0.6	1.1	0.9	1.3	2.0	0.5	1.0	6.9	15.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	7.1	1.3	1.2	1.2	4.8	11.5	12.6	1.9	21.1	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	42.6	60.8	60.4	60.9	59.4	30.5	31.0	68.8	57.0	20.7
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	E	C
Approach Vol, veh/h		749			112			1710			2165	
Approach Delay, s/veh		53.9			60.7			35.5			51.6	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	60.3		26.6	18.6	52.0		12.5
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	60.3		27.5	22.5	46.3		11.4
Max Q Clear Time (g_c+I1), s	5.8	30.0		20.0	12.7	46.4		4.9
Green Ext Time (p_c), s	0.0	2.0		1.1	0.4	0.0		0.1

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

Notes

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

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	20	13	894	45	8	67	5	63	51	105
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	512	2790	66	499	2399	121	88	96	7	134	64	132
Arrive On Green	0.06	0.79	0.79	0.70	0.70	0.70	0.06	0.06	0.06	0.03	0.12	0.12
Sat Flow, veh/h	1781	3549	84	637	3443	173	1231	1719	128	1781	545	1123
Grp Volume(v), veh/h	253	425	444	13	461	478	8	0	72	63	0	156
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	637	1777	1839	1231	0	1847	1781	0	1668
Q Serve(g_s), s	4.9	8.7	8.7	0.8	13.8	13.8	0.8	0.0	5.0	4.0	0.0	11.8
Cycle Q Clear(g_c), s	4.9	8.7	8.7	0.8	13.8	13.8	4.7	0.0	5.0	4.0	0.0	11.8
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.07	1.00		0.67
Lane Grp Cap(c), veh/h	512	1397	1459	499	1238	1282	88	0	103	134	0	196
V/C Ratio(X)	0.49	0.30	0.30	0.03	0.37	0.37	0.09	0.00	0.70	0.47	0.00	0.80
Avail Cap(c_a), veh/h	778	1397	1459	499	1238	1282	279	0	391	134	0	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	3.9	3.9	6.1	8.1	8.1	62.0	0.0	60.3	54.9	0.0	55.8
Incr Delay (d2), s/veh	0.7	0.6	0.5	0.1	0.9	0.8	0.4	0.0	8.1	2.6	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.9	3.0	0.1	5.3	5.5	0.3	0.0	2.6	2.0	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	4.5	4.4	6.2	8.9	8.9	62.4	0.0	68.4	57.5	0.0	63.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1122			952			80			219	
Approach Delay, s/veh		4.9			8.9			67.8			61.4	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	11.6	96.6	8.0	13.8	108.2	21.8
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5
Max Q Clear Time (g_c+I1), s	6.9	15.8	6.0	7.0	10.7	13.8
Green Ext Time (p_c), s	0.7	7.4	0.0	0.3	6.8	0.8

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

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	*1070	-	-	*1106	-	-	*508	*137	*739	*488	*137	*715
Stage 1	-	-	-	-	-	-	*697	*611	-	*674	*591	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*697	*611	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1070	-	-	*1106	-	-	*508	*137	*739	*487	*137	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*508	*137	-	*487	*137	-
Stage 1	-	-	-	-	-	-	*697	*611	-	*674	*591	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*695	*611	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9.9	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	739	* 1070	-	-	* 1106	-	-	-
HCM Lane V/C Ratio	0.003	-	-	-	-	-	-	-
HCM Control Delay (s)	9.9	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Notes

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

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	-	-	*1106	-	*301	*739
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1106	-	*301	*739
Mov Cap-2 Maneuver	-	-	-	-	*451	-
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-

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

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

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

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	-	-	*1106	-	*514	*739
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1106	-	*513	*739
Mov Cap-2 Maneuver	-	-	-	-	*546	-
Stage 1	-	-	-	-	*696	-
Stage 2	-	-	-	-	*675	-

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

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

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

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	-	-	*1106	-	*434	*739
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1106	-	*434	*739
Mov Cap-2 Maneuver	-	-	-	-	*511	-
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-

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

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

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

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	-	-	*1106	-	*350	*739
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1106	-	*350	*739
Mov Cap-2 Maneuver	-	-	-	-	*473	-
Stage 1	-	-	-	-	*698	-
Stage 2	-	-	-	-	*675	-

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

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

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

Intersection	
Int Delay, s/veh	1.2

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	873	0	0	926	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	*1142	-	-	1088	-	-	*418	329	*763	*418	0	*763
Stage 1	-	-	-	-	-	-	*677	602	-	*720	0	-
Stage 2	-	-	-	-	-	-	*720	629	-	*720	0	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1		1
Mov Cap-1 Maneuver	*1142	-	-	1088	-	-	*394	325	*763	*384	-	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*487	426	-	*487	-	-
Stage 1	-	-	-	-	-	-	*672	598	-	*715	-	-
Stage 2	-	-	-	-	-	-	*680	626	-	*662	-	-

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

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

Notes

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

Intersection	
Int Delay, s/veh	1

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	870	0	0	932	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	*1142	-	-	1081	-	-	*418	221	*763	*418	0	*763
Stage 1	-	-	-	-	-	-	*666	596	-	*578	0	-
Stage 2	-	-	-	-	-	-	*720	533	-	*720	0	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1		1
Mov Cap-1 Maneuver	*1142	-	-	1081	-	-	*391	205	*763	*343	-	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*479	336	-	*413	-	-
Stage 1	-	-	-	-	-	-	*659	589	-	*572	-	-
Stage 2	-	-	-	-	-	-	*668	499	-	*619	-	-

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

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

Notes

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

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	261	60	67	52	414	1682	38	62	1623	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	615	0	491	96	107	75	473	2510	57	79	2015	899
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.14	0.49	0.49	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1992	1403	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	555	0	261	60	59	60	414	1114	606	62	1623	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1618	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	19.8	0.0	17.7	4.3	4.2	4.7	15.3	32.4	32.4	4.5	36.7	14.9
Cycle Q Clear(g_c), s	19.8	0.0	17.7	4.3	4.2	4.7	15.3	32.4	32.4	4.5	36.7	14.9
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	615	0	491	96	96	87	473	1663	904	79	2015	899
V/C Ratio(X)	0.90	0.00	0.53	0.63	0.62	0.69	0.87	0.67	0.67	0.78	0.81	0.37
Avail Cap(c_a), veh/h	671	0	516	101	101	92	651	1762	957	119	2015	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	37.1	60.2	60.2	60.4	55.0	25.3	25.3	61.5	34.9	15.4
Incr Delay (d2), s/veh	13.9	0.0	0.4	7.5	6.9	14.9	7.7	0.7	1.3	8.7	3.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	6.9	2.1	2.1	2.3	7.2	13.1	14.4	2.2	15.7	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	0.0	37.5	67.7	67.1	75.3	62.7	26.0	26.6	70.2	38.5	16.6
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		816			179			2134			2017	
Approach Delay, s/veh		57.3			70.1			33.3			35.8	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	69.2		28.0	23.3	57.0		12.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4
Max Q Clear Time (g_c+I1), s	6.5	34.4		21.8	17.3	38.7		6.7
Green Ext Time (p_c), s	0.0	2.6		0.6	0.5	2.7		0.0

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

Notes

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

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)	33.0	33.0	27.0	21.0	21.0	27.0	62.0	14.0	49.0	33.0
Total Split (%)	25.4%	25.4%	20.8%	16.2%	16.2%	20.8%	47.7%	10.8%	37.7%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	25.5	25.5	45.3	9.2	9.2	19.8	66.6	8.7	53.2	84.4
Actuated g/C Ratio	0.20	0.20	0.35	0.07	0.07	0.15	0.51	0.07	0.41	0.65
v/c Ratio	0.87	0.86	0.66	0.48	0.47	0.79	0.67	0.53	0.78	0.44
Control Delay	76.4	73.8	18.8	70.3	33.2	64.6	26.8	74.1	37.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.4	73.8	18.8	70.3	33.2	64.6	26.8	74.1	37.8	6.4
LOS	E	E	B	E	C	E	C	E	D	A
Approach Delay		51.0			44.3		34.1		31.7	
Approach LOS		D			D		C		C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 36.6	Intersection 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	261	60	67	52	414	1682	38	62	1623	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	625	0	494	96	108	76	470	2188	49	79	1701	806
Arrive On Green	0.18	0.00	0.18	0.05	0.05	0.05	0.14	0.43	0.43	0.04	0.33	0.33
Sat Flow, veh/h	3563	0	1585	1781	1992	1403	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	555	0	261	60	59	60	414	1114	606	62	1623	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1618	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	19.8	0.0	17.6	4.3	4.2	4.7	15.3	36.3	36.3	4.5	40.4	16.9
Cycle Q Clear(g_c), s	19.8	0.0	17.6	4.3	4.2	4.7	15.3	36.3	36.3	4.5	40.4	16.9
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	625	0	494	96	96	87	470	1450	788	79	1701	806
V/C Ratio(X)	0.89	0.00	0.53	0.62	0.61	0.69	0.88	0.77	0.77	0.78	0.95	0.41
Avail Cap(c_a), veh/h	754	0	551	211	210	192	572	1474	801	119	1701	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	36.9	60.2	60.2	60.4	55.1	31.8	31.8	61.5	42.4	19.9
Incr Delay (d2), s/veh	9.8	0.0	0.3	2.4	2.4	3.5	11.5	2.2	4.0	8.7	13.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	0.0	6.9	2.0	2.0	2.0	7.4	15.2	17.0	2.2	18.9	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	0.0	37.2	62.6	62.5	63.9	66.7	34.1	35.9	70.2	55.8	21.4
LnGrp LOS	E	A	D	E	E	E	E	C	D	E	E	C
Approach Vol, veh/h		816			179			2134			2017	
Approach Delay, s/veh		54.2			63.0			40.9			50.6	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	61.1		28.3	23.2	49.0		12.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	56.3		27.5	21.5	43.3		15.4
Max Q Clear Time (g_c+I1), s	6.5	38.3		21.8	17.3	42.4		6.7
Green Ext Time (p_c), s	0.0	2.6		1.0	0.4	0.5		0.3

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

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

APPENDIX D

TRIP GENERATION

Smoke Tree Resort

Proposed

CivTech Inc.

January 2020

Methodology Overview

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

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

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

Land Use Types and Size

Proposed Use	Amount	Units	ITE LUC	ITE Land Use Name
Main Hotel/Resort Villas	122	Rooms	310/330	Hotel/Resort Hotel
Stand Alone Restaurant	3.200	1,000 square feet	931	Quality Restaurant
Market/Coffee Shop	5.800	1,000 square feet	820	Shopping Center

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)
Main Hotel/Resort Villas	C: T=X*4.46 [4.46]	C: T=X*0.39 [0.39]	C: T=X*0.47 [0.47]	
Stand Alone Restaurant	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	
Market/Coffee Shop	WA: T=X*37.75 [37.75]	WA: T=X*0.94 [0.94]	WA: T=X*3.81 [3.81]	

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	
Main Hotel/Resort Villas	50%	272	272	544	59%	28	20	48	51%	29	28	57	
Stand Alone Restaurant	50%	134	134	268	80%	2	0	2	67%	17	8	25	
Market/Coffee Shop	50%	109	109	218	62%	3	2	5	48%	11	11	22	
Totals		**515**	**515**	**1,030**		**33**	**22**	**55**		**57**	**47**	**104**	

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	
Main Hotel/Resort Villas	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Stand Alone Restaurant	50%	67	67	134	50%	1	0	1	50%	9	4	13	
Market/Coffee Shop	65%	71	71	142	65%	2	1	3	65%	7	7	14	
Totals		**138**	**138**	**276**		**3**	**1**	**4**		**16**	**11**	**27**	

External Vehicular Trips

	ADT			AM Peak Hour			PM Peak Hour			(not used)
Proposed Use	In	Out	Total	In	Out	Total	In	Out	Total	
Main Hotel/Resort Villas	272	272	544	28	20	48	29	28	57	
Stand Alone Restaurant	67	67	134	1	0	1	8	4	12	
Market/Coffee Shop	38	38	76	1	1	2	4	4	8	
Totals	**377**	**377**	**754**	**30**	**21**	**51**	**41**	**36**	**77**	

APPENDIX E

TRIP DISTRIBUTION

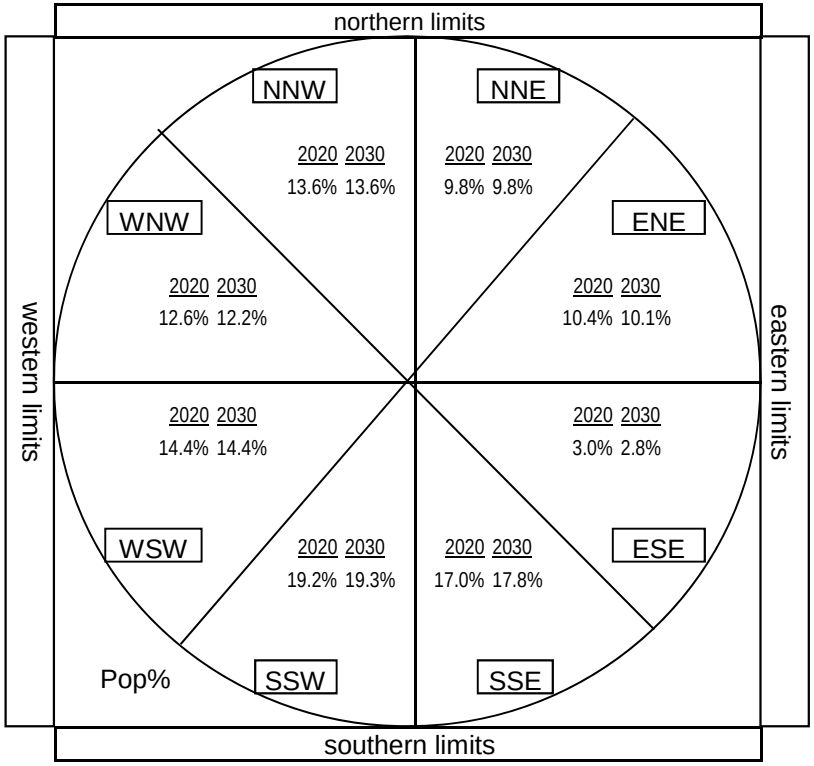
	2020				2030			
Quadrant	**Population**	**Percent**			**Population**	**Percent**		
North Northwest	65,355	13.6%			70,346	13.6%		
North Northeast	46,994	9.8%			50,587	9.8%		
North	112,348	23.4%			120,934	**23.4%**		
East Northeast	49,891	10.4%			52,124	10.1%		
East Southeast	14,233	3.0%			14,712	2.8%		
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			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
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		-	-		-	-			-	-		-	-
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		-	-		-	-			-	-		-	-
From ENE					**49,891**	**52,124**	**From ESE**					**14,233**	**14,712**
From East												**64,123**	**66,836**

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
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			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
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		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
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
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
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		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From WSW					**69,372**	**74,834**	**From WNW**					**60,317**	**63,387**
From West												**129,689**	**138,221**

APPENDIX F

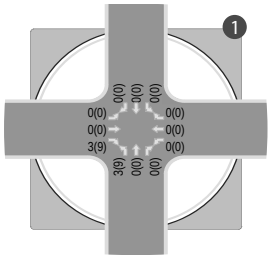
BACKGROUND TRAFFIC

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

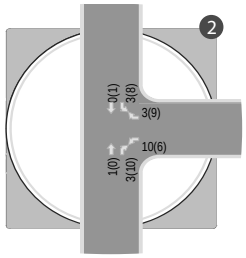
	Year	Volume	Avg Growth Rate to 2012	Expansion Factor to 2012
Beginning	2012	43,500		
End	2014	45,000	1.7%	0.967

Growth Rate Used	1.7%
Per-Year Multiplier	1.017

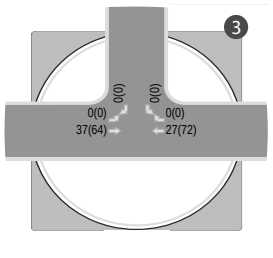
Year	**Expansion Factor(s)**	
2018	1.000	
2019	1.017	
2020	1.034	
2021	**1.052**	<- Expansion factor to opening
2022	1.070	
2023	1.088	
2024	1.106	
2025	1.125	
2026	**1.144**	<- Expansion factor to 5 years after opening
2027	1.164	
2028	1.184	
2029	1.204	
2030	1.224	
2031	1.245	
2032	1.266	
2033	1.288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



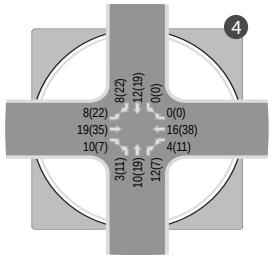
Mockingbird Ln. & Northern Ave.



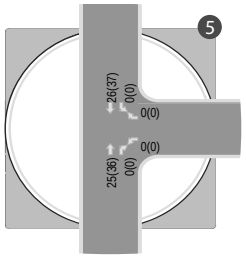
Mockingbird Ln. & Indian Bend Rd.



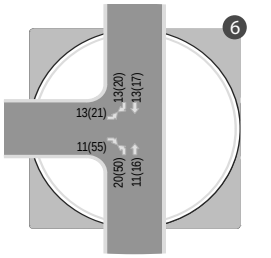
Scottsdale Plaza Resort & Indian Bend Rd.



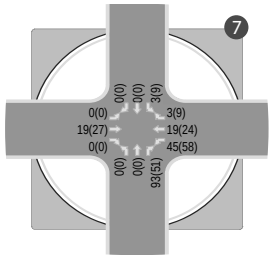
Scottsdale Rd. & Indian Bend Rd.



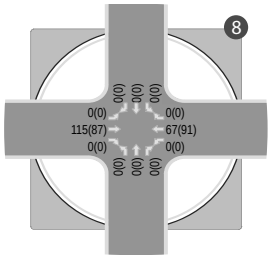
Scottsdale Rd. & Joshua Tree Ln.



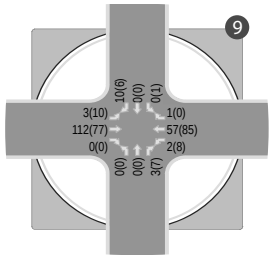
Scottsdale Rd. & 6750 North



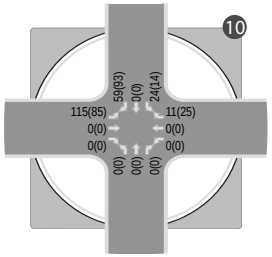
Tatum Blvd. & Lincoln Dr.



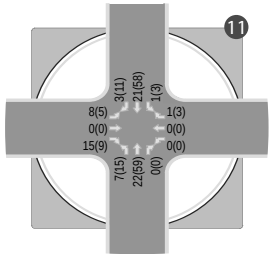
Invergordon Rd. & Lincoln Dr.



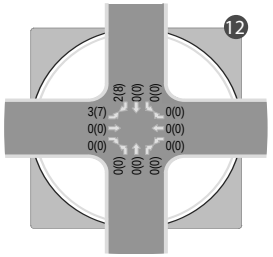
Mockingbird Ln. & Lincoln Dr.



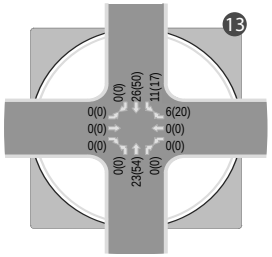
Quail Run Rd & Lincoln Dr.



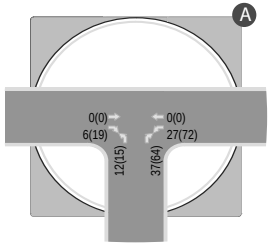
Scottsdale Rd. & Lincoln Dr.



Mockingbird Ln. & McDonald Dr.



Scottsdale Rd. & McDonald Dr.



Street A & Indian Bend Rd.

LEGEND

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

NORTH

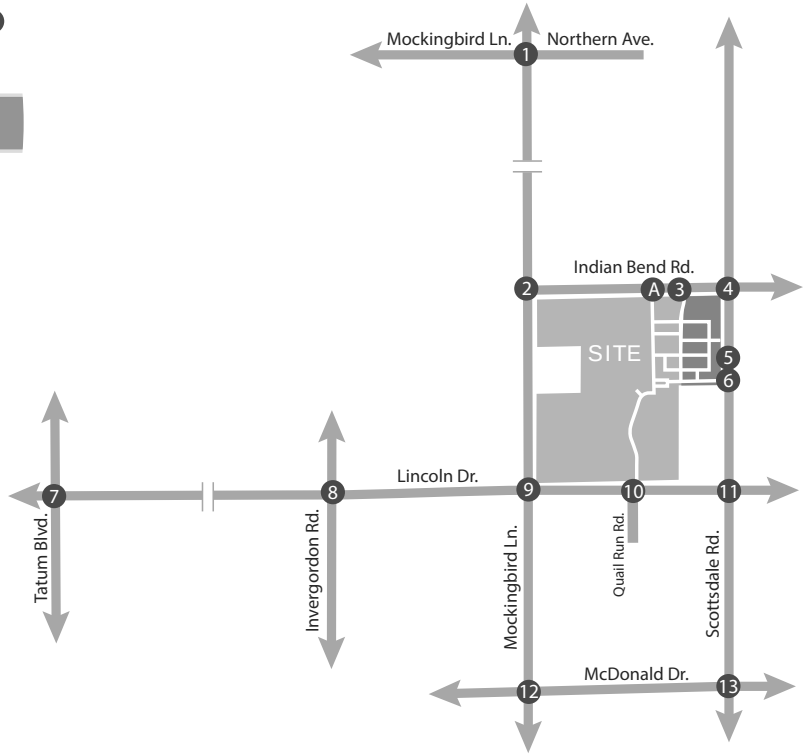


Figure 8: Phase I Site Generated Traffic Volumes without Palmeraie Access A

APPENDIX G

2021 PEAK HOUR ANALYSIS SCENARIO 1

CivTech

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	226	969	22	900	5	35	74	92
Future Volume (vph)	226	969	22	900	5	35	74	92
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)	93.5	91.5	68.9	68.9	18.8	18.8	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.14	0.14	0.22	0.20
v/c Ratio	0.60	0.43	0.10	0.53	0.11	0.21	0.32	0.83
Control Delay	14.8	9.6	34.0	37.4	49.2	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	9.6	34.0	37.4	49.2	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.3		35.0		48.8
Approach LOS		B		D		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: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 72.7%	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)	226	969	31	22	900	42	5	35	19	74	92	237
Future Volume (veh/h)	226	969	31	22	900	42	5	35	19	74	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1077	34	24	1000	47	6	39	21	82	102	263
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	476	2474	78	311	2027	95	87	200	108	296	115	296
Arrive On Green	0.08	0.67	0.67	1.00	1.00	1.00	0.17	0.17	0.17	0.04	0.24	0.24
Sat Flow, veh/h	1688	3701	117	481	3637	171	963	1204	648	1688	487	1256
Grp Volume(v), veh/h	251	544	567	24	514	533	6	0	60	82	0	365
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	481	1870	1938	963	0	1852	1688	0	1743
Q Serve(g_s), s	7.9	17.7	17.7	0.3	0.0	0.0	0.8	0.0	3.6	5.0	0.0	26.3
Cycle Q Clear(g_c), s	7.9	17.7	17.7	3.5	0.0	0.0	18.1	0.0	3.6	5.0	0.0	26.3
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.35	1.00		0.72
Lane Grp Cap(c), veh/h	476	1250	1302	311	1042	1080	87	0	308	296	0	410
V/C Ratio(X)	0.53	0.44	0.44	0.08	0.49	0.49	0.07	0.00	0.20	0.28	0.00	0.89
Avail Cap(c_a), veh/h	638	1250	1302	311	1042	1080	205	0	534	296	0	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	10.1	10.1	0.1	0.0	0.0	61.2	0.0	46.7	41.9	0.0	48.1
Incr Delay (d2), s/veh	0.9	1.1	1.1	0.4	1.3	1.3	0.3	0.0	0.3	0.5	0.0	10.3
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	3.0	7.4	7.6	0.0	0.4	0.4	0.2	0.0	1.7	2.2	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	11.2	11.1	0.5	1.3	1.3	61.5	0.0	47.0	42.4	0.0	58.4
LnGrp LOS	B	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1362			1071			66			447	
Approach Delay, s/veh		11.0			1.3			48.3			55.4	
Approach LOS		B			A			D			E	

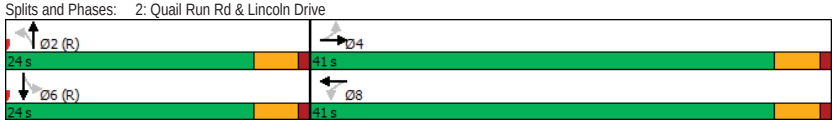
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.5	78.4	9.0	28.1		92.9		37.1
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.9	5.5	7.0	20.1		19.7		28.3
Green Ext Time (p_c), s	0.6	9.1	0.0	0.2		9.8		2.3

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	115	1012	2	862	0	26	0
Future Volume (vph)	115	1012	2	862	0	26	0
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	4	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	31.2	31.2	31.2	31.2	24.8		24.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.38		0.38
v/c Ratio	0.68	0.66	0.01	0.57	0.01		0.16
Control Delay	39.4	18.8	9.0	15.5	0.0		7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	39.4	18.8	9.0	15.5	0.0		7.8
LOS	D	B	A	B	A		A
Approach Delay		20.9		15.5			7.8
Approach LOS		C		B			A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 55.6%	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)	115	1012	3	2	862	12	0	0	7	26	0	65
Future Volume (veh/h)	115	1012	3	2	862	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	1124	3	2	958	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	293	1505	4	247	1486	20	0	0	709	235	36	495
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	579	3636	10	500	3590	49	0	0	1585	365	81	1106
Grp Volume(v), veh/h	128	549	578	2	474	497	0	0	8	101	0	0
Grp Sat Flow(s),veh/h/ln	579	1777	1869	500	1777	1862	0	0	1585	1551	0	0
Q Serve(g_s), s	9.6	9.1	9.1	0.1	6.4	6.4	0.0	0.0	0.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.1	9.1	9.3	6.4	6.4	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.00		1.00	0.29		0.71
Lane Grp Cap(c), veh/h	293	736	774	247	736	771	0	0	709	766	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.01	0.64	0.64	0.00	0.00	0.01	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1049	321	998	1045	0	0	709	766	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	4.1	4.1	6.2	3.8	3.8	0.0	0.0	10.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.9	1.8	0.0	1.0	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.8	0.0	1.4	1.4	0.0	0.0	0.1	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.0	5.9	6.2	4.8	4.7	0.0	0.0	10.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1255			973			8			101	
Approach Delay, s/veh		6.1			4.8			10.0			10.9	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.7	31.3	33.7	31.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.2	18.0	4.3	11.3
Green Ext Time (p_c), s	0.0	8.7	0.4	7.0

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1042	6	5	872	0	6
Future Vol, veh/h	1042	6	5	872	0	6
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	1158	7	6	969	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1165	0	1659	583
Stage 1	-	-	-	-	1162	-
Stage 2	-	-	-	-	497	-
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	-	-	945	-	*88	*684
Stage 1	-	-	-	-	*583	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	945	-	*87	*684
Mov Cap-2 Maneuver	-	-	-	-	*323	-
Stage 1	-	-	-	-	*579	-
Stage 2	-	-	-	-	*675	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	945	-
HCM Lane V/C Ratio	0.01	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	14	8	0	0	8	0
Stage 1	8	-	-	-	-	-
Stage 2	6	-	-	-	-	-
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	1005	1074	-	-	1612	-
Stage 1	1015	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1005	1074	-	-	1612	-
Mov Cap-2 Maneuver	1005	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1612	-
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	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	983	34	18	807	10	50	0	29	5	0	12
Future Vol, veh/h	26	983	34	18	807	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1092	38	20	897	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	908	0	0	1130	0	0	1658	2117	565	1547	-	454
Stage 1	-	-	-	-	-	-	1169	1169	-	943	-	-
Stage 2	-	-	-	-	-	-	489	948	-	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	1112	-	-	990	-	-	*64	50	*684	*78	0	*763
Stage 1	-	-	-	-	-	-	*564	512	-	*646	0	-
Stage 2	-	-	-	-	-	-	*720	578	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1112	-	-	990	-	-	*61	48	*684	*72	-	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	258	-	*308	-	-
Stage 1	-	-	-	-	-	-	*549	499	-	*630	-	-
Stage 2	-	-	-	-	-	-	*693	566	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.3	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	380	1112	-	-	990	-	-	308	763
HCM Lane V/C Ratio	0.231	0.026	-	-	0.02	-	-	0.018	0.017
HCM Control Delay (s)	17.3	8.3	-	-	8.7	-	-	16.9	9.8
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	962	53	43	820	8	6	0	41	4	1	12
Future Vol, veh/h	3	962	53	43	820	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1069	59	48	911	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	920	0	0	1128	0	0	1657	2121	564	1553	2146	460
Stage 1	-	-	-	-	-	-	1105	1105	-	1012	1012	-
Stage 2	-	-	-	-	-	-	552	1016	-	541	1134	-
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	*1106	-	-	993	-	-	*64	50	*684	*77	48	*739
Stage 1	-	-	-	-	-	-	*645	566	-	*621	561	-
Stage 2	-	-	-	-	-	-	*697	557	-	*645	540	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	993	-	-	*60	47	*684	*69	46	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*322	270	-	*298	255	-
Stage 1	-	-	-	-	-	-	*643	564	-	*619	534	-
Stage 2	-	-	-	-	-	-	*650	530	-	*601	539	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	* 1106	-	-	993	-	-	298	739
HCM Lane V/C Ratio	0.087	0.003	-	-	0.048	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.8	-	-	17.3	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	452	39	463	38	37	281	1338	51	1698	589
Future Volume (vph)	452	39	463	38	37	281	1338	51	1698	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.6	23.6	42.3	7.4	7.4	18.7	71.3	7.6	58.0	87.3
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	0.89	0.91	0.42	0.40	0.63	0.55	0.55	0.83	0.58
Control Delay	64.4	64.1	51.2	72.4	33.9	57.7	20.7	79.0	36.8	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	64.1	51.2	72.4	33.9	57.7	20.7	79.0	36.8	10.3
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		57.9			45.8		26.9		31.0	
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: 0.91	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 81.6%	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)	452	39	463	38	37	48	281	1338	40	51	1698	589
Future Volume (veh/h)	452	39	463	38	37	48	281	1338	40	51	1698	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	533	0	270	42	41	36	312	1487	33	57	1887	365
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	603	0	439	101	108	84	372	2377	53	73	2015	894
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	533	0	270	42	38	39	312	985	535	57	1887	365
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	19.0	0.0	19.3	3.0	2.7	3.1	11.5	28.4	28.4	4.1	46.1	17.0
Cycle Q Clear(g_c), s	19.0	0.0	19.3	3.0	2.7	3.1	11.5	28.4	28.4	4.1	46.1	17.0
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	603	0	439	101	101	91	372	1575	856	73	2015	894
V/C Ratio(X)	0.88	0.00	0.62	0.41	0.38	0.43	0.84	0.63	0.63	0.78	0.94	0.41
Avail Cap(c_a), veh/h	671	0	469	101	101	91	651	1762	958	119	2015	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	0.0	41.0	59.2	59.1	59.3	56.9	26.4	26.4	61.7	37.8	16.1
Incr Delay (d2), s/veh	11.6	0.0	1.4	1.0	0.9	1.2	2.0	0.4	0.7	6.5	9.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.7	1.4	1.2	1.3	5.1	11.5	12.6	2.0	20.8	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	42.4	60.2	59.9	60.4	58.9	26.8	27.1	68.2	47.6	17.4
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		803			119			1832			2309	
Approach Delay, s/veh		57.0			60.2			32.3			43.3	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	65.8		27.5	19.5	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	6.1	30.4		21.3	13.5	48.1		5.1
Green Ext Time (p_c), s	0.0	2.2		0.7	0.5	1.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.9
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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	250	881	21	932	7	63	61	48
Future Volume (vph)	250	881	21	932	7	63	61	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	77.0	77.0	12.0	12.0	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	0.60	0.38	0.07	0.53	0.10	0.51	0.38	0.67
Control Delay	11.5	6.0	31.9	39.4	55.1	60.0	52.2	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	6.0	31.9	39.4	55.1	60.0	52.2	32.7
LOS	B	A	C	D	E	E	D	C
Approach Delay		7.2		39.3		59.6		37.1
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 25.0	Intersection LOS: C
Intersection Capacity Utilization 67.6%	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)	250	881	29	21	932	59	7	63	18	61	48	159
Future Volume (veh/h)	250	881	29	21	932	59	7	63	18	61	48	159
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	278	979	21	23	1036	38	8	70	11	68	53	121
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	526	2723	58	431	2332	86	101	121	19	155	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3557	76	563	3496	128	1211	1578	248	1781	506	1156
Grp Volume(v), veh/h	278	489	511	23	527	547	8	0	81	68	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	563	1777	1847	1211	0	1826	1781	0	1662
Q Serve(g_s), s	6.0	11.6	11.6	0.0	0.0	0.0	0.8	0.0	5.6	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.6	11.6	0.0	0.0	0.0	5.9	0.0	5.6	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.07	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	526	1360	1421	431	1185	1232	101	0	140	155	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.05	0.44	0.44	0.08	0.00	0.58	0.44	0.00	0.76
Avail Cap(c_a), veh/h	776	1360	1421	431	1185	1232	264	0	386	155	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	4.9	4.9	0.0	0.0	0.0	60.6	0.0	58.0	53.0	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.2	0.9	0.8	0.3	0.0	3.7	1.9	0.0	5.0
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	2.1	4.0	4.2	0.0	0.3	0.3	0.3	0.0	2.7	0.3	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.6	0.2	0.9	0.8	60.9	0.0	61.7	55.0	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1278			1097			89			242	
Approach Delay, s/veh		5.7			0.8			61.6			57.8	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.6		15.1
Green Ext Time (p_c), s	0.8	9.6	0.0	0.4		8.4		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	890	916	0	14	0
Future Volume (vph)	85	890	916	0	14	0
Turn Type	Perm	NA	NA	NA	Perm	NA
Protected Phases		4	8	2		6
Permitted Phases	4				6	
Detector Phase	4	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	29.3	29.3	29.3	26.7		26.7
Actuated g/C Ratio	0.45	0.45	0.45	0.41		0.41
v/c Ratio	0.66	0.62	0.66	0.00		0.17
Control Delay	41.3	19.0	17.7	0.0		5.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	41.3	19.0	17.7	0.0		5.8
LOS	D	B	B	A		A
Approach Delay		20.9	17.7			5.8
Approach LOS		C	B			A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 55.3%	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	890	1	0	916	25	0	0	2	14	0	93
Future Volume (veh/h)	85	890	1	0	916	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	989	1	0	1018	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	260	1488	2	111	1443	40	0	0	718	121	38	620
Arrive On Green	0.82	0.82	0.82	0.00	0.82	0.82	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	539	3643	4	569	3533	97	0	0	1585	129	84	1370
Grp Volume(v), veh/h	94	482	508	0	512	534	0	0	2	119	0	0
Grp Sat Flow(s),veh/h/ln	539	1777	1870	569	1777	1853	0	0	1585	1582	0	0
Q Serve(g_s), s	7.8	7.1	7.1	0.0	8.1	8.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.4	7.1	7.1	0.0	8.1	8.1	0.0	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	0.13		0.87
Lane Grp Cap(c), veh/h	260	726	764	111	726	757	0	0	718	780	0	0
V/C Ratio(X)	0.36	0.66	0.66	0.00	0.71	0.71	0.00	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	351	1025	1079	207	1025	1069	0	0	718	780	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.0	4.2	4.2	0.0	4.3	4.3	0.0	0.0	9.7	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	0.9	0.0	1.3	1.2	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.5	0.0	1.6	1.7	0.0	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	5.1	5.1	0.0	5.5	5.5	0.0	0.0	9.7	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1084			1046			2			119	
Approach Delay, s/veh		5.4			5.5			9.7			10.9	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.3	30.7	34.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.0	18.4	4.8	10.1
Green Ext Time (p_c), s	0.0	7.5	0.5	7.9

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	906	0	0	940	4	3
Future Vol, veh/h	906	0	0	940	4	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	1007	0	0	1044	4	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1007	0	1529	504
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	522	-
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	-	-	1049	-	*108	*732
Stage 1	-	-	-	-	*651	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1049	-	*108	*732
Mov Cap-2 Maneuver	-	-	-	-	*347	-
Stage 1	-	-	-	-	*651	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	448	-	-	1049	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	13.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	1	-	-	-	-	-
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	1019	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1019	1082	-	-	1620	-
Mov Cap-2 Maneuver	1019	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- -	1620	-
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	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	847	41	6	842	9	66	3	47	7	0	34
Future Vol, veh/h	7	847	41	6	842	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	941	46	7	936	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	946	0	0	987	0	0	1462	1940	494	1443	-	473
Stage 1	-	-	-	-	-	-	980	980	-	955	-	-
Stage 2	-	-	-	-	-	-	482	960	-	488	-	-
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	*1106	-	-	1075	-	-	*90	65	*732	*93	0	*739
Stage 1	-	-	-	-	-	-	*680	598	-	*694	0	-
Stage 2	-	-	-	-	-	-	*697	604	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	1075	-	-	*85	64	*732	*85	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*341	300	-	*338	-	-
Stage 1	-	-	-	-	-	-	*675	594	-	*689	-	-
Stage 2	-	-	-	-	-	-	*657	600	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.8	11.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	433	* 1106	-	-	1075	-	-	338	739
HCM Lane V/C Ratio	0.298	0.007	-	-	0.006	-	-	0.023	0.051
HCM Control Delay (s)	16.8	8.3	-	-	8.4	-	-	15.9	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	841	53	61	840	8	14	1	89	4	0	7
Future Vol, veh/h	11	841	53	61	840	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	934	59	68	933	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	993	0	0	1591	2066	497	1566	-	471
Stage 1	-	-	-	-	-	-	988	988	-	1074	-	-
Stage 2	-	-	-	-	-	-	603	1078	-	492	-	-
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	*1106	-	-	1067	-	-	*72	54	*732	*75	0	*739
Stage 1	-	-	-	-	-	-	*669	591	-	*550	0	-
Stage 2	-	-	-	-	-	-	*697	509	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	1067	-	-	*67	50	*732	*61	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*326	259	-	*271	-	-
Stage 1	-	-	-	-	-	-	*662	585	-	*544	-	-
Stage 2	-	-	-	-	-	-	*646	477	-	*590	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.2	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	618	* 1106	-	-	1067	-	-	271	739
HCM Lane V/C Ratio	0.187	0.011	-	-	0.064	-	-	0.016	0.011
HCM Control Delay (s)	12.2	8.3	-	-	8.6	-	-	18.5	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	490	57	414	57	63	407	1652	62	1595	483
Future Volume (vph)	490	57	414	57	63	407	1652	62	1595	483
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	45.6	7.4	7.4	21.1	70.3	7.9	54.7	84.9
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	0.97	0.94	0.77	0.63	0.58	0.81	0.69	0.64	0.83	0.50
Control Delay	79.3	74.4	34.3	86.9	37.8	64.3	24.1	86.0	38.2	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.3	74.4	34.3	86.9	37.8	64.3	24.1	86.0	38.2	11.2
LOS	E	E	C	F	D	E	C	F	D	B
Approach Delay		58.5			52.3		31.9		33.5	
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: 0.97	
Intersection Signal Delay: 38.0	Intersection LOS: D
Intersection Capacity Utilization 82.2%	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)	490	57	414	57	63	73	407	1652	46	62	1595	483
Future Volume (veh/h)	490	57	414	57	63	73	407	1652	46	62	1595	483
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	589	0	238	63	70	59	452	1836	40	69	1772	270
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	643	0	520	101	109	83	511	2543	55	88	2015	912
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.49	0.49	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5142	112	1781	5106	1585
Grp Volume(v), veh/h	589	0	238	63	64	65	452	1215	661	69	1772	270
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.1	0.0	15.4	4.5	4.6	5.2	16.7	36.5	36.5	5.0	41.8	11.3
Cycle Q Clear(g_c), s	21.1	0.0	15.4	4.5	4.6	5.2	16.7	36.5	36.5	5.0	41.8	11.3
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	643	0	520	101	101	91	511	1684	915	88	2015	912
V/C Ratio(X)	0.92	0.00	0.46	0.62	0.63	0.71	0.89	0.72	0.72	0.79	0.88	0.30
Avail Cap(c_a), veh/h	671	0	533	101	101	91	651	1762	958	119	2015	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	34.5	59.9	60.0	60.2	54.3	25.8	25.8	61.1	36.5	14.1
Incr Delay (d2), s/veh	16.4	0.0	0.2	8.4	9.6	19.5	10.0	1.2	2.2	14.7	5.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	6.0	2.3	2.3	2.6	8.0	14.8	16.4	2.6	18.2	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.7	0.0	34.7	68.4	69.5	79.7	64.3	27.0	28.0	75.8	42.4	15.0
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		827			192			2328			2111	
Approach Delay, s/veh		59.0			72.6			34.5			40.0	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	70.0		29.0	24.7	57.0		13.0
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4
Max Q Clear Time (g_c+I1), s	7.0	38.5		23.1	18.7	43.8		7.2
Green Ext Time (p_c), s	0.0	3.0		0.4	0.5	2.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	226	976	23	905	5	35	76	92
Future Volume (vph)	226	976	23	905	5	35	76	92
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)	93.5	91.5	68.9	68.9	17.1	17.1	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.13	0.13	0.22	0.20
v/c Ratio	0.60	0.43	0.11	0.54	0.10	0.23	0.32	0.83
Control Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.2		34.9		48.8
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 72.9%	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)	226	976	31	23	905	43	5	35	20	76	92	237
Future Volume (veh/h)	226	976	31	23	905	43	5	35	20	76	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1084	34	26	1006	48	6	39	22	84	102	263
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	474	2475	78	309	2025	97	87	196	111	295	115	296
Arrive On Green	0.08	0.67	0.67	1.00	1.00	1.00	0.17	0.17	0.17	0.04	0.24	0.24
Sat Flow, veh/h	1688	3702	116	477	3635	173	963	1182	667	1688	487	1256
Grp Volume(v), veh/h	251	548	570	26	518	536	6	0	61	84	0	365
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	477	1870	1938	963	0	1849	1688	0	1743
Q Serve(g_s), s	7.9	17.8	17.8	0.4	0.0	0.0	0.8	0.0	3.7	5.0	0.0	26.3
Cycle Q Clear(g_c), s	7.9	17.8	17.8	3.7	0.0	0.0	18.1	0.0	3.7	5.0	0.0	26.3
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.36	1.00		0.72
Lane Grp Cap(c), veh/h	474	1250	1302	309	1042	1080	87	0	307	295	0	410
V/C Ratio(X)	0.53	0.44	0.44	0.08	0.50	0.50	0.07	0.00	0.20	0.28	0.00	0.89
Avail Cap(c_a), veh/h	637	1250	1302	309	1042	1080	205	0	533	295	0	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	10.1	10.1	0.1	0.0	0.0	61.2	0.0	46.7	42.0	0.0	48.1
Incr Delay (d2), s/veh	0.9	1.1	1.1	0.4	1.4	1.3	0.3	0.0	0.3	0.5	0.0	10.3
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	3.0	7.4	7.7	0.0	0.4	0.4	0.2	0.0	1.7	2.3	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	11.2	11.2	0.5	1.4	1.3	61.5	0.0	47.1	42.6	0.0	58.4
LnGrp LOS	B	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1369			1080			67			449	
Approach Delay, s/veh		11.0			1.3			48.4			55.4	
Approach LOS		B			A			D			E	

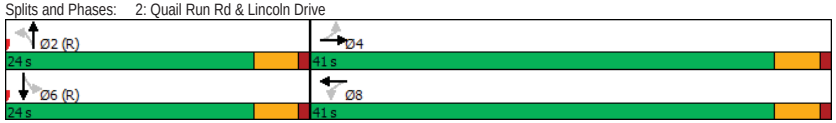
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.5	78.4	9.0	28.1		92.9		37.1
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.9	5.7	7.0	20.1		19.8		28.3
Green Ext Time (p_c), s	0.6	9.2	0.0	0.2		9.9		2.3

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1018	6	866	3	0	26	0
Future Volume (vph)	115	1018	6	866	3	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.4	31.4	31.4	31.4		24.6		24.6
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.68	0.67	0.05	0.57		0.02		0.16
Control Delay	38.8	18.7	9.7	15.3		5.1		7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	38.8	18.7	9.7	15.3		5.1		7.8
LOS	D	B	A	B		A		A
Approach Delay		20.7		15.3		5.1		7.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
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	1018	7	6	866	12	3	0	10	26	0	65
Future Volume (veh/h)	115	1018	7	6	866	12	3	0	10	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	1131	8	7	962	13	3	0	11	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1501	11	245	1490	20	177	38	544	234	36	493
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	577	3617	26	494	3590	49	246	86	1218	364	81	1105
Grp Volume(v), veh/h	128	556	583	7	476	499	14	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	577	1777	1866	494	1777	1862	1551	0	0	1550	0	0
Q Serve(g_s), s	9.5	9.2	9.2	0.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.2	9.2	9.7	6.4	6.4	0.3	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.21		0.79	0.29		0.71
Lane Grp Cap(c), veh/h	293	737	774	245	737	773	760	0	0	763	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.03	0.65	0.65	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1048	317	998	1045	760	0	0	763	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	4.0	4.0	6.2	3.8	3.8	10.0	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.0	1.9	0.0	1.0	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.8	0.0	1.3	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.0	6.0	6.3	4.7	4.7	10.1	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1267			982			14			101	
Approach Delay, s/veh		6.2			4.7			10.1			11.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.6	31.4	33.6	31.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.3	18.0	4.3	11.7
Green Ext Time (p_c), s	0.0	8.8	0.4	7.1

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1045	12	21	876	4	17
Future Vol, veh/h	1045	12	21	876	4	17
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	1161	13	23	973	4	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1174	0	1701	587
Stage 1	-	-	-	-	1168	-
Stage 2	-	-	-	-	533	-
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	-	-	*952	-	*83	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*81	*636
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*586	-
Stage 2	-	-	-	-	*675	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	535	-	-	* 952	-
HCM Lane V/C Ratio	0.044	-	-	0.025	-
HCM Control Delay (s)	12	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	4.2

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

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

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612	-
HCM Lane V/C Ratio	-	-	0.006	0.006	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	997	34	18	827	10	50	0	29	5	0	12
Future Vol, veh/h	26	997	34	18	827	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1108	38	20	919	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	930	0	0	1146	0	0	1685	2155	573	1577	-	465
Stage 1	-	-	-	-	-	-	1185	1185	-	965	-	-
Stage 2	-	-	-	-	-	-	500	970	-	612	-	-
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	*1106	-	-	969	-	-	*61	47	*684	*74	0	*739
Stage 1	-	-	-	-	-	-	*545	499	-	*681	0	-
Stage 2	-	-	-	-	-	-	*697	595	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	969	-	-	*58	45	*684	*68	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*291	257	-	*313	-	-
Stage 1	-	-	-	-	-	-	*531	486	-	*663	-	-
Stage 2	-	-	-	-	-	-	*670	583	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.8	12
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	* 1106	-	-	969	-	-	313	739
HCM Lane V/C Ratio	0.238	0.026	-	-	0.021	-	-	0.018	0.018
HCM Control Delay (s)	17.8	8.3	-	-	8.8	-	-	16.7	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	976	53	43	840	8	6	0	41	4	1	12
Future Vol, veh/h	3	976	53	43	840	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1084	59	48	933	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	1143	0	0	1683	2158	572	1582	2183	471
Stage 1	-	-	-	-	-	-	1120	1120	-	1034	1034	-
Stage 2	-	-	-	-	-	-	563	1038	-	548	1149	-
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	*1106	-	-	973	-	-	*61	47	*684	*73	45	*739
Stage 1	-	-	-	-	-	-	*626	552	-	*595	543	-
Stage 2	-	-	-	-	-	-	*697	540	-	*645	528	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	973	-	-	*57	45	*684	*65	43	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*316	263	-	*291	246	-
Stage 1	-	-	-	-	-	-	*624	551	-	*593	516	-
Stage 2	-	-	-	-	-	-	*649	514	-	*601	526	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	595	* 1106	-	-	973	-	-	291	739
HCM Lane V/C Ratio	0.088	0.003	-	-	0.049	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.9	-	-	17.6	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Future Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.8	23.8	42.8	7.4	7.4	19.1	71.2	7.6	57.5	86.9
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	0.92	0.42	0.40	0.64	0.55	0.55	0.84	0.59
Control Delay	66.6	66.0	51.5	72.4	33.9	57.5	20.7	79.0	37.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	66.0	51.5	72.4	33.9	57.5	20.7	79.0	37.4	10.9
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		59.1			45.8		27.1		31.6	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 82.0%	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)	460	39	469	38	37	48	290	1338	40	51	1698	600
Future Volume (veh/h)	460	39	469	38	37	48	290	1338	40	51	1698	600
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	277	42	41	36	322	1487	33	57	1887	378
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	613	0	448	101	108	84	382	2392	53	73	2015	898
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	542	0	277	42	38	39	322	985	535	57	1887	378
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.3	28.3	4.1	46.1	17.6
Cycle Q Clear(g_c), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.3	28.3	4.1	46.1	17.6
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	613	0	448	101	101	91	382	1584	861	73	2015	898
V/C Ratio(X)	0.88	0.00	0.62	0.41	0.38	0.43	0.84	0.62	0.62	0.78	0.94	0.42
Avail Cap(c_a), veh/h	671	0	474	101	101	91	651	1762	958	119	2015	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	0.0	40.5	59.2	59.1	59.3	56.7	26.1	26.1	61.7	37.8	16.0
Incr Delay (d2), s/veh	11.7	0.0	1.5	1.0	0.9	1.2	2.0	0.4	0.6	6.5	9.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	7.9	1.4	1.2	1.3	5.3	11.4	12.5	2.0	20.8	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	42.1	60.2	59.9	60.4	58.7	26.5	26.8	68.2	47.6	17.5
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		819			119			1842			2322	
Approach Delay, s/veh		56.8			60.2			32.2			43.2	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	66.2		27.9	19.9	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	6.1	30.3		21.7	13.9	48.1		5.1
Green Ext Time (p_c), s	0.0	2.2		0.6	0.5	1.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	226	976	23	905	5	35	76	92
Future Volume (vph)	226	976	23	905	5	35	76	92
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)	93.5	91.5	68.9	68.9	17.1	17.1	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.13	0.13	0.22	0.20
v/c Ratio	0.60	0.43	0.11	0.54	0.10	0.23	0.32	0.83
Control Delay	15.1	9.6	34.7	37.5	47.8	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	9.6	34.7	37.5	47.8	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.4		34.9		48.8
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 72.9%	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)	226	976	31	23	905	43	5	35	20	76	92	237
Future Volume (veh/h)	226	976	31	23	905	43	5	35	20	76	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1084	34	26	1006	48	6	39	22	84	102	263
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	474	2475	78	309	2025	97	87	196	111	295	115	296
Arrive On Green	0.08	0.67	0.67	1.00	1.00	1.00	0.17	0.17	0.17	0.04	0.24	0.24
Sat Flow, veh/h	1688	3702	116	477	3635	173	963	1182	667	1688	487	1256
Grp Volume(v), veh/h	251	548	570	26	518	536	6	0	61	84	0	365
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	477	1870	1938	963	0	1849	1688	0	1743
Q Serve(g_s), s	7.9	17.8	17.8	0.4	0.0	0.0	0.8	0.0	3.7	5.0	0.0	26.3
Cycle Q Clear(g_c), s	7.9	17.8	17.8	3.7	0.0	0.0	18.1	0.0	3.7	5.0	0.0	26.3
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.36	1.00		0.72
Lane Grp Cap(c), veh/h	474	1250	1302	309	1042	1080	87	0	307	295	0	410
V/C Ratio(X)	0.53	0.44	0.44	0.08	0.50	0.50	0.07	0.00	0.20	0.28	0.00	0.89
Avail Cap(c_a), veh/h	637	1250	1302	309	1042	1080	205	0	533	295	0	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	10.1	10.1	0.1	0.0	0.0	61.2	0.0	46.7	42.0	0.0	48.1
Incr Delay (d2), s/veh	0.9	1.1	1.1	0.4	1.4	1.3	0.3	0.0	0.3	0.5	0.0	10.3
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	3.0	7.4	7.7	0.0	0.4	0.4	0.2	0.0	1.7	2.3	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	11.2	11.2	0.5	1.4	1.3	61.5	0.0	47.1	42.6	0.0	58.4
LnGrp LOS	B	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1369			1080			67			449	
Approach Delay, s/veh		11.0			1.3			48.4			55.4	
Approach LOS		B			A			D			E	

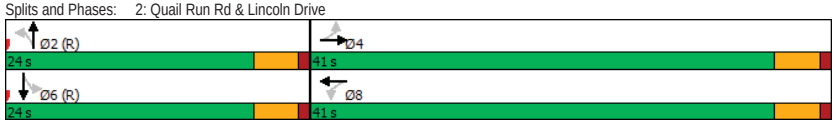
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.5	78.4	9.0	28.1		92.9		37.1
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.9	5.7	7.0	20.1		19.8		28.3
Green Ext Time (p_c), s	0.6	9.2	0.0	0.2		9.9		2.3

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1018	6	866	3	0	26	0
Future Volume (vph)	115	1018	6	866	3	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.4	31.4	31.4	31.4		24.6		24.6
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.68	0.67	0.05	0.57		0.02		0.16
Control Delay	38.8	18.7	7.2	13.4		5.1		7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	38.8	18.7	7.2	13.4		5.1		7.8
LOS	D	B	A	B		A		A
Approach Delay		20.7		13.4		5.1		7.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
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	1018	7	6	866	12	3	0	10	26	0	65
Future Volume (veh/h)	115	1018	7	6	866	12	3	0	10	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	1131	8	7	962	13	3	0	11	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1501	11	245	1490	20	177	38	544	234	36	493
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	577	3617	26	494	3590	49	246	86	1218	364	81	1105
Grp Volume(v), veh/h	128	556	583	7	476	499	14	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	577	1777	1866	494	1777	1862	1551	0	0	1550	0	0
Q Serve(g_s), s	9.5	9.2	9.2	0.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.2	9.2	9.7	6.4	6.4	0.3	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.21		0.79	0.29		0.71
Lane Grp Cap(c), veh/h	293	737	774	245	737	773	760	0	0	763	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.03	0.65	0.65	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1048	317	998	1045	760	0	0	763	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	4.0	4.0	6.2	3.8	3.8	10.0	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.0	1.9	0.0	1.0	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.8	0.0	1.3	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.0	6.0	6.3	4.7	4.7	10.1	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1267			982			14			101	
Approach Delay, s/veh		6.2			4.7			10.1			11.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.6	31.4	33.6	31.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.3	18.0	4.3	11.7
Green Ext Time (p_c), s	0.0	8.8	0.4	7.1

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1045	12	21	876	4	17
Future Vol, veh/h	1045	12	21	876	4	17
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	1161	13	23	973	4	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1174	0	1701	587
Stage 1	-	-	-	-	1168	-
Stage 2	-	-	-	-	533	-
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	-	-	*952	-	*83	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*81	*636
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*586	-
Stage 2	-	-	-	-	*675	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	535	-	-	* 952	-
HCM Lane V/C Ratio	0.044	-	-	0.025	-
HCM Control Delay (s)	12	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	4.2

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

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

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612	-
HCM Lane V/C Ratio	-	-	0.006	0.006	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	997	34	18	827	10	50	0	29	5	0	12
Future Vol, veh/h	26	997	34	18	827	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1108	38	20	919	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	930	0	0	1146	0	0	1685	2155	573	1577	-	465
Stage 1	-	-	-	-	-	-	1185	1185	-	965	-	-
Stage 2	-	-	-	-	-	-	500	970	-	612	-	-
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	*1106	-	-	969	-	-	*61	47	*684	*74	0	*739
Stage 1	-	-	-	-	-	-	*545	499	-	*681	0	-
Stage 2	-	-	-	-	-	-	*697	595	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	969	-	-	*58	45	*684	*68	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*291	257	-	*313	-	-
Stage 1	-	-	-	-	-	-	*531	486	-	*663	-	-
Stage 2	-	-	-	-	-	-	*670	583	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.8	12
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	* 1106	-	-	969	-	-	313	739
HCM Lane V/C Ratio	0.238	0.026	-	-	0.021	-	-	0.018	0.018
HCM Control Delay (s)	17.8	8.3	-	-	8.8	-	-	16.7	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	976	53	43	840	8	6	0	41	4	1	12
Future Vol, veh/h	3	976	53	43	840	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1084	59	48	933	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	1143	0	0	1683	2158	572	1582	2183	471
Stage 1	-	-	-	-	-	-	1120	1120	-	1034	1034	-
Stage 2	-	-	-	-	-	-	563	1038	-	548	1149	-
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	*1106	-	-	973	-	-	*61	47	*684	*73	45	*739
Stage 1	-	-	-	-	-	-	*626	552	-	*595	543	-
Stage 2	-	-	-	-	-	-	*697	540	-	*645	528	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	973	-	-	*57	45	*684	*65	43	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*316	263	-	*291	246	-
Stage 1	-	-	-	-	-	-	*624	551	-	*593	516	-
Stage 2	-	-	-	-	-	-	*649	514	-	*601	526	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	595	* 1106	-	-	973	-	-	291	739
HCM Lane V/C Ratio	0.088	0.003	-	-	0.049	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.9	-	-	17.6	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Future Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	33.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	25.5	25.5	40.2	10.1	10.1	14.7	66.7	7.7	57.5	88.6
Actuated g/C Ratio	0.20	0.20	0.31	0.08	0.08	0.11	0.51	0.06	0.44	0.68
v/c Ratio	0.84	0.84	0.95	0.31	0.31	0.83	0.59	0.55	0.84	0.57
Control Delay	54.5	54.3	53.3	63.0	30.3	74.9	24.3	78.4	37.0	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	54.5	54.3	53.3	63.0	30.3	74.9	24.3	78.4	37.0	7.2
LOS	D	D	D	E	C	E	C	E	D	A
Approach Delay		53.9			40.4		33.1		30.3	
Approach LOS		D			D		C		C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 35.9	Intersection LOS: D
Intersection Capacity Utilization 84.2%	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)	460	39	469	38	37	48	290	1338	40	51	1698	600
Future Volume (veh/h)	460	39	469	38	37	48	290	1338	40	51	1698	600
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	277	42	41	36	322	1487	33	57	1887	378
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	624	0	448	137	146	114	371	2535	56	73	2172	952
Arrive On Green	0.18	0.00	0.18	0.08	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	542	0	277	42	38	39	322	985	535	57	1887	378
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	19.2	0.0	19.7	2.9	2.6	3.0	11.9	26.8	26.8	4.1	43.8	16.3
Cycle Q Clear(g_c), s	19.2	0.0	19.7	2.9	2.6	3.0	11.9	26.8	26.8	4.1	43.8	16.3
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	624	0	448	137	137	123	371	1679	912	73	2172	952
V/C Ratio(X)	0.87	0.00	0.62	0.31	0.28	0.32	0.87	0.59	0.59	0.78	0.87	0.40
Avail Cap(c_a), veh/h	754	0	506	143	142	128	385	1679	912	119	2172	952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	40.5	56.7	56.6	56.8	57.1	23.5	23.5	61.7	34.0	13.6
Incr Delay (d2), s/veh	8.1	0.0	1.1	0.5	0.4	0.5	17.1	0.4	0.7	6.5	5.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	0.0	7.9	1.3	1.2	1.2	6.1	10.8	11.8	2.0	18.8	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	0.0	41.6	57.2	57.0	57.3	74.2	23.8	24.2	68.2	39.1	14.9
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		819			119			1842			2322	
Approach Delay, s/veh		53.9			57.2			32.7			35.9	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	69.8		28.3	19.5	61.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	61.3		27.5	14.5	55.3		10.4
Max Q Clear Time (g_c+I1), s	6.1	28.8		21.7	13.9	45.8		5.0
Green Ext Time (p_c), s	0.0	2.2		1.0	0.0	3.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	38.1
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)	250	891	22	941	7	63	64	48
Future Volume (vph)	250	891	22	941	7	63	64	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.0	99.0	77.4	77.4	12.1	12.1	21.0	18.5
Actuated g/C Ratio	0.78	0.76	0.60	0.60	0.09	0.09	0.16	0.14
v/c Ratio	0.61	0.38	0.08	0.53	0.10	0.52	0.39	0.67
Control Delay	12.0	6.0	31.9	39.2	54.9	59.7	52.7	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	6.0	31.9	39.2	54.9	59.7	52.7	32.6
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.3		39.0		59.3		37.3
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 25.0	Intersection LOS: C
Intersection Capacity Utilization 67.9%	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)	250	891	29	22	941	61	7	63	20	64	48	159
Future Volume (veh/h)	250	891	29	22	941	61	7	63	20	64	48	159
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	278	990	21	24	1046	40	8	70	13	71	53	121
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	522	2723	58	427	2328	89	101	118	22	153	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3558	75	558	3490	133	1211	1534	285	1781	506	1156
Grp Volume(v), veh/h	278	494	517	24	533	553	8	0	83	71	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	558	1777	1846	1211	0	1819	1781	0	1662
Q Serve(g_s), s	6.0	11.8	11.8	0.0	0.0	0.0	0.8	0.0	5.7	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.8	11.8	0.0	0.0	0.0	5.9	0.0	5.7	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.07	1.00		0.16	1.00		0.70
Lane Grp Cap(c), veh/h	522	1360	1421	427	1185	1232	101	0	140	153	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.06	0.45	0.45	0.08	0.00	0.59	0.46	0.00	0.76
Avail Cap(c_a), veh/h	772	1360	1421	427	1185	1232	264	0	385	153	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	5.0	5.0	0.0	0.0	0.0	60.6	0.0	58.0	53.4	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.8	0.7	0.2	0.9	0.8	0.3	0.0	4.0	2.2	0.0	5.0
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	2.1	4.1	4.3	0.0	0.3	0.3	0.3	0.0	2.8	0.4	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.7	0.2	0.9	0.8	60.9	0.0	62.0	55.6	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1289			1110			91			245	
Approach Delay, s/veh		5.7			0.8			61.9			57.9	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.8		15.1
Green Ext Time (p_c), s	0.8	9.8	0.0	0.4		8.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	899	5	923	5	0	14	0
Future Volume (vph)	85	899	5	923	5	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	29.3	29.3	29.3	29.3		26.7		26.7
Actuated g/C Ratio	0.45	0.45	0.45	0.45		0.41		0.41
v/c Ratio	0.68	0.63	0.04	0.66		0.02		0.17
Control Delay	43.1	19.2	9.0	17.7		5.2		5.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	43.1	19.2	9.0	17.7		5.2		5.8
LOS	D	B	A	B		A		A
Approach Delay		21.2		17.7		5.2		5.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
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	899	7	5	923	25	5	0	7	14	0	93
Future Volume (veh/h)	85	899	7	5	923	25	5	0	7	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	999	8	6	1026	28	6	0	8	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	261	1484	12	275	1451	40	333	30	378	121	38	617
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	535	3613	29	560	3533	96	563	66	839	129	84	1369
Grp Volume(v), veh/h	94	491	516	6	516	538	14	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	535	1777	1865	560	1777	1853	1468	0	0	1582	0	0
Q Serve(g_s), s	7.7	7.2	7.2	0.3	8.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.2	7.2	7.2	7.9	8.0	8.0	0.3	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.43		0.57	0.13		0.87
Lane Grp Cap(c), veh/h	261	730	766	275	730	761	741	0	0	776	0	0
V/C Ratio(X)	0.36	0.67	0.67	0.02	0.71	0.71	0.02	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	350	1025	1076	368	1025	1069	741	0	0	776	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	4.1	4.1	5.7	4.1	4.1	9.9	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.0	1.3	1.3	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.5	0.0	1.6	1.7	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	5.1	5.0	5.8	5.4	5.4	9.9	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1101			1060			14			119	
Approach Delay, s/veh		5.4			5.4			9.9			11.0	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.2	30.8	34.2	30.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.3	18.2	4.8	10.0
Green Ext Time (p_c), s	0.0	7.7	0.5	8.1

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	9	21	945	11	22
Future Vol, veh/h	911	9	21	945	11	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	1012	10	23	1050	12	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1022	0	1588	511
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1029	-	*99	*732
Stage 1	-	-	-	-	*640	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1029	-	*97	*732
Mov Cap-2 Maneuver	-	-	-	-	*331	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	521	-	-	1029	-
HCM Lane V/C Ratio	0.07	-	-	0.023	-
HCM Control Delay (s)	12.4	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	2	0	11	1
Future Vol, veh/h	0	10	2	0	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	2	0	12	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	27	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	988	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	981	1082	-	-	1620	-
Mov Cap-2 Maneuver	981	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	998	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.01	0.008	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	871	41	6	869	9	66	3	47	7	0	34
Future Vol, veh/h	7	871	41	6	869	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	968	46	7	966	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	976	0	0	1014	0	0	1504	1997	507	1487	-	488
Stage 1	-	-	-	-	-	-	1007	1007	-	985	-	-
Stage 2	-	-	-	-	-	-	497	990	-	502	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1039	-	-	*84	*59	*732	*86	0	*715
Stage 1	-	-	-	-	-	-	*645	*575	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1039	-	-	*79	*58	*732	*78	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*325	*289	-	*331	-	-
Stage 1	-	-	-	-	-	-	*640	*571	-	*670	-	-
Stage 2	-	-	-	-	-	-	*634	*587	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.4	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	418	* 1070	-	-	1039	-	-	331	715
HCM Lane V/C Ratio	0.308	0.007	-	-	0.006	-	-	0.023	0.053
HCM Control Delay (s)	17.4	8.4	-	-	8.5	-	-	16.1	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.1	0.2

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	11	865	53	61	867	8	14	1	89	4	0	7
Future Vol, veh/h	11	865	53	61	867	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	961	59	68	963	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	972	0	0	1020	0	0	1633	2123	510	1609	-	486
Stage 1	-	-	-	-	-	-	1015	1015	-	1104	-	-
Stage 2	-	-	-	-	-	-	618	1108	-	505	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1032	-	-	*67	49	*732	*70	0	*715
Stage 1	-	-	-	-	-	-	*634	568	-	*569	0	-
Stage 2	-	-	-	-	-	-	*674	517	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1032	-	-	*62	45	*732	*57	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*311	254	-	*273	-	-
Stage 1	-	-	-	-	-	-	*627	562	-	*562	-	-
Stage 2	-	-	-	-	-	-	*623	483	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.3	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	610	* 1070	-	-	1032	-	-	273	715
HCM Lane V/C Ratio	0.189	0.011	-	-	0.066	-	-	0.016	0.011
HCM Control Delay (s)	12.3	8.4	-	-	8.7	-	-	18.4	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	503	57	425	57	63	419	1652	62	1595	497
Future Volume (vph)	503	57	425	57	63	419	1652	62	1595	497
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	45.9	7.4	7.4	21.4	70.3	7.9	54.4	84.6
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	0.97	0.98	0.78	0.63	0.58	0.82	0.69	0.64	0.83	0.52
Control Delay	80.9	83.6	34.9	86.9	37.8	65.1	24.1	86.0	38.5	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	80.9	83.6	34.9	86.9	37.8	65.1	24.1	86.0	38.5	11.6
LOS	F	F	C	F	D	E	C	F	D	B
Approach Delay		61.8			52.3		32.2		33.7	
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: 0.98	
Intersection Signal Delay: 38.9	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)	503	57	425	57	63	73	419	1652	46	62	1595	497
Future Volume (veh/h)	503	57	425	57	63	73	419	1652	46	62	1595	497
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	604	0	250	63	70	59	466	1836	40	69	1772	285
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	655	0	532	101	109	83	524	2563	56	88	2015	917
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5142	112	1781	5106	1585
Grp Volume(v), veh/h	604	0	250	63	64	65	466	1215	661	69	1772	285
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.7	0.0	16.2	4.5	4.6	5.2	17.2	36.2	36.2	5.0	41.8	12.0
Cycle Q Clear(g_c), s	21.7	0.0	16.2	4.5	4.6	5.2	17.2	36.2	36.2	5.0	41.8	12.0
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	655	0	532	101	101	91	524	1697	922	88	2015	917
V/C Ratio(X)	0.92	0.00	0.47	0.62	0.63	0.71	0.89	0.72	0.72	0.79	0.88	0.31
Avail Cap(c_a), veh/h	671	0	539	101	101	91	651	1762	958	119	2015	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	34.1	59.9	60.0	60.2	54.1	25.4	25.4	61.1	36.5	14.1
Incr Delay (d2), s/veh	17.7	0.0	0.2	8.4	9.6	19.5	10.8	1.1	2.1	14.7	5.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	6.3	2.3	2.3	2.6	8.3	14.6	16.2	2.6	18.2	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.8	0.0	34.3	68.4	69.5	79.7	64.9	26.6	27.5	75.8	42.4	15.0
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		854			192			2342			2126	
Approach Delay, s/veh		59.4			72.6			34.5			39.8	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	70.5		29.4	25.2	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	7.0	38.2		23.7	19.2	43.8		7.2
Green Ext Time (p_c), s	0.0	3.0		0.2	0.5	2.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	250	891	22	941	7	63	64	48
Future Volume (vph)	250	891	22	941	7	63	64	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.0	99.0	77.0	77.0	12.1	12.1	21.0	18.5
Actuated g/C Ratio	0.78	0.76	0.59	0.59	0.09	0.09	0.16	0.14
v/c Ratio	0.61	0.38	0.08	0.54	0.10	0.52	0.39	0.67
Control Delay	11.9	6.0	32.3	39.6	54.9	59.7	52.7	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	6.0	32.3	39.6	54.9	59.7	52.7	32.6
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.3		39.4		59.3		37.3
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 67.9%	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)	250	891	29	22	941	61	7	63	20	64	48	159
Future Volume (veh/h)	250	891	29	22	941	61	7	63	20	64	48	159
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	278	990	21	24	1046	40	8	70	13	71	53	121
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	522	2723	58	427	2328	89	101	118	22	153	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3558	75	558	3490	133	1211	1534	285	1781	506	1156
Grp Volume(v), veh/h	278	494	517	24	533	553	8	0	83	71	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	558	1777	1846	1211	0	1819	1781	0	1662
Q Serve(g_s), s	6.0	11.8	11.8	0.0	0.0	0.0	0.8	0.0	5.7	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.8	11.8	0.0	0.0	0.0	5.9	0.0	5.7	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.07	1.00		0.16	1.00		0.70
Lane Grp Cap(c), veh/h	522	1360	1421	427	1185	1232	101	0	140	153	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.06	0.45	0.45	0.08	0.00	0.59	0.46	0.00	0.76
Avail Cap(c_a), veh/h	772	1360	1421	427	1185	1232	264	0	385	153	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	5.0	5.0	0.0	0.0	0.0	60.6	0.0	58.0	53.4	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.8	0.7	0.2	0.9	0.8	0.3	0.0	4.0	2.2	0.0	5.0
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	2.1	4.1	4.3	0.0	0.3	0.3	0.3	0.0	2.8	0.4	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.7	0.2	0.9	0.8	60.9	0.0	62.0	55.6	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1289			1110			91			245	
Approach Delay, s/veh		5.7			0.8			61.9			57.9	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.8		15.1
Green Ext Time (p_c), s	0.8	9.8	0.0	0.4		8.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	899	5	923	5	0	14	0
Future Volume (vph)	85	899	5	923	5	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	29.4	29.4	29.4	29.4		26.6		26.6
Actuated g/C Ratio	0.45	0.45	0.45	0.45		0.41		0.41
v/c Ratio	0.67	0.63	0.04	0.66		0.02		0.17
Control Delay	42.3	19.0	8.0	17.6		5.2		5.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	42.3	19.0	8.0	17.6		5.2		5.8
LOS	D	B	A	B		A		A
Approach Delay		21.0		17.6		5.2		5.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 18.5	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
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	899	7	5	923	25	5	0	7	14	0	93
Future Volume (veh/h)	85	899	7	5	923	25	5	0	7	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	999	8	6	1026	28	6	0	8	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	261	1484	12	275	1451	40	333	30	378	121	38	617
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	535	3613	29	560	3533	96	563	66	839	129	84	1369
Grp Volume(v), veh/h	94	491	516	6	516	538	14	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	535	1777	1865	560	1777	1853	1468	0	0	1582	0	0
Q Serve(g_s), s	7.7	7.2	7.2	0.3	8.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.2	7.2	7.2	7.9	8.0	8.0	0.3	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.43		0.57	0.13		0.87
Lane Grp Cap(c), veh/h	261	730	766	275	730	761	741	0	0	776	0	0
V/C Ratio(X)	0.36	0.67	0.67	0.02	0.71	0.71	0.02	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	350	1025	1076	368	1025	1069	741	0	0	776	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	4.1	4.1	5.7	4.1	4.1	9.9	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.0	1.3	1.3	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.5	0.0	1.6	1.7	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	5.1	5.0	5.8	5.4	5.4	9.9	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1101			1060			14			119	
Approach Delay, s/veh		5.4			5.4			9.9			11.0	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.2	30.8	34.2	30.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.3	18.2	4.8	10.0
Green Ext Time (p_c), s	0.0	7.7	0.5	8.1

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	9	21	945	11	22
Future Vol, veh/h	911	9	21	945	11	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	1012	10	23	1050	12	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1022	0	1588	511
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1029	-	*99	*732
Stage 1	-	-	-	-	*640	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1029	-	*97	*732
Mov Cap-2 Maneuver	-	-	-	-	*331	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	521	-	-	1029	-
HCM Lane V/C Ratio	0.07	-	-	0.023	-
HCM Control Delay (s)	12.4	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	2	0	11	1
Future Vol, veh/h	0	10	2	0	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	2	0	12	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	27	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	988	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	981	1082	-	-	1620	-
Mov Cap-2 Maneuver	981	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	998	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.01	0.008	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	871	41	6	869	9	66	3	47	7	0	34
Future Vol, veh/h	7	871	41	6	869	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	968	46	7	966	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	976	0	0	1014	0	0	1504	1997	507	1487	-	488
Stage 1	-	-	-	-	-	-	1007	1007	-	985	-	-
Stage 2	-	-	-	-	-	-	497	990	-	502	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1039	-	-	*84	*59	*732	*86	0	*715
Stage 1	-	-	-	-	-	-	*645	*575	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1039	-	-	*79	*58	*732	*78	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*325	*289	-	*331	-	-
Stage 1	-	-	-	-	-	-	*640	*571	-	*670	-	-
Stage 2	-	-	-	-	-	-	*634	*587	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.4	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	418	* 1070	-	-	1039	-	-	331	715
HCM Lane V/C Ratio	0.308	0.007	-	-	0.006	-	-	0.023	0.053
HCM Control Delay (s)	17.4	8.4	-	-	8.5	-	-	16.1	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.1	0.2

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	11	865	53	61	867	8	14	1	89	4	0	7
Future Vol, veh/h	11	865	53	61	867	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	961	59	68	963	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	972	0	0	1020	0	0	1633	2123	510	1609	-	486
Stage 1	-	-	-	-	-	-	1015	1015	-	1104	-	-
Stage 2	-	-	-	-	-	-	618	1108	-	505	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1032	-	-	*67	49	*732	*70	0	*715
Stage 1	-	-	-	-	-	-	*634	568	-	*569	0	-
Stage 2	-	-	-	-	-	-	*674	517	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1032	-	-	*62	45	*732	*57	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*311	254	-	*273	-	-
Stage 1	-	-	-	-	-	-	*627	562	-	*562	-	-
Stage 2	-	-	-	-	-	-	*623	483	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.3	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	610	* 1070	-	-	1032	-	-	273	715
HCM Lane V/C Ratio	0.189	0.011	-	-	0.066	-	-	0.016	0.011
HCM Control Delay (s)	12.3	8.4	-	-	8.7	-	-	18.4	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	503	57	425	57	63	419	1652	62	1595	497
Future Volume (vph)	503	57	425	57	63	419	1652	62	1595	497
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	34.0	34.0	27.0	17.0	17.0	27.0	65.0	14.0	52.0	34.0
Total Split (%)	26.2%	26.2%	20.8%	13.1%	13.1%	20.8%	50.0%	10.8%	40.0%	26.2%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	27.1	27.1	47.7	10.4	10.4	20.6	64.3	8.2	49.6	82.4
Actuated g/C Ratio	0.21	0.21	0.37	0.08	0.08	0.16	0.49	0.06	0.38	0.63
v/c Ratio	0.88	0.89	0.74	0.45	0.45	0.86	0.75	0.62	0.91	0.52
Control Delay	58.5	59.9	25.5	67.3	31.6	69.3	30.0	82.4	47.0	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	59.9	25.5	67.3	31.6	69.3	30.0	82.4	47.0	10.6
LOS	E	E	C	E	C	E	C	F	D	B
Approach Delay		44.7			42.1		37.8		39.6	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 39.9	Intersection LOS: D
Intersection Capacity Utilization 85.1%	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)	503	57	425	57	63	73	419	1652	46	62	1595	497
Future Volume (veh/h)	503	57	425	57	63	73	419	1652	46	62	1595	497
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	604	0	250	63	70	59	466	1836	40	69	1772	285
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	672	0	537	137	148	112	518	2357	51	88	1819	864
Arrive On Green	0.19	0.00	0.19	0.08	0.08	0.08	0.15	0.46	0.46	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5142	112	1781	5106	1585
Grp Volume(v), veh/h	604	0	250	63	64	65	466	1215	661	69	1772	285
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.5	0.0	16.1	4.4	4.5	5.0	17.2	39.1	39.1	5.0	44.5	13.0
Cycle Q Clear(g_c), s	21.5	0.0	16.1	4.4	4.5	5.0	17.2	39.1	39.1	5.0	44.5	13.0
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	672	0	537	137	137	124	518	1560	848	88	1819	864
V/C Ratio(X)	0.90	0.00	0.47	0.46	0.47	0.53	0.90	0.78	0.78	0.79	0.97	0.33
Avail Cap(c_a), veh/h	781	0	585	156	156	141	572	1560	848	119	1819	864
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	33.7	57.4	57.5	57.7	54.3	29.7	29.7	61.1	41.3	16.4
Incr Delay (d2), s/veh	11.1	0.0	0.2	0.9	0.9	1.3	15.3	2.4	4.3	14.7	15.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	6.3	2.0	2.1	2.1	8.6	16.3	18.2	2.6	21.1	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.6	0.0	34.0	58.3	58.4	59.0	69.5	32.0	33.9	75.8	57.1	17.4
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	E	B
Approach Vol, veh/h		854			192			2342			2126	
Approach Delay, s/veh		54.2			58.6			40.0			52.4	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	65.3		30.0	25.0	52.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	59.3		28.5	21.5	46.3		11.4
Max Q Clear Time (g_c+I1), s	7.0	41.1		23.5	19.2	46.5		7.0
Green Ext Time (p_c), s	0.0	2.9		1.0	0.3	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

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

APPENDIX H

2021 PEAK HOUR ANALYSIS SCENARIO 2

CivTech

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	226	969	22	900	5	35	74	92
Future Volume (vph)	226	969	22	900	5	35	74	92
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)	93.5	91.5	68.9	68.9	18.8	18.8	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.14	0.14	0.22	0.20
v/c Ratio	0.60	0.43	0.10	0.53	0.11	0.21	0.32	0.83
Control Delay	14.8	9.6	34.0	37.3	49.2	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	9.6	34.0	37.3	49.2	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.3		35.0		48.8
Approach LOS		B		D		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: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 72.7%	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)	226	969	31	22	900	42	5	35	19	74	92	237
Future Volume (veh/h)	226	969	31	22	900	42	5	35	19	74	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1077	23	24	1000	30	6	39	12	82	102	152
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	502	2760	59	362	2364	71	85	141	43	213	119	177
Arrive On Green	0.07	0.74	0.74	1.00	1.00	1.00	0.10	0.10	0.10	0.04	0.17	0.17
Sat Flow, veh/h	1688	3745	80	486	3708	111	1066	1444	444	1688	714	1064
Grp Volume(v), veh/h	251	538	562	24	504	526	6	0	51	82	0	254
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	486	1870	1949	1066	0	1889	1688	0	1777
Q Serve(g_s), s	6.3	13.8	13.8	0.1	0.0	0.0	0.7	0.0	3.3	5.0	0.0	18.1
Cycle Q Clear(g_c), s	6.3	13.8	13.8	0.9	0.0	0.0	9.8	0.0	3.3	5.0	0.0	18.1
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.24	1.00		0.60
Lane Grp Cap(c), veh/h	502	1379	1441	362	1192	1242	85	0	184	213	0	296
V/C Ratio(X)	0.50	0.39	0.39	0.07	0.42	0.42	0.07	0.00	0.28	0.38	0.00	0.86
Avail Cap(c_a), veh/h	685	1379	1441	362	1192	1242	289	0	545	213	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	6.3	6.3	0.0	0.0	0.0	61.8	0.0	54.4	49.9	0.0	52.7
Incr Delay (d2), s/veh	0.8	0.8	0.8	0.3	0.9	0.8	0.3	0.0	0.8	1.1	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.3	5.5	0.0	0.3	0.3	0.2	0.0	1.6	0.2	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	7.1	7.1	0.3	0.9	0.8	62.1	0.0	55.2	51.0	0.0	59.7
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1351			1054			57			336	
Approach Delay, s/veh		7.0			0.9			55.9			57.6	
Approach LOS		A			A			E			E	

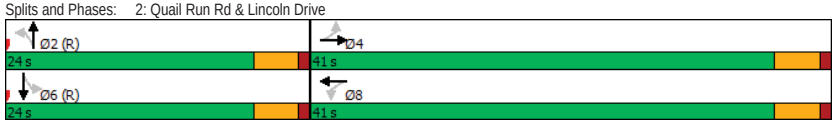
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.9	88.9	9.0	19.2		101.8		28.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	8.3	2.9	7.0	11.8		15.8		20.1
Green Ext Time (p_c), s	0.6	8.9	0.0	0.2		9.7		1.6

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	115	1012	2	862	0	26	0
Future Volume (vph)	115	1012	2	862	0	26	0
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	4	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	31.2	31.2	31.2	31.2	24.8		24.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.38		0.38
v/c Ratio	0.68	0.66	0.01	0.57	0.01		0.16
Control Delay	39.4	18.8	9.0	15.4	0.0		7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	39.4	18.8	9.0	15.4	0.0		7.8
LOS	D	B	A	B	A		A
Approach Delay		20.9		15.4			7.8
Approach LOS		C		B			A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 55.6%	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)	115	1012	3	2	862	12	0	0	7	26	0	65
Future Volume (veh/h)	115	1012	3	2	862	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	1124	3	2	958	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	293	1505	4	247	1486	20	0	0	709	235	36	495
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	579	3636	10	500	3590	49	0	0	1585	365	81	1106
Grp Volume(v), veh/h	128	549	578	2	474	497	0	0	8	101	0	0
Grp Sat Flow(s),veh/h/ln	579	1777	1869	500	1777	1862	0	0	1585	1551	0	0
Q Serve(g_s), s	9.6	9.1	9.1	0.1	6.4	6.4	0.0	0.0	0.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.1	9.1	9.3	6.4	6.4	0.0	0.0	0.2	2.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.00		1.00	0.29		0.71
Lane Grp Cap(c), veh/h	293	736	774	247	736	771	0	0	709	766	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.01	0.64	0.64	0.00	0.00	0.01	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1049	321	998	1045	0	0	709	766	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	4.1	4.1	6.2	3.8	3.8	0.0	0.0	10.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.9	1.8	0.0	1.0	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.8	0.0	1.4	1.4	0.0	0.0	0.1	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.0	5.9	6.2	4.8	4.7	0.0	0.0	10.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1255			973			8			101	
Approach Delay, s/veh		6.1			4.8			10.0			10.9	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.7	31.3	33.7	31.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.2	18.0	4.3	11.3
Green Ext Time (p_c), s	0.0	8.7	0.4	7.0

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1042	0	0	872	0	0
Future Vol, veh/h	1042	0	0	872	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	-	-	-	-	-	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	1158	0	0	969	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	579
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*684
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*684
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Notes

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	14	8	0	0	8	0
Stage 1	8	-	-	-	-	-
Stage 2	6	-	-	-	-	-
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	1005	1074	-	-	1612	-
Stage 1	1015	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1005	1074	-	-	1612	-
Mov Cap-2 Maneuver	1005	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1612	-
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	1042	4	0	868	0	3
Future Vol, veh/h	1042	4	0	868	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	1158	4	0	964	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1162	0	1642	581
Stage 1	-	-	-	-	1160	-
Stage 2	-	-	-	-	482	-
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	-	-	948	-	*91	*684
Stage 1	-	-	-	-	*585	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	948	-	*91	*684
Mov Cap-2 Maneuver	-	-	-	-	*327	-
Stage 1	-	-	-	-	*585	-
Stage 2	-	-	-	-	*675	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	948	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1041	2	5	868	0	3
Future Vol, veh/h	1041	2	5	868	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1157	2	6	964	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1159	0	1652	580
Stage 1	-	-	-	-	1158	-
Stage 2	-	-	-	-	494	-
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	-	-	953	-	*89	*684
Stage 1	-	-	-	-	*587	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	953	-	*88	*684
Mov Cap-2 Maneuver	-	-	-	-	*325	-
Stage 1	-	-	-	-	*584	-
Stage 2	-	-	-	-	*675	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	953	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	983	34	18	807	10	50	0	29	5	0	12
Future Vol, veh/h	26	983	34	18	807	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1092	38	20	897	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	908	0	0	1130	0	0	1658	2117	565	1547	-	454
Stage 1	-	-	-	-	-	-	1169	1169	-	943	-	-
Stage 2	-	-	-	-	-	-	489	948	-	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	1112	-	-	990	-	-	*64	50	*684	*78	0	*763
Stage 1	-	-	-	-	-	-	*564	512	-	*646	0	-
Stage 2	-	-	-	-	-	-	*720	578	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1112	-	-	990	-	-	*61	48	*684	*72	-	*763
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	258	-	*308	-	-
Stage 1	-	-	-	-	-	-	*549	499	-	*630	-	-
Stage 2	-	-	-	-	-	-	*693	566	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.3	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	380	1112	-	-	990	-	-	308	763
HCM Lane V/C Ratio	0.231	0.026	-	-	0.02	-	-	0.018	0.017
HCM Control Delay (s)	17.3	8.3	-	-	8.7	-	-	16.9	9.8
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	962	53	43	820	8	6	0	41	4	1	12
Future Vol, veh/h	3	962	53	43	820	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1069	59	48	911	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	920	0	0	1128	0	0	1657	2121	564	1553	2146	460
Stage 1	-	-	-	-	-	-	1105	1105	-	1012	1012	-
Stage 2	-	-	-	-	-	-	552	1016	-	541	1134	-
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	*1106	-	-	993	-	-	*64	50	*684	*77	48	*739
Stage 1	-	-	-	-	-	-	*645	566	-	*621	561	-
Stage 2	-	-	-	-	-	-	*697	557	-	*645	540	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	993	-	-	*60	47	*684	*69	46	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*322	270	-	*298	255	-
Stage 1	-	-	-	-	-	-	*643	564	-	*619	534	-
Stage 2	-	-	-	-	-	-	*650	530	-	*601	539	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	* 1106	-	-	993	-	-	298	739
HCM Lane V/C Ratio	0.087	0.003	-	-	0.048	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.8	-	-	17.3	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	452	39	463	38	37	281	1338	51	1698	589
Future Volume (vph)	452	39	463	38	37	281	1338	51	1698	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.6	23.6	42.3	7.4	7.4	18.7	71.3	7.6	58.0	87.3
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	0.89	0.91	0.42	0.40	0.63	0.55	0.55	0.83	0.58
Control Delay	64.4	64.1	51.2	72.4	33.9	57.7	20.7	79.0	36.8	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	64.1	51.2	72.4	33.9	57.7	20.7	79.0	36.8	10.3
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		57.9			45.8		26.9		31.0	
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: 0.91	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 81.6%	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)	452	39	463	38	37	48	281	1338	40	51	1698	589
Future Volume (veh/h)	452	39	463	38	37	48	281	1338	40	51	1698	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	533	0	270	42	41	36	312	1487	27	57	1887	376
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	603	0	439	101	108	84	372	2388	43	73	2015	894
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5164	94	1781	5106	1585
Grp Volume(v), veh/h	533	0	270	42	38	39	312	980	534	57	1887	376
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	19.0	0.0	19.3	3.0	2.7	3.1	11.5	28.3	28.3	4.1	46.1	17.6
Cycle Q Clear(g_c), s	19.0	0.0	19.3	3.0	2.7	3.1	11.5	28.3	28.3	4.1	46.1	17.6
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	603	0	439	101	101	91	372	1575	857	73	2015	894
V/C Ratio(X)	0.88	0.00	0.62	0.41	0.38	0.43	0.84	0.62	0.62	0.78	0.94	0.42
Avail Cap(c_a), veh/h	671	0	469	101	101	91	651	1762	960	119	2015	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	0.0	41.0	59.2	59.1	59.3	56.9	26.4	26.4	61.7	37.8	16.2
Incr Delay (d2), s/veh	11.6	0.0	1.4	1.0	0.9	1.2	2.0	0.3	0.6	6.5	9.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.7	1.4	1.2	1.3	5.1	11.4	12.5	2.0	20.8	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	42.4	60.2	59.9	60.4	58.9	26.7	27.0	68.2	47.6	17.7
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		803			119			1826			2320	
Approach Delay, s/veh		57.0			60.2			32.3			43.3	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	65.8		27.5	19.5	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	6.1	30.3		21.3	13.5	48.1		5.1
Green Ext Time (p_c), s	0.0	2.2		0.7	0.5	1.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.9
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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	250	881	21	932	7	63	61	48
Future Volume (vph)	250	881	21	932	7	63	61	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	77.4	77.4	12.0	12.0	20.9	18.4
Actuated g/C Ratio	0.78	0.76	0.60	0.60	0.09	0.09	0.16	0.14
v/c Ratio	0.60	0.38	0.07	0.53	0.10	0.51	0.38	0.67
Control Delay	11.6	6.0	31.0	38.2	55.1	60.0	52.2	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	6.0	31.0	38.2	55.1	60.0	52.2	32.7
LOS	B	A	C	D	E	E	D	C
Approach Delay		7.2		38.0		59.6		37.1
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 67.6%	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)	250	881	29	21	932	59	7	63	18	61	48	159
Future Volume (veh/h)	250	881	29	21	932	59	7	63	18	61	48	159
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	278	979	21	23	1036	44	8	70	11	68	53	121
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	524	2723	58	431	2317	98	101	121	19	155	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3557	76	563	3473	147	1211	1578	248	1781	506	1156
Grp Volume(v), veh/h	278	489	511	23	530	550	8	0	81	68	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	563	1777	1844	1211	0	1826	1781	0	1662
Q Serve(g_s), s	6.0	11.6	11.6	0.0	0.0	0.0	0.8	0.0	5.6	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.6	11.6	0.0	0.0	0.0	5.9	0.0	5.6	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	524	1360	1421	431	1185	1230	101	0	140	155	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.05	0.45	0.45	0.08	0.00	0.58	0.44	0.00	0.76
Avail Cap(c_a), veh/h	774	1360	1421	431	1185	1230	264	0	386	155	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	4.9	4.9	0.0	0.0	0.0	60.6	0.0	58.0	53.0	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.2	0.8	0.8	0.3	0.0	3.7	1.9	0.0	5.0
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	2.1	4.0	4.2	0.0	0.3	0.3	0.3	0.0	2.7	0.3	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.6	0.2	0.8	0.8	60.9	0.0	61.7	55.0	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1278			1103			89			242	
Approach Delay, s/veh		5.7			0.8			61.6			57.8	
Approach LOS		A			A			E			E	

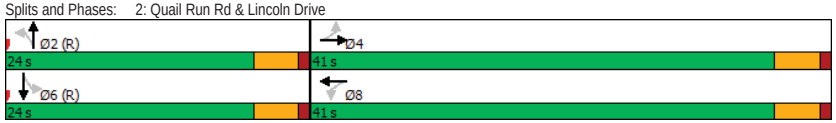
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.6		15.1
Green Ext Time (p_c), s	0.8	9.7	0.0	0.4		8.4		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	890	916	0	14	0
Future Volume (vph)	85	890	916	0	14	0
Turn Type	Perm	NA	NA	NA	Perm	NA
Protected Phases		4	8	2		6
Permitted Phases	4				6	
Detector Phase	4	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	28.9	28.9	28.9	27.1		27.1
Actuated g/C Ratio	0.44	0.44	0.44	0.42		0.42
v/c Ratio	0.69	0.63	0.67	0.00		0.16
Control Delay	44.6	18.8	18.4	0.0		5.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	44.6	18.8	18.4	0.0		5.9
LOS	D	B	B	A		A
Approach Delay		21.0	18.4			5.9
Approach LOS		C	B			A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 55.3%	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	890	1	0	916	25	0	0	2	14	0	93
Future Volume (veh/h)	85	890	1	0	916	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	989	1	0	1018	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	257	1481	1	111	1436	39	0	0	721	122	38	623
Arrive On Green	0.81	0.81	0.81	0.00	0.81	0.81	0.00	0.00	0.46	0.46	0.00	0.46
Sat Flow, veh/h	539	3643	4	569	3533	97	0	0	1585	129	84	1370
Grp Volume(v), veh/h	94	482	508	0	512	534	0	0	2	119	0	0
Grp Sat Flow(s),veh/h/ln	539	1777	1870	569	1777	1853	0	0	1585	1582	0	0
Q Serve(g_s), s	7.9	7.2	7.2	0.0	8.3	8.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.7	7.2	7.2	0.0	8.3	8.3	0.0	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	0.13		0.87
Lane Grp Cap(c), veh/h	257	722	760	111	722	753	0	0	721	783	0	0
V/C Ratio(X)	0.37	0.67	0.67	0.00	0.71	0.71	0.00	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	341	998	1050	199	998	1040	0	0	721	783	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	4.3	4.3	0.0	4.4	4.4	0.0	0.0	9.7	10.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.0	1.4	1.4	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.6	0.0	1.7	1.7	0.0	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	5.3	5.2	0.0	5.8	5.7	0.0	0.0	9.7	10.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1084			1046			2			119	
Approach Delay, s/veh		5.6			5.8			9.7			10.8	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.3	30.7	34.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.0	18.7	4.8	10.3
Green Ext Time (p_c), s	0.0	7.3	0.5	7.8

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	906	0	0	940	0	0
Future Vol, veh/h	906	0	0	940	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	-	-	-	-	-	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	1007	0	0	1044	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	504
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*732
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*732
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	1	-	-	-	-	-
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	1019	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1019	1082	-	-	1620	-
Mov Cap-2 Maneuver	1019	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1620	-
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	907	0	0	940	2	0
Future Vol, veh/h	907	0	0	940	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	1008	0	0	1044	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1008	0	1530	504
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	522	-
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	-	-	1048	-	*108	*732
Stage 1	-	-	-	-	*650	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1048	-	*108	*732
Mov Cap-2 Maneuver	-	-	-	-	*346	-
Stage 1	-	-	-	-	*650	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	-	-	1048	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	15.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	907	0	0	939	2	3
Future Vol, veh/h	907	0	0	939	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1008	0	0	1043	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1008	0	1530	504
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	522	-
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	-	-	1048	-	*108	*732
Stage 1	-	-	-	-	*650	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1048	-	*108	*732
Mov Cap-2 Maneuver	-	-	-	-	*346	-
Stage 1	-	-	-	-	*650	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	506	-	-	1048	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	12.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	847	41	6	842	9	66	3	47	7	0	34
Future Vol, veh/h	7	847	41	6	842	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	941	46	7	936	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	946	0	0	987	0	0	1462	1940	494	1443	-	473
Stage 1	-	-	-	-	-	-	980	980	-	955	-	-
Stage 2	-	-	-	-	-	-	482	960	-	488	-	-
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	*1106	-	-	1075	-	-	*90	65	*732	*93	0	*739
Stage 1	-	-	-	-	-	-	*680	598	-	*694	0	-
Stage 2	-	-	-	-	-	-	*697	604	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	1075	-	-	*85	64	*732	*85	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*341	300	-	*338	-	-
Stage 1	-	-	-	-	-	-	*675	594	-	*689	-	-
Stage 2	-	-	-	-	-	-	*657	600	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.8	11.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	433	* 1106	-	-	1075	-	-	338	739
HCM Lane V/C Ratio	0.298	0.007	-	-	0.006	-	-	0.023	0.051
HCM Control Delay (s)	16.8	8.3	-	-	8.4	-	-	15.9	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.1	0.2

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	841	53	61	840	8	14	1	89	4	0	7
Future Vol, veh/h	11	841	53	61	840	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	934	59	68	933	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	942	0	0	993	0	0	1591	2066	497	1566	-	471
Stage 1	-	-	-	-	-	-	988	988	-	1074	-	-
Stage 2	-	-	-	-	-	-	603	1078	-	492	-	-
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	*1106	-	-	1067	-	-	*72	54	*732	*75	0	*739
Stage 1	-	-	-	-	-	-	*669	591	-	*550	0	-
Stage 2	-	-	-	-	-	-	*697	509	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	1067	-	-	*67	50	*732	*61	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*326	259	-	*271	-	-
Stage 1	-	-	-	-	-	-	*662	585	-	*544	-	-
Stage 2	-	-	-	-	-	-	*646	477	-	*590	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.2	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	618	* 1106	-	-	1067	-	-	271	739
HCM Lane V/C Ratio	0.187	0.011	-	-	0.064	-	-	0.016	0.011
HCM Control Delay (s)	12.2	8.3	-	-	8.6	-	-	18.5	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	490	57	414	57	63	407	1652	62	1595	483
Future Volume (vph)	490	57	414	57	63	407	1652	62	1595	483
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	45.6	7.4	7.4	21.1	70.3	7.9	54.7	84.9
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	0.97	0.94	0.77	0.63	0.58	0.81	0.69	0.64	0.83	0.50
Control Delay	79.1	74.2	35.9	86.9	37.8	64.3	24.1	86.0	38.2	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.1	74.2	35.9	86.9	37.8	64.3	24.1	86.0	38.2	11.2
LOS	E	E	D	F	D	E	C	F	D	B
Approach Delay		59.1			52.3		31.9		33.5	
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: 0.97	
Intersection Signal Delay: 38.1	Intersection LOS: D
Intersection Capacity Utilization 82.2%	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)	490	57	414	57	63	73	407	1652	46	62	1595	483
Future Volume (veh/h)	490	57	414	57	63	73	407	1652	46	62	1595	483
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	589	0	238	63	70	59	452	1836	34	69	1772	270
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	643	0	520	101	109	83	511	2553	47	88	2015	912
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.49	0.49	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5162	96	1781	5106	1585
Grp Volume(v), veh/h	589	0	238	63	64	65	452	1211	659	69	1772	270
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.1	0.0	15.4	4.5	4.6	5.2	16.7	36.3	36.3	5.0	41.8	11.3
Cycle Q Clear(g_c), s	21.1	0.0	15.4	4.5	4.6	5.2	16.7	36.3	36.3	5.0	41.8	11.3
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	643	0	520	101	101	91	511	1684	917	88	2015	912
V/C Ratio(X)	0.92	0.00	0.46	0.62	0.63	0.71	0.89	0.72	0.72	0.79	0.88	0.30
Avail Cap(c_a), veh/h	671	0	533	101	101	91	651	1762	959	119	2015	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	34.5	59.9	60.0	60.2	54.3	25.8	25.8	61.1	36.5	14.1
Incr Delay (d2), s/veh	16.4	0.0	0.2	8.4	9.6	19.5	10.0	1.1	2.1	14.7	5.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	6.0	2.3	2.3	2.6	8.0	14.7	16.3	2.6	18.2	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.7	0.0	34.7	68.4	69.5	79.7	64.3	26.9	27.9	75.8	42.4	15.0
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		827			192			2322			2111	
Approach Delay, s/veh		59.0			72.6			34.5			40.0	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	70.0		29.0	24.7	57.0		13.0
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4
Max Q Clear Time (g_c+I1), s	7.0	38.3		23.1	18.7	43.8		7.2
Green Ext Time (p_c), s	0.0	3.0		0.4	0.5	2.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	41.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* 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)	226	977	23	905	5	35	76	92
Future Volume (vph)	226	977	23	905	5	35	76	92
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)	93.5	91.5	68.9	68.9	17.1	17.1	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.13	0.13	0.22	0.20
v/c Ratio	0.60	0.43	0.11	0.54	0.10	0.23	0.32	0.83
Control Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.2		34.9		48.8
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 73.0%	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)	226	977	31	23	905	43	5	35	20	76	92	237
Future Volume (veh/h)	226	977	31	23	905	43	5	35	20	76	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1086	23	26	1006	31	6	39	13	84	102	152
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	500	2761	58	359	2362	73	85	138	46	212	119	177
Arrive On Green	0.07	0.74	0.74	1.00	1.00	1.00	0.10	0.10	0.10	0.04	0.17	0.17
Sat Flow, veh/h	1688	3746	79	481	3704	114	1066	1413	471	1688	714	1064
Grp Volume(v), veh/h	251	542	567	26	508	529	6	0	52	84	0	254
Grp Sat Flow(s),veh/h/ln	1688	1870	1955	481	1870	1948	1066	0	1884	1688	0	1777
Q Serve(g_s), s	6.3	14.0	14.0	0.1	0.0	0.0	0.7	0.0	3.3	5.0	0.0	18.1
Cycle Q Clear(g_c), s	6.3	14.0	14.0	1.1	0.0	0.0	9.8	0.0	3.3	5.0	0.0	18.1
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.60
Lane Grp Cap(c), veh/h	500	1379	1441	359	1192	1242	85	0	184	212	0	296
V/C Ratio(X)	0.50	0.39	0.39	0.07	0.43	0.43	0.07	0.00	0.28	0.40	0.00	0.86
Avail Cap(c_a), veh/h	683	1379	1441	359	1192	1242	289	0	543	212	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	6.3	6.3	0.0	0.0	0.0	61.8	0.0	54.4	50.0	0.0	52.7
Incr Delay (d2), s/veh	0.8	0.8	0.8	0.3	0.9	0.9	0.3	0.0	0.8	1.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.4	5.6	0.0	0.3	0.3	0.2	0.0	1.6	0.3	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	7.2	7.1	0.3	0.9	0.9	62.1	0.0	55.3	51.2	0.0	59.7
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1360			1063			58			338	
Approach Delay, s/veh		7.1			0.9			56.0			57.6	
Approach LOS		A			A			E			E	

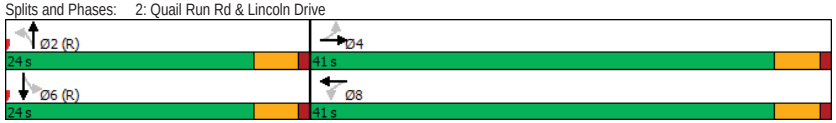
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.9	88.9	9.0	19.2		101.8		28.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	8.3	3.1	7.0	11.8		16.0		20.1
Green Ext Time (p_c), s	0.6	9.1	0.0	0.2		9.8		1.6

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1017	22	863	6	0	26	0
Future Volume (vph)	115	1017	22	863	6	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.3	31.3	31.3	31.3		24.7		24.7
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.68	0.67	0.18	0.57		0.03		0.16
Control Delay	38.9	18.7	12.6	15.3		6.2		7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	38.9	18.7	12.6	15.3		6.2		7.8
LOS	D	B	B	B		A		A
Approach Delay		20.8		15.2		6.3		7.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 50.3%	ICU Level of Service A
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	8	22	863	12	6	0	10	26	0	65
Future Volume (veh/h)	115	1017	8	22	863	12	6	0	10	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	9	24	959	13	7	0	11	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1498	12	244	1488	20	305	32	409	234	36	494
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	578	3613	29	494	3590	49	511	71	915	364	81	1105
Grp Volume(v), veh/h	128	556	583	24	475	497	18	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	578	1777	1865	494	1777	1862	1497	0	0	1550	0	0
Q Serve(g_s), s	9.5	9.3	9.3	1.6	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.3	9.3	11.0	6.4	6.4	0.4	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.03	0.39		0.61	0.29		0.71
Lane Grp Cap(c), veh/h	293	737	773	244	737	772	746	0	0	764	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.10	0.64	0.64	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1047	317	998	1045	746	0	0	764	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	4.0	4.0	6.6	3.8	3.8	10.0	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.0	2.0	0.2	1.0	0.9	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.9	0.1	1.3	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.1	6.0	6.7	4.7	4.7	10.1	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1267			996			18			101	
Approach Delay, s/veh		6.2			4.8			10.1			10.9	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.6	31.4	33.6	31.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	18.0	4.3	13.0
Green Ext Time (p_c), s	0.0	8.8	0.4	7.2

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1045	5	0	893	0	12
Future Vol, veh/h	1045	5	0	893	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	1161	6	0	992	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	584
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*636
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*636
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	636	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	7	0	25	5
Future Vol, veh/h	0	9	7	0	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	8	0	28	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	8	0	0	8	0
Stage 1	8	-	-	-	-	-
Stage 2	62	-	-	-	-	-
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	934	1074	-	-	1612	-
Stage 1	1015	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	918	1074	-	-	1612	-
Mov Cap-2 Maneuver	918	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612	-
HCM Lane V/C Ratio	-	-	0.009	0.017	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1057	4	0	889	0	3
Future Vol, veh/h	1057	4	0	889	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	1174	4	0	988	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1178	0	1670	589
Stage 1	-	-	-	-	1176	-
Stage 2	-	-	-	-	494	-
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	-	-	*952	-	*87	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*87	*636
Mov Cap-2 Maneuver	-	-	-	-	*329	-
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-

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

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

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

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1056	2	5	889	0	3
Future Vol, veh/h	1056	2	5	889	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1173	2	6	988	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1175	0	1680	588
Stage 1	-	-	-	-	1174	-
Stage 2	-	-	-	-	506	-
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	-	-	*952	-	*86	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*85	*636
Mov Cap-2 Maneuver	-	-	-	-	*327	-
Stage 1	-	-	-	-	*597	-
Stage 2	-	-	-	-	*675	-

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

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

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	998	34	18	828	10	50	0	29	5	0	12
Future Vol, veh/h	26	998	34	18	828	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1109	38	20	920	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	931	0	0	1147	0	0	1686	2157	574	1579	-	466
Stage 1	-	-	-	-	-	-	1186	1186	-	966	-	-
Stage 2	-	-	-	-	-	-	500	971	-	613	-	-
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	*1106	-	-	968	-	-	*61	47	*684	*74	0	*739
Stage 1	-	-	-	-	-	-	*544	498	-	*679	0	-
Stage 2	-	-	-	-	-	-	*697	595	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	968	-	-	*58	45	*684	*68	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*291	256	-	*313	-	-
Stage 1	-	-	-	-	-	-	*530	485	-	*662	-	-
Stage 2	-	-	-	-	-	-	*670	582	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.8	12
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	* 1106	-	-	968	-	-	313	739
HCM Lane V/C Ratio	0.238	0.026	-	-	0.021	-	-	0.018	0.018
HCM Control Delay (s)	17.8	8.3	-	-	8.8	-	-	16.7	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	977	53	43	841	8	6	0	41	4	1	12
Future Vol, veh/h	3	977	53	43	841	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1086	59	48	934	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	943	0	0	1145	0	0	1686	2161	573	1584	2186	472
Stage 1	-	-	-	-	-	-	1122	1122	-	1035	1035	-
Stage 2	-	-	-	-	-	-	564	1039	-	549	1151	-
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	*1106	-	-	971	-	-	*61	47	*684	*73	45	*739
Stage 1	-	-	-	-	-	-	*622	550	-	*593	542	-
Stage 2	-	-	-	-	-	-	*697	539	-	*645	526	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	971	-	-	*57	45	*684	*65	43	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*315	262	-	*291	246	-
Stage 1	-	-	-	-	-	-	*621	549	-	*592	516	-
Stage 2	-	-	-	-	-	-	*649	512	-	*601	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	595	* 1106	-	-	971	-	-	291	739
HCM Lane V/C Ratio	0.088	0.003	-	-	0.049	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.9	-	-	17.6	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Future Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.8	23.8	42.8	7.4	7.4	19.1	71.2	7.6	57.5	86.9
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	0.92	0.42	0.40	0.64	0.55	0.55	0.84	0.59
Control Delay	66.6	66.0	51.6	72.4	33.9	57.5	20.7	79.0	37.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	66.0	51.6	72.4	33.9	57.5	20.7	79.0	37.4	10.9
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		59.2			45.8		27.1		31.6	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 82.0%	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)	460	39	469	38	37	48	290	1338	40	51	1698	600
Future Volume (veh/h)	460	39	469	38	37	48	290	1338	40	51	1698	600
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	277	42	41	36	322	1487	27	57	1887	389
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	613	0	448	101	108	84	382	2404	44	73	2015	898
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5164	94	1781	5106	1585
Grp Volume(v), veh/h	542	0	277	42	38	39	322	980	534	57	1887	389
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.1	28.1	4.1	46.1	18.3
Cycle Q Clear(g_c), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.1	28.1	4.1	46.1	18.3
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	613	0	448	101	101	91	382	1584	863	73	2015	898
V/C Ratio(X)	0.88	0.00	0.62	0.41	0.38	0.43	0.84	0.62	0.62	0.78	0.94	0.43
Avail Cap(c_a), veh/h	671	0	474	101	101	91	651	1762	960	119	2015	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	0.0	40.5	59.2	59.1	59.3	56.7	26.1	26.1	61.7	37.8	16.2
Incr Delay (d2), s/veh	11.7	0.0	1.5	1.0	0.9	1.2	2.0	0.3	0.6	6.5	9.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	7.9	1.4	1.2	1.3	5.3	11.4	12.5	2.0	20.8	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	42.1	60.2	59.9	60.4	58.7	26.4	26.7	68.2	47.6	17.7
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		819			119			1836			2333	
Approach Delay, s/veh		56.8			60.2			32.2			43.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	66.2		27.9	19.9	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	6.1	30.1		21.7	13.9	48.1		5.1
Green Ext Time (p_c), s	0.0	2.2		0.6	0.5	1.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	226	977	23	905	5	35	76	92
Future Volume (vph)	226	977	23	905	5	35	76	92
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)	93.5	91.5	68.9	68.9	17.1	17.1	28.5	26.0
Actuated g/C Ratio	0.72	0.70	0.53	0.53	0.13	0.13	0.22	0.20
v/c Ratio	0.60	0.43	0.11	0.54	0.10	0.23	0.32	0.83
Control Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	9.6	33.8	37.3	47.8	33.6	42.8	50.2
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.6		37.2		34.9		48.8
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 73.0%	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)	226	977	31	23	905	43	5	35	20	76	92	237
Future Volume (veh/h)	226	977	31	23	905	43	5	35	20	76	92	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	251	1086	23	26	1006	31	6	39	13	84	102	152
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	500	2761	58	359	2362	73	85	138	46	212	119	177
Arrive On Green	0.07	0.74	0.74	1.00	1.00	1.00	0.10	0.10	0.10	0.04	0.17	0.17
Sat Flow, veh/h	1688	3746	79	481	3704	114	1066	1413	471	1688	714	1064
Grp Volume(v), veh/h	251	542	567	26	508	529	6	0	52	84	0	254
Grp Sat Flow(s),veh/h/ln	1688	1870	1955	481	1870	1948	1066	0	1884	1688	0	1777
Q Serve(g_s), s	6.3	14.0	14.0	0.1	0.0	0.0	0.7	0.0	3.3	5.0	0.0	18.1
Cycle Q Clear(g_c), s	6.3	14.0	14.0	1.1	0.0	0.0	9.8	0.0	3.3	5.0	0.0	18.1
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.60
Lane Grp Cap(c), veh/h	500	1379	1441	359	1192	1242	85	0	184	212	0	296
V/C Ratio(X)	0.50	0.39	0.39	0.07	0.43	0.43	0.07	0.00	0.28	0.40	0.00	0.86
Avail Cap(c_a), veh/h	683	1379	1441	359	1192	1242	289	0	543	212	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	6.3	6.3	0.0	0.0	0.0	61.8	0.0	54.4	50.0	0.0	52.7
Incr Delay (d2), s/veh	0.8	0.8	0.8	0.3	0.9	0.9	0.3	0.0	0.8	1.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.4	5.6	0.0	0.3	0.3	0.2	0.0	1.6	0.3	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	7.2	7.1	0.3	0.9	0.9	62.1	0.0	55.3	51.2	0.0	59.7
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1360			1063			58			338	
Approach Delay, s/veh		7.1			0.9			56.0			57.6	
Approach LOS		A			A			E			E	

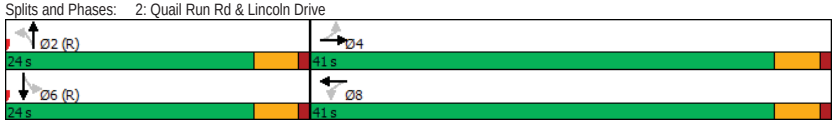
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.9	88.9	9.0	19.2		101.8		28.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	8.3	3.1	7.0	11.8		16.0		20.1
Green Ext Time (p_c), s	0.6	9.1	0.0	0.2		9.8		1.6

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1017	22	863	6	0	26	0
Future Volume (vph)	115	1017	22	863	6	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.3	31.3	31.3	31.3		24.7		24.7
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.68	0.67	0.18	0.57		0.03		0.16
Control Delay	38.9	18.7	12.6	15.3		6.2		7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	38.9	18.7	12.6	15.3		6.2		7.8
LOS	D	B	B	B		A		A
Approach Delay		20.8		15.2		6.3		7.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 50.3%	ICU Level of Service A
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	8	22	863	12	6	0	10	26	0	65
Future Volume (veh/h)	115	1017	8	22	863	12	6	0	10	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	9	24	959	13	7	0	11	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1498	12	244	1488	20	305	32	409	234	36	494
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	578	3613	29	494	3590	49	511	71	915	364	81	1105
Grp Volume(v), veh/h	128	556	583	24	475	497	18	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	578	1777	1865	494	1777	1862	1497	0	0	1550	0	0
Q Serve(g_s), s	9.5	9.3	9.3	1.6	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.3	9.3	11.0	6.4	6.4	0.4	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.03	0.39		0.61	0.29		0.71
Lane Grp Cap(c), veh/h	293	737	773	244	737	772	746	0	0	764	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.10	0.64	0.64	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	378	998	1047	317	998	1045	746	0	0	764	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	4.0	4.0	6.6	3.8	3.8	10.0	0.0	0.0	10.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.0	2.0	0.2	1.0	0.9	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.9	0.1	1.3	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	6.1	6.0	6.7	4.7	4.7	10.1	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1267			996			18			101	
Approach Delay, s/veh		6.2			4.8			10.1			10.9	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	33.6	31.4	33.6	31.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	18.0	4.3	13.0
Green Ext Time (p_c), s	0.0	8.8	0.4	7.2

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1045	5	0	893	0	12
Future Vol, veh/h	1045	5	0	893	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	1161	6	0	992	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	584
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*636
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*636
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	636	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	5.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	7	0	25	5
Future Vol, veh/h	0	9	7	0	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	8	0	28	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	8	0	0	8	0
Stage 1	8	-	-	-	-	-
Stage 2	62	-	-	-	-	-
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	934	1074	-	-	1612	-
Stage 1	1015	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	918	1074	-	-	1612	-
Mov Cap-2 Maneuver	918	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612	-
HCM Lane V/C Ratio	-	-	0.009	0.017	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1057	4	0	889	0	3
Future Vol, veh/h	1057	4	0	889	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	1174	4	0	988	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1178	0	1670	589
Stage 1	-	-	-	-	1176	-
Stage 2	-	-	-	-	494	-
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	-	-	*952	-	*87	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*87	*636
Mov Cap-2 Maneuver	-	-	-	-	*329	-
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-

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

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

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

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1056	2	5	889	0	3
Future Vol, veh/h	1056	2	5	889	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1173	2	6	988	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1175	0	1680	588
Stage 1	-	-	-	-	1174	-
Stage 2	-	-	-	-	506	-
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	-	-	*952	-	*86	*636
Stage 1	-	-	-	-	*600	-
Stage 2	-	-	-	-	*675	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*952	-	*85	*636
Mov Cap-2 Maneuver	-	-	-	-	*327	-
Stage 1	-	-	-	-	*597	-
Stage 2	-	-	-	-	*675	-

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

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

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	998	34	18	828	10	50	0	29	5	0	12
Future Vol, veh/h	26	998	34	18	828	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1109	38	20	920	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	931	0	0	1147	0	0	1686	2157	574	1579	-	466
Stage 1	-	-	-	-	-	-	1186	1186	-	966	-	-
Stage 2	-	-	-	-	-	-	500	971	-	613	-	-
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	*1106	-	-	968	-	-	*61	47	*684	*74	0	*739
Stage 1	-	-	-	-	-	-	*544	498	-	*679	0	-
Stage 2	-	-	-	-	-	-	*697	595	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	968	-	-	*58	45	*684	*68	-	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*291	256	-	*313	-	-
Stage 1	-	-	-	-	-	-	*530	485	-	*662	-	-
Stage 2	-	-	-	-	-	-	*670	582	-	*599	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.8	12
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	* 1106	-	-	968	-	-	313	739
HCM Lane V/C Ratio	0.238	0.026	-	-	0.021	-	-	0.018	0.018
HCM Control Delay (s)	17.8	8.3	-	-	8.8	-	-	16.7	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	977	53	43	841	8	6	0	41	4	1	12
Future Vol, veh/h	3	977	53	43	841	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1086	59	48	934	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	943	0	0	1145	0	0	1686	2161	573	1584	2186	472
Stage 1	-	-	-	-	-	-	1122	1122	-	1035	1035	-
Stage 2	-	-	-	-	-	-	564	1039	-	549	1151	-
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	*1106	-	-	971	-	-	*61	47	*684	*73	45	*739
Stage 1	-	-	-	-	-	-	*622	550	-	*593	542	-
Stage 2	-	-	-	-	-	-	*697	539	-	*645	526	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1106	-	-	971	-	-	*57	45	*684	*65	43	*739
Mov Cap-2 Maneuver	-	-	-	-	-	-	*315	262	-	*291	246	-
Stage 1	-	-	-	-	-	-	*621	549	-	*592	516	-
Stage 2	-	-	-	-	-	-	*649	512	-	*601	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	595	* 1106	-	-	971	-	-	291	739
HCM Lane V/C Ratio	0.088	0.003	-	-	0.049	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.9	-	-	17.6	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Future Volume (vph)	460	39	469	38	37	290	1338	51	1698	600
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.8	23.8	42.8	7.4	7.4	19.1	71.2	7.6	57.5	86.9
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	0.92	0.42	0.40	0.64	0.55	0.55	0.84	0.59
Control Delay	66.6	66.0	51.6	72.4	33.9	57.5	20.7	79.0	37.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	66.0	51.6	72.4	33.9	57.5	20.7	79.0	37.4	10.9
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		59.2			45.8		27.1		31.6	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 82.0%	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)	460	39	469	38	37	48	290	1338	40	51	1698	600
Future Volume (veh/h)	460	39	469	38	37	48	290	1338	40	51	1698	600
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	277	42	41	36	322	1487	27	57	1887	389
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	613	0	448	101	108	84	382	2404	44	73	2015	898
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1900	1480	3456	5164	94	1781	5106	1585
Grp Volume(v), veh/h	542	0	277	42	38	39	322	980	534	57	1887	389
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1604	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.1	28.1	4.1	46.1	18.3
Cycle Q Clear(g_c), s	19.3	0.0	19.7	3.0	2.7	3.1	11.9	28.1	28.1	4.1	46.1	18.3
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	613	0	448	101	101	91	382	1584	863	73	2015	898
V/C Ratio(X)	0.88	0.00	0.62	0.41	0.38	0.43	0.84	0.62	0.62	0.78	0.94	0.43
Avail Cap(c_a), veh/h	671	0	474	101	101	91	651	1762	960	119	2015	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	0.0	40.5	59.2	59.1	59.3	56.7	26.1	26.1	61.7	37.8	16.2
Incr Delay (d2), s/veh	11.7	0.0	1.5	1.0	0.9	1.2	2.0	0.3	0.6	6.5	9.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	7.9	1.4	1.2	1.3	5.3	11.4	12.5	2.0	20.8	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	42.1	60.2	59.9	60.4	58.7	26.4	26.7	68.2	47.6	17.7
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		819			119			1836			2333	
Approach Delay, s/veh		56.8			60.2			32.2			43.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	66.2		27.9	19.9	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	6.1	30.1		21.7	13.9	48.1		5.1
Green Ext Time (p_c), s	0.0	2.2		0.6	0.5	1.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	250	891	22	941	7	63	63	48
Future Volume (vph)	250	891	22	941	7	63	63	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.0	99.0	77.4	77.4	12.1	12.1	21.0	18.5
Actuated g/C Ratio	0.78	0.76	0.60	0.60	0.09	0.09	0.16	0.14
v/c Ratio	0.61	0.38	0.08	0.53	0.10	0.52	0.39	0.67
Control Delay	12.0	6.0	31.0	38.3	54.9	59.7	52.5	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	6.0	31.0	38.3	54.9	59.7	52.5	32.6
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.3		38.1		59.3		37.2
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 24.7	Intersection LOS: C
Intersection Capacity Utilization 67.9%	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)	250	891	29	22	941	61	7	63	20	63	48	159
Future Volume (veh/h)	250	891	29	22	941	61	7	63	20	63	48	159
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	278	990	21	24	1046	46	8	70	13	70	53	121
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	520	2723	58	427	2313	102	101	118	22	153	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3558	75	558	3467	152	1211	1534	285	1781	506	1156
Grp Volume(v), veh/h	278	494	517	24	536	556	8	0	83	70	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	558	1777	1843	1211	0	1819	1781	0	1662
Q Serve(g_s), s	6.0	11.8	11.8	0.0	0.0	0.0	0.8	0.0	5.7	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.8	11.8	0.0	0.0	0.0	5.9	0.0	5.7	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.16	1.00		0.70
Lane Grp Cap(c), veh/h	520	1360	1421	427	1185	1229	101	0	140	153	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.06	0.45	0.45	0.08	0.00	0.59	0.46	0.00	0.76
Avail Cap(c_a), veh/h	770	1360	1421	427	1185	1229	264	0	385	153	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	5.0	5.0	0.0	0.0	0.0	60.6	0.0	58.0	53.3	0.0	53.9
Incr Delay (d2), s/veh	0.9	0.8	0.7	0.2	0.9	0.8	0.3	0.0	4.0	2.1	0.0	5.0
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	2.1	4.1	4.3	0.0	0.3	0.3	0.3	0.0	2.8	0.4	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.7	0.2	0.9	0.8	60.9	0.0	62.0	55.4	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1289			1116			91			244	
Approach Delay, s/veh		5.7			0.8			61.9			57.9	
Approach LOS		A			A			E			E	

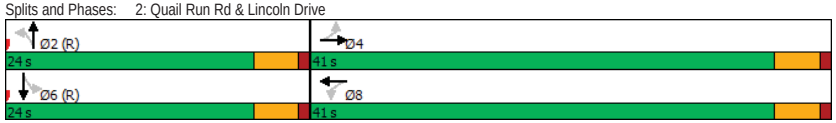
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.8		15.1
Green Ext Time (p_c), s	0.8	9.9	0.0	0.4		8.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	897	27	918	11	0	14	0
Future Volume (vph)	85	897	27	918	11	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	28.9	28.9	28.9	28.9		27.1		27.1
Actuated g/C Ratio	0.44	0.44	0.44	0.44		0.42		0.42
v/c Ratio	0.69	0.64	0.20	0.67		0.03		0.16
Control Delay	45.1	19.0	13.5	18.3		6.4		6.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	45.1	19.0	13.5	18.3		6.4		6.0
LOS	D	B	B	B		A		A
Approach Delay		21.3		18.1		6.4		6.0
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 48.6%	ICU Level of Service A
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	897	8	27	918	25	11	0	7	14	0	93
Future Volume (veh/h)	85	897	8	27	918	25	11	0	7	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	997	9	30	1020	28	12	0	8	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	258	1469	13	271	1438	39	457	21	260	121	38	622
Arrive On Green	0.81	0.81	0.81	0.81	0.81	0.81	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	538	3609	33	560	3533	97	811	47	572	129	84	1369
Grp Volume(v), veh/h	94	491	515	30	513	535	20	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	538	1777	1864	560	1777	1853	1430	0	0	1582	0	0
Q Serve(g_s), s	7.9	7.5	7.5	1.7	8.2	8.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.6	7.5	7.5	9.6	8.2	8.2	0.4	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.60		0.40	0.13		0.87
Lane Grp Cap(c), veh/h	258	723	759	271	723	754	738	0	0	781	0	0
V/C Ratio(X)	0.36	0.68	0.68	0.11	0.71	0.71	0.03	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	341	998	1047	357	998	1040	738	0	0	781	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	4.3	4.3	6.4	4.3	4.3	9.8	0.0	0.0	10.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.2	1.4	1.4	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.6	0.1	1.7	1.7	0.2	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	5.3	5.3	6.5	5.8	5.7	9.9	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1100			1078			20			119	
Approach Delay, s/veh		5.6			5.8			9.9			10.9	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.3	30.7	34.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	18.6	4.8	11.6
Green Ext Time (p_c), s	0.0	7.4	0.5	8.1

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	7	0	969	0	21
Future Vol, veh/h	911	7	0	969	0	21
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	1012	8	0	1077	0	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	510
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*732
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*732
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	732	-	-	-
HCM Lane V/C Ratio	0.032	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

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

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	2	0	34	1
Future Vol, veh/h	0	15	2	0	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	2	0	38	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	79	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	77	-	-	-	-	-
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	924	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	903	1082	-	-	1620	-
Mov Cap-2 Maneuver	903	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.015	0.023	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	932	0	0	969	2	0
Future Vol, veh/h	932	0	0	969	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	1036	0	0	1077	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1036	0	1575	518
Stage 1	-	-	-	-	1036	-
Stage 2	-	-	-	-	539	-
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	-	-	1012	-	*101	*732
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1012	-	*101	*732
Mov Cap-2 Maneuver	-	-	-	-	*336	-
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	336	-	-	1012	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	15.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	932	0	0	968	2	3
Future Vol, veh/h	932	0	0	968	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1036	0	0	1076	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1036	0	1574	518
Stage 1	-	-	-	-	1036	-
Stage 2	-	-	-	-	538	-
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	-	-	1012	-	*101	*732
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1012	-	*101	*732
Mov Cap-2 Maneuver	-	-	-	-	*336	-
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	497	-	-	1012	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	12.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	872	41	6	871	9	66	3	47	7	0	34
Future Vol, veh/h	7	872	41	6	871	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	969	46	7	968	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	978	0	0	1015	0	0	1506	2000	508	1489	-	489
Stage 1	-	-	-	-	-	-	1008	1008	-	987	-	-
Stage 2	-	-	-	-	-	-	498	992	-	502	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1038	-	-	*83	*59	*732	*86	0	*715
Stage 1	-	-	-	-	-	-	*643	*574	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1038	-	-	*78	*58	*732	*78	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*324	*289	-	*331	-	-
Stage 1	-	-	-	-	-	-	*639	*570	-	*670	-	-
Stage 2	-	-	-	-	-	-	*634	*587	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.4	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	417	* 1070	-	-	1038	-	-	331	715
HCM Lane V/C Ratio	0.309	0.007	-	-	0.006	-	-	0.023	0.053
HCM Control Delay (s)	17.4	8.4	-	-	8.5	-	-	16.1	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.1	0.2

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	11	866	53	61	869	8	14	1	89	4	0	7
Future Vol, veh/h	11	866	53	61	869	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	962	59	68	966	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	975	0	0	1021	0	0	1635	2127	511	1613	-	488
Stage 1	-	-	-	-	-	-	1016	1016	-	1107	-	-
Stage 2	-	-	-	-	-	-	619	1111	-	506	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1031	-	-	*67	49	*732	*69	0	*715
Stage 1	-	-	-	-	-	-	*633	567	-	*565	0	-
Stage 2	-	-	-	-	-	-	*674	515	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1031	-	-	*62	45	*732	*56	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*311	254	-	*272	-	-
Stage 1	-	-	-	-	-	-	*626	561	-	*559	-	-
Stage 2	-	-	-	-	-	-	*623	481	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.3	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	610	* 1070	-	-	1031	-	-	272	715
HCM Lane V/C Ratio	0.189	0.011	-	-	0.066	-	-	0.016	0.011
HCM Control Delay (s)	12.3	8.4	-	-	8.7	-	-	18.5	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	504	57	425	57	63	419	1652	62	1595	497
Future Volume (vph)	504	57	425	57	63	419	1652	62	1595	497
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	45.9	7.4	7.4	21.4	70.3	7.9	54.4	84.6
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	0.97	0.98	0.78	0.63	0.58	0.82	0.69	0.64	0.83	0.52
Control Delay	81.5	83.6	36.7	86.9	37.8	65.1	24.1	86.0	38.5	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	81.5	83.6	36.7	86.9	37.8	65.1	24.1	86.0	38.5	11.6
LOS	F	F	D	F	D	E	C	F	D	B
Approach Delay		62.8			52.3		32.2		33.7	
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: 0.98	
Intersection Signal Delay: 39.0	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)	504	57	425	57	63	73	419	1652	46	62	1595	497
Future Volume (veh/h)	504	57	425	57	63	73	419	1652	46	62	1595	497
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	605	0	250	63	70	59	466	1836	34	69	1772	285
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	656	0	532	101	109	83	524	2573	48	88	2015	917
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5162	96	1781	5106	1585
Grp Volume(v), veh/h	605	0	250	63	64	65	466	1211	659	69	1772	285
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.7	0.0	16.2	4.5	4.6	5.2	17.2	36.0	36.0	5.0	41.8	12.0
Cycle Q Clear(g_c), s	21.7	0.0	16.2	4.5	4.6	5.2	17.2	36.0	36.0	5.0	41.8	12.0
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	656	0	532	101	101	91	524	1697	924	88	2015	917
V/C Ratio(X)	0.92	0.00	0.47	0.62	0.63	0.71	0.89	0.71	0.71	0.79	0.88	0.31
Avail Cap(c_a), veh/h	671	0	539	101	101	91	651	1762	959	119	2015	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	34.1	59.9	60.0	60.2	54.1	25.4	25.4	61.1	36.5	14.1
Incr Delay (d2), s/veh	17.7	0.0	0.2	8.4	9.6	19.5	10.8	1.1	2.0	14.7	5.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	6.3	2.3	2.3	2.6	8.3	14.6	16.1	2.6	18.2	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	0.0	34.3	68.4	69.5	79.7	64.9	26.5	27.4	75.8	42.4	14.9
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		855			192			2336			2126	
Approach Delay, s/veh		59.5			72.6			34.4			39.8	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	70.5		29.4	25.2	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	7.0	38.0		23.7	19.2	43.8		7.2
Green Ext Time (p_c), s	0.0	3.0		0.2	0.5	2.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	250	891	22	941	7	63	63	48
Future Volume (vph)	250	891	22	941	7	63	63	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.0	99.0	77.0	77.0	12.1	12.1	21.0	18.5
Actuated g/C Ratio	0.78	0.76	0.59	0.59	0.09	0.09	0.16	0.14
v/c Ratio	0.61	0.38	0.08	0.54	0.10	0.52	0.39	0.67
Control Delay	11.9	6.0	31.3	38.5	54.9	59.7	52.5	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	6.0	31.3	38.5	54.9	59.7	52.5	32.6
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.3		38.3		59.3		37.2
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 24.7	Intersection LOS: C
Intersection Capacity Utilization 67.9%	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)	250	891	29	22	941	61	7	63	20	63	48	159
Future Volume (veh/h)	250	891	29	22	941	61	7	63	20	63	48	159
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	278	990	21	24	1046	46	8	70	13	70	53	121
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	520	2723	58	427	2313	102	101	118	22	153	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3558	75	558	3467	152	1211	1534	285	1781	506	1156
Grp Volume(v), veh/h	278	494	517	24	536	556	8	0	83	70	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	558	1777	1843	1211	0	1819	1781	0	1662
Q Serve(g_s), s	6.0	11.8	11.8	0.0	0.0	0.0	0.8	0.0	5.7	4.0	0.0	13.1
Cycle Q Clear(g_c), s	6.0	11.8	11.8	0.0	0.0	0.0	5.9	0.0	5.7	4.0	0.0	13.1
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.16	1.00		0.70
Lane Grp Cap(c), veh/h	520	1360	1421	427	1185	1229	101	0	140	153	0	230
V/C Ratio(X)	0.53	0.36	0.36	0.06	0.45	0.45	0.08	0.00	0.59	0.46	0.00	0.76
Avail Cap(c_a), veh/h	770	1360	1421	427	1185	1229	264	0	385	153	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	5.0	5.0	0.0	0.0	0.0	60.6	0.0	58.0	53.3	0.0	53.9
Incr Delay (d2), s/veh	0.9	0.8	0.7	0.2	0.9	0.8	0.3	0.0	4.0	2.1	0.0	5.0
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	2.1	4.1	4.3	0.0	0.3	0.3	0.3	0.0	2.8	0.4	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	5.7	5.7	0.2	0.9	0.8	60.9	0.0	62.0	55.4	0.0	58.9
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1289			1116			91			244	
Approach Delay, s/veh		5.7			0.8			61.9			57.9	
Approach LOS		A			A			E			E	

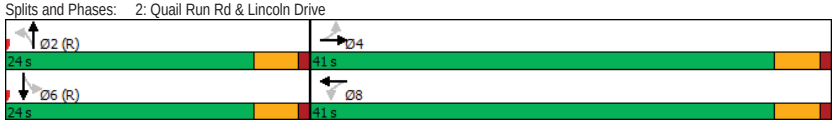
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	12.8	92.7	8.0	16.5		105.5		24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5
Max Q Clear Time (g_c+I1), s	8.0	2.0	6.0	7.9		13.8		15.1
Green Ext Time (p_c), s	0.8	9.9	0.0	0.4		8.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	897	27	918	11	0	14	0
Future Volume (vph)	85	897	27	918	11	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	29.0	29.0	29.0	29.0		27.0		27.0
Actuated g/C Ratio	0.45	0.45	0.45	0.45		0.42		0.42
v/c Ratio	0.69	0.64	0.20	0.66		0.03		0.16
Control Delay	44.1	18.8	12.1	17.9		6.4		6.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	44.1	18.8	12.1	17.9		6.4		6.0
LOS	D	B	B	B		A		A
Approach Delay		21.0		17.7		6.4		6.0
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 48.6%	ICU Level of Service A
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	897	8	27	918	25	11	0	7	14	0	93
Future Volume (veh/h)	85	897	8	27	918	25	11	0	7	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	997	9	30	1020	28	12	0	8	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	258	1469	13	271	1438	39	457	21	260	121	38	622
Arrive On Green	0.81	0.81	0.81	0.81	0.81	0.81	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	538	3609	33	560	3533	97	811	47	572	129	84	1369
Grp Volume(v), veh/h	94	491	515	30	513	535	20	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	538	1777	1864	560	1777	1853	1430	0	0	1582	0	0
Q Serve(g_s), s	7.9	7.5	7.5	1.7	8.2	8.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.6	7.5	7.5	9.6	8.2	8.2	0.4	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.60		0.40	0.13		0.87
Lane Grp Cap(c), veh/h	258	723	759	271	723	754	738	0	0	781	0	0
V/C Ratio(X)	0.36	0.68	0.68	0.11	0.71	0.71	0.03	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	341	998	1047	357	998	1040	738	0	0	781	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	4.3	4.3	6.4	4.3	4.3	9.8	0.0	0.0	10.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.2	1.4	1.4	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.6	0.1	1.7	1.7	0.2	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	5.3	5.3	6.5	5.8	5.7	9.9	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1100			1078			20			119	
Approach Delay, s/veh		5.6			5.8			9.9			10.9	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.3	30.7	34.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	18.6	4.8	11.6
Green Ext Time (p_c), s	0.0	7.4	0.5	8.1

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	7	0	969	0	21
Future Vol, veh/h	911	7	0	969	0	21
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	1012	8	0	1077	0	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	510
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*732
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*732
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	732	-	-	-
HCM Lane V/C Ratio	0.032	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	2	0	34	1
Future Vol, veh/h	0	15	2	0	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	2	0	38	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	79	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	77	-	-	-	-	-
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	924	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	903	1082	-	-	1620	-
Mov Cap-2 Maneuver	903	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.015	0.023	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	932	0	0	969	2	0
Future Vol, veh/h	932	0	0	969	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	1036	0	0	1077	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1036	0	1575	518
Stage 1	-	-	-	-	1036	-
Stage 2	-	-	-	-	539	-
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	-	-	1012	-	*101	*732
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1012	-	*101	*732
Mov Cap-2 Maneuver	-	-	-	-	*336	-
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	336	-	-	1012	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	15.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	932	0	0	968	2	3
Future Vol, veh/h	932	0	0	968	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1036	0	0	1076	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1036	0	1574	518
Stage 1	-	-	-	-	1036	-
Stage 2	-	-	-	-	538	-
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	-	-	1012	-	*101	*732
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1012	-	*101	*732
Mov Cap-2 Maneuver	-	-	-	-	*336	-
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*652	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	497	-	-	1012	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	12.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	872	41	6	871	9	66	3	47	7	0	34
Future Vol, veh/h	7	872	41	6	871	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	969	46	7	968	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	978	0	0	1015	0	0	1506	2000	508	1489	-	489
Stage 1	-	-	-	-	-	-	1008	1008	-	987	-	-
Stage 2	-	-	-	-	-	-	498	992	-	502	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1038	-	-	*83	*59	*732	*86	0	*715
Stage 1	-	-	-	-	-	-	*643	*574	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	*591	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1038	-	-	*78	*58	*732	*78	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*324	*289	-	*331	-	-
Stage 1	-	-	-	-	-	-	*639	*570	-	*670	-	-
Stage 2	-	-	-	-	-	-	*634	*587	-	*633	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.4	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	417	* 1070	-	-	1038	-	-	331	715
HCM Lane V/C Ratio	0.309	0.007	-	-	0.006	-	-	0.023	0.053
HCM Control Delay (s)	17.4	8.4	-	-	8.5	-	-	16.1	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.1	0.2

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	11	866	53	61	869	8	14	1	89	4	0	7
Future Vol, veh/h	11	866	53	61	869	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	962	59	68	966	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	975	0	0	1021	0	0	1635	2127	511	1613	-	488
Stage 1	-	-	-	-	-	-	1016	1016	-	1107	-	-
Stage 2	-	-	-	-	-	-	619	1111	-	506	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	1031	-	-	*67	49	*732	*69	0	*715
Stage 1	-	-	-	-	-	-	*633	567	-	*565	0	-
Stage 2	-	-	-	-	-	-	*674	515	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	1031	-	-	*62	45	*732	*56	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*311	254	-	*272	-	-
Stage 1	-	-	-	-	-	-	*626	561	-	*559	-	-
Stage 2	-	-	-	-	-	-	*623	481	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.3	13.2
HCM LOS			B	B

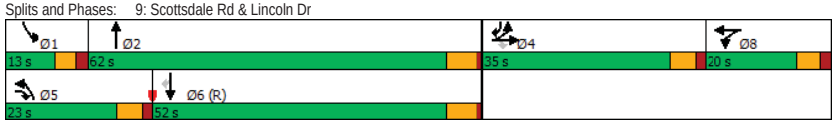
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	610	* 1070	-	-	1031	-	-	272	715
HCM Lane V/C Ratio	0.189	0.011	-	-	0.066	-	-	0.016	0.011
HCM Control Delay (s)	12.3	8.4	-	-	8.7	-	-	18.5	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	504	57	425	57	63	419	1652	62	1595	497
Future Volume (vph)	504	57	425	57	63	419	1652	62	1595	497
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	13.0	13.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	18.6	18.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	35.0	35.0	23.0	20.0	20.0	23.0	62.0	13.0	52.0	35.0
Total Split (%)	26.9%	26.9%	17.7%	15.4%	15.4%	17.7%	47.7%	10.0%	40.0%	26.9%
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)	27.5	27.5	47.4	13.0	13.0	19.9	61.3	8.3	47.3	80.5
Actuated g/C Ratio	0.21	0.21	0.36	0.10	0.10	0.15	0.47	0.06	0.36	0.62
v/c Ratio	0.87	0.88	0.72	0.36	0.38	0.89	0.79	0.62	0.96	0.51
Control Delay	56.4	57.3	22.0	60.8	29.0	73.6	33.2	82.5	53.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	57.3	22.0	60.8	29.0	73.6	33.2	82.5	53.9	8.1
LOS	E	E	C	E	C	E	C	F	D	A
Approach Delay		41.8			38.3		41.2		44.2	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 42.4	Intersection LOS: D
Intersection Capacity Utilization 87.6%	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)	504	57	425	57	63	73	419	1652	46	62	1595	497
Future Volume (veh/h)	504	57	425	57	63	73	419	1652	46	62	1595	497
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	605	0	250	63	70	59	466	1836	34	69	1772	285
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	676	0	514	178	192	146	465	2287	42	88	1819	865
Arrive On Green	0.19	0.00	0.19	0.10	0.10	0.10	0.13	0.44	0.44	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1922	1462	3456	5162	96	1781	5106	1585
Grp Volume(v), veh/h	605	0	250	63	64	65	466	1211	659	69	1772	285
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1607	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.5	0.0	16.4	4.3	4.4	4.9	17.5	40.0	40.0	5.0	44.5	12.9
Cycle Q Clear(g_c), s	21.5	0.0	16.4	4.3	4.4	4.9	17.5	40.0	40.0	5.0	44.5	12.9
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	676	0	514	178	178	161	465	1508	821	88	1819	865
V/C Ratio(X)	0.89	0.00	0.49	0.35	0.36	0.40	1.00	0.80	0.80	0.79	0.97	0.33
Avail Cap(c_a), veh/h	808	0	573	197	197	178	465	1508	821	106	1819	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.4	0.0	35.2	54.6	54.6	54.9	56.2	31.3	31.3	61.1	41.3	16.3
Incr Delay (d2), s/veh	10.0	0.0	0.3	0.4	0.5	0.6	42.2	3.0	5.4	22.2	15.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	6.4	2.0	2.0	2.0	10.3	16.8	18.9	2.8	21.1	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.5	0.0	35.5	55.0	55.1	55.5	98.4	34.3	36.7	83.4	57.1	17.4
LnGrp LOS	E	A	D	E	E	E	F	C	D	F	E	B
Approach Vol, veh/h		855			192			2336			2126	
Approach Delay, s/veh		53.9			55.2			47.8			52.6	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	63.3		30.2	23.0	52.0		18.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 7.7	56.3		29.5	17.5	46.3		14.4
Max Q Clear Time (g_c+I1), s	7.0	42.0		23.5	19.5	46.5		6.9
Green Ext Time (p_c), s	0.0	2.8		1.1	0.0	0.0		0.3

Intersection Summary	
HCM 6th Ctrl Delay	50.8
HCM 6th LOS	D

Notes

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

APPENDIX I

2026 PEAK HOUR ANALYSIS SCENARIO 1

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1044	24	973	6	38	80	100
Future Volume (vph)	246	1044	24	973	6	38	80	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.47	0.13	0.62	0.11	0.22	0.31	0.84
Control Delay	25.4	11.3	37.7	42.2	46.5	33.4	40.5	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	11.3	37.7	42.2	46.5	33.4	40.5	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		13.9		42.1		34.7		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.9	Intersection LOS: C
Intersection Capacity Utilization 76.3%	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)	246	1044	33	24	973	46	6	38	20	80	100	257
Future Volume (veh/h)	246	1044	33	24	973	46	6	38	20	80	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1160	37	27	1081	51	7	42	22	89	111	286
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	457	2405	77	273	1923	91	87	224	118	317	124	319
Arrive On Green	0.09	0.65	0.65	1.00	1.00	1.00	0.18	0.18	0.18	0.04	0.25	0.25
Sat Flow, veh/h	1688	3700	118	443	3637	172	935	1217	637	1688	487	1256
Grp Volume(v), veh/h	273	586	611	27	556	576	7	0	64	89	0	397
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	443	1870	1938	935	0	1854	1688	0	1743
Q Serve(g_s), s	9.2	20.8	20.8	0.7	0.0	0.0	0.9	0.0	3.8	5.0	0.0	28.6
Cycle Q Clear(g_c), s	9.2	20.8	20.8	5.6	0.0	0.0	20.6	0.0	3.8	5.0	0.0	28.6
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.34	1.00		0.72
Lane Grp Cap(c), veh/h	457	1216	1266	273	989	1024	87	0	342	317	0	442
V/C Ratio(X)	0.60	0.48	0.48	0.10	0.56	0.56	0.08	0.00	0.19	0.28	0.00	0.90
Avail Cap(c_a), veh/h	603	1216	1266	273	989	1024	184	0	535	317	0	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	11.6	11.6	0.2	0.0	0.0	61.2	0.0	44.8	40.4	0.0	46.9
Incr Delay (d2), s/veh	1.2	1.4	1.3	0.6	1.9	1.8	0.4	0.0	0.3	0.5	0.0	12.2
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	3.5	8.8	9.1	0.0	0.5	0.5	0.2	0.0	1.8	2.4	0.0	13.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	13.0	12.9	0.8	1.9	1.8	61.6	0.0	45.0	40.9	0.0	59.1
LnGrp LOS	B	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1470			1159			71			486	
Approach Delay, s/veh		12.7			1.8			46.7			55.7	
Approach LOS		B			A			D			E	

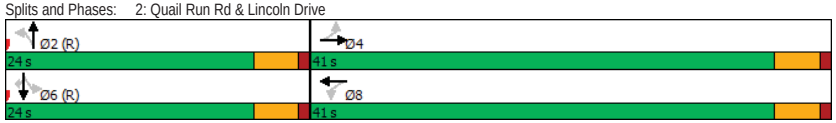
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	15.8	74.7	9.0	30.5		90.5		39.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	11.2	7.6	7.0	22.6		22.8		30.6
Green Ext Time (p_c), s	0.6	10.2	0.0	0.2		11.0		2.4

Intersection Summary	
HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	115	1101	2	937	0	26	0	66
Future Volume (vph)	115	1101	2	937	0	26	0	66
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases		4		8	2		6	
Permitted Phases	4		8			6		6
Detector Phase	4	4	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.6	32.6	32.6	32.6	23.4		23.4	23.4
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.36		0.36	0.36
v/c Ratio	0.73	0.69	0.02	0.59	0.01		0.06	0.12
Control Delay	47.3	20.5	9.5	14.8	0.0		16.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	47.3	20.5	9.5	14.8	0.0		16.3	5.5
LOS	D	C	A	B	A		B	A
Approach Delay		23.1		14.8			8.6	
Approach LOS		C		B			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 54.1%	ICU Level of Service A
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	1101	3	2	937	12	0	0	8	26	0	66
Future Volume (veh/h)	115	1101	3	2	937	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	1223	3	2	1041	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	290	1556	4	242	1538	19	0	0	687	714	0	687
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.00	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	535	3637	9	455	3594	45	0	0	1585	1390	0	1585
Grp Volume(v), veh/h	128	598	628	2	515	539	0	0	9	29	0	73
Grp Sat Flow(s),veh/h/ln	535	1777	1869	455	1777	1862	0	0	1585	1390	0	1585
Q Serve(g_s), s	9.8	9.6	9.6	0.1	6.5	6.5	0.0	0.0	0.2	0.8	0.0	1.8
Cycle Q Clear(g_c), s	15.9	9.6	9.6	9.2	6.5	6.5	0.0	0.0	0.2	1.1	0.0	1.8
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	290	760	800	242	760	797	0	0	687	714	0	687
V/C Ratio(X)	0.44	0.79	0.79	0.01	0.68	0.68	0.00	0.00	0.01	0.04	0.00	0.11
Avail Cap(c_a), veh/h	362	998	1049	303	998	1046	0	0	687	714	0	687
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.4	3.4	5.3	3.1	3.1	0.0	0.0	10.5	10.8	0.0	10.9
Incr Delay (d2), s/veh	0.9	2.8	2.7	0.0	1.2	1.1	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	0.4	1.8	1.9	0.0	1.3	1.3	0.0	0.0	0.1	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	6.2	6.0	5.3	4.3	4.3	0.0	0.0	10.5	10.9	0.0	11.2
LnGrp LOS	A	A	A	A	A	A	A	A	B	B	A	B
Approach Vol, veh/h		1354			1056			9			102	
Approach Delay, s/veh		6.2			4.3			10.5			11.2	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.2	17.9	3.8	11.2
Green Ext Time (p_c), s	0.0	9.7	0.3	7.8

Intersection Summary	
HCM 6th Ctrl Delay	5.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1131	6	5	947	0	6
Future Vol, veh/h	1131	6	5	947	0	6
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	1257	7	6	1052	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1264	0	1799	632
Stage 1	-	-	-	-	1261	-
Stage 2	-	-	-	-	538	-
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	-	-	917	-	*71	*636
Stage 1	-	-	-	-	*574	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	917	-	*71	*636
Mov Cap-2 Maneuver	-	-	-	-	*309	-
Stage 1	-	-	-	-	*570	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	917	-
HCM Lane V/C Ratio	0.01	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	15	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	6	-	-	-	-	-
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	1004	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1073	-	-	1611	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1611	-
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	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1067	34	18	877	10	50	0	29	5	0	12
Future Vol, veh/h	26	1067	34	18	877	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1186	38	20	974	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	985	0	0	1224	0	0	1790	2288	612	1671	-	493
Stage 1	-	-	-	-	-	-	1263	1263	-	1020	-	-
Stage 2	-	-	-	-	-	-	527	1025	-	651	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	*952	-	-	*~ 51	39	*636	*63	0	*715
Stage 1	-	-	-	-	-	-	*567	504	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	586	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	*952	-	-	*~ 48	37	*636	*58	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*288	252	-	*295	-	-
Stage 1	-	-	-	-	-	-	*552	490	-	*656	-	-
Stage 2	-	-	-	-	-	-	*648	574	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.2	12.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	360	* 1070	-	-	* 952	-	-	295	715
HCM Lane V/C Ratio	0.244	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.2	8.5	-	-	8.9	-	-	17.4	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1044	53	43	891	8	6	0	41	4	1	12
Future Vol, veh/h	3	1044	53	43	891	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1160	59	48	990	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	999	0	0	1219	0	0	1788	2291	610	1677	2316	500
Stage 1	-	-	-	-	-	-	1196	1196	-	1091	1091	-
Stage 2	-	-	-	-	-	-	592	1095	-	586	1225	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	*1070	-	-	879	-	-	*51	39	*684	*62	37	*715
Stage 1	-	-	-	-	-	-	*533	490	-	*584	531	-
Stage 2	-	-	-	-	-	-	*674	528	-	*645	468	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	879	-	-	*48	37	*684	*55	35	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*283	242	-	*284	224	-
Stage 1	-	-	-	-	-	-	*531	489	-	*582	502	-
Stage 2	-	-	-	-	-	-	*624	499	-	*601	467	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	579	* 1070	-	-	879	-	-	284	715
HCM Lane V/C Ratio	0.09	0.003	-	-	0.054	-	-	0.016	0.019
HCM Control Delay (s)	11.8	8.4	-	-	9.3	-	-	17.9	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	491	42	502	41	40	304	1453	56	1845	640
Future Volume (vph)	491	42	502	41	40	304	1453	56	1845	640
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	24.4	24.4	45.0	7.4	7.4	20.7	70.5	7.7	55.3	85.3
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.43	0.66
v/c Ratio	0.94	0.94	0.94	0.46	0.43	0.62	0.60	0.60	0.95	0.65
Control Delay	73.0	72.3	52.6	74.6	33.9	55.6	22.0	82.1	47.2	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	72.3	52.6	74.6	33.9	55.6	22.0	82.1	47.2	13.2
LOS	E	E	D	E	C	E	C	F	D	B
Approach Delay		62.9			46.5		27.7		39.4	
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: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 40.2	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)	491	42	502	41	40	52	304	1453	43	56	1845	640
Future Volume (veh/h)	491	42	502	41	40	52	304	1453	43	56	1845	640
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	580	0	314	46	44	41	338	1614	37	62	2050	422
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	669	0	480	101	105	87	398	2397	55	79	2015	923
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.12	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1851	1522	3456	5136	118	1781	5106	1585
Grp Volume(v), veh/h	580	0	314	46	42	43	338	1070	581	62	2050	422
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	20.5	0.0	22.4	3.2	3.0	3.4	12.5	31.8	31.8	4.5	51.3	19.7
Cycle Q Clear(g_c), s	20.5	0.0	22.4	3.2	3.0	3.4	12.5	31.8	31.8	4.5	51.3	19.7
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	669	0	480	101	101	91	398	1589	863	79	2015	923
V/C Ratio(X)	0.87	0.00	0.65	0.45	0.42	0.47	0.85	0.67	0.67	0.78	1.02	0.46
Avail Cap(c_a), veh/h	671	0	481	101	101	91	651	1762	957	119	2015	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	39.4	59.3	59.2	59.4	56.4	27.0	27.0	61.5	39.3	15.4
Incr Delay (d2), s/veh	11.1	0.0	2.5	1.2	1.0	1.4	2.8	0.6	1.2	8.7	24.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	9.1	1.5	1.4	1.4	5.6	12.9	14.2	2.2	25.6	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	0.0	41.9	60.5	60.2	60.8	59.2	27.6	28.1	70.2	63.9	17.1
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	F	B
Approach Vol, veh/h		894			131			1989			2534	
Approach Delay, s/veh		55.1			60.5			33.1			56.2	
Approach LOS		E			E			C			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	66.4		29.9	20.5	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	6.5	33.8		24.4	14.5	53.3		5.4
Green Ext Time (p_c), s	0.0	2.5		0.0	0.5	0.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	47.9
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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	271	951	22	1006	8	69	66	53
Future Volume (vph)	271	951	22	1006	8	69	66	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	75.1	75.1	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.58	0.58	0.10	0.10	0.16	0.15
v/c Ratio	0.68	0.41	0.09	0.59	0.12	0.53	0.40	0.72
Control Delay	18.9	6.5	33.7	42.1	55.8	61.0	52.3	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	6.5	33.7	42.1	55.8	61.0	52.3	38.3
LOS	B	A	C	D	E	E	D	D
Approach Delay		9.2		41.9		60.5		41.5
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 72.0%	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)	271	951	32	22	1006	64	8	69	18	66	53	172
Future Volume (veh/h)	271	951	32	22	1006	64	8	69	18	66	53	172
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	301	1057	25	24	1118	43	9	77	11	73	59	135
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	505	2712	64	400	2306	89	86	125	18	151	70	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3548	84	521	3489	134	1189	1601	229	1781	506	1157
Grp Volume(v), veh/h	301	529	553	24	569	592	9	0	88	73	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	521	1777	1846	1189	0	1829	1781	0	1662
Q Serve(g_s), s	6.6	13.0	13.0	0.0	0.0	0.0	1.0	0.0	6.1	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.0	13.0	0.0	0.0	0.0	7.7	0.0	6.1	4.0	0.0	14.8
Prop In Lane	1.00		0.05	1.00		0.07	1.00		0.13	1.00		0.70
Lane Grp Cap(c), veh/h	505	1358	1418	400	1174	1220	86	0	142	151	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.06	0.48	0.49	0.10	0.00	0.62	0.48	0.00	0.84
Avail Cap(c_a), veh/h	745	1358	1418	400	1174	1220	245	0	387	151	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.1	5.1	0.0	0.0	0.0	62.2	0.0	58.1	53.6	0.0	54.5
Incr Delay (d2), s/veh	1.1	0.8	0.8	0.2	1.0	1.0	0.5	0.0	4.3	2.4	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.0	0.5	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	5.9	0.2	1.0	1.0	62.7	0.0	62.4	56.0	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1383			1185			97			267	
Approach Delay, s/veh		6.0			1.0			62.4			60.6	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.0		16.8				
Green Ext Time (p_c), s	0.8	11.0	0.0	0.4		9.5		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	85	968	996	0	14	0	93
Future Volume (vph)	85	968	996	0	14	0	93
Turn Type	Perm	NA	NA	NA	Perm	NA	Perm
Protected Phases		4	8	2		6	
Permitted Phases	4				6		6
Detector Phase	4	4	8	2	6	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.9	30.9	30.9	25.1		25.1	25.1
Actuated g/C Ratio	0.48	0.48	0.48	0.39		0.39	0.39
v/c Ratio	0.71	0.64	0.68	0.00		0.03	0.16
Control Delay	48.7	17.9	17.3	0.0		15.9	6.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	48.7	17.9	17.3	0.0		15.9	6.6
LOS	D	B	B	A		B	A
Approach Delay		20.4	17.3			7.9	
Approach LOS		C	B			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
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	968	1	0	996	25	0	0	2	14	0	93
Future Volume (veh/h)	85	968	1	0	996	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	1076	1	0	1107	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	267	1512	1	111	1470	37	0	0	708	728	0	708
Arrive On Green	0.83	0.83	0.83	0.00	0.83	0.83	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	496	3643	3	524	3542	90	0	0	1585	1383	0	1585
Grp Volume(v), veh/h	94	525	552	0	555	580	0	0	2	16	0	103
Grp Sat Flow(s),veh/h/ln	496	1777	1870	524	1777	1854	0	0	1585	1383	0	1585
Q Serve(g_s), s	7.4	8.0	8.0	0.0	9.2	9.2	0.0	0.0	0.0	0.4	0.0	2.5
Cycle Q Clear(g_c), s	13.9	8.0	8.0	0.0	9.2	9.2	0.0	0.0	0.0	1.1	0.0	2.5
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	267	737	776	111	737	770	0	0	708	728	0	708
V/C Ratio(X)	0.35	0.71	0.71	0.00	0.75	0.75	0.00	0.00	0.00	0.02	0.00	0.15
Avail Cap(c_a), veh/h	347	1025	1079	196	1025	1070	0	0	708	728	0	708
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.4	3.9	3.9	0.0	4.0	4.0	0.0	0.0	10.0	10.4	0.0	10.6
Incr Delay (d2), s/veh	0.7	1.3	1.2	0.0	2.1	2.0	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	0.3	1.5	1.6	0.0	1.8	1.8	0.0	0.0	0.0	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	5.2	5.1	0.0	6.1	6.0	0.0	0.0	10.0	10.5	0.0	11.1
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	B
Approach Vol, veh/h		1171			1135			2			119	
Approach Delay, s/veh		5.3			6.0			10.0			11.0	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.6	30.4	34.6	30.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.0	15.9	4.5	11.2
Green Ext Time (p_c), s	0.0	8.8	0.3	8.7

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	984	0	0	1020	4	3
Future Vol, veh/h	984	0	0	1020	4	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	1093	0	0	1133	4	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1093	0	1660	547
Stage 1	-	-	-	-	1093	-
Stage 2	-	-	-	-	567	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	*1024	-	*88	*684
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1024	-	*88	*684
Mov Cap-2 Maneuver	-	-	-	-	*331	-
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	425	-	-	* 1024	-
HCM Lane V/C Ratio	0.018	-	-	-	-
HCM Control Delay (s)	13.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	1	-	-	-	-	-
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	1019	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1019	1082	-	-	1620	-
Mov Cap-2 Maneuver	1019	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1620	-
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	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	920	41	6	914	9	66	3	47	7	0	34
Future Vol, veh/h	7	920	41	6	914	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1022	46	7	1016	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1026	0	0	1068	0	0	1583	2101	534	1564	-	513
Stage 1	-	-	-	-	-	-	1061	1061	-	1035	-	-
Stage 2	-	-	-	-	-	-	522	1040	-	529	-	-
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	1061	-	-	972	-	-	*~ 73	51	*732	*75	0	*715
Stage 1	-	-	-	-	-	-	*580	531	-	*653	0	-
Stage 2	-	-	-	-	-	-	*674	573	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1061	-	-	972	-	-	*~ 68	50	*732	*68	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*305	271	-	*321	-	-
Stage 1	-	-	-	-	-	-	*575	527	-	*648	-	-
Stage 2	-	-	-	-	-	-	*634	569	-	*632	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	398	1061	-	-	972	-	-	321	715
HCM Lane V/C Ratio	0.324	0.007	-	-	0.007	-	-	0.024	0.053
HCM Control Delay (s)	18.3	8.4	-	-	8.7	-	-	16.5	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	913	53	61	912	8	14	1	89	4	0	7
Future Vol, veh/h	11	913	53	61	912	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1014	59	68	1013	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1022	0	0	1073	0	0	1711	2226	537	1686	-	511
Stage 1	-	-	-	-	-	-	1068	1068	-	1154	-	-
Stage 2	-	-	-	-	-	-	643	1158	-	532	-	-
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	1066	-	-	966	-	-	*59	43	*732	*61	0	*715
Stage 1	-	-	-	-	-	-	*571	525	-	*514	0	-
Stage 2	-	-	-	-	-	-	*674	480	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1066	-	-	966	-	-	*55	40	*732	*49	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*292	234	-	*257	-	-
Stage 1	-	-	-	-	-	-	*565	520	-	*508	-	-
Stage 2	-	-	-	-	-	-	*620	446	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.5	13.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	1066	-	-	966	-	-	257	715
HCM Lane V/C Ratio	0.193	0.011	-	-	0.07	-	-	0.017	0.011
HCM Control Delay (s)	12.5	8.4	-	-	9	-	-	19.3	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	532	62	449	62	69	442	1791	67	1729	525
Future Volume (vph)	532	62	449	62	69	442	1791	67	1729	525
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	46.4	7.4	7.4	21.9	70.2	8.1	53.9	84.1
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	1.05	1.03	0.82	0.69	0.62	0.85	0.75	0.68	0.91	0.55
Control Delay	99.9	94.5	37.4	93.0	38.8	66.6	25.9	88.5	43.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.9	94.5	37.4	93.0	38.8	66.6	25.9	88.5	43.9	12.5
LOS	F	F	D	F	D	E	C	F	D	B
Approach Delay		71.5			54.7		33.8		38.0	
Approach LOS		E			D		C		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 42.9	Intersection LOS: D
Intersection Capacity Utilization 87.1%	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)	532	62	449	62	69	80	442	1791	50	67	1729	525
Future Volume (veh/h)	532	62	449	62	69	80	442	1791	50	67	1729	525
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	640	0	277	69	77	67	491	1990	45	74	1921	316
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	550	101	108	85	548	2579	58	94	2015	924
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.16	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	640	0	277	69	72	72	491	1318	717	74	1921	316
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	23.1	0.0	18.0	4.9	5.2	5.8	18.1	40.9	41.0	5.3	47.5	13.5
Cycle Q Clear(g_c), s	23.1	0.0	18.0	4.9	5.2	5.8	18.1	40.9	41.0	5.3	47.5	13.5
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	550	101	101	91	548	1709	929	94	2015	924
V/C Ratio(X)	0.95	0.00	0.50	0.68	0.71	0.79	0.90	0.77	0.77	0.79	0.95	0.34
Avail Cap(c_a), veh/h	671	0	550	101	101	91	651	1762	957	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	0.0	33.6	60.1	60.2	60.5	53.6	26.3	26.3	60.9	38.2	14.1
Incr Delay (d2), s/veh	23.6	0.0	0.3	14.2	17.8	34.0	12.3	1.9	3.4	18.3	11.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	0.0	7.0	2.6	2.8	3.2	8.8	16.7	18.6	2.9	21.6	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	0.0	33.9	74.3	78.1	94.5	65.9	28.2	29.7	79.1	49.9	15.1
LnGrp LOS	E	A	C	E	E	F	E	C	C	E	D	B
Approach Vol, veh/h		917			213			2526			2311	
Approach Delay, s/veh		63.1			82.4			36.0			46.1	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	71.0		30.0	26.1	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	43.0		25.1	20.1	49.5		7.8
Green Ext Time (p_c), s	0.0	3.3		0.0	0.5	1.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		45.7
HCM 6th LOS		D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1051	25	978	6	38	82	100
Future Volume (vph)	246	1051	25	978	6	38	82	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.47	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	38.8	42.5	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	38.8	42.5	46.5	32.9	40.6	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		14.0		42.4		34.3		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.1	Intersection LOS: C
Intersection Capacity Utilization 76.5%	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)	246	1051	33	25	978	47	6	38	21	82	100	257
Future Volume (veh/h)	246	1051	33	25	978	47	6	38	21	82	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1168	37	28	1087	52	7	42	23	91	111	286
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	456	2406	76	270	1921	92	87	221	121	316	124	319
Arrive On Green	0.09	0.65	0.65	1.00	1.00	1.00	0.18	0.18	0.18	0.04	0.25	0.25
Sat Flow, veh/h	1688	3701	117	440	3634	174	935	1196	655	1688	487	1256
Grp Volume(v), veh/h	273	590	615	28	559	580	7	0	65	91	0	397
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	440	1870	1938	935	0	1851	1688	0	1743
Q Serve(g_s), s	9.2	21.0	21.0	0.7	0.0	0.0	0.9	0.0	3.9	5.0	0.0	28.6
Cycle Q Clear(g_c), s	9.2	21.0	21.0	5.9	0.0	0.0	20.6	0.0	3.9	5.0	0.0	28.6
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.35	1.00		0.72
Lane Grp Cap(c), veh/h	456	1216	1266	270	989	1024	87	0	341	316	0	442
V/C Ratio(X)	0.60	0.49	0.49	0.10	0.57	0.57	0.08	0.00	0.19	0.29	0.00	0.90
Avail Cap(c_a), veh/h	601	1216	1266	270	989	1024	184	0	534	316	0	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	11.6	11.6	0.2	0.0	0.0	61.2	0.0	44.8	40.6	0.0	46.9
Incr Delay (d2), s/veh	1.3	1.4	1.3	0.6	1.9	1.8	0.4	0.0	0.3	0.5	0.0	12.2
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	3.5	8.9	9.2	0.0	0.5	0.5	0.2	0.0	1.8	0.2	0.0	13.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	13.0	13.0	0.8	1.9	1.8	61.6	0.0	45.1	41.1	0.0	59.1
LnGrp LOS	B	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1478			1167			72			488	
Approach Delay, s/veh		12.7			1.8			46.7			55.7	
Approach LOS		B			A			D			E	

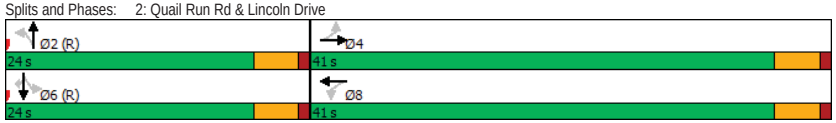
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	15.8	74.7	9.0	30.5		90.5		39.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	11.2	7.9	7.0	22.6		23.0		30.6
Green Ext Time (p_c), s	0.6	10.3	0.0	0.2		11.1		2.4

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	115	1107	6	941	3	0	26	0	66
Future Volume (vph)	115	1107	6	941	3	0	26	0	66
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.7	32.7	32.7	32.7		23.3		23.3	23.3
Actuated g/C Ratio	0.50	0.50	0.50	0.50		0.36		0.36	0.36
v/c Ratio	0.73	0.69	0.06	0.59		0.03		0.06	0.12
Control Delay	47.4	20.5	7.7	12.8		5.4		16.3	5.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	47.4	20.5	7.7	12.8		5.4		16.3	5.5
LOS	D	C	A	B		A		B	A
Approach Delay		23.0		12.7		5.4		8.6	
Approach LOS		C		B		A		A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 51.4%	ICU Level of Service A
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	1107	7	6	941	12	3	0	11	26	0	66
Future Volume (veh/h)	115	1107	7	6	941	12	3	0	11	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	1230	8	7	1046	13	3	0	12	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	290	1552	10	240	1542	19	163	39	538	720	0	686
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	533	3619	24	450	3594	45	222	89	1244	1408	0	1585
Grp Volume(v), veh/h	128	604	634	7	517	542	15	0	0	29	0	73
Grp Sat Flow(s),veh/h/ln	533	1777	1866	450	1777	1862	1555	0	0	1408	0	1585
Q Serve(g_s), s	9.8	9.8	9.8	0.4	6.4	6.4	0.0	0.0	0.0	0.2	0.0	1.8
Cycle Q Clear(g_c), s	15.8	9.8	9.8	9.7	6.4	6.4	0.3	0.0	0.0	0.7	0.0	1.8
Prop In Lane	1.00		0.01	1.00		0.02	0.20		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	290	762	800	240	762	799	739	0	0	720	0	686
V/C Ratio(X)	0.44	0.79	0.79	0.03	0.68	0.68	0.02	0.00	0.00	0.04	0.00	0.11
Avail Cap(c_a), veh/h	361	998	1048	299	998	1046	739	0	0	720	0	686
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)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.3	3.3	5.4	3.1	3.1	10.6	0.0	0.0	10.6	0.0	11.0
Incr Delay (d2), s/veh	0.9	2.9	2.8	0.0	1.2	1.2	0.1	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	0.4	1.8	1.9	0.0	1.3	1.3	0.1	0.0	0.0	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	6.3	6.1	5.4	4.3	4.3	10.6	0.0	0.0	10.7	0.0	11.3
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		1366			1066			15			102	
Approach Delay, s/veh		6.2			4.3			10.6			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.3	17.8	3.8	11.7
Green Ext Time (p_c), s	0.0	9.8	0.3	7.9

Intersection Summary	
HCM 6th Ctrl Delay	5.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1134	12	21	951	4	17
Future Vol, veh/h	1134	12	21	951	4	17
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	1260	13	23	1057	4	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1273	0	1842	637
Stage 1	-	-	-	-	1267	-
Stage 2	-	-	-	-	575	-
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	-	-	905	-	*67	*636
Stage 1	-	-	-	-	*568	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	905	-	*65	*636
Mov Cap-2 Maneuver	-	-	-	-	*298	-
Stage 1	-	-	-	-	*553	-
Stage 2	-	-	-	-	*652	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	523	-	-	905	-
HCM Lane V/C Ratio	0.045	-	-	0.026	-
HCM Control Delay (s)	12.2	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	4

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	33	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	24	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	980	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	974	1073	-	-	1611	-
Mov Cap-2 Maneuver	974	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	999	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611	-
HCM Lane V/C Ratio	-	-	0.006	0.006	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1081	34	18	897	10	50	0	29	5	0	12
Future Vol, veh/h	26	1081	34	18	897	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1201	38	20	997	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1008	0	0	1239	0	0	1817	2326	620	1702	-	504
Stage 1	-	-	-	-	-	-	1278	1278	-	1043	-	-
Stage 2	-	-	-	-	-	-	539	1048	-	659	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	951	-	-	*~ 49	37	*636	*59	0	*715
Stage 1	-	-	-	-	-	-	*548	492	-	*643	0	-
Stage 2	-	-	-	-	-	-	*674	566	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	951	-	-	*~ 46	35	*636	*54	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*282	244	-	*287	-	-
Stage 1	-	-	-	-	-	-	*533	478	-	*625	-	-
Stage 2	-	-	-	-	-	-	*648	554	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.5	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	354	* 1070	-	-	951	-	-	287	715
HCM Lane V/C Ratio	0.248	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.5	8.5	-	-	8.9	-	-	17.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-	-	0.1	0.1

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1058	53	43	911	8	6	0	41	4	1	12
Future Vol, veh/h	3	1058	53	43	911	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1176	59	48	1012	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1021	0	0	1235	0	0	1815	2329	618	1707	2354	511
Stage 1	-	-	-	-	-	-	1212	1212	-	1113	1113	-
Stage 2	-	-	-	-	-	-	603	1117	-	594	1241	-
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	1067	-	-	*952	-	-	*49	*37	*636	*59	35	*715
Stage 1	-	-	-	-	-	-	*600	*526	-	*558	513	-
Stage 2	-	-	-	-	-	-	*674	*511	-	*600	523	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1067	-	-	*952	-	-	*46	*35	*636	*53	33	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*300	*245	-	*266	234	-
Stage 1	-	-	-	-	-	-	*598	*524	-	*556	488	-
Stage 2	-	-	-	-	-	-	*627	*485	-	*555	521	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.1	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	556	1067	-	-	* 952	-	-	266	715
HCM Lane V/C Ratio	0.094	0.003	-	-	0.05	-	-	0.017	0.019
HCM Control Delay (s)	12.1	8.4	-	-	9	-	-	18.8	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.1	0.1

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Future Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	33.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	26.3	26.3	42.3	10.1	10.1	16.0	65.8	7.8	55.3	87.3
Actuated g/C Ratio	0.20	0.20	0.33	0.08	0.08	0.12	0.51	0.06	0.43	0.67
v/c Ratio	0.88	0.88	0.99	0.34	0.34	0.82	0.65	0.58	0.95	0.62
Control Delay	57.4	57.4	59.5	63.9	30.1	72.7	26.1	81.0	46.6	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	57.4	57.4	59.5	63.9	30.1	72.7	26.1	81.0	46.6	9.0
LOS	E	E	E	E	C	E	C	F	D	A
Approach Delay		58.4			40.6		34.1		37.8	
Approach LOS		E			D		C		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 40.6	Intersection LOS: D
Intersection Capacity Utilization 89.4%	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)	499	42	508	41	40	52	313	1453	43	56	1845	651
Future Volume (veh/h)	499	42	508	41	40	52	313	1453	43	56	1845	651
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	588	0	286	46	44	41	348	1614	31	62	2050	390
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	656	0	469	137	142	117	385	2547	49	79	2172	966
Arrive On Green	0.18	0.00	0.18	0.08	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1851	1522	3456	5158	99	1781	5106	1585
Grp Volume(v), veh/h	588	0	286	46	42	43	348	1065	580	62	2050	390
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.0	0.0	20.2	3.2	2.9	3.3	12.9	30.0	30.0	4.5	50.1	16.6
Cycle Q Clear(g_c), s	21.0	0.0	20.2	3.2	2.9	3.3	12.9	30.0	30.0	4.5	50.1	16.6
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	656	0	469	137	137	123	385	1681	915	79	2172	966
V/C Ratio(X)	0.90	0.00	0.61	0.34	0.31	0.35	0.90	0.63	0.63	0.78	0.94	0.40
Avail Cap(c_a), veh/h	754	0	512	143	142	128	385	1681	915	119	2172	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	0.0	39.3	56.9	56.7	56.9	57.1	24.2	24.2	61.5	35.9	13.1
Incr Delay (d2), s/veh	11.4	0.0	1.1	0.5	0.5	0.6	23.3	0.6	1.1	8.7	10.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	8.0	1.5	1.3	1.4	6.9	12.1	13.3	2.2	22.4	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.2	0.0	40.5	57.4	57.2	57.5	80.3	24.8	25.3	70.2	45.8	14.4
LnGrp LOS	E	A	D	E	E	E	F	C	C	E	D	B
Approach Vol, veh/h		874			131			1993			2502	
Approach Delay, s/veh		55.7			57.4			34.7			41.5	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	69.9		29.4	20.0	61.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	61.3		27.5	14.5	55.3		10.4
Max Q Clear Time (g_c+I1), s	6.5	32.0		23.0	14.9	52.1		5.3
Green Ext Time (p_c), s	0.0	2.5		1.0	0.0	1.7		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1051	25	978	6	38	82	100
Future Volume (vph)	246	1051	25	978	6	38	82	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.47	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	40.7	44.0	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	40.7	44.0	46.5	32.9	40.6	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		14.0		43.9		34.3		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.6	Intersection LOS: C
Intersection Capacity Utilization 76.5%	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)	246	1051	33	25	978	47	6	38	21	82	100	257
Future Volume (veh/h)	246	1051	33	25	978	47	6	38	21	82	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1168	26	28	1087	35	7	42	14	91	111	175
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	477	2686	60	317	2253	73	86	165	55	235	128	202
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.12	0.12	0.12	0.04	0.19	0.19
Sat Flow, veh/h	1688	3741	83	444	3699	119	1036	1413	471	1688	688	1085
Grp Volume(v), veh/h	273	584	610	28	550	572	7	0	56	91	0	286
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	444	1870	1947	1036	0	1884	1688	0	1773
Q Serve(g_s), s	7.5	16.6	16.7	0.3	0.0	0.0	0.9	0.0	3.5	5.0	0.0	20.3
Cycle Q Clear(g_c), s	7.5	16.6	16.7	2.8	0.0	0.0	12.2	0.0	3.5	5.0	0.0	20.3
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.61
Lane Grp Cap(c), veh/h	477	1343	1403	317	1139	1186	86	0	220	235	0	330
V/C Ratio(X)	0.57	0.43	0.43	0.09	0.48	0.48	0.08	0.00	0.25	0.39	0.00	0.87
Avail Cap(c_a), veh/h	644	1343	1403	317	1139	1186	264	0	543	235	0	634
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	7.5	7.5	0.0	0.0	0.0	61.6	0.0	52.3	48.3	0.0	51.4
Incr Delay (d2), s/veh	1.1	1.0	1.0	0.4	1.2	1.1	0.4	0.0	0.6	1.0	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.6	6.9	0.0	0.4	0.4	0.2	0.0	1.7	0.5	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	8.5	8.5	0.5	1.2	1.1	62.1	0.0	52.9	49.4	0.0	58.3
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1467			1150			63			377	
Approach Delay, s/veh		8.4			1.1			53.9			56.1	
Approach LOS		A			A			D			E	

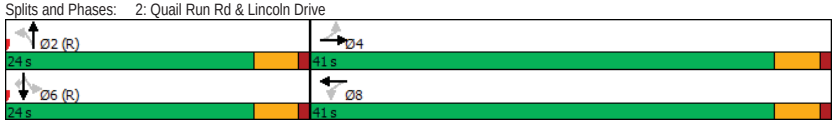
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.1	85.2	9.0	21.7		99.3		30.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.5	4.8	7.0	14.2		18.7		22.3
Green Ext Time (p_c), s	0.7	10.2	0.0	0.2		11.0		1.8

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	115	1107	6	941	3	0	26	0	66
Future Volume (vph)	115	1107	6	941	3	0	26	0	66
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.7	32.7	32.7	32.7		23.3		23.3	23.3
Actuated g/C Ratio	0.50	0.50	0.50	0.50		0.36		0.36	0.36
v/c Ratio	0.73	0.69	0.06	0.59		0.03		0.06	0.12
Control Delay	47.4	20.5	8.3	14.3		5.4		16.3	5.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	47.4	20.5	8.3	14.3		5.4		16.3	5.5
LOS	D	C	A	B		A		B	A
Approach Delay		23.0		14.2		5.4		8.6	
Approach LOS		C		B		A		A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 51.4%	ICU Level of Service A
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	1107	7	6	941	12	3	0	11	26	0	66
Future Volume (veh/h)	115	1107	7	6	941	12	3	0	11	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	1230	8	7	1046	13	3	0	12	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	290	1552	10	240	1542	19	163	39	538	720	0	686
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	533	3619	24	450	3594	45	222	89	1244	1408	0	1585
Grp Volume(v), veh/h	128	604	634	7	517	542	15	0	0	29	0	73
Grp Sat Flow(s),veh/h/ln	533	1777	1866	450	1777	1862	1555	0	0	1408	0	1585
Q Serve(g_s), s	9.8	9.8	9.8	0.4	6.4	6.4	0.0	0.0	0.0	0.2	0.0	1.8
Cycle Q Clear(g_c), s	15.8	9.8	9.8	9.7	6.4	6.4	0.3	0.0	0.0	0.7	0.0	1.8
Prop In Lane	1.00		0.01	1.00		0.02	0.20		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	290	762	800	240	762	799	739	0	0	720	0	686
V/C Ratio(X)	0.44	0.79	0.79	0.03	0.68	0.68	0.02	0.00	0.00	0.04	0.00	0.11
Avail Cap(c_a), veh/h	361	998	1048	299	998	1046	739	0	0	720	0	686
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)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.3	3.3	5.4	3.1	3.1	10.6	0.0	0.0	10.6	0.0	11.0
Incr Delay (d2), s/veh	0.9	2.9	2.8	0.0	1.2	1.2	0.1	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	0.4	1.8	1.9	0.0	1.3	1.3	0.1	0.0	0.0	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	6.3	6.1	5.4	4.3	4.3	10.6	0.0	0.0	10.7	0.0	11.3
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		1366			1066			15			102	
Approach Delay, s/veh		6.2			4.3			10.6			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.3	17.8	3.8	11.7
Green Ext Time (p_c), s	0.0	9.8	0.3	7.9

Intersection Summary	
HCM 6th Ctrl Delay	5.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1134	12	21	951	4	17
Future Vol, veh/h	1134	12	21	951	4	17
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	1260	13	23	1057	4	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1273	0	1842	637
Stage 1	-	-	-	-	1267	-
Stage 2	-	-	-	-	575	-
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	-	-	905	-	*67	*636
Stage 1	-	-	-	-	*568	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	905	-	*65	*636
Mov Cap-2 Maneuver	-	-	-	-	*298	-
Stage 1	-	-	-	-	*553	-
Stage 2	-	-	-	-	*652	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	523	-	-	905	-
HCM Lane V/C Ratio	0.045	-	-	0.026	-
HCM Control Delay (s)	12.2	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	4

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	33	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	24	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	980	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	974	1073	-	-	1611	-
Mov Cap-2 Maneuver	974	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	999	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611	-
HCM Lane V/C Ratio	-	-	0.006	0.006	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1081	34	18	897	10	50	0	29	5	0	12
Future Vol, veh/h	26	1081	34	18	897	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1201	38	20	997	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1008	0	0	1239	0	0	1817	2326	620	1702	-	504
Stage 1	-	-	-	-	-	-	1278	1278	-	1043	-	-
Stage 2	-	-	-	-	-	-	539	1048	-	659	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	951	-	-	*~ 49	37	*636	*59	0	*715
Stage 1	-	-	-	-	-	-	*548	492	-	*643	0	-
Stage 2	-	-	-	-	-	-	*674	566	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	951	-	-	*~ 46	35	*636	*54	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*282	244	-	*287	-	-
Stage 1	-	-	-	-	-	-	*533	478	-	*625	-	-
Stage 2	-	-	-	-	-	-	*648	554	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.5	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	354	* 1070	-	-	951	-	-	287	715
HCM Lane V/C Ratio	0.248	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.5	8.5	-	-	8.9	-	-	17.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1058	53	43	911	8	6	0	41	4	1	12
Future Vol, veh/h	3	1058	53	43	911	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1176	59	48	1012	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1021	0	0	1235	0	0	1815	2329	618	1707	2354	511
Stage 1	-	-	-	-	-	-	1212	1212	-	1113	1113	-
Stage 2	-	-	-	-	-	-	603	1117	-	594	1241	-
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	1067	-	-	*952	-	-	*49	*37	*636	*59	35	*715
Stage 1	-	-	-	-	-	-	*600	*526	-	*558	513	-
Stage 2	-	-	-	-	-	-	*674	*511	-	*600	523	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1067	-	-	*952	-	-	*46	*35	*636	*53	33	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*300	*245	-	*266	234	-
Stage 1	-	-	-	-	-	-	*598	*524	-	*556	488	-
Stage 2	-	-	-	-	-	-	*627	*485	-	*555	521	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.1	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	556	1067	-	-	* 952	-	-	266	715
HCM Lane V/C Ratio	0.094	0.003	-	-	0.05	-	-	0.017	0.019
HCM Control Delay (s)	12.1	8.4	-	-	9	-	-	18.8	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.1	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Future Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	30.7
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	61.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	46.9%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	C-Max
Act Effct Green (s)	25.5	25.5	42.3	10.1	12.1	14.8	64.6	7.8	55.3	55.3
Actuated g/C Ratio	0.20	0.20	0.33	0.08	0.09	0.11	0.50	0.06	0.43	0.43
v/c Ratio	0.91	0.91	0.99	0.34	0.29	0.89	0.66	0.58	0.95	0.75
Control Delay	62.1	62.1	59.3	63.9	29.1	81.7	26.7	81.0	46.6	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	62.1	59.3	63.9	29.1	81.7	26.7	81.0	46.6	14.0
LOS	E	E	E	E	C	F	C	F	D	B
Approach Delay		60.8			39.9		36.2		39.1	
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: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 89.4%	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)	499	42	508	41	40	52	313	1453	43	56	1845	651
Future Volume (veh/h)	499	42	508	41	40	52	313	1453	43	56	1845	651
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	588	0	286	46	44	41	348	1614	31	62	2050	390
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	648	0	370	244	142	117	385	2547	49	79	2172	674
Arrive On Green	0.18	0.00	0.12	0.14	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1851	1522	3456	5158	99	1781	5106	1585
Grp Volume(v), veh/h	588	0	286	46	42	43	348	1065	580	62	2050	390
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.0	0.0	13.4	3.0	2.9	3.3	12.9	30.0	30.0	4.5	50.1	24.4
Cycle Q Clear(g_c), s	21.0	0.0	13.4	3.0	2.9	3.3	12.9	30.0	30.0	4.5	50.1	24.4
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	648	0	370	244	137	123	385	1681	915	79	2172	674
V/C Ratio(X)	0.91	0.00	0.77	0.19	0.31	0.35	0.90	0.63	0.63	0.78	0.94	0.58
Avail Cap(c_a), veh/h	754	0	512	244	142	128	385	1681	915	119	2172	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	20.0	49.7	56.7	56.9	57.1	24.2	24.2	61.5	35.9	28.5
Incr Delay (d2), s/veh	12.5	0.0	3.0	0.1	0.5	0.6	23.3	0.6	1.1	8.7	10.0	3.6
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	10.5	0.0	5.2	1.3	1.3	1.4	6.9	12.1	13.3	2.2	22.4	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.6	0.0	23.1	49.8	57.2	57.5	80.3	24.8	25.3	70.2	45.8	32.1
LnGrp LOS	E	A	C	D	E	E	F	C	C	E	D	C
Approach Vol, veh/h		874			131			1993			2502	
Approach Delay, s/veh		51.0			54.7			34.7			44.3	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	69.9	23.4	21.3	20.0	61.0	29.2	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 8.7	61.3	10.4	27.5	14.5	55.3	27.5	10.4
Max Q Clear Time (g_c+I1), s	6.5	32.0	5.0	15.4	14.9	52.1	23.0	5.3
Green Ext Time (p_c), s	0.0	2.5	0.0	0.4	0.0	1.7	0.6	0.1

Intersection Summary		
HCM 6th Ctrl Delay		42.1
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)	271	961	23	1015	8	69	69	53
Future Volume (vph)	271	961	23	1015	8	69	69	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	74.7	74.7	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.57	0.57	0.10	0.10	0.16	0.15
v/c Ratio	0.68	0.41	0.09	0.60	0.12	0.54	0.42	0.72
Control Delay	19.6	6.5	34.0	42.4	55.6	60.9	53.3	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	6.5	34.0	42.4	55.6	60.9	53.3	38.2
LOS	B	A	C	D	E	E	D	D
Approach Delay		9.3		42.2		60.5		41.8
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 72.3%	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)	271	961	32	23	1015	66	8	69	20	69	53	172
Future Volume (veh/h)	271	961	32	23	1015	66	8	69	20	69	53	172
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	301	1068	25	26	1128	45	9	77	13	77	59	135
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	501	2713	64	396	2302	92	86	122	21	149	71	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3549	83	516	3483	139	1189	1560	263	1781	506	1157
Grp Volume(v), veh/h	301	535	558	26	575	598	9	0	90	77	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	516	1777	1845	1189	0	1823	1781	0	1662
Q Serve(g_s), s	6.6	13.2	13.2	0.0	0.0	0.0	1.0	0.0	6.2	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.2	13.2	0.0	0.0	0.0	7.7	0.0	6.2	4.0	0.0	14.8
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	501	1358	1418	396	1174	1219	86	0	142	149	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.07	0.49	0.49	0.10	0.00	0.63	0.52	0.00	0.84
Avail Cap(c_a), veh/h	741	1358	1418	396	1174	1219	245	0	386	149	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.2	5.2	0.0	0.0	0.0	62.2	0.0	58.1	54.1	0.0	54.5
Incr Delay (d2), s/veh	1.2	0.9	0.8	0.2	1.0	1.0	0.5	0.0	4.6	3.0	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.1	0.7	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	6.0	0.2	1.0	1.0	62.7	0.0	62.7	57.2	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1394			1199			99			271	
Approach Delay, s/veh		6.0			1.0			62.7			60.8	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.2		16.8				
Green Ext Time (p_c), s	0.8	11.2	0.0	0.4		9.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	977	5	1003	5	0	14	0
Future Volume (vph)	85	977	5	1003	5	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.0	31.0	31.0	31.0		25.0		25.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.72	0.65	0.04	0.68		0.02		0.18
Control Delay	49.2	17.9	8.0	16.7		5.2		7.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	49.2	17.9	8.0	16.7		5.2		7.6
LOS	D	B	A	B		A		A
Approach Delay		20.3		16.7		5.2		7.6
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 51.3%	ICU Level of Service A
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	977	7	5	1003	25	5	0	7	14	0	93
Future Volume (veh/h)	85	977	7	5	1003	25	5	0	7	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	1086	8	6	1114	28	6	0	8	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	267	1498	11	280	1468	37	333	30	378	120	38	612
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	493	3616	27	515	3542	89	568	67	846	128	85	1369
Grp Volume(v), veh/h	94	534	560	6	559	583	14	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	493	1777	1866	515	1777	1854	1481	0	0	1582	0	0
Q Serve(g_s), s	7.4	8.4	8.4	0.3	9.4	9.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.7	8.4	8.4	5.8	9.4	9.4	0.3	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.43		0.57	0.13		0.87
Lane Grp Cap(c), veh/h	267	736	773	280	736	768	741	0	0	770	0	0
V/C Ratio(X)	0.35	0.72	0.72	0.02	0.76	0.76	0.02	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	347	1025	1076	364	1025	1070	741	0	0	770	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.3	4.0	4.0	4.7	4.1	4.1	10.0	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	1.4	1.4	0.0	2.2	2.1	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.6	1.7	0.0	1.8	1.9	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	5.4	5.3	4.8	6.2	6.1	10.1	0.0	0.0	11.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1188			1148			14			119	
Approach Delay, s/veh		5.5			6.2			10.1			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.7	30.3	34.7	30.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.3	15.7	4.9	11.4
Green Ext Time (p_c), s	0.0	9.0	0.5	8.9

Intersection Summary	
HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	989	9	21	1025	11	22
Future Vol, veh/h	989	9	21	1025	11	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	1099	10	23	1139	12	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1109	0	1720	555
Stage 1	-	-	-	-	1104	-
Stage 2	-	-	-	-	616	-
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	-	-	1019	-	*80	*684
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1019	-	*78	*684
Mov Cap-2 Maneuver	-	-	-	-	*318	-
Stage 1	-	-	-	-	*631	-
Stage 2	-	-	-	-	*630	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	494	-	-	1019	-
HCM Lane V/C Ratio	0.074	-	-	0.023	-
HCM Control Delay (s)	12.9	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	2	0	11	1
Future Vol, veh/h	0	10	2	0	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	2	0	12	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	27	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	988	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	981	1082	-	-	1620	-
Mov Cap-2 Maneuver	981	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	998	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.01	0.008	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	944	41	6	941	9	66	3	47	7	0	34
Future Vol, veh/h	7	944	41	6	941	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1049	46	7	1046	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1056	0	0	1095	0	0	1625	2158	548	1607	-	528
Stage 1	-	-	-	-	-	-	1088	1088	-	1065	-	-
Stage 2	-	-	-	-	-	-	537	1070	-	542	-	-
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	*1034	-	-	*1024	-	-	*~ 68	*47	*684	*70	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*652	0	-
Stage 2	-	-	-	-	-	-	*652	*571	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*~ 64	*46	*684	*63	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*313	*277	-	*308	-	-
Stage 1	-	-	-	-	-	-	*640	*561	-	*646	-	-
Stage 2	-	-	-	-	-	-	*612	*567	-	*588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	399	* 1034	-	-	* 1024	-	-	308	691
HCM Lane V/C Ratio	0.323	0.008	-	-	0.007	-	-	0.025	0.055
HCM Control Delay (s)	18.3	8.5	-	-	8.5	-	-	17	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	937	53	61	939	8	14	1	89	4	0	7
Future Vol, veh/h	11	937	53	61	939	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1041	59	68	1043	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1052	0	0	1100	0	0	1753	2283	550	1729	-	526
Stage 1	-	-	-	-	-	-	1095	1095	-	1184	-	-
Stage 2	-	-	-	-	-	-	658	1188	-	545	-	-
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	*1034	-	-	*1024	-	-	*54	*39	*684	*57	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*531	0	-
Stage 2	-	-	-	-	-	-	*652	*488	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*50	*36	*684	*46	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	*242	-	*249	-	-
Stage 1	-	-	-	-	-	-	*637	*559	-	*525	-	-
Stage 2	-	-	-	-	-	-	*602	*455	-	*544	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	12.8	13.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	576	* 1034	-	-	* 1024	-	-	249	691
HCM Lane V/C Ratio	0.201	0.012	-	-	0.066	-	-	0.018	0.011
HCM Control Delay (s)	12.8	8.5	-	-	8.8	-	-	19.7	10.3
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	545	62	460	62	69	454	1791	67	1729	539
Future Volume (vph)	545	62	460	62	69	454	1791	67	1729	539
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	34.0	34.0	27.0	17.0	17.0	27.0	65.0	14.0	52.0	34.0
Total Split (%)	26.2%	26.2%	20.8%	13.1%	13.1%	20.8%	50.0%	10.8%	40.0%	26.2%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	27.9	27.9	49.3	10.5	10.5	21.4	63.3	8.4	47.9	81.5
Actuated g/C Ratio	0.21	0.21	0.38	0.08	0.08	0.16	0.49	0.06	0.37	0.63
v/c Ratio	0.92	0.93	0.79	0.48	0.48	0.89	0.83	0.65	1.03	0.57
Control Delay	66.2	68.3	28.7	68.8	31.7	72.3	33.4	84.6	68.3	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	66.2	68.3	28.7	68.8	31.7	72.3	33.4	84.6	68.3	12.6
LOS	E	E	C	E	C	E	C	F	E	B
Approach Delay		50.7			42.6		41.1		55.9	
Approach LOS		D			D		D		E	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 48.7	Intersection LOS: D
Intersection Capacity Utilization 90.0%	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)	545	62	460	62	69	80	454	1791	50	67	1729	539
Future Volume (veh/h)	545	62	460	62	69	80	454	1791	50	67	1729	539
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	655	0	289	69	77	67	504	1990	45	74	1921	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	718	0	573	137	146	114	552	2389	54	94	1819	884
Arrive On Green	0.20	0.00	0.20	0.08	0.08	0.08	0.16	0.46	0.46	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	655	0	289	69	72	72	504	1318	717	74	1921	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	23.4	0.0	18.5	4.8	5.1	5.7	18.6	43.9	44.1	5.3	46.3	15.2
Cycle Q Clear(g_c), s	23.4	0.0	18.5	4.8	5.1	5.7	18.6	43.9	44.1	5.3	46.3	15.2
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	718	0	573	137	137	123	552	1583	860	94	1819	884
V/C Ratio(X)	0.91	0.00	0.50	0.50	0.53	0.59	0.91	0.83	0.83	0.79	1.06	0.38
Avail Cap(c_a), veh/h	781	0	601	156	156	141	572	1583	860	119	1819	884
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	50.8	0.0	32.4	57.6	57.7	58.0	53.7	30.4	30.4	60.9	41.8	16.1
Incr Delay (d2), s/veh	13.6	0.0	0.3	1.1	1.2	2.2	18.2	3.7	6.7	18.3	37.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	0.0	7.2	2.2	2.3	2.4	9.5	18.5	20.8	2.9	25.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	32.7	58.7	58.9	60.2	71.9	34.1	37.1	79.1	79.6	17.3
LnGrp LOS	E	A	C	E	E	E	E	C	D	E	F	B
Approach Vol, veh/h		944			213			2539			2327	
Approach Delay, s/veh		54.7			59.3			42.5			70.7	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	66.1		31.7	26.3	52.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	59.3		28.5	21.5	46.3		11.4
Max Q Clear Time (g_c+I1), s	7.3	46.1		25.4	20.6	48.3		7.7
Green Ext Time (p_c), s	0.0	3.1		0.8	0.1	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	55.9
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)	271	961	23	1015	8	69	69	53
Future Volume (vph)	271	961	23	1015	8	69	69	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	73.4	73.4	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.56	0.56	0.10	0.10	0.16	0.15
v/c Ratio	0.66	0.41	0.10	0.61	0.12	0.54	0.42	0.72
Control Delay	19.2	6.5	35.3	43.8	55.6	60.9	53.3	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.5	35.3	43.8	55.6	60.9	53.3	38.2
LOS	B	A	D	D	E	E	D	D
Approach Delay		9.2		43.6		60.5		41.8
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 72.3%	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)	271	961	32	23	1015	66	8	69	20	69	53	172
Future Volume (veh/h)	271	961	32	23	1015	66	8	69	20	69	53	172
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	301	1068	25	26	1128	45	9	77	13	77	59	135
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	501	2713	64	396	2302	92	86	122	21	149	71	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3549	83	516	3483	139	1189	1560	263	1781	506	1157
Grp Volume(v), veh/h	301	535	558	26	575	598	9	0	90	77	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	516	1777	1845	1189	0	1823	1781	0	1662
Q Serve(g_s), s	6.6	13.2	13.2	0.0	0.0	0.0	1.0	0.0	6.2	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.2	13.2	0.0	0.0	0.0	7.7	0.0	6.2	4.0	0.0	14.8
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	501	1358	1418	396	1174	1219	86	0	142	149	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.07	0.49	0.49	0.10	0.00	0.63	0.52	0.00	0.84
Avail Cap(c_a), veh/h	741	1358	1418	396	1174	1219	245	0	386	149	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.2	5.2	0.0	0.0	0.0	62.2	0.0	58.1	54.1	0.0	54.5
Incr Delay (d2), s/veh	1.2	0.9	0.8	0.2	1.0	1.0	0.5	0.0	4.6	3.0	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.1	0.7	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	6.0	0.2	1.0	1.0	62.7	0.0	62.7	57.2	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1394			1199			99			271	
Approach Delay, s/veh		6.0			1.0			62.7			60.8	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.2		16.8				
Green Ext Time (p_c), s	0.8	11.2	0.0	0.4		9.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	977	5	1003	5	0	14	0
Future Volume (vph)	85	977	5	1003	5	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.3	31.3	31.3	31.3		24.7		24.7
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.38		0.38
v/c Ratio	0.70	0.64	0.04	0.67		0.02		0.18
Control Delay	46.6	17.4	7.2	15.8		5.3		7.7
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	46.6	17.4	7.2	15.8		5.3		7.7
LOS	D	B	A	B		A		A
Approach Delay		19.7		15.8		5.3		7.7
Approach LOS		B		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 17.2	Intersection LOS: B
Intersection Capacity Utilization 51.3%	ICU Level of Service A
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	977	7	5	1003	25	5	0	7	14	0	93
Future Volume (veh/h)	85	977	7	5	1003	25	5	0	7	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	1086	8	6	1114	28	6	0	8	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	267	1498	11	280	1468	37	333	30	378	120	38	612
Arrive On Green	0.83	0.83	0.83	0.83	0.83	0.83	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	493	3616	27	515	3542	89	568	67	846	128	85	1369
Grp Volume(v), veh/h	94	534	560	6	559	583	14	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	493	1777	1866	515	1777	1854	1481	0	0	1582	0	0
Q Serve(g_s), s	7.4	8.4	8.4	0.3	9.4	9.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.7	8.4	8.4	5.8	9.4	9.4	0.3	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.43		0.57	0.13		0.87
Lane Grp Cap(c), veh/h	267	736	773	280	736	768	741	0	0	770	0	0
V/C Ratio(X)	0.35	0.72	0.72	0.02	0.76	0.76	0.02	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	347	1025	1076	364	1025	1070	741	0	0	770	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.3	4.0	4.0	4.7	4.1	4.1	10.0	0.0	0.0	10.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	1.4	1.4	0.0	2.2	2.1	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.6	1.7	0.0	1.8	1.9	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	5.4	5.3	4.8	6.2	6.1	10.1	0.0	0.0	11.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1188			1148			14			119	
Approach Delay, s/veh		5.5			6.2			10.1			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.7	30.3	34.7	30.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	37.5	18.5	37.5
Max Q Clear Time (g_c+I1), s	2.3	15.7	4.9	11.4
Green Ext Time (p_c), s	0.0	9.0	0.5	8.9

Intersection Summary	
HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	989	9	21	1025	11	22
Future Vol, veh/h	989	9	21	1025	11	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	1099	10	23	1139	12	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1109	0	1720	555
Stage 1	-	-	-	-	1104	-
Stage 2	-	-	-	-	616	-
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	-	-	1019	-	*80	*684
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1019	-	*78	*684
Mov Cap-2 Maneuver	-	-	-	-	*318	-
Stage 1	-	-	-	-	*631	-
Stage 2	-	-	-	-	*630	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	494	-	-	1019	-
HCM Lane V/C Ratio	0.074	-	-	0.023	-
HCM Control Delay (s)	12.9	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	10	2	0	11	1
Future Vol, veh/h	0	10	2	0	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	2	0	12	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	27	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	988	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	981	1082	-	-	1620	-
Mov Cap-2 Maneuver	981	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	998	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.01	0.008	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	944	41	6	941	9	66	3	47	7	0	34
Future Vol, veh/h	7	944	41	6	941	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1049	46	7	1046	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1056	0	0	1095	0	0	1625	2158	548	1607	-	528
Stage 1	-	-	-	-	-	-	1088	1088	-	1065	-	-
Stage 2	-	-	-	-	-	-	537	1070	-	542	-	-
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	*1034	-	-	*1024	-	-	*~ 68	*47	*684	*70	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*652	0	-
Stage 2	-	-	-	-	-	-	*652	*571	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*~ 64	*46	*684	*63	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*313	*277	-	*308	-	-
Stage 1	-	-	-	-	-	-	*640	*561	-	*646	-	-
Stage 2	-	-	-	-	-	-	*612	*567	-	*588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	399	* 1034	-	-	* 1024	-	-	308	691
HCM Lane V/C Ratio	0.323	0.008	-	-	0.007	-	-	0.025	0.055
HCM Control Delay (s)	18.3	8.5	-	-	8.5	-	-	17	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	937	53	61	939	8	14	1	89	4	0	7
Future Vol, veh/h	11	937	53	61	939	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1041	59	68	1043	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1052	0	0	1100	0	0	1753	2283	550	1729	-	526
Stage 1	-	-	-	-	-	-	1095	1095	-	1184	-	-
Stage 2	-	-	-	-	-	-	658	1188	-	545	-	-
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	*1034	-	-	*1024	-	-	*54	*39	*684	*57	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*531	0	-
Stage 2	-	-	-	-	-	-	*652	*488	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*50	*36	*684	*46	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	*242	-	*249	-	-
Stage 1	-	-	-	-	-	-	*637	*559	-	*525	-	-
Stage 2	-	-	-	-	-	-	*602	*455	-	*544	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	12.8	13.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	576	* 1034	-	-	* 1024	-	-	249	691
HCM Lane V/C Ratio	0.201	0.012	-	-	0.066	-	-	0.018	0.011
HCM Control Delay (s)	12.8	8.5	-	-	8.8	-	-	19.7	10.3
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	545	62	460	62	69	454	1791	67	1729	539
Future Volume (vph)	545	62	460	62	69	454	1791	67	1729	539
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	35.0	35.0	23.0	17.0	17.0	23.0	64.0	14.0	55.0	35.0
Total Split (%)	26.9%	26.9%	17.7%	13.1%	13.1%	17.7%	49.2%	10.8%	42.3%	26.9%
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)	28.6	28.6	47.9	10.5	10.5	19.3	62.7	8.4	49.3	83.6
Actuated g/C Ratio	0.22	0.22	0.37	0.08	0.08	0.15	0.48	0.06	0.38	0.64
v/c Ratio	0.90	0.91	0.81	0.48	0.48	0.99	0.84	0.65	1.00	0.56
Control Delay	61.7	63.5	30.2	68.8	31.7	92.2	34.3	84.6	59.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.7	63.5	30.2	68.8	31.7	92.2	34.3	84.6	59.9	10.7
LOS	E	E	C	E	C	F	C	F	E	B
Approach Delay		48.6			42.6		45.7		49.3	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 47.5	Intersection LOS: D
Intersection Capacity Utilization 90.0%	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)	545	62	460	62	69	80	454	1791	50	67	1729	539
Future Volume (veh/h)	545	62	460	62	69	80	454	1791	50	67	1729	539
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	655	0	289	69	77	67	504	1990	45	74	1921	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	722	0	535	137	146	114	465	2378	54	94	1936	922
Arrive On Green	0.20	0.00	0.20	0.08	0.08	0.08	0.13	0.46	0.46	0.05	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	655	0	289	69	72	72	504	1318	717	74	1921	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	23.3	0.0	19.2	4.8	5.1	5.7	17.5	44.1	44.2	5.3	48.7	14.4
Cycle Q Clear(g_c), s	23.3	0.0	19.2	4.8	5.1	5.7	17.5	44.1	44.2	5.3	48.7	14.4
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	722	0	535	137	137	123	465	1575	856	94	1936	922
V/C Ratio(X)	0.91	0.00	0.54	0.50	0.53	0.59	1.08	0.84	0.84	0.79	0.99	0.36
Avail Cap(c_a), veh/h	808	0	573	156	156	141	465	1575	856	119	1936	922
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	50.6	0.0	34.9	57.6	57.7	58.0	56.2	30.6	30.6	60.9	40.2	14.4
Incr Delay (d2), s/veh	12.2	0.0	0.3	1.1	1.2	2.2	66.1	3.9	7.0	18.3	18.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	7.5	2.2	2.3	2.4	11.9	18.6	21.0	2.9	23.4	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	35.3	58.7	58.9	60.2	122.3	34.5	37.6	79.1	58.8	15.5
LnGrp LOS	E	A	D	E	E	E	F	C	D	E	E	B
Approach Vol, veh/h		944			213			2539			2327	
Approach Delay, s/veh		54.4			59.3			52.8			53.3	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	65.9		31.9	23.0	55.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 8.7	58.3		29.5	17.5	49.3		11.4
Max Q Clear Time (g_c+I1), s	7.3	46.2		25.3	19.5	50.7		7.7
Green Ext Time (p_c), s	0.0	3.0		1.0	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	53.5
HCM 6th LOS	D

Notes

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

APPENDIX J

2026 PEAK HOUR ANALYSIS SCENARIO 2

CivTech

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1044	24	973	6	38	80	100
Future Volume (vph)	246	1044	24	973	6	38	80	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.47	0.13	0.62	0.11	0.22	0.31	0.84
Control Delay	25.4	11.3	37.6	42.1	46.5	33.4	40.5	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	11.3	37.6	42.1	46.5	33.4	40.5	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		13.9		42.0		34.7		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.9	Intersection LOS: C
Intersection Capacity Utilization 76.3%	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)	246	1044	33	24	973	46	6	38	20	80	100	257
Future Volume (veh/h)	246	1044	33	24	973	46	6	38	20	80	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1160	26	27	1081	34	7	42	13	89	111	175
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	479	2685	60	320	2255	71	86	168	52	236	128	202
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.12	0.12	0.12	0.04	0.19	0.19
Sat Flow, veh/h	1688	3740	84	448	3702	116	1036	1442	446	1688	688	1085
Grp Volume(v), veh/h	273	580	606	27	546	569	7	0	55	89	0	286
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	448	1870	1948	1036	0	1888	1688	0	1773
Q Serve(g_s), s	7.5	16.5	16.5	0.3	0.0	0.0	0.9	0.0	3.4	5.0	0.0	20.3
Cycle Q Clear(g_c), s	7.5	16.5	16.5	2.6	0.0	0.0	12.2	0.0	3.4	5.0	0.0	20.3
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.24	1.00		0.61
Lane Grp Cap(c), veh/h	479	1343	1403	320	1139	1187	86	0	220	236	0	330
V/C Ratio(X)	0.57	0.43	0.43	0.08	0.48	0.48	0.08	0.00	0.25	0.38	0.00	0.87
Avail Cap(c_a), veh/h	646	1343	1403	320	1139	1187	264	0	545	236	0	634
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	7.5	7.5	0.0	0.0	0.0	61.6	0.0	52.2	48.2	0.0	51.4
Incr Delay (d2), s/veh	1.1	1.0	1.0	0.4	1.2	1.1	0.4	0.0	0.6	1.0	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.5	6.8	0.0	0.4	0.4	0.2	0.0	1.7	0.4	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	8.5	8.5	0.5	1.2	1.1	62.1	0.0	52.8	49.2	0.0	58.3
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1459			1142			62			375	
Approach Delay, s/veh		8.4			1.1			53.9			56.1	
Approach LOS		A			A			D			E	

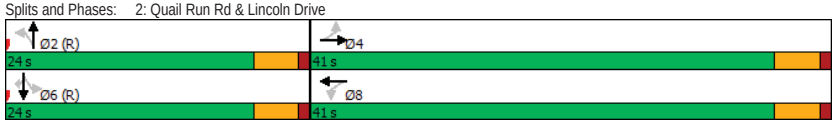
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.1	85.2	9.0	21.7		99.3		30.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.5	4.6	7.0	14.2		18.5		22.3
Green Ext Time (p_c), s	0.7	10.1	0.0	0.2		10.9		1.8

Intersection Summary		
HCM 6th Ctrl Delay		12.5
HCM 6th LOS		B

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	115	1101	2	937	0	26	0	66
Future Volume (vph)	115	1101	2	937	0	26	0	66
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases		4		8	2		6	
Permitted Phases	4		8			6		6
Detector Phase	4	4	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.6	32.6	32.6	32.6	23.4		23.4	23.4
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.36		0.36	0.36
v/c Ratio	0.73	0.69	0.02	0.59	0.01		0.06	0.12
Control Delay	47.3	20.5	9.5	14.7	0.0		16.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	47.3	20.5	9.5	14.7	0.0		16.3	5.5
LOS	D	C	A	B	A		B	A
Approach Delay		23.1		14.7			8.6	
Approach LOS		C		B			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 54.1%	ICU Level of Service A
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	1101	3	2	937	12	0	0	8	26	0	66
Future Volume (veh/h)	115	1101	3	2	937	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	1223	3	2	1041	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	290	1556	4	242	1538	19	0	0	687	714	0	687
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.00	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	535	3637	9	455	3594	45	0	0	1585	1390	0	1585
Grp Volume(v), veh/h	128	598	628	2	515	539	0	0	9	29	0	73
Grp Sat Flow(s),veh/h/ln	535	1777	1869	455	1777	1862	0	0	1585	1390	0	1585
Q Serve(g_s), s	9.8	9.6	9.6	0.1	6.5	6.5	0.0	0.0	0.2	0.8	0.0	1.8
Cycle Q Clear(g_c), s	15.9	9.6	9.6	9.2	6.5	6.5	0.0	0.0	0.2	1.1	0.0	1.8
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	290	760	800	242	760	797	0	0	687	714	0	687
V/C Ratio(X)	0.44	0.79	0.79	0.01	0.68	0.68	0.00	0.00	0.01	0.04	0.00	0.11
Avail Cap(c_a), veh/h	362	998	1049	303	998	1046	0	0	687	714	0	687
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.4	3.4	5.3	3.1	3.1	0.0	0.0	10.5	10.8	0.0	10.9
Incr Delay (d2), s/veh	0.9	2.8	2.7	0.0	1.2	1.1	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	0.4	1.8	1.9	0.0	1.3	1.3	0.0	0.0	0.1	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	6.2	6.0	5.3	4.3	4.3	0.0	0.0	10.5	10.9	0.0	11.2
LnGrp LOS	A	A	A	A	A	A	A	A	B	B	A	B
Approach Vol, veh/h		1354			1056			9			102	
Approach Delay, s/veh		6.2			4.3			10.5			11.2	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.2	17.9	3.8	11.2
Green Ext Time (p_c), s	0.0	9.7	0.3	7.8

Intersection Summary	
HCM 6th Ctrl Delay	5.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1131	0	0	947	0	0
Future Vol, veh/h	1131	0	0	947	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	-	-	-	-	-	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	1257	0	0	1052	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	629
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*636
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*636
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	15	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	6	-	-	-	-	-
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	1004	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1004	1073	-	-	1611	-
Mov Cap-2 Maneuver	1004	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1611	-
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	1131	4	0	943	0	3
Future Vol, veh/h	1131	4	0	943	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	1257	4	0	1048	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1261	0	1783	631
Stage 1	-	-	-	-	1259	-
Stage 2	-	-	-	-	524	-
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	-	-	921	-	*73	*636
Stage 1	-	-	-	-	*576	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	921	-	*73	*636
Mov Cap-2 Maneuver	-	-	-	-	*312	-
Stage 1	-	-	-	-	*576	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	921	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1130	2	5	943	0	3
Future Vol, veh/h	1130	2	5	943	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1256	2	6	1048	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1258	0	1793	629
Stage 1	-	-	-	-	1257	-
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	-	-	925	-	*72	*636
Stage 1	-	-	-	-	*579	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	925	-	*72	*636
Mov Cap-2 Maneuver	-	-	-	-	*310	-
Stage 1	-	-	-	-	*575	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	925	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1067	34	18	877	10	50	0	29	5	0	12
Future Vol, veh/h	26	1067	34	18	877	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1186	38	20	974	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	985	0	0	1224	0	0	1790	2288	612	1671	-	493
Stage 1	-	-	-	-	-	-	1263	1263	-	1020	-	-
Stage 2	-	-	-	-	-	-	527	1025	-	651	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	*952	-	-	*~ 51	39	*636	*63	0	*715
Stage 1	-	-	-	-	-	-	*567	504	-	*674	0	-
Stage 2	-	-	-	-	-	-	*674	586	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	*952	-	-	*~ 48	37	*636	*58	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*288	252	-	*295	-	-
Stage 1	-	-	-	-	-	-	*552	490	-	*656	-	-
Stage 2	-	-	-	-	-	-	*648	574	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.2	12.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	360	* 1070	-	-	* 952	-	-	295	715
HCM Lane V/C Ratio	0.244	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.2	8.5	-	-	8.9	-	-	17.4	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1044	53	43	891	8	6	0	41	4	1	12
Future Vol, veh/h	3	1044	53	43	891	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1160	59	48	990	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	999	0	0	1219	0	0	1788	2291	610	1677	2316	500
Stage 1	-	-	-	-	-	-	1196	1196	-	1091	1091	-
Stage 2	-	-	-	-	-	-	592	1095	-	586	1225	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	*1070	-	-	879	-	-	*51	39	*684	*62	37	*715
Stage 1	-	-	-	-	-	-	*533	490	-	*584	531	-
Stage 2	-	-	-	-	-	-	*674	528	-	*645	468	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	879	-	-	*48	37	*684	*55	35	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*283	242	-	*284	224	-
Stage 1	-	-	-	-	-	-	*531	489	-	*582	502	-
Stage 2	-	-	-	-	-	-	*624	499	-	*601	467	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	579	* 1070	-	-	879	-	-	284	715
HCM Lane V/C Ratio	0.09	0.003	-	-	0.054	-	-	0.016	0.019
HCM Control Delay (s)	11.8	8.4	-	-	9.3	-	-	17.9	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	491	42	502	41	40	304	1453	56	1845	640
Future Volume (vph)	491	42	502	41	40	304	1453	56	1845	640
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	24.4	24.4	45.0	7.4	7.4	20.7	70.5	7.7	55.3	85.3
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.43	0.66
v/c Ratio	0.94	0.94	0.94	0.46	0.43	0.62	0.60	0.60	0.95	0.65
Control Delay	73.0	72.3	52.6	74.6	33.9	55.6	22.0	82.1	47.2	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	72.3	52.6	74.6	33.9	55.6	22.0	82.1	47.2	13.2
LOS	E	E	D	E	C	E	C	F	D	B
Approach Delay		63.0			46.5		27.7		39.4	
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: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 40.2	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)	491	42	502	41	40	52	304	1453	43	56	1845	640
Future Volume (veh/h)	491	42	502	41	40	52	304	1453	43	56	1845	640
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	580	0	314	46	44	41	338	1614	31	62	2050	433
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	669	0	480	101	105	87	398	2407	46	79	2015	923
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.12	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1851	1522	3456	5158	99	1781	5106	1585
Grp Volume(v), veh/h	580	0	314	46	42	43	338	1065	580	62	2050	433
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	20.5	0.0	22.4	3.2	3.0	3.4	12.5	31.6	31.6	4.5	51.3	20.4
Cycle Q Clear(g_c), s	20.5	0.0	22.4	3.2	3.0	3.4	12.5	31.6	31.6	4.5	51.3	20.4
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	669	0	480	101	101	91	398	1589	865	79	2015	923
V/C Ratio(X)	0.87	0.00	0.65	0.45	0.42	0.47	0.85	0.67	0.67	0.78	1.02	0.47
Avail Cap(c_a), veh/h	671	0	481	101	101	91	651	1762	959	119	2015	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	39.4	59.3	59.2	59.4	56.4	26.9	26.9	61.5	39.3	15.6
Incr Delay (d2), s/veh	11.1	0.0	2.5	1.2	1.0	1.4	2.8	0.6	1.1	8.7	24.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	9.1	1.5	1.4	1.4	5.6	12.8	14.1	2.2	25.6	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	0.0	41.9	60.5	60.2	60.8	59.2	27.5	28.1	70.2	63.9	17.3
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	F	B
Approach Vol, veh/h		894			131			1983			2545	
Approach Delay, s/veh		55.1			60.5			33.1			56.1	
Approach LOS		E			E			C			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	66.4		29.9	20.5	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	6.5	33.6		24.4	14.5	53.3		5.4
Green Ext Time (p_c), s	0.0	2.5		0.0	0.5	0.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	47.8
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	271	951	22	1006	8	69	66	53
Future Volume (vph)	271	951	22	1006	8	69	66	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	75.1	75.1	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.58	0.58	0.10	0.10	0.16	0.15
v/c Ratio	0.68	0.41	0.09	0.59	0.12	0.53	0.40	0.72
Control Delay	18.9	6.5	32.6	41.2	55.8	61.0	52.3	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	6.5	32.6	41.2	55.8	61.0	52.3	38.3
LOS	B	A	C	D	E	E	D	D
Approach Delay		9.2		41.1		60.5		41.5
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.1	Intersection LOS: C
Intersection Capacity Utilization 72.0%	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)	271	951	32	22	1006	64	8	69	18	66	53	172
Future Volume (veh/h)	271	951	32	22	1006	64	8	69	18	66	53	172
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	301	1057	25	24	1118	49	9	77	11	73	59	135
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	503	2712	64	400	2292	100	86	125	18	151	70	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3548	84	521	3468	152	1189	1601	229	1781	506	1157
Grp Volume(v), veh/h	301	529	553	24	573	594	9	0	88	73	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	521	1777	1843	1189	0	1829	1781	0	1662
Q Serve(g_s), s	6.6	13.0	13.0	0.0	0.0	0.0	1.0	0.0	6.1	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.0	13.0	0.0	0.0	0.0	7.7	0.0	6.1	4.0	0.0	14.8
Prop In Lane	1.00		0.05	1.00		0.08	1.00		0.13	1.00		0.70
Lane Grp Cap(c), veh/h	503	1358	1418	400	1174	1218	86	0	142	151	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.06	0.49	0.49	0.10	0.00	0.62	0.48	0.00	0.84
Avail Cap(c_a), veh/h	743	1358	1418	400	1174	1218	245	0	387	151	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.1	5.1	0.0	0.0	0.0	62.2	0.0	58.1	53.6	0.0	54.5
Incr Delay (d2), s/veh	1.1	0.8	0.8	0.2	1.1	1.0	0.5	0.0	4.3	2.4	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.0	0.5	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	5.9	0.2	1.1	1.0	62.7	0.0	62.4	56.0	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1383			1191			97			267	
Approach Delay, s/veh		6.0			1.0			62.4			60.6	
Approach LOS		A			A			E			E	

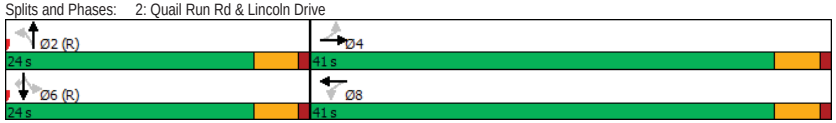
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.0		16.8				
Green Ext Time (p_c), s	0.8	11.1	0.0	0.4		9.5		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	85	968	996	0	14	0	93
Future Volume (vph)	85	968	996	0	14	0	93
Turn Type	Perm	NA	NA	NA	Perm	NA	Perm
Protected Phases		4	8	2		6	
Permitted Phases	4				6		6
Detector Phase	4	4	8	2	6	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.6	30.6	30.6	25.4		25.4	25.4
Actuated g/C Ratio	0.47	0.47	0.47	0.39		0.39	0.39
v/c Ratio	0.73	0.65	0.68	0.00		0.03	0.15
Control Delay	52.3	17.9	17.9	0.0		15.4	7.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	52.3	17.9	17.9	0.0		15.4	7.0
LOS	D	B	B	A		B	A
Approach Delay		20.7	17.9			8.1	
Approach LOS		C	B			A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
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	968	1	0	996	25	0	0	2	14	0	93
Future Volume (veh/h)	85	968	1	0	996	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	1076	1	0	1107	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	263	1523	1	111	1481	37	0	0	703	729	0	703
Arrive On Green	0.84	0.84	0.84	0.00	0.84	0.84	0.00	0.00	0.44	0.44	0.00	0.44
Sat Flow, veh/h	496	3643	3	524	3542	90	0	0	1585	1394	0	1585
Grp Volume(v), veh/h	94	525	552	0	555	580	0	0	2	16	0	103
Grp Sat Flow(s),veh/h/ln	496	1777	1870	524	1777	1854	0	0	1585	1394	0	1585
Q Serve(g_s), s	7.7	7.7	7.7	0.0	8.9	8.9	0.0	0.0	0.0	0.4	0.0	2.5
Cycle Q Clear(g_c), s	14.9	7.7	7.7	0.0	8.9	8.9	0.0	0.0	0.0	0.8	0.0	2.5
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	263	743	782	111	743	775	0	0	703	729	0	703
V/C Ratio(X)	0.36	0.71	0.71	0.00	0.75	0.75	0.00	0.00	0.00	0.02	0.00	0.15
Avail Cap(c_a), veh/h	334	998	1050	186	998	1041	0	0	703	729	0	703
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.6	3.7	3.7	0.0	3.8	3.8	0.0	0.0	10.1	10.4	0.0	10.8
Incr Delay (d2), s/veh	0.8	1.4	1.3	0.0	2.1	2.1	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	0.3	1.5	1.6	0.0	1.8	1.8	0.0	0.0	0.0	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	5.1	5.0	0.0	6.0	5.9	0.0	0.0	10.1	10.5	0.0	11.2
LnGrp LOS	A	A	A	A	A	A	A	A	B	B	A	B
Approach Vol, veh/h		1171			1135			2			119	
Approach Delay, s/veh		5.2			5.9			10.1			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.3	30.7	34.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.0	16.9	4.5	10.9
Green Ext Time (p_c), s	0.0	8.4	0.3	8.6

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	984	0	0	1020	0	0
Future Vol, veh/h	984	0	0	1020	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	-	-	-	-	-	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	1093	0	0	1133	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	547
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*684
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*684
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

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

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	1	-	-	-	-	-
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	1019	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1019	1082	-	-	1620	-
Mov Cap-2 Maneuver	1019	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1620	-
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	985	0	0	1020	2	0
Future Vol, veh/h	985	0	0	1020	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	1094	0	0	1133	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1094	0	1661	547
Stage 1	-	-	-	-	1094	-
Stage 2	-	-	-	-	567	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	*1024	-	*88	*684
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1024	-	*88	*684
Mov Cap-2 Maneuver	-	-	-	-	*331	-
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-

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

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

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	985	0	0	1019	2	3
Future Vol, veh/h	985	0	0	1019	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1094	0	0	1132	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1094	0	1660	547
Stage 1	-	-	-	-	1094	-
Stage 2	-	-	-	-	566	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	*1024	-	*88	*684
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1024	-	*88	*684
Mov Cap-2 Maneuver	-	-	-	-	*331	-
Stage 1	-	-	-	-	*646	-
Stage 2	-	-	-	-	*630	-

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

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

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	920	41	6	914	9	66	3	47	7	0	34
Future Vol, veh/h	7	920	41	6	914	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1022	46	7	1016	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1026	0	0	1068	0	0	1583	2101	534	1564	-	513
Stage 1	-	-	-	-	-	-	1061	1061	-	1035	-	-
Stage 2	-	-	-	-	-	-	522	1040	-	529	-	-
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	1061	-	-	972	-	-	*~ 73	51	*732	*75	0	*715
Stage 1	-	-	-	-	-	-	*580	531	-	*653	0	-
Stage 2	-	-	-	-	-	-	*674	573	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1061	-	-	972	-	-	*~ 68	50	*732	*68	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*305	271	-	*321	-	-
Stage 1	-	-	-	-	-	-	*575	527	-	*648	-	-
Stage 2	-	-	-	-	-	-	*634	569	-	*632	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	398	1061	-	-	972	-	-	321	715
HCM Lane V/C Ratio	0.324	0.007	-	-	0.007	-	-	0.024	0.053
HCM Control Delay (s)	18.3	8.4	-	-	8.7	-	-	16.5	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	913	53	61	912	8	14	1	89	4	0	7
Future Vol, veh/h	11	913	53	61	912	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1014	59	68	1013	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1022	0	0	1073	0	0	1711	2226	537	1686	-	511
Stage 1	-	-	-	-	-	-	1068	1068	-	1154	-	-
Stage 2	-	-	-	-	-	-	643	1158	-	532	-	-
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	1066	-	-	966	-	-	*59	43	*732	*61	0	*715
Stage 1	-	-	-	-	-	-	*571	525	-	*514	0	-
Stage 2	-	-	-	-	-	-	*674	480	-	*691	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1066	-	-	966	-	-	*55	40	*732	*49	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*292	234	-	*257	-	-
Stage 1	-	-	-	-	-	-	*565	520	-	*508	-	-
Stage 2	-	-	-	-	-	-	*620	446	-	*589	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.5	13.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	1066	-	-	966	-	-	257	715
HCM Lane V/C Ratio	0.193	0.011	-	-	0.07	-	-	0.017	0.011
HCM Control Delay (s)	12.5	8.4	-	-	9	-	-	19.3	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	532	62	449	62	69	442	1791	67	1729	525
Future Volume (vph)	532	62	449	62	69	442	1791	67	1729	525
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	46.4	7.4	7.4	21.9	70.2	8.1	53.9	84.1
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	1.05	1.03	0.82	0.69	0.62	0.85	0.75	0.68	0.91	0.55
Control Delay	100.1	94.7	39.0	93.0	38.8	66.6	25.9	88.5	43.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.1	94.7	39.0	93.0	38.8	66.6	25.9	88.5	43.9	12.5
LOS	F	F	D	F	D	E	C	F	D	B
Approach Delay		72.3			54.7		33.8		38.0	
Approach LOS		E			D		C		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 43.1	Intersection LOS: D
Intersection Capacity Utilization 87.1%	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)	532	62	449	62	69	80	442	1791	50	67	1729	525
Future Volume (veh/h)	532	62	449	62	69	80	442	1791	50	67	1729	525
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	640	0	277	69	77	67	491	1990	39	74	1921	316
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	550	101	108	85	548	2588	51	94	2015	924
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.16	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	640	0	277	69	72	72	491	1313	716	74	1921	316
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	23.1	0.0	18.0	4.9	5.2	5.8	18.1	40.7	40.8	5.3	47.5	13.5
Cycle Q Clear(g_c), s	23.1	0.0	18.0	4.9	5.2	5.8	18.1	40.7	40.8	5.3	47.5	13.5
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	550	101	101	91	548	1709	930	94	2015	924
V/C Ratio(X)	0.95	0.00	0.50	0.68	0.71	0.79	0.90	0.77	0.77	0.79	0.95	0.34
Avail Cap(c_a), veh/h	671	0	550	101	101	91	651	1762	959	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	0.0	33.6	60.1	60.2	60.5	53.6	26.2	26.3	60.9	38.2	14.1
Incr Delay (d2), s/veh	23.6	0.0	0.3	14.2	17.8	34.0	12.3	1.8	3.3	18.3	11.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	0.0	7.0	2.6	2.8	3.2	8.8	16.6	18.5	2.9	21.6	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	0.0	33.9	74.3	78.1	94.5	65.9	28.1	29.6	79.1	49.9	15.1
LnGrp LOS	E	A	C	E	E	F	E	C	C	E	D	B
Approach Vol, veh/h		917			213			2520			2311	
Approach Delay, s/veh		63.1			82.4			35.9			46.1	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	71.0		30.0	26.1	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	42.8		25.1	20.1	49.5		7.8
Green Ext Time (p_c), s	0.0	3.3		0.0	0.5	1.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.7
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1052	25	978	6	38	82	100
Future Volume (vph)	246	1052	25	978	6	38	82	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.48	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	38.2	42.3	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	38.2	42.3	46.5	32.9	40.6	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		14.0		42.2		34.3		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.0	Intersection LOS: C
Intersection Capacity Utilization 76.6%	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)	246	1052	33	25	978	47	6	38	21	82	100	257
Future Volume (veh/h)	246	1052	33	25	978	47	6	38	21	82	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1169	26	28	1087	35	7	42	14	91	111	175
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	477	2686	60	317	2253	73	86	165	55	235	128	202
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.12	0.12	0.12	0.04	0.19	0.19
Sat Flow, veh/h	1688	3741	83	444	3699	119	1036	1413	471	1688	688	1085
Grp Volume(v), veh/h	273	584	611	28	550	572	7	0	56	91	0	286
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	444	1870	1947	1036	0	1884	1688	0	1773
Q Serve(g_s), s	7.5	16.7	16.7	0.3	0.0	0.0	0.9	0.0	3.5	5.0	0.0	20.3
Cycle Q Clear(g_c), s	7.5	16.7	16.7	2.8	0.0	0.0	12.2	0.0	3.5	5.0	0.0	20.3
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.61
Lane Grp Cap(c), veh/h	477	1343	1403	317	1139	1186	86	0	220	235	0	330
V/C Ratio(X)	0.57	0.44	0.44	0.09	0.48	0.48	0.08	0.00	0.25	0.39	0.00	0.87
Avail Cap(c_a), veh/h	644	1343	1403	317	1139	1186	264	0	543	235	0	634
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	7.5	7.5	0.0	0.0	0.0	61.6	0.0	52.3	48.3	0.0	51.4
Incr Delay (d2), s/veh	1.1	1.0	1.0	0.4	1.2	1.1	0.4	0.0	0.6	1.0	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.6	6.9	0.0	0.4	0.4	0.2	0.0	1.7	0.5	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	8.6	8.5	0.5	1.2	1.1	62.1	0.0	52.9	49.4	0.0	58.3
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1468			1150			63			377	
Approach Delay, s/veh		8.4			1.1			53.9			56.1	
Approach LOS		A			A			D			E	

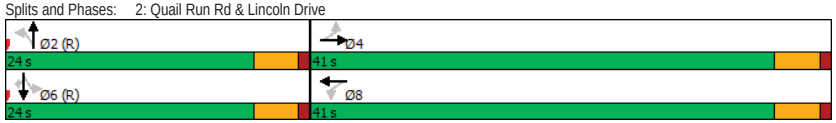
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.1	85.2	9.0	21.7		99.3		30.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.5	4.8	7.0	14.2		18.7		22.3
Green Ext Time (p_c), s	0.7	10.2	0.0	0.2		11.0		1.8

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	115	1106	22	938	6	0	26	0	66
Future Volume (vph)	115	1106	22	938	6	0	26	0	66
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.7	32.7	32.7	32.7		23.3		23.3	23.3
Actuated g/C Ratio	0.50	0.50	0.50	0.50		0.36		0.36	0.36
v/c Ratio	0.72	0.69	0.20	0.59		0.03		0.06	0.12
Control Delay	46.8	20.5	12.3	14.2		6.5		16.4	5.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	46.8	20.5	12.3	14.2		6.5		16.4	5.5
LOS	D	C	B	B		A		B	A
Approach Delay		23.0		14.1		6.5		8.6	
Approach LOS		C		B		A		A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 52.8%	ICU Level of Service A
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	1106	8	22	938	12	6	0	11	26	0	66
Future Volume (veh/h)	115	1106	8	22	938	12	6	0	11	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	1229	9	24	1042	13	7	0	12	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	290	1550	11	239	1541	19	283	33	411	721	0	686
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	535	3616	26	450	3594	45	479	75	950	1409	0	1585
Grp Volume(v), veh/h	128	604	634	24	515	540	19	0	0	29	0	73
Grp Sat Flow(s),veh/h/ln	535	1777	1866	450	1777	1862	1503	0	0	1409	0	1585
Q Serve(g_s), s	9.8	9.8	9.8	1.7	6.4	6.4	0.0	0.0	0.0	0.1	0.0	1.8
Cycle Q Clear(g_c), s	15.8	9.8	9.8	11.0	6.4	6.4	0.4	0.0	0.0	0.6	0.0	1.8
Prop In Lane	1.00		0.01	1.00		0.02	0.37		0.63	1.00		1.00
Lane Grp Cap(c), veh/h	290	762	800	239	762	798	726	0	0	721	0	686
V/C Ratio(X)	0.44	0.79	0.79	0.10	0.68	0.68	0.03	0.00	0.00	0.04	0.00	0.11
Avail Cap(c_a), veh/h	361	998	1048	299	998	1046	726	0	0	721	0	686
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)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.3	3.3	5.7	3.1	3.1	10.6	0.0	0.0	10.6	0.0	11.0
Incr Delay (d2), s/veh	0.9	2.9	2.8	0.2	1.2	1.1	0.1	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	0.4	1.8	1.9	0.1	1.3	1.3	0.2	0.0	0.0	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	6.3	6.2	5.9	4.3	4.2	10.6	0.0	0.0	10.7	0.0	11.3
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		1366			1079			19			102	
Approach Delay, s/veh		6.3			4.3			10.6			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	17.8	3.8	13.0
Green Ext Time (p_c), s	0.0	9.8	0.3	8.0

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1134	5	0	968	0	12
Future Vol, veh/h	1134	5	0	968	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	1260	6	0	1076	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	633
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*636
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*636
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	636	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	8	0	25	5
Future Vol, veh/h	0	9	8	0	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	9	0	28	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	71	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	62	-	-	-	-	-
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	933	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	917	1073	-	-	1611	-
Mov Cap-2 Maneuver	917	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611	-
HCM Lane V/C Ratio	-	-	0.009	0.017	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1146	4	0	964	0	3
Future Vol, veh/h	1146	4	0	964	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	1273	4	0	1071	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1277	0	1811	639
Stage 1	-	-	-	-	1275	-
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	-	-	900	-	*70	*636
Stage 1	-	-	-	-	*559	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	900	-	*70	*636
Mov Cap-2 Maneuver	-	-	-	-	*306	-
Stage 1	-	-	-	-	*559	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	900	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection						
Int Delay, s/veh	0					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1145	2	5	964	0	3
Future Vol, veh/h	1145	2	5	964	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1272	2	6	1071	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1274	0	1821	637
Stage 1	-	-	-	-	1273	-
Stage 2	-	-	-	-	548	-
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	-	-	904	-	*69	*636
Stage 1	-	-	-	-	*561	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	904	-	*69	*636
Mov Cap-2 Maneuver	-	-	-	-	*304	-
Stage 1	-	-	-	-	*557	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	904	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1082	34	18	898	10	50	0	29	5	0	12
Future Vol, veh/h	26	1082	34	18	898	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1202	38	20	998	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1009	0	0	1240	0	0	1818	2328	620	1703	-	505
Stage 1	-	-	-	-	-	-	1279	1279	-	1044	-	-
Stage 2	-	-	-	-	-	-	539	1049	-	659	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	949	-	-	*~ 49	37	*636	*59	0	*715
Stage 1	-	-	-	-	-	-	*547	491	-	*641	0	-
Stage 2	-	-	-	-	-	-	*674	565	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	949	-	-	*~ 46	35	*636	*54	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*282	244	-	*287	-	-
Stage 1	-	-	-	-	-	-	*532	477	-	*624	-	-
Stage 2	-	-	-	-	-	-	*648	554	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.5	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	354	* 1070	-	-	949	-	-	287	715
HCM Lane V/C Ratio	0.248	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.5	8.5	-	-	8.9	-	-	17.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1059	53	43	912	8	6	0	41	4	1	12
Future Vol, veh/h	3	1059	53	43	912	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1177	59	48	1013	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1022	0	0	1236	0	0	1816	2331	618	1709	2356	511
Stage 1	-	-	-	-	-	-	1213	1213	-	1114	1114	-
Stage 2	-	-	-	-	-	-	603	1118	-	595	1242	-
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	1066	-	-	*952	-	-	*49	*36	*636	*59	35	*715
Stage 1	-	-	-	-	-	-	*600	*526	-	*557	513	-
Stage 2	-	-	-	-	-	-	*674	*510	-	*600	522	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1066	-	-	*952	-	-	*46	*34	*636	*53	33	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*300	*244	-	*266	234	-
Stage 1	-	-	-	-	-	-	*598	*524	-	*555	487	-
Stage 2	-	-	-	-	-	-	*627	*484	-	*555	521	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.1	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	556	1066	-	-	* 952	-	-	266	715
HCM Lane V/C Ratio	0.094	0.003	-	-	0.05	-	-	0.017	0.019
HCM Control Delay (s)	12.1	8.4	-	-	9	-	-	18.8	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.1	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Future Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	26.0	16.0	16.0	26.0	66.0	15.0	55.0	33.0
Total Split (%)	25.4%	25.4%	20.0%	12.3%	12.3%	20.0%	50.8%	11.5%	42.3%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	26.3	26.3	44.2	10.1	10.1	17.9	65.4	8.2	53.4	85.4
Actuated g/C Ratio	0.20	0.20	0.34	0.08	0.08	0.14	0.50	0.06	0.41	0.66
v/c Ratio	0.88	0.88	0.94	0.34	0.34	0.74	0.65	0.55	0.98	0.64
Control Delay	60.1	60.2	50.0	63.9	30.1	63.3	26.5	77.3	54.1	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	60.1	60.2	50.0	63.9	30.1	63.3	26.5	77.3	54.1	11.4
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		55.2			40.6		32.9		43.7	
Approach LOS		E			D		C		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 89.4%	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)	499	42	508	41	40	52	313	1453	43	56	1845	651
Future Volume (veh/h)	499	42	508	41	40	52	313	1453	43	56	1845	651
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	588	0	286	46	44	36	348	1614	31	62	2050	390
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	656	0	478	137	151	110	405	2338	45	79	1936	893
Arrive On Green	0.18	0.00	0.18	0.08	0.08	0.08	0.12	0.45	0.45	0.04	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1957	1432	3456	5158	99	1781	5106	1585
Grp Volume(v), veh/h	588	0	286	46	39	41	348	1065	580	62	2050	390
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1613	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.0	0.0	20.0	3.2	2.7	3.1	12.9	32.4	32.4	4.5	49.3	18.5
Cycle Q Clear(g_c), s	21.0	0.0	20.0	3.2	2.7	3.1	12.9	32.4	32.4	4.5	49.3	18.5
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	656	0	478	137	137	124	405	1543	840	79	1936	893
V/C Ratio(X)	0.90	0.00	0.60	0.34	0.29	0.33	0.86	0.69	0.69	0.78	1.06	0.44
Avail Cap(c_a), veh/h	754	0	521	143	142	129	545	1579	859	133	1936	893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	0.0	38.7	56.9	56.6	56.8	56.3	28.3	28.3	61.5	40.3	16.4
Incr Delay (d2), s/veh	11.4	0.0	1.0	0.5	0.4	0.6	8.1	1.0	1.9	6.1	38.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	7.9	1.5	1.2	1.3	6.1	13.3	14.7	2.2	27.1	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.2	0.0	39.7	57.4	57.1	57.4	64.4	29.3	30.2	67.5	78.4	18.0
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	F	B
Approach Vol, veh/h		874			126			1993			2502	
Approach Delay, s/veh		55.5			57.3			35.7			68.7	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.1	64.6		29.4	20.7	55.0		15.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 9.7	60.3		27.5	20.5	49.3		10.4
Max Q Clear Time (g_c+I1), s	6.5	34.4		23.0	14.9	51.3		5.2
Green Ext Time (p_c), s	0.0	2.5		1.0	0.4	0.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	54.4
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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	1052	25	978	6	38	82	100
Future Volume (vph)	246	1052	25	978	6	38	82	100
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.0	89.0	64.1	64.1	19.2	19.2	31.0	28.5
Actuated g/C Ratio	0.70	0.68	0.49	0.49	0.15	0.15	0.24	0.22
v/c Ratio	0.69	0.48	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	39.9	43.7	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	39.9	43.7	46.5	32.9	40.6	50.4
LOS	C	B	D	D	D	C	D	D
Approach Delay		14.0		43.6		34.3		48.6
Approach LOS		B		D		C		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 76.6%	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)	246	1052	33	25	978	47	6	38	21	82	100	257
Future Volume (veh/h)	246	1052	33	25	978	47	6	38	21	82	100	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	273	1169	26	28	1087	35	7	42	14	91	111	175
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	477	2686	60	317	2253	73	86	165	55	235	128	202
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.12	0.12	0.12	0.04	0.19	0.19
Sat Flow, veh/h	1688	3741	83	444	3699	119	1036	1413	471	1688	688	1085
Grp Volume(v), veh/h	273	584	611	28	550	572	7	0	56	91	0	286
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	444	1870	1947	1036	0	1884	1688	0	1773
Q Serve(g_s), s	7.5	16.7	16.7	0.3	0.0	0.0	0.9	0.0	3.5	5.0	0.0	20.3
Cycle Q Clear(g_c), s	7.5	16.7	16.7	2.8	0.0	0.0	12.2	0.0	3.5	5.0	0.0	20.3
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.61
Lane Grp Cap(c), veh/h	477	1343	1403	317	1139	1186	86	0	220	235	0	330
V/C Ratio(X)	0.57	0.44	0.44	0.09	0.48	0.48	0.08	0.00	0.25	0.39	0.00	0.87
Avail Cap(c_a), veh/h	644	1343	1403	317	1139	1186	264	0	543	235	0	634
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	7.5	7.5	0.0	0.0	0.0	61.6	0.0	52.3	48.3	0.0	51.4
Incr Delay (d2), s/veh	1.1	1.0	1.0	0.4	1.2	1.1	0.4	0.0	0.6	1.0	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.6	6.9	0.0	0.4	0.4	0.2	0.0	1.7	0.5	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	8.6	8.5	0.5	1.2	1.1	62.1	0.0	52.9	49.4	0.0	58.3
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1468			1150			63			377	
Approach Delay, s/veh		8.4			1.1			53.9			56.1	
Approach LOS		A			A			D			E	

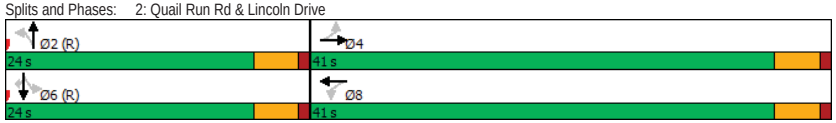
Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	14.1	85.2	9.0	21.7		99.3		30.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5
Max Q Clear Time (g_c+I1), s	9.5	4.8	7.0	14.2		18.7		22.3
Green Ext Time (p_c), s	0.7	10.2	0.0	0.2		11.0		1.8

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	115	1106	22	938	6	0	26	0	66
Future Volume (vph)	115	1106	22	938	6	0	26	0	66
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.7	32.7	32.7	32.7		23.3		23.3	23.3
Actuated g/C Ratio	0.50	0.50	0.50	0.50		0.36		0.36	0.36
v/c Ratio	0.72	0.69	0.20	0.59		0.03		0.06	0.12
Control Delay	46.8	20.5	12.0	14.3		6.5		16.4	5.5
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	46.8	20.5	12.0	14.3		6.5		16.4	5.5
LOS	D	C	B	B		A		B	A
Approach Delay		23.0		14.3		6.5		8.6	
Approach LOS		C		B		A		A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 52.8%	ICU Level of Service A
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	1106	8	22	938	12	6	0	11	26	0	66
Future Volume (veh/h)	115	1106	8	22	938	12	6	0	11	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	1229	9	24	1042	13	7	0	12	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	290	1550	11	239	1541	19	283	33	411	721	0	686
Arrive On Green	0.86	0.86	0.86	0.86	0.86	0.86	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	535	3616	26	450	3594	45	479	75	950	1409	0	1585
Grp Volume(v), veh/h	128	604	634	24	515	540	19	0	0	29	0	73
Grp Sat Flow(s),veh/h/ln	535	1777	1866	450	1777	1862	1503	0	0	1409	0	1585
Q Serve(g_s), s	9.8	9.8	9.8	1.7	6.4	6.4	0.0	0.0	0.0	0.1	0.0	1.8
Cycle Q Clear(g_c), s	15.8	9.8	9.8	11.0	6.4	6.4	0.4	0.0	0.0	0.6	0.0	1.8
Prop In Lane	1.00		0.01	1.00		0.02	0.37		0.63	1.00		1.00
Lane Grp Cap(c), veh/h	290	762	800	239	762	798	726	0	0	721	0	686
V/C Ratio(X)	0.44	0.79	0.79	0.10	0.68	0.68	0.03	0.00	0.00	0.04	0.00	0.11
Avail Cap(c_a), veh/h	361	998	1048	299	998	1046	726	0	0	721	0	686
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)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	3.3	3.3	5.7	3.1	3.1	10.6	0.0	0.0	10.6	0.0	11.0
Incr Delay (d2), s/veh	0.9	2.9	2.8	0.2	1.2	1.1	0.1	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	0.4	1.8	1.9	0.1	1.3	1.3	0.2	0.0	0.0	0.2	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	6.3	6.2	5.9	4.3	4.2	10.6	0.0	0.0	10.7	0.0	11.3
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		1366			1079			19			102	
Approach Delay, s/veh		6.3			4.3			10.6			11.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	32.8	32.2	32.8	32.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	17.8	3.8	13.0
Green Ext Time (p_c), s	0.0	9.8	0.3	8.0

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1134	5	0	968	0	12
Future Vol, veh/h	1134	5	0	968	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	1260	6	0	1076	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	633
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*636
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*636
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	636	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	8	0	25	5
Future Vol, veh/h	0	9	8	0	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	9	0	28	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	71	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	62	-	-	-	-	-
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	933	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	917	1073	-	-	1611	-
Mov Cap-2 Maneuver	917	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611	-
HCM Lane V/C Ratio	-	-	0.009	0.017	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1146	4	0	964	0	3
Future Vol, veh/h	1146	4	0	964	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	1273	4	0	1071	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1277	0	1811	639
Stage 1	-	-	-	-	1275	-
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	-	-	900	-	*70	*636
Stage 1	-	-	-	-	*559	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	900	-	*70	*636
Mov Cap-2 Maneuver	-	-	-	-	*306	-
Stage 1	-	-	-	-	*559	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	900	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1145	2	5	964	0	3
Future Vol, veh/h	1145	2	5	964	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1272	2	6	1071	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1274	0	1821	637
Stage 1	-	-	-	-	1273	-
Stage 2	-	-	-	-	548	-
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	-	-	904	-	*69	*636
Stage 1	-	-	-	-	*561	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	904	-	*69	*636
Mov Cap-2 Maneuver	-	-	-	-	*304	-
Stage 1	-	-	-	-	*557	-
Stage 2	-	-	-	-	*652	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	904	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	1082	34	18	898	10	50	0	29	5	0	12
Future Vol, veh/h	26	1082	34	18	898	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1202	38	20	998	11	56	0	32	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1009	0	0	1240	0	0	1818	2328	620	1703	-	505
Stage 1	-	-	-	-	-	-	1279	1279	-	1044	-	-
Stage 2	-	-	-	-	-	-	539	1049	-	659	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	*1070	-	-	949	-	-	*~ 49	37	*636	*59	0	*715
Stage 1	-	-	-	-	-	-	*547	491	-	*641	0	-
Stage 2	-	-	-	-	-	-	*674	565	-	*600	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1070	-	-	949	-	-	*~ 46	35	*636	*54	-	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*282	244	-	*287	-	-
Stage 1	-	-	-	-	-	-	*532	477	-	*624	-	-
Stage 2	-	-	-	-	-	-	*648	554	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.5	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	354	* 1070	-	-	949	-	-	287	715
HCM Lane V/C Ratio	0.248	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.5	8.5	-	-	8.9	-	-	17.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1059	53	43	912	8	6	0	41	4	1	12
Future Vol, veh/h	3	1059	53	43	912	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1177	59	48	1013	9	7	0	46	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1022	0	0	1236	0	0	1816	2331	618	1709	2356	511
Stage 1	-	-	-	-	-	-	1213	1213	-	1114	1114	-
Stage 2	-	-	-	-	-	-	603	1118	-	595	1242	-
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	1066	-	-	*952	-	-	*49	*36	*636	*59	35	*715
Stage 1	-	-	-	-	-	-	*600	*526	-	*557	513	-
Stage 2	-	-	-	-	-	-	*674	*510	-	*600	522	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	1066	-	-	*952	-	-	*46	*34	*636	*53	33	*715
Mov Cap-2 Maneuver	-	-	-	-	-	-	*300	*244	-	*266	234	-
Stage 1	-	-	-	-	-	-	*598	*524	-	*555	487	-
Stage 2	-	-	-	-	-	-	*627	*484	-	*555	521	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	12.1	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	556	1066	-	-	* 952	-	-	266	715
HCM Lane V/C Ratio	0.094	0.003	-	-	0.05	-	-	0.017	0.019
HCM Control Delay (s)	12.1	8.4	-	-	9	-	-	18.8	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.1	0.1

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Future Volume (vph)	499	42	508	41	40	313	1453	56	1845	651
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	30.7
Total Split (s)	33.0	33.0	23.0	16.0	16.0	23.0	66.0	15.0	58.0	58.0
Total Split (%)	25.4%	25.4%	17.7%	12.3%	12.3%	17.7%	50.8%	11.5%	44.6%	44.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	C-Max
Act Effct Green (s)	25.5	25.5	44.9	10.1	12.1	17.4	64.2	8.2	52.7	52.7
Actuated g/C Ratio	0.20	0.20	0.35	0.08	0.09	0.13	0.49	0.06	0.41	0.41
v/c Ratio	0.91	0.91	0.93	0.34	0.29	0.76	0.66	0.55	1.00	0.77
Control Delay	63.7	63.7	46.9	63.9	29.1	65.5	27.1	77.3	57.3	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.7	63.7	46.9	63.9	29.1	65.5	27.1	77.3	57.3	16.6
LOS	E	E	D	E	C	E	C	E	E	B
Approach Delay		55.6			39.9		33.8		47.4	
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: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 44.3	Intersection LOS: D
Intersection Capacity Utilization 89.4%	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)	499	42	508	41	40	52	313	1453	43	56	1845	651
Future Volume (veh/h)	499	42	508	41	40	52	313	1453	43	56	1845	651
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	588	0	286	46	44	36	348	1614	31	62	2050	367
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	648	0	369	253	151	110	401	2451	47	79	2054	638
Arrive On Green	0.18	0.00	0.12	0.14	0.08	0.08	0.12	0.48	0.48	0.04	0.40	0.40
Sat Flow, veh/h	3563	0	1585	1781	1957	1432	3456	5158	99	1781	5106	1585
Grp Volume(v), veh/h	588	0	286	46	39	41	348	1065	580	62	2050	367
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1613	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.0	0.0	12.8	3.0	2.7	3.1	12.9	31.1	31.1	4.5	52.1	23.4
Cycle Q Clear(g_c), s	21.0	0.0	12.8	3.0	2.7	3.1	12.9	31.1	31.1	4.5	52.1	23.4
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	648	0	369	253	137	124	401	1618	880	79	2054	638
V/C Ratio(X)	0.91	0.00	0.77	0.18	0.29	0.33	0.87	0.66	0.66	0.78	1.00	0.58
Avail Cap(c_a), veh/h	754	0	519	253	142	129	465	1618	880	133	2054	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	0.0	18.5	49.1	56.6	56.8	56.5	26.1	26.1	61.5	38.8	30.2
Incr Delay (d2), s/veh	12.5	0.0	2.8	0.1	0.4	0.6	13.0	0.8	1.5	6.1	19.4	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	10.5	0.0	4.9	1.3	1.2	1.3	6.3	12.6	13.9	2.2	25.0	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.6	0.0	21.3	49.2	57.1	57.4	69.5	26.8	27.5	67.5	58.2	34.0
LnGrp LOS	E	A	C	D	E	E	E	C	C	E	E	C
Approach Vol, veh/h		874			126			1993			2479	
Approach Delay, s/veh		50.4			54.3			34.5			54.8	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	67.5	24.1	20.7	20.6	58.0	29.2	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 9.7	60.3	10.4	27.5	17.5	52.3	27.5	10.4
Max Q Clear Time (g_c+I1), s	6.5	33.1	5.0	14.8	14.9	54.1	23.0	5.1
Green Ext Time (p_c), s	0.0	2.5	0.0	0.4	0.2	0.0	0.6	0.1

Intersection Summary		
HCM 6th Ctrl Delay		46.7
HCM 6th LOS		D

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	271	961	23	1015	8	69	68	53
Future Volume (vph)	271	961	23	1015	8	69	68	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	74.7	74.7	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.57	0.57	0.10	0.10	0.16	0.15
v/c Ratio	0.68	0.41	0.09	0.60	0.12	0.54	0.42	0.72
Control Delay	19.6	6.5	33.1	41.4	55.6	60.9	53.1	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	6.5	33.1	41.4	55.6	60.9	53.1	38.2
LOS	B	A	C	D	E	E	D	D
Approach Delay		9.3		41.2		60.5		41.7
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 72.3%	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)	271	961	32	23	1015	66	8	69	20	68	53	172
Future Volume (veh/h)	271	961	32	23	1015	66	8	69	20	68	53	172
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	301	1068	25	26	1128	51	9	77	13	76	59	135
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	499	2713	64	396	2288	103	86	122	21	149	71	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3549	83	516	3463	156	1189	1560	263	1781	506	1157
Grp Volume(v), veh/h	301	535	558	26	579	600	9	0	90	76	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	516	1777	1842	1189	0	1823	1781	0	1662
Q Serve(g_s), s	6.6	13.2	13.2	0.0	0.0	0.0	1.0	0.0	6.2	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.2	13.2	0.0	0.0	0.0	7.7	0.0	6.2	4.0	0.0	14.8
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	499	1358	1418	396	1174	1217	86	0	142	149	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.07	0.49	0.49	0.10	0.00	0.63	0.51	0.00	0.84
Avail Cap(c_a), veh/h	740	1358	1418	396	1174	1217	245	0	386	149	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.2	5.2	0.0	0.0	0.0	62.2	0.0	58.1	54.0	0.0	54.5
Incr Delay (d2), s/veh	1.2	0.9	0.8	0.2	1.0	1.0	0.5	0.0	4.6	2.8	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.1	0.6	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	6.0	0.2	1.0	1.0	62.7	0.0	62.7	56.8	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1394			1205			99			270	
Approach Delay, s/veh		6.0			1.0			62.7			60.7	
Approach LOS		A			A			E			E	

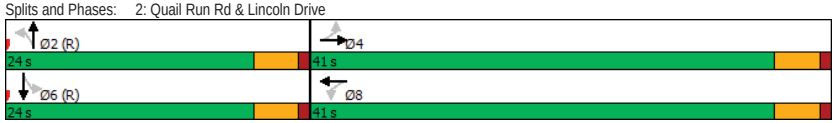
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.2		16.8				
Green Ext Time (p_c), s	0.8	11.3	0.0	0.4		9.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	975	27	998	11	0	14	0
Future Volume (vph)	85	975	27	998	11	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.7	30.7	30.7	30.7		25.3		25.3
Actuated g/C Ratio	0.47	0.47	0.47	0.47		0.39		0.39
v/c Ratio	0.72	0.65	0.21	0.68		0.03		0.18
Control Delay	50.5	17.9	11.8	16.8		6.6		7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	50.5	17.9	11.8	16.8		6.6		7.8
LOS	D	B	B	B		A		A
Approach Delay		20.5		16.7		6.6		7.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 50.8%	ICU Level of Service A
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	975	8	27	998	25	11	0	7	14	0	93
Future Volume (veh/h)	85	975	8	27	998	25	11	0	7	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	1083	9	30	1109	28	12	0	8	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	263	1514	13	276	1485	37	449	21	255	119	38	606
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.44	0.00	0.44	0.44	0.00	0.44
Sat Flow, veh/h	495	3612	30	516	3542	89	815	49	576	127	85	1369
Grp Volume(v), veh/h	94	533	559	30	556	581	20	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	495	1777	1865	516	1777	1854	1440	0	0	1582	0	0
Q Serve(g_s), s	7.7	7.9	7.9	1.5	8.8	8.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.0	7.9	7.9	8.0	8.8	8.8	0.4	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.60		0.40	0.13		0.87
Lane Grp Cap(c), veh/h	263	745	782	276	745	777	725	0	0	762	0	0
V/C Ratio(X)	0.36	0.72	0.72	0.11	0.75	0.75	0.03	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	333	998	1047	349	998	1041	725	0	0	762	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	3.7	3.7	5.0	3.8	3.8	10.2	0.0	0.0	10.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	1.5	1.4	0.2	2.1	2.1	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.6	0.1	1.7	1.8	0.2	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	5.2	5.1	5.2	5.9	5.8	10.3	0.0	0.0	11.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1186			1167			20			119	
Approach Delay, s/veh		5.3			5.8			10.3			11.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.1	30.9	34.1	30.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	17.0	4.9	10.8
Green Ext Time (p_c), s	0.0	8.5	0.5	9.1

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	989	7	0	1049	0	21
Future Vol, veh/h	989	7	0	1049	0	21
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	1099	8	0	1166	0	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	554
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*684
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*684
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	684	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	2	0	34	1
Future Vol, veh/h	0	15	2	0	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	2	0	38	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	79	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	77	-	-	-	-	-
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	924	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	903	1082	-	-	1620	-
Mov Cap-2 Maneuver	903	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.015	0.023	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1010	0	0	1049	2	0
Future Vol, veh/h	1010	0	0	1049	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	1122	0	0	1166	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1705	561
Stage 1	-	-	-	-	1122	-
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	-	-	1001	-	*82	*684
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1001	-	*82	*684
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1001	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	16.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1010	0	0	1048	2	3
Future Vol, veh/h	1010	0	0	1048	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1122	0	0	1164	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1704	561
Stage 1	-	-	-	-	1122	-
Stage 2	-	-	-	-	582	-
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	-	-	1001	-	*82	*684
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1001	-	*82	*684
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	469	-	-	1001	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	12.8	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	945	41	6	943	9	66	3	47	7	0	34
Future Vol, veh/h	7	945	41	6	943	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1050	46	7	1048	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1058	0	0	1096	0	0	1627	2161	548	1610	-	529
Stage 1	-	-	-	-	-	-	1089	1089	-	1067	-	-
Stage 2	-	-	-	-	-	-	538	1072	-	543	-	-
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	*1034	-	-	*1024	-	-	*~ 68	*47	*684	*70	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*652	0	-
Stage 2	-	-	-	-	-	-	*652	*571	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*~ 64	*46	*684	*63	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*313	*277	-	*308	-	-
Stage 1	-	-	-	-	-	-	*640	*561	-	*646	-	-
Stage 2	-	-	-	-	-	-	*612	*567	-	*588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	399	* 1034	-	-	* 1024	-	-	308	691
HCM Lane V/C Ratio	0.323	0.008	-	-	0.007	-	-	0.025	0.055
HCM Control Delay (s)	18.3	8.5	-	-	8.5	-	-	17	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	938	53	61	941	8	14	1	89	4	0	7
Future Vol, veh/h	11	938	53	61	941	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1042	59	68	1046	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1055	0	0	1101	0	0	1755	2287	551	1733	-	528
Stage 1	-	-	-	-	-	-	1096	1096	-	1187	-	-
Stage 2	-	-	-	-	-	-	659	1191	-	546	-	-
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	*1034	-	-	*1024	-	-	*54	*39	*684	*56	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*527	0	-
Stage 2	-	-	-	-	-	-	*652	*485	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*50	*36	*684	*45	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	*241	-	*248	-	-
Stage 1	-	-	-	-	-	-	*637	*559	-	*521	-	-
Stage 2	-	-	-	-	-	-	*602	*453	-	*544	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	12.8	13.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	576	* 1034	-	-	* 1024	-	-	248	691
HCM Lane V/C Ratio	0.201	0.012	-	-	0.066	-	-	0.018	0.011
HCM Control Delay (s)	12.8	8.5	-	-	8.8	-	-	19.8	10.3
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

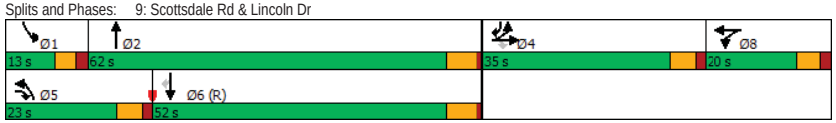
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	546	62	460	62	69	454	1791	67	1729	539
Future Volume (vph)	546	62	460	62	69	454	1791	67	1729	539
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	13.0	13.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	18.6	18.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	35.0	35.0	23.0	20.0	20.0	23.0	62.0	13.0	52.0	35.0
Total Split (%)	26.9%	26.9%	17.7%	15.4%	15.4%	17.7%	47.7%	10.0%	40.0%	26.9%
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)	28.6	28.6	48.3	13.1	13.1	19.7	57.9	8.3	46.3	80.6
Actuated g/C Ratio	0.22	0.22	0.37	0.10	0.10	0.15	0.45	0.06	0.36	0.62
v/c Ratio	0.91	0.91	0.77	0.39	0.41	0.97	0.91	0.65	1.06	0.56
Control Delay	62.4	63.8	24.9	61.5	28.9	87.2	40.7	85.7	79.8	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	62.4	63.8	24.9	61.5	28.9	87.2	40.7	85.7	79.8	9.9
LOS	E	E	C	E	C	F	D	F	E	A
Approach Delay		46.6			38.5		49.9		63.8	
Approach LOS		D			D		D		E	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 54.4	Intersection LOS: D
Intersection Capacity Utilization 92.5%	ICU Level of Service F
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)	546	62	460	62	69	80	454	1791	50	67	1729	539
Future Volume (veh/h)	546	62	460	62	69	80	454	1791	50	67	1729	539
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	656	0	289	69	77	67	504	1990	39	74	1921	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	723	0	535	178	189	149	465	2267	44	94	1819	886
Arrive On Green	0.20	0.00	0.20	0.10	0.10	0.10	0.13	0.44	0.44	0.05	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	656	0	289	69	72	72	504	1313	716	74	1921	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	23.4	0.0	19.2	4.7	4.9	5.5	17.5	45.8	45.9	5.3	46.3	15.2
Cycle Q Clear(g_c), s	23.4	0.0	19.2	4.7	4.9	5.5	17.5	45.8	45.9	5.3	46.3	15.2
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	723	0	535	178	178	160	465	1497	814	94	1819	886
V/C Ratio(X)	0.91	0.00	0.54	0.39	0.40	0.45	1.08	0.88	0.88	0.79	1.06	0.37
Avail Cap(c_a), veh/h	808	0	573	197	197	178	465	1497	814	106	1819	886
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	50.6	0.0	34.9	54.8	54.9	55.1	56.2	33.2	33.3	60.9	41.8	16.0
Incr Delay (d2), s/veh	12.3	0.0	0.3	0.5	0.6	0.7	66.1	6.0	10.4	25.7	37.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	7.5	2.2	2.2	2.3	11.9	19.8	22.6	3.1	25.5	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	35.2	55.3	55.4	55.9	122.3	39.2	43.7	86.5	79.6	17.2
LnGrp LOS	E	A	D	E	E	E	F	D	D	F	F	B
Approach Vol, veh/h		945			213			2533			2327	
Approach Delay, s/veh		54.4			55.5			57.0			71.0	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	62.9		31.9	23.0	52.0		18.6
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 7.7	56.3		29.5	17.5	46.3		14.4
Max Q Clear Time (g_c+I1), s	7.3	47.9		25.4	19.5	48.3		7.5
Green Ext Time (p_c), s	0.0	2.6		1.0	0.0	0.0		0.3

Intersection Summary	
HCM 6th Ctrl Delay	62.0
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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	271	961	23	1015	8	69	68	53
Future Volume (vph)	271	961	23	1015	8	69	68	53
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	73.4	73.4	12.5	12.5	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.56	0.56	0.10	0.10	0.16	0.15
v/c Ratio	0.66	0.41	0.10	0.61	0.12	0.54	0.42	0.72
Control Delay	19.2	6.5	34.2	42.9	55.6	60.9	53.1	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.5	34.2	42.9	55.6	60.9	53.1	38.2
LOS	B	A	C	D	E	E	D	D
Approach Delay		9.2		42.7		60.5		41.7
Approach LOS		A		D		E		D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.9	Intersection LOS: C
Intersection Capacity Utilization 72.3%	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)	271	961	32	23	1015	66	8	69	20	68	53	172
Future Volume (veh/h)	271	961	32	23	1015	66	8	69	20	68	53	172
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	301	1068	25	26	1128	51	9	77	13	76	59	135
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	499	2713	64	396	2288	103	86	122	21	149	71	161
Arrive On Green	0.07	0.76	0.76	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3549	83	516	3463	156	1189	1560	263	1781	506	1157
Grp Volume(v), veh/h	301	535	558	26	579	600	9	0	90	76	0	194
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	516	1777	1842	1189	0	1823	1781	0	1662
Q Serve(g_s), s	6.6	13.2	13.2	0.0	0.0	0.0	1.0	0.0	6.2	4.0	0.0	14.8
Cycle Q Clear(g_c), s	6.6	13.2	13.2	0.0	0.0	0.0	7.7	0.0	6.2	4.0	0.0	14.8
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.70
Lane Grp Cap(c), veh/h	499	1358	1418	396	1174	1217	86	0	142	149	0	232
V/C Ratio(X)	0.60	0.39	0.39	0.07	0.49	0.49	0.10	0.00	0.63	0.51	0.00	0.84
Avail Cap(c_a), veh/h	740	1358	1418	396	1174	1217	245	0	386	149	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.2	5.2	0.0	0.0	0.0	62.2	0.0	58.1	54.0	0.0	54.5
Incr Delay (d2), s/veh	1.2	0.9	0.8	0.2	1.0	1.0	0.5	0.0	4.6	2.8	0.0	7.8
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	2.4	4.6	4.8	0.0	0.3	0.3	0.3	0.0	3.1	0.6	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.0	6.0	0.2	1.0	1.0	62.7	0.0	62.7	56.8	0.0	62.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1394			1205			99			270	
Approach Delay, s/veh		6.0			1.0			62.7			60.7	
Approach LOS		A			A			E			E	

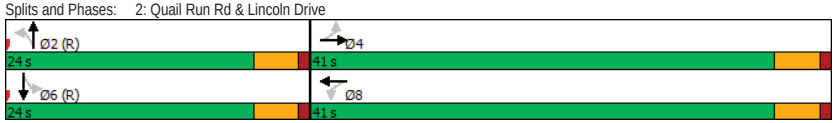
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.5	91.9	8.0	16.6		105.4		24.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.6	2.0	6.0	9.7		15.2		16.8				
Green Ext Time (p_c), s	0.8	11.3	0.0	0.4		9.7		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.8
HCM 6th LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	85	975	27	998	11	0	14	0
Future Volume (vph)	85	975	27	998	11	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.9	30.9	30.9	30.9		25.1		25.1
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.39		0.39
v/c Ratio	0.71	0.65	0.21	0.68		0.03		0.18
Control Delay	48.5	17.5	11.7	16.1		6.6		7.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	48.5	17.5	11.7	16.1		6.6		7.9
LOS	D	B	B	B		A		A
Approach Delay		20.0		16.0		6.6		7.9
Approach LOS		B		B		A		A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 17.4	Intersection LOS: B
Intersection Capacity Utilization 50.8%	ICU Level of Service A
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	975	8	27	998	25	11	0	7	14	0	93
Future Volume (veh/h)	85	975	8	27	998	25	11	0	7	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	1083	9	30	1109	28	12	0	8	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	263	1514	13	276	1485	37	449	21	255	119	38	606
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.44	0.00	0.44	0.44	0.00	0.44
Sat Flow, veh/h	495	3612	30	516	3542	89	815	49	576	127	85	1369
Grp Volume(v), veh/h	94	533	559	30	556	581	20	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	495	1777	1865	516	1777	1854	1440	0	0	1582	0	0
Q Serve(g_s), s	7.7	7.9	7.9	1.5	8.8	8.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.0	7.9	7.9	8.0	8.8	8.8	0.4	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.60		0.40	0.13		0.87
Lane Grp Cap(c), veh/h	263	745	782	276	745	777	725	0	0	762	0	0
V/C Ratio(X)	0.36	0.72	0.72	0.11	0.75	0.75	0.03	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	333	998	1047	349	998	1041	725	0	0	762	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	3.7	3.7	5.0	3.8	3.8	10.2	0.0	0.0	10.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	1.5	1.4	0.2	2.1	2.1	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.6	0.1	1.7	1.8	0.2	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	5.2	5.1	5.2	5.9	5.8	10.3	0.0	0.0	11.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1186			1167			20			119	
Approach Delay, s/veh		5.3			5.8			10.3			11.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.1	30.9	34.1	30.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+I1), s	2.4	17.0	4.9	10.8
Green Ext Time (p_c), s	0.0	8.5	0.5	9.1

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	989	7	0	1049	0	21
Future Vol, veh/h	989	7	0	1049	0	21
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	1099	8	0	1166	0	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	554
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*684
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*684
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	684	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	2	0	34	1
Future Vol, veh/h	0	15	2	0	34	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	2	0	38	1

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	79	2	0	0	2	0
Stage 1	2	-	-	-	-	-
Stage 2	77	-	-	-	-	-
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	924	1082	-	-	1620	-
Stage 1	1021	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	903	1082	-	-	1620	-
Mov Cap-2 Maneuver	903	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.015	0.023	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1010	0	0	1049	2	0
Future Vol, veh/h	1010	0	0	1049	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	1122	0	0	1166	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1705	561
Stage 1	-	-	-	-	1122	-
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	-	-	1001	-	*82	*684
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1001	-	*82	*684
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1001	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	16.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1010	0	0	1048	2	3
Future Vol, veh/h	1010	0	0	1048	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1122	0	0	1164	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1704	561
Stage 1	-	-	-	-	1122	-
Stage 2	-	-	-	-	582	-
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	-	-	1001	-	*82	*684
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1001	-	*82	*684
Mov Cap-2 Maneuver	-	-	-	-	*319	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*607	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	469	-	-	1001	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	12.8	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	945	41	6	943	9	66	3	47	7	0	34
Future Vol, veh/h	7	945	41	6	943	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1050	46	7	1048	10	73	3	52	8	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1058	0	0	1096	0	0	1627	2161	548	1610	-	529
Stage 1	-	-	-	-	-	-	1089	1089	-	1067	-	-
Stage 2	-	-	-	-	-	-	538	1072	-	543	-	-
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	*1034	-	-	*1024	-	-	*~ 68	*47	*684	*70	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*652	0	-
Stage 2	-	-	-	-	-	-	*652	*571	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*~ 64	*46	*684	*63	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*313	*277	-	*308	-	-
Stage 1	-	-	-	-	-	-	*640	*561	-	*646	-	-
Stage 2	-	-	-	-	-	-	*612	*567	-	*588	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.3	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	399	* 1034	-	-	* 1024	-	-	308	691
HCM Lane V/C Ratio	0.323	0.008	-	-	0.007	-	-	0.025	0.055
HCM Control Delay (s)	18.3	8.5	-	-	8.5	-	-	17	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	938	53	61	941	8	14	1	89	4	0	7
Future Vol, veh/h	11	938	53	61	941	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	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1042	59	68	1046	9	16	1	99	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1055	0	0	1101	0	0	1755	2287	551	1733	-	528
Stage 1	-	-	-	-	-	-	1096	1096	-	1187	-	-
Stage 2	-	-	-	-	-	-	659	1191	-	546	-	-
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	*1034	-	-	*1024	-	-	*54	*39	*684	*56	0	*691
Stage 1	-	-	-	-	-	-	*645	*566	-	*527	0	-
Stage 2	-	-	-	-	-	-	*652	*485	-	*645	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1034	-	-	*1024	-	-	*50	*36	*684	*45	-	*691
Mov Cap-2 Maneuver	-	-	-	-	-	-	*302	*241	-	*248	-	-
Stage 1	-	-	-	-	-	-	*637	*559	-	*521	-	-
Stage 2	-	-	-	-	-	-	*602	*453	-	*544	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	12.8	13.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	576	* 1034	-	-	* 1024	-	-	248	691
HCM Lane V/C Ratio	0.201	0.012	-	-	0.066	-	-	0.018	0.011
HCM Control Delay (s)	12.8	8.5	-	-	8.8	-	-	19.8	10.3
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	546	62	460	62	69	454	1791	67	1729	539
Future Volume (vph)	546	62	460	62	69	454	1791	67	1729	539
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	9.4	9.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	15.0	15.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	35.0	35.0	24.0	15.0	15.0	24.0	67.0	13.0	56.0	35.0
Total Split (%)	26.9%	26.9%	18.5%	11.5%	11.5%	18.5%	51.5%	10.0%	43.1%	26.9%
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)	28.6	28.6	48.0	9.4	9.4	19.4	62.5	7.4	50.3	84.6
Actuated g/C Ratio	0.22	0.22	0.37	0.07	0.07	0.15	0.48	0.06	0.39	0.65
v/c Ratio	0.91	0.91	0.81	0.54	0.52	0.98	0.84	0.74	0.98	0.56
Control Delay	62.3	63.7	33.0	74.6	33.7	91.0	33.6	99.2	54.8	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	62.3	63.7	33.0	74.6	33.7	91.0	33.6	99.2	54.8	11.8
LOS	E	E	C	E	C	F	C	F	D	B
Approach Delay		50.1			45.7		44.9		46.2	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 46.4	Intersection LOS: D
Intersection Capacity Utilization 89.5%	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)	546	62	460	62	69	80	454	1791	50	67	1729	539
Future Volume (veh/h)	546	62	460	62	69	80	454	1791	50	67	1729	539
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	656	0	289	69	77	67	504	1990	39	74	1921	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	723	0	547	129	137	107	492	2465	48	94	1976	935
Arrive On Green	0.20	0.00	0.20	0.07	0.07	0.07	0.14	0.48	0.48	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1893	1487	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	656	0	289	69	72	72	504	1313	716	74	1921	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1603	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	23.4	0.0	19.0	4.9	5.1	5.7	18.5	42.6	42.7	5.3	48.1	14.1
Cycle Q Clear(g_c), s	23.4	0.0	19.0	4.9	5.1	5.7	18.5	42.6	42.7	5.3	48.1	14.1
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	723	0	547	129	128	116	492	1628	886	94	1976	935
V/C Ratio(X)	0.91	0.00	0.53	0.54	0.56	0.62	1.02	0.81	0.81	0.79	0.97	0.36
Avail Cap(c_a), veh/h	808	0	585	129	128	116	492	1628	886	106	1976	935
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	50.6	0.0	34.1	58.2	58.3	58.6	55.7	28.8	28.8	60.9	39.2	13.8
Incr Delay (d2), s/veh	12.3	0.0	0.3	2.3	3.3	7.6	47.1	2.9	5.2	25.7	14.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	7.4	2.3	2.4	2.6	11.3	17.7	19.9	3.1	22.4	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	34.4	60.5	61.6	66.2	102.8	31.7	34.1	86.5	53.9	14.9
LnGrp LOS	E	A	C	E	E	E	F	C	C	F	D	B
Approach Vol, veh/h		945			213			2533			2327	
Approach Delay, s/veh		54.2			62.8			46.5			49.3	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	67.9		31.9	24.0	56.0		15.0
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6
Max Green Setting (Gmax), s	* 7.7	61.3		29.5	18.5	50.3		9.4
Max Q Clear Time (g_c+I1), s	7.3	44.7		25.4	20.5	50.1		7.7
Green Ext Time (p_c), s	0.0	3.2		1.0	0.0	0.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	49.4
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.

APPENDIX K

QUEUE STORAGE ANALYSIS

Signalized Intersection

2026

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	82	0	69	6	0	150'
	EB Left	246	0	271	20	0	500'
	WB Left	25	0	23	2	0	50'
Quail Run Rd & Lincoln Dr	EB Left	115	0	85	9	0	225'
	WB Left	6	0	5	1	0	25'
Scottsdale Rd & Lincoln Dr	NB Left	313	0	454	33	0	825'
	SB Left	56	0	67	5	0	125'
	EB Left	499	0	545	40	0	1000'
	NB Right	43	0	50	4	0	100'
	SB Right	651	0	539	48	0	1200'
	EB Right	508	0	460	37	0	925'

Unsignalized Intersection

2026

Average Vehicle Length (ft): 25

Equation Used: storage length = 2 x (vehicles/hour)/(30 cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Storage Length
Smoke Tree Drwy A & Lincoln Dr	WB Left	21	0	21	1	0	25'
	EB Right	12	0	9	1	0	25'

Signalized Intersection

2026

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	82	0	68	6	0	150'
	EB Left	246	0	271	20	0	500'
	WB Left	25	0	23	2	0	50'
Quail Run Rd & Lincoln Dr	EB Left	115	0	85	9	0	225'
	WB Left	22	0	27	2	0	50'
Scottsdale Rd & Lincoln Dr	NB Left	313	0	454	33	0	825'
	SB Left	56	0	67	5	0	125'
	EB Left	499	0	546	40	0	1000'
	WB Left	41	0	62	5	0	125'
	SB Right	651	0	539	48	0	1200'
	EB Right	508	0	460	37	0	925'

Unsignalized Intersection

2026

Average Vehicle Length (ft): 25

Equation Used: storage length = 2 x (vehicles/hour)/(30 cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Storage Length
Smoke Tree Drwy A & Lincoln Dr	EB Right	5	0	7	1	0	25'

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	273	1205	28	1139	7	65	91	397
v/c Ratio	0.69	0.47	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	40.7	44.0	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	40.7	44.0	46.5	32.9	40.6	50.4
Queue Length 50th (ft)	98	227	17	500	5	33	62	240
Queue Length 95th (ft)	211	359	m44	#625	19	69	98	325
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	437	2538	203	1826	120	550	285	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.47	0.14	0.62	0.06	0.12	0.32	0.57

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	SBT	SBR
Lane Group Flow (vph)	128	1238	7	1059	15	29	73
v/c Ratio	0.73	0.69	0.06	0.59	0.03	0.06	0.12
Control Delay	47.4	20.5	8.3	14.3	5.4	16.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	20.5	8.3	14.3	5.4	16.3	5.5
Queue Length 50th (ft)	60	295	2	270	0	8	0
Queue Length 95th (ft)	#168	511	m3	m287	9	25	25
Internal Link Dist (ft)		1255		269	287	291	
Turn Bay Length (ft)	25		25				300
Base Capacity (vph)	196	1986	135	1984	595	498	613
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	0.65	0.62	0.05	0.53	0.03	0.06	0.12

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	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	299	302	564	46	102	348	1662	62	2050	723
v/c Ratio	0.91	0.91	0.99	0.34	0.29	0.89	0.66	0.58	0.95	0.75
Control Delay	62.1	62.1	59.3	63.9	29.1	81.7	26.7	81.0	46.6	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	62.1	59.3	63.9	29.1	81.7	26.7	81.0	46.6	14.0
Queue Length 50th (ft)	228	231	406	37	18	151	392	51	600	148
Queue Length 95th (ft)	#405	#407	#488	79	48	#240	449	100	#716	319
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	355	332	571	141	358	391	2518	120	2163	966
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	0.84	0.91	0.99	0.33	0.28	0.89	0.66	0.52	0.95	0.75

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)	301	1104	26	1201	9	99	77	250
v/c Ratio	0.66	0.41	0.10	0.61	0.12	0.54	0.42	0.72
Control Delay	19.2	6.5	35.3	43.8	55.6	60.9	53.3	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.5	35.3	43.8	55.6	60.9	53.3	38.2
Queue Length 50th (ft)	80	153	16	544	7	73	57	102
Queue Length 95th (ft)	186	224	m36	633	25	128	100	189
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	528	2671	271	1983	159	388	182	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.41	0.10	0.61	0.06	0.26	0.42	0.46

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	94	1094	6	1142	14	119
v/c Ratio	0.70	0.64	0.04	0.67	0.02	0.18
Control Delay	46.6	17.4	7.2	15.8	5.3	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	17.4	7.2	15.8	5.3	7.7
Queue Length 50th (ft)	41	240	2	332	0	9
Queue Length 95th (ft)	113	293	m3	m318	8	45
Internal Link Dist (ft)		1255		269	107	291
Turn Bay Length (ft)	25		25			
Base Capacity (vph)	160	2040	178	2036	621	661
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.54	0.03	0.56	0.02	0.18

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	333	342	511	69	166	504	2046	74	1921	599
v/c Ratio	0.90	0.91	0.81	0.48	0.48	0.99	0.84	0.65	1.00	0.56
Control Delay	61.7	63.5	30.2	68.8	31.7	92.2	34.3	84.6	59.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.7	63.5	30.2	68.8	31.7	92.2	34.3	84.6	59.9	10.7
Queue Length 50th (ft)	268	281	327	57	32	~224	572	61	586	177
Queue Length 95th (ft)	#447	#462	#474	107	69	#358	645	#129	#709	271
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	381	386	630	155	366	510	2443	123	1928	1089
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	0.89	0.81	0.45	0.45	0.99	0.84	0.60	1.00	0.55

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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	273	1206	28	1139	7	65	91	397
v/c Ratio	0.69	0.48	0.14	0.62	0.11	0.22	0.32	0.84
Control Delay	25.8	11.3	39.9	43.7	46.5	32.9	40.6	50.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	11.3	39.9	43.7	46.5	32.9	40.6	50.4
Queue Length 50th (ft)	98	227	17	494	5	33	62	240
Queue Length 95th (ft)	211	360	m44	#624	19	69	98	325
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	437	2538	202	1826	120	550	285	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.48	0.14	0.62	0.06	0.12	0.32	0.57

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	SBT	SBR
Lane Group Flow (vph)	128	1238	24	1055	19	29	73
v/c Ratio	0.72	0.69	0.20	0.59	0.03	0.06	0.12
Control Delay	46.8	20.5	12.0	14.3	6.5	16.4	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.8	20.5	12.0	14.3	6.5	16.4	5.5
Queue Length 50th (ft)	60	296	9	257	0	8	0
Queue Length 95th (ft)	#167	511	m12	270	11	25	25
Internal Link Dist (ft)		1255		269	287	291	
Turn Bay Length (ft)	25		25				300
Base Capacity (vph)	197	1986	135	1984	593	496	613
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	0.65	0.62	0.18	0.53	0.03	0.06	0.12

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	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	299	302	564	46	102	348	1662	62	2050	723
v/c Ratio	0.91	0.91	0.93	0.34	0.29	0.76	0.66	0.55	1.00	0.77
Control Delay	63.7	63.7	46.9	63.9	29.1	65.5	27.1	77.3	57.3	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.7	63.7	46.9	63.9	29.1	65.5	27.1	77.3	57.3	16.6
Queue Length 50th (ft)	208	210	406	37	18	146	392	51	~628	175
Queue Length 95th (ft)	#406	#409	#612	79	48	201	457	100	#753	358
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	355	332	607	141	358	468	2502	133	2060	933
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	0.84	0.91	0.93	0.33	0.28	0.74	0.66	0.47	1.00	0.77

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.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	301	1104	26	1201	9	99	76	250
v/c Ratio	0.66	0.41	0.10	0.61	0.12	0.54	0.42	0.72
Control Delay	19.2	6.5	34.2	42.9	55.6	60.9	53.1	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	6.5	34.2	42.9	55.6	60.9	53.1	38.2
Queue Length 50th (ft)	80	153	16	542	7	73	56	102
Queue Length 95th (ft)	186	224	m34	633	25	128	99	189
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	528	2671	271	1983	159	388	182	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.41	0.10	0.61	0.06	0.26	0.42	0.46

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	94	1092	30	1137	20	119
v/c Ratio	0.71	0.65	0.21	0.68	0.03	0.18
Control Delay	48.5	17.5	11.7	16.1	6.6	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	17.5	11.7	16.1	6.6	7.9
Queue Length 50th (ft)	40	234	12	326	0	10
Queue Length 95th (ft)	#123	299	m19	m322	12	45
Internal Link Dist (ft)		1255		269	107	291
Turn Bay Length (ft)	25		25			
Base Capacity (vph)	156	1986	171	1982	616	667
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	0.60	0.55	0.18	0.57	0.03	0.18

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	334	342	511	69	166	504	2046	74	1921	599
v/c Ratio	0.91	0.91	0.81	0.54	0.52	0.98	0.84	0.74	0.98	0.56
Control Delay	62.3	63.7	33.0	74.6	33.7	91.0	33.6	99.2	54.8	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	62.3	63.7	33.0	74.6	33.7	91.0	33.6	99.2	54.8	11.8
Queue Length 50th (ft)	275	283	346	57	33	~234	546	62	578	199
Queue Length 95th (ft)	#450	#464	#479	109	71	#346	616	#141	#696	295
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	381	386	628	127	317	512	2438	104	1967	1081
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	0.88	0.89	0.81	0.54	0.52	0.98	0.84	0.71	0.98	0.55

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.

APPENDIX L

SIGHT DISTANCE ANALYSIS

CivTech

Location: Access A & Lincoln Dr (Scenario 1)

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})		40	MPH	
Grades - Approaching Minor Street from: (– = approaching downhill)				
Left (G_L)			%	
Right (G_R)			%	
Approach Grade Adjustment Factor	Left	1.0		Tbl 9-4, p 9-35
	Right	1.0		
Major Road Through Lanes on Each Approach			(Use 1 for RI/RO[/LI] only)	
Median Width (in "Lane Equivalents")			(Use 0 for RI/RO[/LI] only)	
Minor Road Approach Upgrade, if >3%			%	
Minor Road Access (check restricted)				
	LI	LO/Th	RO	

Stopping Sight Distance = Brake Reaction Distance + Braking Distance

Neglecting Effect of Grade $d=1.47Vt+1.075\frac{V^2}{a}$ Eq 3-2, p 3-4

Calculated d= 300.6 ft
Design d= 305 ft

With Effect of Grade $d=1.47Vt+\frac{V^2}{30((\frac{a}{32.2})\pm G)}$ Eq 3-3, p 3-5

Calculated d= 300.3 ft - left
305 ft - right
Design d= 300.3 ft - left
305 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: Access A & Lincoln Dr (Scenario 1)

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	0.0	§9.5.3, p 9-37
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-37

Time Gap based on site data

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

Passenger Car	7.0 sec
Single-Unit Tuck	8.8 sec
Combination Truck	10.8 sec

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

			ISD to Left and Right	
Passenger Car	calculated	ISD=	411.6	ft
	design	ISD=	415	ft
Single-Unit Tuck	calculated	ISD=	517.4	ft
	design	ISD=	520	ft
Combination Truck	calculated	ISD=	635.0	ft
	design	ISD=	635	ft

Location: Access A & Lincoln Dr (Scenario 1)

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	0.0		§9.5.3, p 9-40
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-40

Time Gap based on site data (sec)	B2 & B3	B3 Only
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	6.0	5.5
Single-Unit Tuck	7.8	7.1
Combination Truck	9.8	9.1

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

			ISD to Left (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	352.8	323.4
	design	ISD=	355	325
Single-Unit Tuck	calculated	ISD=	458.6	417.5
	design	ISD=	460	420
Combination Truck	calculated	ISD=	576.2	535.1
	design	ISD=	580	540

*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: Access A & Lincoln Dr (Scenario 1)

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)	-1.0		
Time Gap based on site data			
Design Vehicle Gap+Adj for Add'l Opposing Lanes			
Passenger Car	5.0	sec	
Single-Unit Tuck	5.8	sec	
Combination Truck	6.8	sec	

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

Passenger Car	calculated	ISD=	294.0	ft
	design	ISD=	295	ft
Single-Unit Tuck	calculated	ISD=	341.0	ft
	design	ISD=	345	ft
Combination Truck	calculated	ISD=	399.8	ft
	design	ISD=	400	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		305	N/A	N/A
With effect of grade on left		305	N/A	N/A
With effect of grade on right		305	N/A	N/A
Intersection				
To Right	B1	415	520	635
To Left	B2/B3	355	460	580
On Major Road	F	295	345	400

Location: Access A & Lincoln Dr (Scenario 2)

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})		35	MPH	
Grades - Approaching Minor Street from: (– = approaching downhill)				
Left (G_L)			%	
Right (G_R)			%	
Approach Grade Adjustment Factor	Left	1.0		Tbl 9-4, p 9-35
	Right	1.0		
Major Road Through Lanes on Each Approach			(Use 1 for RI/RO[/LI] only)	
Median Width (in "Lane Equivalents")			(Use 0 for RI/RO[/LI] only)	
Minor Road Approach Upgrade, if >3%			%	
Minor Road Access (check restricted)	x	x		
	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= 246.2 ft
Design d= 250 ft

With Effect of Grade

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

Calculated d= 246.4 ft - left
250 ft - right
Design d= 246.4 ft - left
250 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: Access A & Lincoln Dr (Scenario 2)

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	0.0		§9.5.3, p 9-37
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-37

Time Gap based on site data

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

Passenger Car	7.0	sec
Single-Unit Tuck	8.8	sec
Combination Truck	10.8	sec

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

			ISD to Left and Right	
Passenger Car	calculated	ISD=	360.2	ft
	design	ISD=	365	ft
Single-Unit Tuck	calculated	ISD=	452.8	ft
	design	ISD=	455	ft
Combination Truck	calculated	ISD=	555.7	ft
	design	ISD=	560	ft

Location: Access A & Lincoln Dr (Scenario 2)

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	0.0		§9.5.3, p 9-40
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-40

Time Gap based on site data (sec)	B2 & B3	B3 Only
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	6.0	5.5
Single-Unit Tuck	7.8	7.1
Combination Truck	9.8	9.1

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

			ISD to Left (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	308.7	283.0
	design	ISD=	310	285
Single-Unit Tuck	calculated	ISD=	401.3	365.3
	design	ISD=	405	370
Combination Truck	calculated	ISD=	504.2	468.2
	design	ISD=	505	470

*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: Access A & Lincoln Dr (Scenario 2)

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)	-1.0		
Time Gap based on site data			
Design Vehicle Gap+Adj for Add'l Opposing Lanes			
Passenger Car	5.0	sec	
Single-Unit Tuck	5.8	sec	
Combination Truck	6.8	sec	

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

Passenger Car	calculated	ISD=	257.3	ft
	design	ISD=	260	ft
Single-Unit Tuck	calculated	ISD=	298.4	ft
	design	ISD=	300	ft
Combination Truck	calculated	ISD=	349.9	ft
	design	ISD=	350	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		250	N/A	N/A
With effect of grade on left		250	N/A	N/A
With effect of grade on right		250	N/A	N/A
Intersection				
To Right	B3	Restricted	Restricted	Restricted
To Left	B2/B3	310	405	505
On Major Road	F	Restricted	Restricted	Restricted

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			(Use 1 for RI/RO[/LI] only)	
Median Width (in "Lane Equivalents")			(Use 0 for RI/RO[/LI] only)	
Minor Road Approach Upgrade, if >3%			%	
Minor Road Access (check restricted)				
	LI	LO/Th	RO	

Stopping Sight Distance = Brake Reaction Distance + Braking Distance

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

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

Calculated d= 196.3 ft - left
200 ft - right
Design d= 196.3 ft - left
200 ft - right

SSD's do not consider design for truck operations, since better visibility is considered to offset longer braking distance. §3.2.2, p 3-6

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	0.0		§9.5.3, p 9-37
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-37

Time Gap based on site data

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

Passenger Car	7.0	sec
Single-Unit Tuck	8.8	sec
Combination Truck	10.8	sec

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

			ISD to Left and Right	
Passenger Car	calculated	ISD=	308.7	ft
	design	ISD=	310	ft
Single-Unit Tuck	calculated	ISD=	388.1	ft
	design	ISD=	390	ft
Combination Truck	calculated	ISD=	476.3	ft
	design	ISD=	480	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	0.0		§9.5.3, p 9-40
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-40

Time Gap based on site data (sec)	B2 & B3	B3 Only
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	6.0	5.5
Single-Unit Tuck	7.8	7.1
Combination Truck	9.8	9.1

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

			ISD to Left (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	264.6	242.6
	design	ISD=	265	245
Single-Unit Tuck	calculated	ISD=	344.0	313.1
	design	ISD=	345	315
Combination Truck	calculated	ISD=	432.2	401.3
	design	ISD=	435	405

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

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

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)	-1.0		
Time Gap based on site data			
Design Vehicle Gap+Adj for Add'l Opposing Lanes			
Passenger Car	5.0	sec	
Single-Unit Tuck	5.8	sec	
Combination Truck	6.8	sec	

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

Passenger Car	calculated	ISD=	220.5	ft
	design	ISD=	225	ft
Single-Unit Tuck	calculated	ISD=	255.8	ft
	design	ISD=	260	ft
Combination Truck	calculated	ISD=	299.9	ft
	design	ISD=	300	ft

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

SIGHT DISTANCE SUMMARY

Sight Distance Type	Governing Case	Car	SU Truck	Combo Truck
Stopping				
Without effect of grade		200	N/A	N/A
With effect of grade on left		200	N/A	N/A
With effect of grade on right		200	N/A	N/A
Intersection				
To Right	B1	310	390	480
To Left	B2/B3	265	345	435
On Major Road	F	225	260	300

PRELIMINARY DRAINAGE REPORT

August 5, 2019
Revised: May 7, 2020

SMOKE TREE RESORT

Town of Paradise Valley, AZ

Prepared for:

Gentree, LLC
3620 E Campbell Ave, Suite B
Phoenix, AZ 85018
(602) 952-8811

Prepared by:

CVL Consultants, Inc.
4550 N 12th Street
Phoenix, AZ 85014
(602) 264-6831

Registered Professional Engineer (Civil)
CERTIFICATE NO.
66356
OSCAR E.
GARCIA
Date Signed 5-07-20
ARIZONA, U.S.A.
Expires 6-30-2021

CVL CONSULTANTS

Job #:1-01-03153-01

Preliminary Drainage Report

For

SMOKE TREE RESORT

Paradise Valley, Arizona

August 5, 2019

Revised: *May 7, 2020*

Prepared for:

Gentree, LLC

3620 E Campbell Ave, Suite B

Phoenix, AZ 85018

(602) 952-8811

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

(602) 264-6831

CVL Job Number: 1-01-03153-01

Preliminary Drainage Report for

Smoke Tree Resort

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Appendix A NOAA Rainfall Data

Appendix B Runoff Coefficients, Retention and Drywell Calculations, VortSentry(R) HS Stormwater Treatment Detail.

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Figure 1 Location & Vicinity Map

Figure 2 FIRM

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1.0 INTRODUCTION

1.1 SCOPE

Coe & Van Loo Consultants, Inc. (CVL) has been contracted by Gentree, LLC to provide engineering services in support of the proposed improvements to Smoke Tree Resort, herein referred to as the site. The purpose of this report is to provide on-site and off-site hydrologic and hydraulic analysis for the proposed development.

This report is focused on providing design information, evaluation, and analysis for statistical flood events up to and including the 100-year storm. The scope of this assessment does not include, neither did CVL's client request that, evaluation of storm-water runoff resulting from storm events exceeding the 100-year frequency event. Hence, it should be noted that a storm event exceeding the 100-year frequency may cause or create the risk of greater flood impact than is addressed and presented in this assessment.

The procedures used herein are derived from, and performed with, currently accepted engineering methodologies and practices.

1.2 REGULATORY JURISDICTION

The development is designed to meet the drainage requirements as stated in the Town of Paradise Valley's *Storm Drain Design Manual (2018)* [1] and Flood Control District of Maricopa County (FCDMC), *Drainage Design Manuals for Maricopa County, Arizona, Volume I, Hydrology* [2], *Volume II, Hydraulics* [3], and *Drainage Policies and Standards Manual for Maricopa County, Arizona* [4].

2.0 SITE CONDITIONS

2.1 LOCATION

The site is located within the Town of Paradise Valley, Maricopa County, Arizona. The site is bordered on the north by Lincoln Drive, on the east by commercial property, on the south by the Andaz Resort Hotel and on the west by Quail Run Road and custom residences. Furthermore, the site is located within Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Arizona.

2.2 Existing Conditions

A field reconnaissance of the existing resort complex on approximately 5-acres of existing special use permit land and its surroundings was performed on February 5th, 2019. It was observed that the site and surrounding properties are flat and generally drain to east then to the north towards Lincoln Drive. The resort's landscaping is characterized by hedges around all but the north perimeter, mature trees throughout the site and open space consisting of lawn and dirt drive lanes and parking.

2.3 Proposed Conditions

The resort was originally opened in 1966 and has yet to undergo any significant renovations beyond general maintenance measures. The resort is notably dated and in need of renovations and refurbishment of amenities. The vision for the transformation of the Smoke Tree Resort is to welcome guests to a four-star "local-centric" hospitality experience in both form and substance. This is to be achieved through active forward-facing components and lifestyle programmatic aspects. The existing resort often goes unnoticed in its unassuming character along Lincoln Drive, with only 23 of its 32 guest rooms currently in use. The revitalization of the site will retain its charming essence while providing the scale and quality of amenities sought by today's traveler; the specifics of which include 122 total keys, a restaurant, a special events pavilion, a neighborhood local-centric fresh market & coffee shop. The relaxed, pedestrian friendly environment will not include the typical resort perimeter walls or gates; instead, setbacks that align with existing buildings are desired, including a bicycle/pedestrian path that shall weave the resort into the local tapestry.

3.0 Flood Zone Information

The Maricopa County, Arizona and Incorporated Areas Flood Insurance Rate Map (FIRM), panel numbers 04013C1770L, Map Revised October 16, 2013 [5], indicates the site falls within Zone D.

Zone D is defined by FEMA as:

> "The Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The Zone D designation is also used when a community incorporates portions of another community's area where no map has been prepared."

Refer to Figure 2 for a copy of the Flood Insurance Rate Map (FIRM).

4.0 Offsite and Onsite Runoff

4.1 Offsite Runoff Management Plan

The offsite watershed affecting the site is urbanized by mainly low density custom residential lots to the west. These residential lots are flat with no concentrated flow paths. During the field reconnaissance, it was observed that some of the custom residences with perimeter block walls have weepholes in order to keep flow moving through their sites while others do not. At a meeting with the Paradise Valley Town Engineer on January 30th, 2019, it was agreed that the proposed site would handle offsite runoff similarly by allowing it to move through the site. The proposed site will consist of small drainage swales around the perimeter of the site to convey off-site flow to the east. Weepholes will be provided along any east perimeter walls to ensure offsite flows are safely conveyed away from the site. Quail Run Road will be improved with ribbon curb from Lincoln Drive to the south boundary of the site. These improvements will keep the majority of runoff flowing east across Quail Run Road and onto the site.

4.2 Onsite Runoff Management Plan

The resort was developed in 1966 when drainage regulations were non-existent. The site has a single small drain located just south of the abandoned restaurant building for localized flow which is to be removed as part of this project. The remainder of the site is graded to drain to the east. The site currently provides no onsite retention. The proposed improvements to the resort will utilize parking and drive corridors as drainage pathways to drain flow to the east and north where runoff will be captured by grated catch basins. The flow from the catch basins will be treated by VortSentry(R) HS Stormwater Treatment (or equivalent) prior to being retained by 12-ft diameter underground tanks. The separators specification and details can be found in Appendix B. The location of the VortSentry hydronamic separators can be seen on the Drainage Map in Plate 1. Stormwater runoff from rooftops will drain into roofdrains then underground to a storm sewer system outfalling to the underground retention tanks. The site will be graded so that stormwater runoff that falls between buildings will drain towards the parking lots. Onsite retention will be provided for the pre vs. post condition as agreed at a meeting with the Paradise Valley Town Engineer on January 30th, 2019. Basins will be designed to dispose of the storm water within 36 hours through drywells. Rainfall data was taken from NOAA Atlas 14 (see Appendix A). Retention

and drywell calculations can be found in Appendix B. Runoff coefficients based on land use of [2] for pre-development and post-development condition (see Appendix B).

5.0 Storm Water Pollution Prevention Plan

During final engineering design, the Storm Water Pollution Prevention Plan (SWPPP) will be prepared and submitted for approval.

6.0 Summary and Conclusions

1. Retention will be provided for pre-development versus post-development conditions.
2. Underground retention basins will be designed to drain within 36 hours.
3. According to the FIRM panel number 04013C1770L, Map Revised: October 16, 2013, the site is located in Zone D.
4. All finished floor elevations (FFE) will be at least 14 inches above the lowest drainage outfall for the site.

7.0 References

[1] Town of Paradise Valley, "Storm Drain Design Manual," June 2018.

[2] Flood Control District of Maricopa County, "Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology," December 14, 2018.

[3] Flood Control District of Maricopa County, Arizona, "Drainage Design Manual for Maricopa County, Volume II, Hydraulics," December 14, 2018.

[4] Flood Control District of Maricopa County, "Drainage Policies and Standards," Revised August 22, 2018.

[5] Federal Emergency Management Agency (FEMA), "National Flood Insurance Program, Flood Insurance Rate Map, Maricopa County, Arizona and Incorporated Areas, Panel Number 04013C1770L," Revised October 16, 2013.

FIGURES

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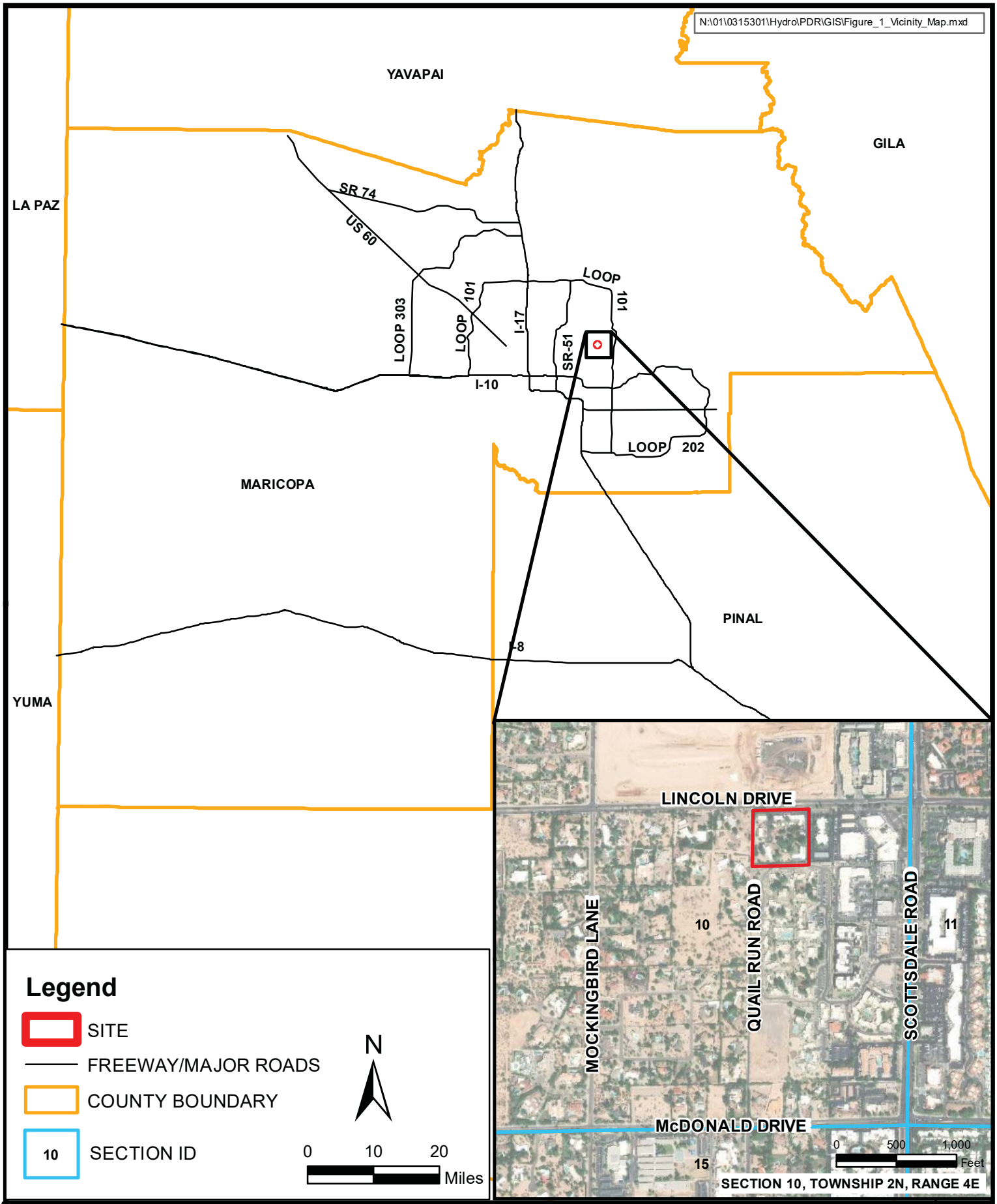

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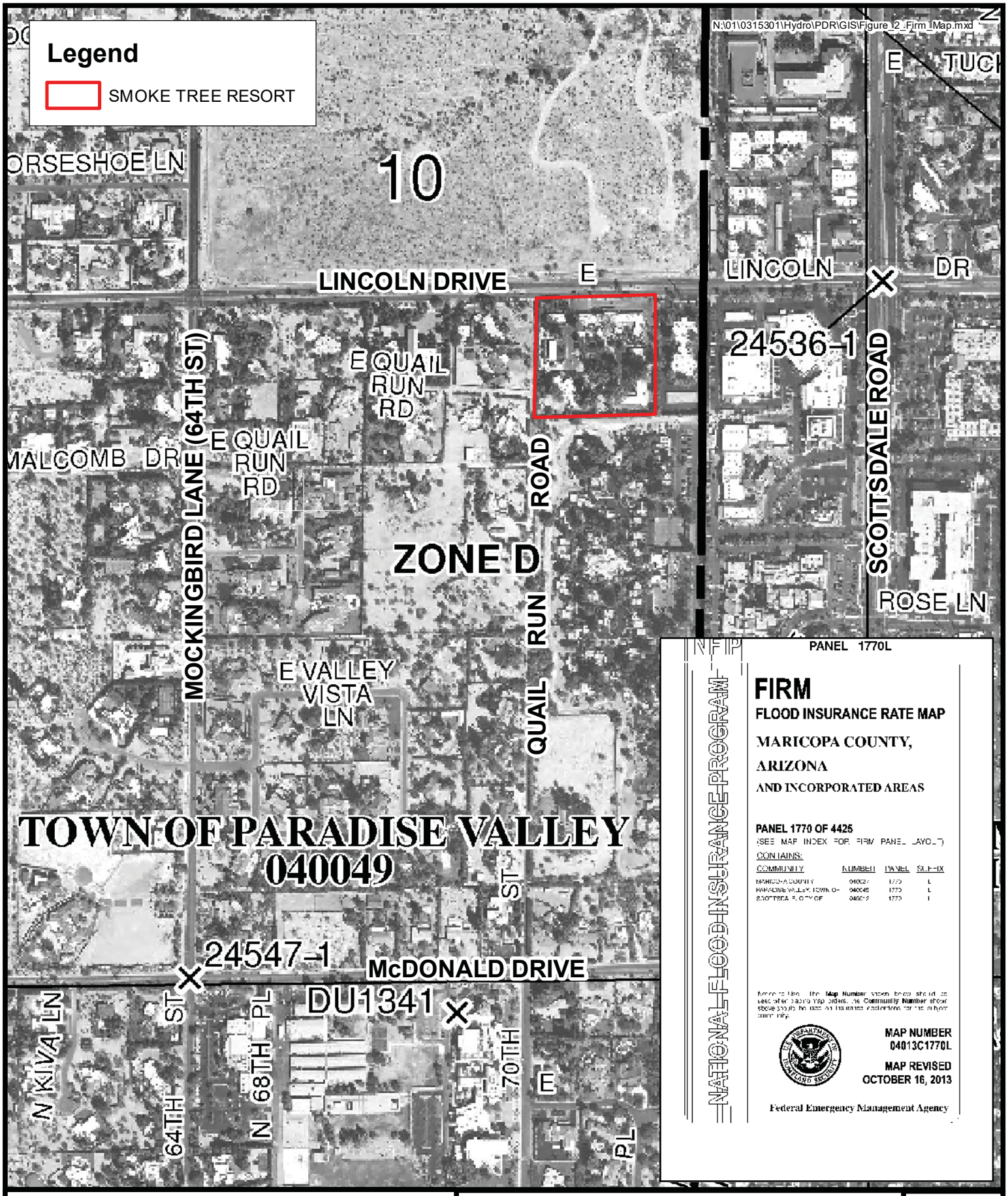
SMOKE TREE RESORT

VICINITY & LOCATION MAP

JOB NO. 01-03153-01

FIGURE 1



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SMOKE TREE RESORT

FLOOD INSURANCE RATE MAP

JOB NO. 1.01.03153.01

FIGURE 2

APPENDICES

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APPENDIX A

NOAA Atlas 14 Rainfall Data

CVL

NOAA Atlas 14, Volume 1, Version 5
Location name: Paradise Valley, Arizona, USA*
Latitude: 33.5306°, Longitude: -111.9293°
Elevation: 1310.38 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.186 (0.156-0.228)	0.243 (0.204-0.298)	0.331 (0.275-0.403)	0.397 (0.329-0.482)	0.487 (0.397-0.589)	0.556 (0.447-0.668)	0.627 (0.495-0.752)	0.700 (0.543-0.837)	0.796 (0.602-0.954)	0.870 (0.645-1.04)
10-min	0.284 (0.237-0.347)	0.371 (0.311-0.454)	0.503 (0.419-0.613)	0.605 (0.500-0.734)	0.742 (0.604-0.896)	0.847 (0.681-1.02)	0.955 (0.754-1.15)	1.07 (0.827-1.27)	1.21 (0.916-1.45)	1.32 (0.981-1.59)
15-min	0.352 (0.294-0.430)	0.459 (0.386-0.562)	0.624 (0.519-0.760)	0.750 (0.620-0.910)	0.919 (0.749-1.11)	1.05 (0.844-1.26)	1.18 (0.935-1.42)	1.32 (1.02-1.58)	1.50 (1.14-1.80)	1.64 (1.22-1.97)
30-min	0.473 (0.396-0.579)	0.619 (0.520-0.757)	0.840 (0.699-1.02)	1.01 (0.835-1.23)	1.24 (1.01-1.50)	1.41 (1.14-1.70)	1.60 (1.26-1.91)	1.78 (1.38-2.13)	2.02 (1.53-2.42)	2.21 (1.64-2.65)
60-min	0.586 (0.490-0.717)	0.766 (0.643-0.937)	1.04 (0.865-1.27)	1.25 (1.03-1.52)	1.53 (1.25-1.85)	1.75 (1.41-2.10)	1.97 (1.56-2.37)	2.20 (1.71-2.63)	2.50 (1.89-3.00)	2.74 (2.03-3.29)
2-hr	0.680 (0.577-0.814)	0.881 (0.748-1.06)	1.18 (0.995-1.41)	1.40 (1.17-1.67)	1.71 (1.42-2.03)	1.95 (1.59-2.30)	2.19 (1.76-2.59)	2.44 (1.92-2.88)	2.77 (2.13-3.27)	3.03 (2.28-3.60)
3-hr	0.748 (0.632-0.906)	0.959 (0.814-1.17)	1.26 (1.06-1.52)	1.49 (1.25-1.80)	1.83 (1.50-2.18)	2.09 (1.70-2.49)	2.37 (1.89-2.82)	2.65 (2.08-3.15)	3.05 (2.32-3.62)	3.37 (2.50-4.01)
6-hr	0.900 (0.777-1.07)	1.14 (0.985-1.35)	1.46 (1.25-1.72)	1.71 (1.46-2.01)	2.06 (1.73-2.40)	2.33 (1.93-2.71)	2.62 (2.13-3.04)	2.91 (2.33-3.38)	3.30 (2.58-3.84)	3.61 (2.75-4.21)
12-hr	1.00 (0.875-1.17)	1.27 (1.10-1.48)	1.61 (1.39-1.87)	1.87 (1.61-2.17)	2.23 (1.90-2.58)	2.50 (2.10-2.89)	2.78 (2.31-3.21)	3.07 (2.51-3.54)	3.45 (2.75-4.01)	3.75 (2.94-4.38)
24-hr	1.19 (1.05-1.38)	1.52 (1.33-1.75)	1.96 (1.72-2.27)	2.32 (2.02-2.68)	2.81 (2.44-3.24)	3.20 (2.75-3.68)	3.60 (3.08-4.15)	4.02 (3.41-4.63)	4.60 (3.85-5.30)	5.06 (4.20-5.84)
2-day	1.29 (1.13-1.48)	1.65 (1.45-1.90)	2.16 (1.90-2.49)	2.58 (2.25-2.96)	3.15 (2.74-3.62)	3.61 (3.11-4.14)	4.10 (3.51-4.70)	4.60 (3.91-5.28)	5.31 (4.46-6.10)	5.87 (4.88-6.77)
3-day	1.37 (1.20-1.57)	1.75 (1.54-2.01)	2.31 (2.02-2.65)	2.76 (2.40-3.16)	3.38 (2.94-3.87)	3.89 (3.35-4.45)	4.43 (3.79-5.07)	4.99 (4.24-5.72)	5.79 (4.86-6.63)	6.43 (5.34-7.39)
4-day	1.45 (1.27-1.66)	1.86 (1.63-2.13)	2.45 (2.15-2.80)	2.93 (2.56-3.35)	3.62 (3.14-4.13)	4.17 (3.59-4.76)	4.76 (4.07-5.43)	5.39 (4.57-6.16)	6.27 (5.26-7.16)	6.99 (5.80-8.01)
7-day	1.63 (1.43-1.87)	2.08 (1.82-2.39)	2.76 (2.40-3.17)	3.30 (2.87-3.79)	4.08 (3.52-4.67)	4.70 (4.04-5.37)	5.36 (4.57-6.14)	6.07 (5.13-6.96)	7.07 (5.90-8.10)	7.87 (6.51-9.04)
10-day	1.76 (1.54-2.02)	2.25 (1.98-2.58)	2.98 (2.60-3.40)	3.56 (3.10-4.07)	4.38 (3.80-4.99)	5.04 (4.34-5.72)	5.74 (4.91-6.53)	6.47 (5.50-7.37)	7.50 (6.29-8.54)	8.33 (6.92-9.50)
20-day	2.17 (1.91-2.47)	2.79 (2.46-3.18)	3.69 (3.25-4.20)	4.37 (3.83-4.96)	5.29 (4.62-6.00)	6.00 (5.21-6.80)	6.72 (5.81-7.63)	7.45 (6.41-8.47)	8.44 (7.20-9.61)	9.20 (7.79-10.5)
30-day	2.54 (2.23-2.89)	3.27 (2.87-3.72)	4.31 (3.78-4.90)	5.11 (4.47-5.79)	6.17 (5.37-7.00)	7.00 (6.07-7.92)	7.84 (6.77-8.87)	8.70 (7.47-9.83)	9.86 (8.40-11.2)	10.7 (9.10-12.2)
45-day	2.93 (2.59-3.32)	3.78 (3.33-4.28)	4.98 (4.39-5.64)	5.87 (5.17-6.64)	7.05 (6.18-7.97)	7.94 (6.93-8.98)	8.84 (7.68-10.00)	9.74 (8.43-11.0)	10.9 (9.39-12.4)	11.8 (10.1-13.5)
60-day	3.23 (2.86-3.64)	4.17 (3.70-4.71)	5.49 (4.86-6.19)	6.45 (5.70-7.28)	7.71 (6.79-8.68)	8.64 (7.57-9.73)	9.57 (8.36-10.8)	10.5 (9.12-11.8)	11.7 (10.1-13.2)	12.6 (10.8-14.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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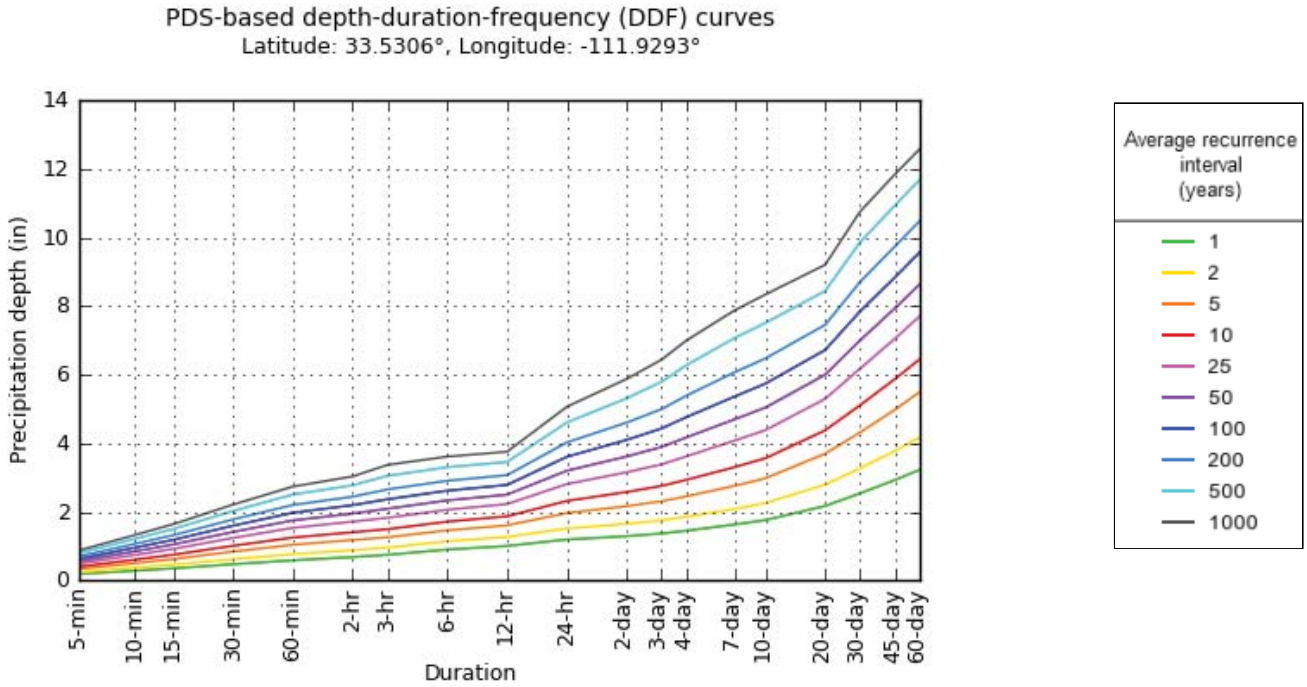
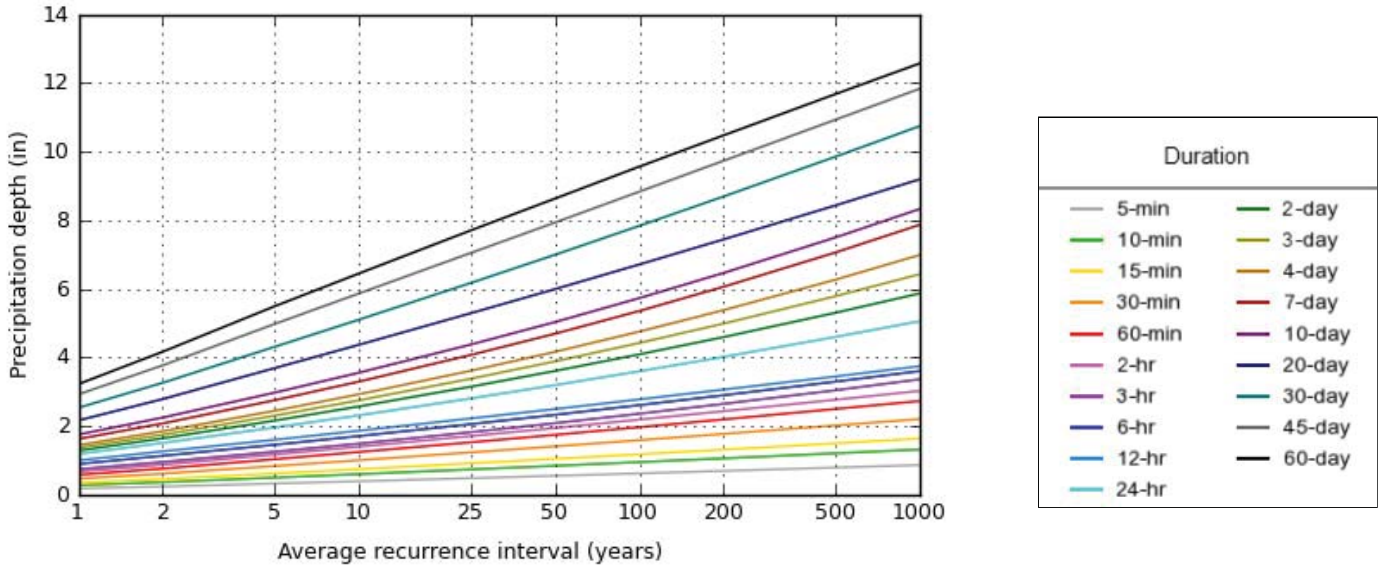
PF graphical





NOAA Atlas 14, Volume 1, Version 5 Created (GMT): Tue Feb 5 20:17:35 2019

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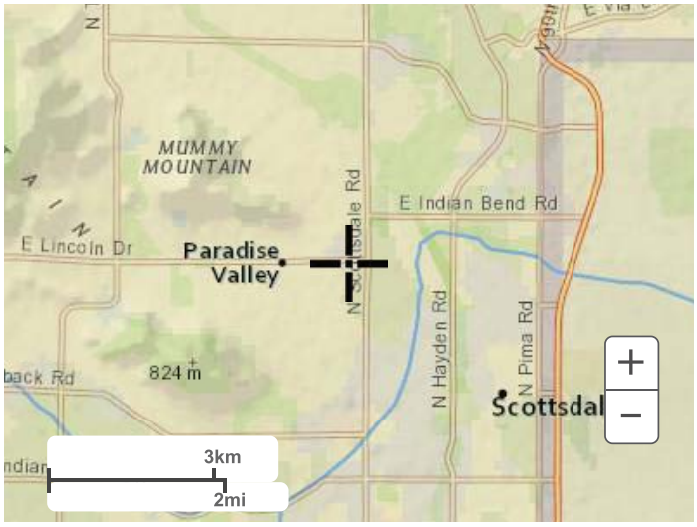
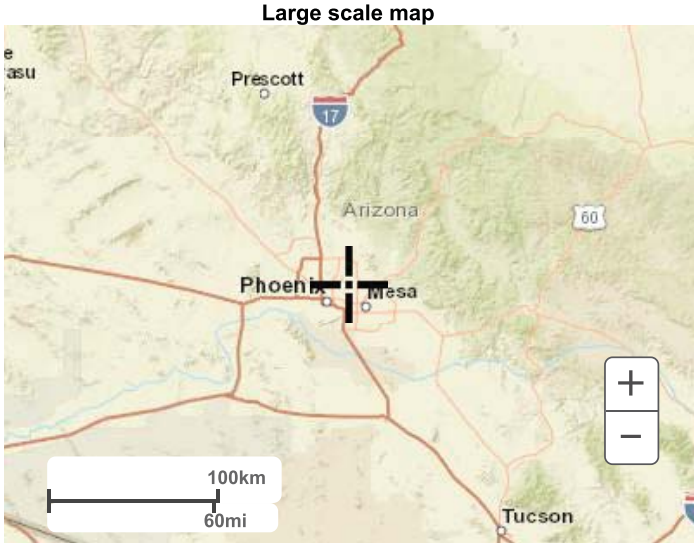
Maps & aerials

Small scale terrain



Large scale terrain

Large scale map



Large scale aerial

APPENDIX B

Runoff Coefficients, Retention and Drywell Calculations, VortSentry(R) HS Stormwater Treatment Detail

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Table 3.2
RUNOFF COEFFICIENTS FOR MARICOPA COUNTY

Land Use Code	Land Use Category	Runoff Coefficients by Storm Frequency[1, 2]							
		2-10 Year		25 Year		50 Year		100 Year	
		min	max	min	max	min	max	min	max
VLDR	Very L						0.60	0.45	0.65
LDR	Low D						0.64	0.53	0.70
MDR	Mediu						0.78	0.60	0.80
MFR	Multiple Family Residential[3, 4]	0.65	0.75	0.72	0.83	0.78	0.90	0.82	0.94
I1	Industrial 1[3]	0.60	0.70	0.66	0.77	0.72	0.84	0.75	0.88
I2	Industrial 2[3]	0.70	0.80	0.77	0.88	0.84	0.95	0.88	0.95
C1	Commercial 1[3]	0.55	0.65	0.61	0.72	0.66	0.78	0.69	0.81
C2	Commercial 2[3]	0.75	0.85	0.83	0.94	0.90	0.95	0.94	0.95
P	Pavement and Rooftops	0.75	0.85	0.83	0.94	0.90	0.95	0.94	0.95
GR	Gravel Roadways & Shoulders	0.60	0.70	0.66	0.77	0.72	0.84	0.75	0.88
AG	Agricultural	0.10	0.20	0.11	0.22	0.12	0.24	0.13	0.25
LPC	Lawns/Parks/Cemeteries	0.10	0.25	0.11	0.28	0.12	0.30	0.13	0.31
DL1	Desert Landscaping 1	0.55	0.85	0.61	0.94	0.66	0.95	0.69	0.95
DL2	Desert Landscaping 2	0.30	0.40	0.33	0.44	0.36	0.48	0.38	0.50
NDR	Undeveloped Desert Rangeland	0.30	0.40	0.33	0.44	0.36	0.48	0.38	0.50
NHS	Hillslopes, Sonoran Desert	0.40	0.55	0.45	0.60	0.48	0.66	0.50	0.70
NMT	Mountain Terrain	0.50	0.70	0.65	0.80	0.70	0.90	0.75	0.90

POST-DEVELOPMENT
Most of the site will be covered with pavement and rooftops with the exception of medians/islands found between parking area and adjacent streets

PRE-DEVELOPMENT
average C value of 0.44 used

Notes:

1. Runoff coefficients for 25-, 50- and 100-Year storm frequencies were derived using adjustment factors of 1.10, 1.20 and 1.25, respectively, applied to the 2-10 Year values with an upper limit of 0.95.

2. The ranges of runoff coefficients shown for urban land uses were derived from lot coverage standards specified in the zoning ordinances for Maricopa County.

3. Runoff coefficients for urban land uses are for lot coverage only and do not include the adjacent street and right-of-way, or alleys.

4, Values are based on the NDR terrain class. Values should be increased for NHS and NMT terrain classes by the difference between NHS (or NMT) and the NDR C values, up to a maximum of 0.95. Engineering judgement should be used.

5. Maricopa County has adopted specific values of C for each land use and storm frequency in the Drainage Policies and Standards for Maricopa County, Arizona (Maricopa County, 2007). These are the standard default values. The engineer/hydrologist may develop a computed composite value of C based on actual land uses, but must fully document the computations and assumptions and submit them to Maricopa County for approval. Many jurisdictions in Maricopa County may have adopted specific C coefficient values and procedures. The user should check with the appropriate agency before proceeding.

SMOKE TREE RESORT
Retention Volume Calculations

Pre vs. Post										
Development Condition	**Drainage (1) Area A** (acres)	**Drainage (1) Area A** ($feet^2$)	**Runoff (2) Coefficient C**	**Precipitation (3) Depth P** (inches)	**Volume (4) Required V_{req}** (acre-ft)	**Volume (4) Required V_{req}** (cubic feet)	**Retention Basin/Tank ID**	**12' Dia. Underground Tank** (LF)	**Volume (5) Provided V_{prov}** (acre-ft)	**Volume (5) Provided V_{prov}** (cubic feet)
PRE	4.61	200,829	0.44	2.19	0.37	**16,127**				
POST			0.95	2.19	0.80	**34,819**	**RET**	175	0.45	**19,792**
DIFFERENCE					**0.43**	**18,692**			**0.45**	**19,792**

Reference: Drainage Design Manual for Maricopa County (2018)

Notes:

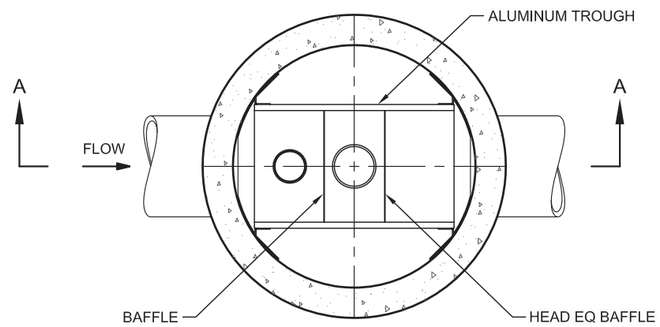
1. Drainage sub-basin delineated per Drainage Map (Plate 1).
2. Runoff coefficient values of 0.44 for undevelopd area and 0.95 for resorts per Drainage Design Manual for Maricopa County (see Appendix B).
3. Precipitation depth per NOAA Atlas 14 rainfall data (see Appendix A).
4. V_{req} = A x C x (P/12) = Volume required
5. V_{prov} = 12' Diameter Pipe LF x π $(6')^2$

SMOKE TREE RESORT
Drywell Calculations

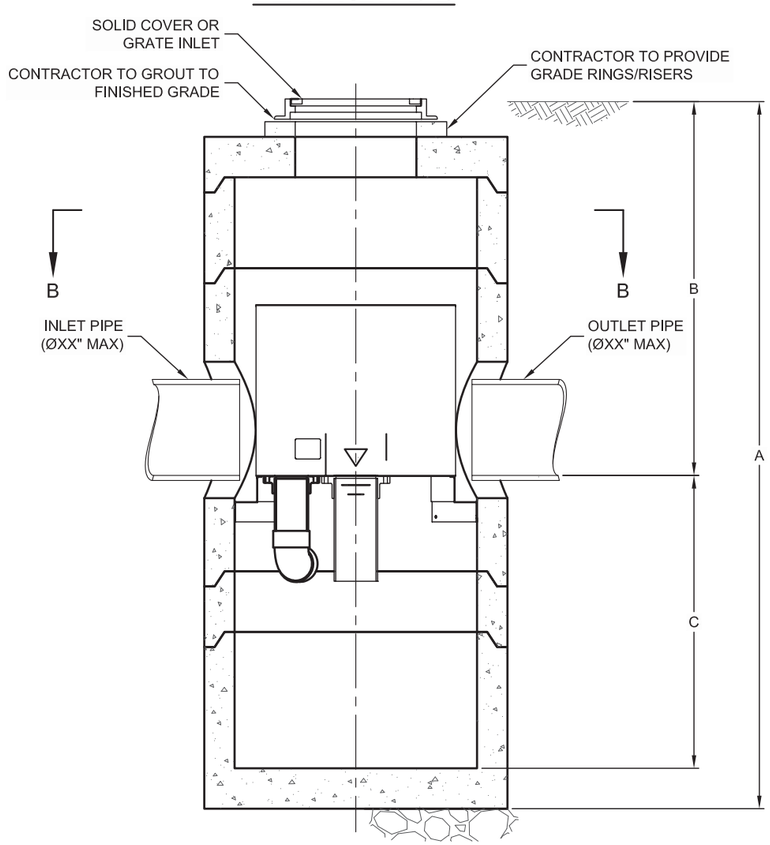
Retention Basin ID	Volume Required to Drain(2) (ft^3)	Soil Infiltration Rate(3) ($ft^3/hr/ft^2$)	Flowrate Required to Drain Within 36 hrs (4) (cfs)	Drywell Flow Rate(5) (cfs)	Number Of Drywells Required (6)	Number Of Drywells Provided*
RET	19,792	0.00	0.15	0.10	**2**	**1**
				TOTAL	**2**	**1**

Notes:
(1) Bottom area per preliminary grading and drainage plans prepared by CVL Consultants, Inc.
(2) Volume required to drain = Volume provided for retention basins.
(3) Soil infiltration rate at the bottom of a compacted basin is below the minimum requirement of 0.5in/hr per DPSM Std 6.10.12, Hence, no infiltration was assumed.
(4) Flowrate Required to Drain Basin Within 36 hrs = (Volume Required to Drain)/(36 x 3600)
(5) Drywell flow rate assumed to be minimum required per DPSM Std 6.10.13. Field test should be performed to calculate actual dry well flow rate.
(6) (Number Of Dry Well(s) Required)=(Flowrate Required to Drain Basin Within 36 hrs)/(Dry Well Flowrate Capacity)

Note to contractor:
*Initially one drywell will be installed and field tests performed per the DPSM Standard 6.10.12 to check the actual flow rate of drywell.
Drywells will be provided and tested until the percolation requirement is achieved per DPSM Standard 6.10.12.
The amount of drywells needed shall be changed in accordance to the newly calculated flow rate.



PLAN VIEW B-B



SECTION A-A

VortSentry®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,991,114; 7,296,692; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

VORTSENTRY HS DESIGN NOTES

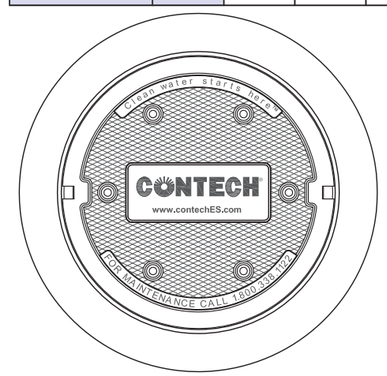
VSHS RATED TREATMENT CAPACITY IS SHOWN IN THE TABLE BELOW, OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY VARIES. CONTACT YOUR CONTECH REPRESENTATIVE FOR ADITIONAL INFORMATION.

THE STANDARD SOLID COVER CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW.

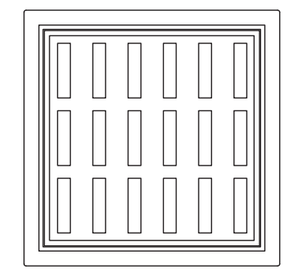
	CONFIGURATION OPTION DESCRIPTION
	GRATE INLET (NO INLET PIPE)
	GRATE INLET WITH INLET PIPE

VORTSENTRY HS GENERAL INFORMATION

Model	Manhole Diameter (ID)		Total Treatment Flow Rate		Typical Total Distance Rim to Outside Bottom A		Typical Distance Rim to Invert B		Typical Depth Below Invert (inside) C		Approximate Minimum Distance Rim to Invert		Maximum Pipe Diameter (ID)	
	FT	mm	CFS	L/S	FT	m	FT	m	FT	mm	FT	m	IN	mm
HS36	3	900	0.55	15.6	10.16	3.10	4.08	1.24	5.58	1702	3.00	0.91	18	450
2 HS48	4	1200	1.20	34.0	13.25	4.04	6.00	1.83	6.75	2057	4.00	1.22	24	600
3 HS60	5	1500	2.20	62.3	15.13	4.61	6.50	1.98	7.96	2426	4.82	1.47	30	750
HS72	6	1800	3.70	104.8	16.56	5.05	6.75	2.06	9.15	2788	5.59	1.70	36	900
HS84	7	2100	5.60	158.6	18.85	5.75	7.75	2.36	10.35	3156	5.00	1.52	42	1050
1 HS96	8	2400	8.10	229.4	20.87	6.36	8.50	2.59	11.54	3518	6.91	2.11	48	1200



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



FRAME AND GRATE
(24" SQUARE)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS)			*
PEAK FLOW RATE (CFS)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	
	*	*	

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

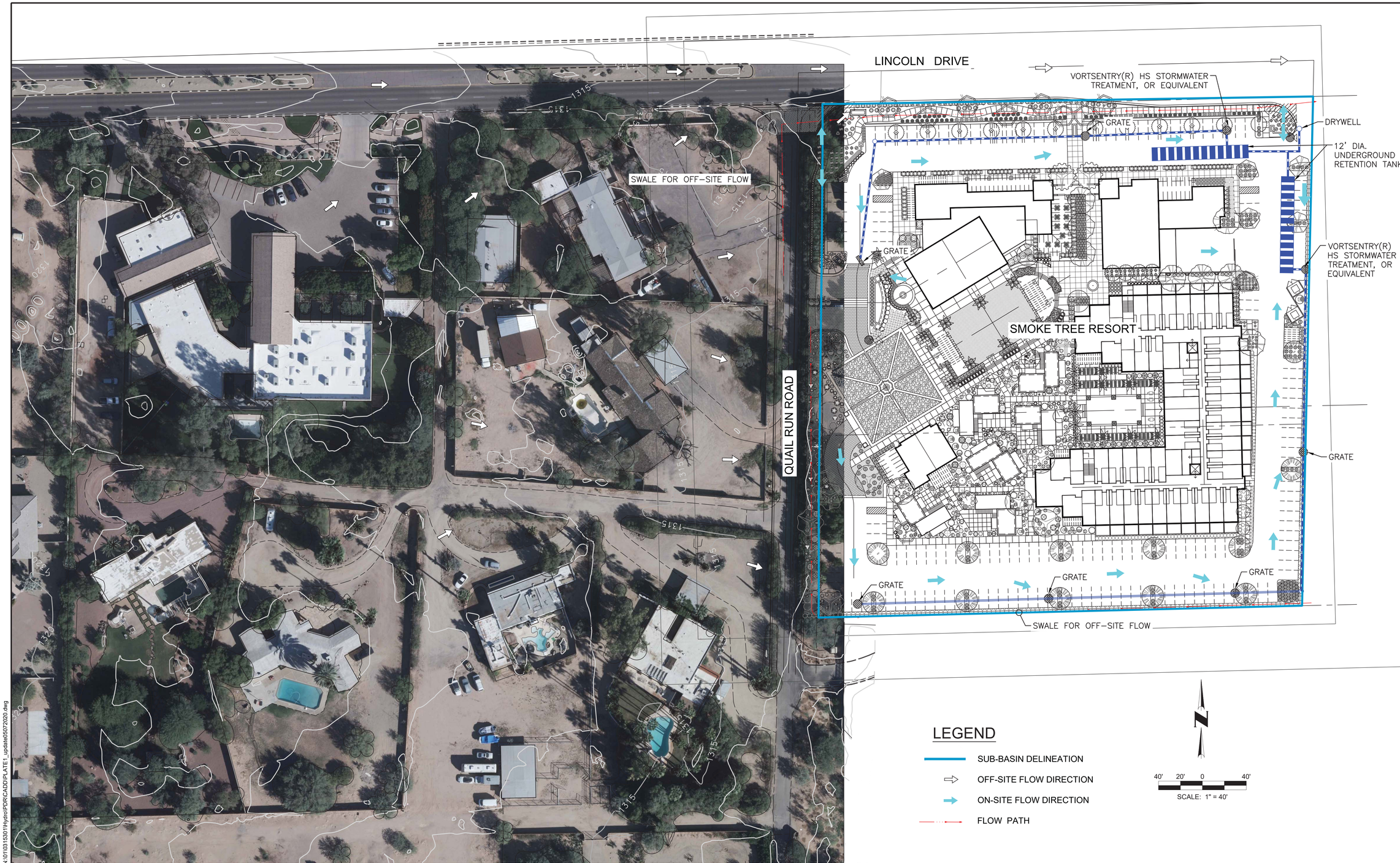
CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

VORTSENTRY HS
STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\26 VORTSENTRY HS\40 STANDARD DRAWINGS\DWG\VSHS-DTL.DWG 5/3/2013 3:58 PM

PLATE

CVL



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(602) 264-6831
www.cvlci.com

NO.	REVISION	DATE

Coe & Van Loo Consultants, Inc.

DRAINAGE MAP

SMOKE TREE RESORT
TOWN OF PARADISE VALLEY, ARIZONA

PLATE

SHEET 1 OF 1

CVL Contact: OSCAR GARCIA
CVL Project #: SMOKE TREE

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PROJECT NO. 1-01-03153-01

Printed By: **AnaR** Print Date: **May 7, 2020** Filename: N:\01\03153\01\Hydro\PDR\CADD\PLATE1_update05072020.dwg

May 8, 2020

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Wastewater Capacity Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Registered Professional Engineer (Civil)
CERTIFICATE NO.
67062
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Date Signed 05/08/20
ARIZONA, U.S.A.

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4550 N. 12th Street

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Contact: Cassandra Alejandro, P.E.

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Job # 1.01.0315301

CVL CONSULTANTS

WASTEWATER CAPACITY STUDY

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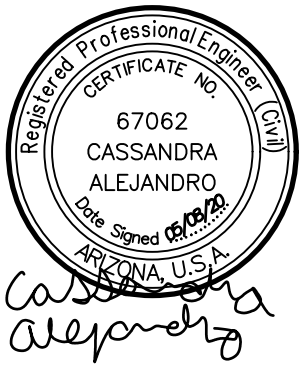
Appendix A: City of Scottsdale "Will-Serve" Letter
Appendix B: Applicable Pages from the *Town of Paradise Valley Wastewater Master Plan (Arcadis, May 2015)*
Appendix C: Sewer Quarter Section Maps
Appendix D: Sewer Analysis Results



1.0 INTRODUCTION

1.1 General Description

Smoke Tree Resort is a proposed redevelopment of an existing resort complex on approximately 5 acres of existing special use permit resort land located in the Town of Paradise Valley, Arizona. A total of 122 new rental rooms are proposed. Room counts have not been approved by the Town of Paradise Valley's Town Council. Room counts may be revised. The site will also include a Restaurant, Market, and Coffee Shop with square footages estimated and may be revised at 3,200; 4,000; and 1,800 respectively.

This report addresses sewer capacity requirements for the proposed development. The sewer system will outfall to the City of Scottsdale Sewer System. The system's design will adhere to the *City of Scottsdale Design Standards and Policies Manual, January 2018* and the *International Plumbing Code.*

1.2 Project Location

Smoke Tree Resort is located in Section 10 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The development is bordered by East Lincoln Drive to the north and Quail Run Road to the west. See Figure 1, 2, 3, and 4.

1.3 Topographic Conditions

Smoke Tree Resort ranges in elevation from approximately 1,318 feet above mean sea level (MSL) on the southwest corner of the property to approximately 1,313 feet MSL on the northeast corner of the property. Overall, the property generally slopes to the north northeast toward Lincoln Drive.

1.4 Existing Sewer Capacity

The Town of Paradise Valley has two wastewater providers, the City of Phoenix and the Town of Paradise Valley. The Town of Paradise Valley's wastewater system is operated, maintained, and treated by the City of Scottsdale through an intergovernmental agreement. Appendix A contains the City of Scottsdale "Will-Serve" letter. Smoke Tree Resort will be served by the City of Scottsdale per the *Town of Paradise Valley Wastewater Master Plan (Arcadis, May 2015)*. Appendix B includes applicable Pages from the *Town of Paradise Valley Wastewater Master Plan (Arcadis, May 2015)* depicting the direction of flow into the City of Scottsdale's wastewater system. Appendix C includes City of Scottsdale Wastewater Quarter Section Maps depicting the location and flow direction of the existing gravity sewer network servicing the Smoke Tree Resort.

NOT TO SCALE	VICINITY MAP	CVL CONSULTANTS CELEBRATING 60 YEARS
1.01.0315301		
4550 North 12th Street Phoenix, Arizona 85014 Phone 602-264-6831 http://www.cvlci.com	SMOKE TREE RESORT	FIGURE 1

N:\01\0315301\Enviro\Parcel\cad\Vicinity Map.dwg **NicoleW December 7, 2018**

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS

PROPOSED SITE PLAN - GROUND LEVEL

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A8

SEP 6, 2019
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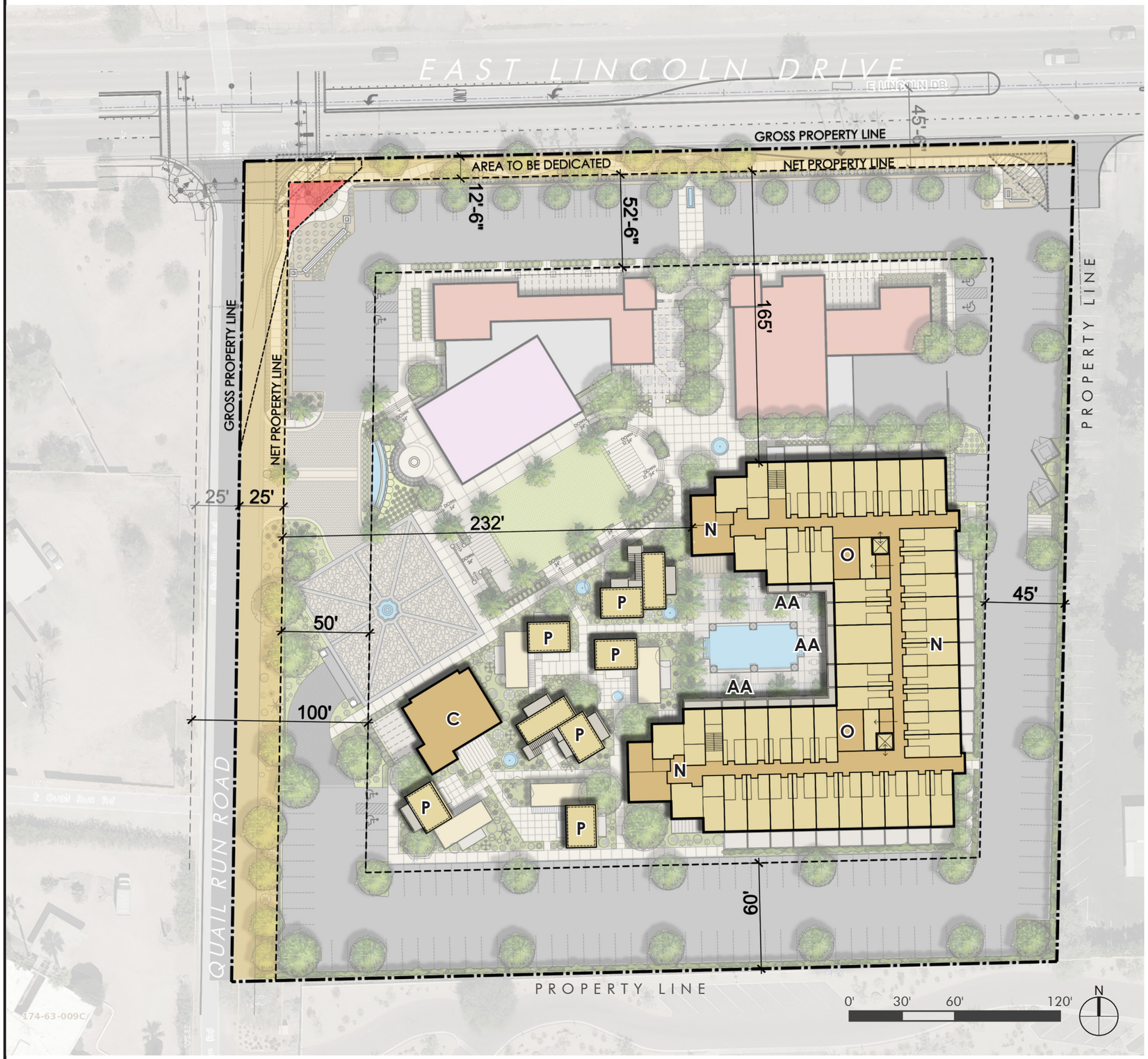
MAY 5, 2020



PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - SECOND LEVEL

The smoke tree resort

7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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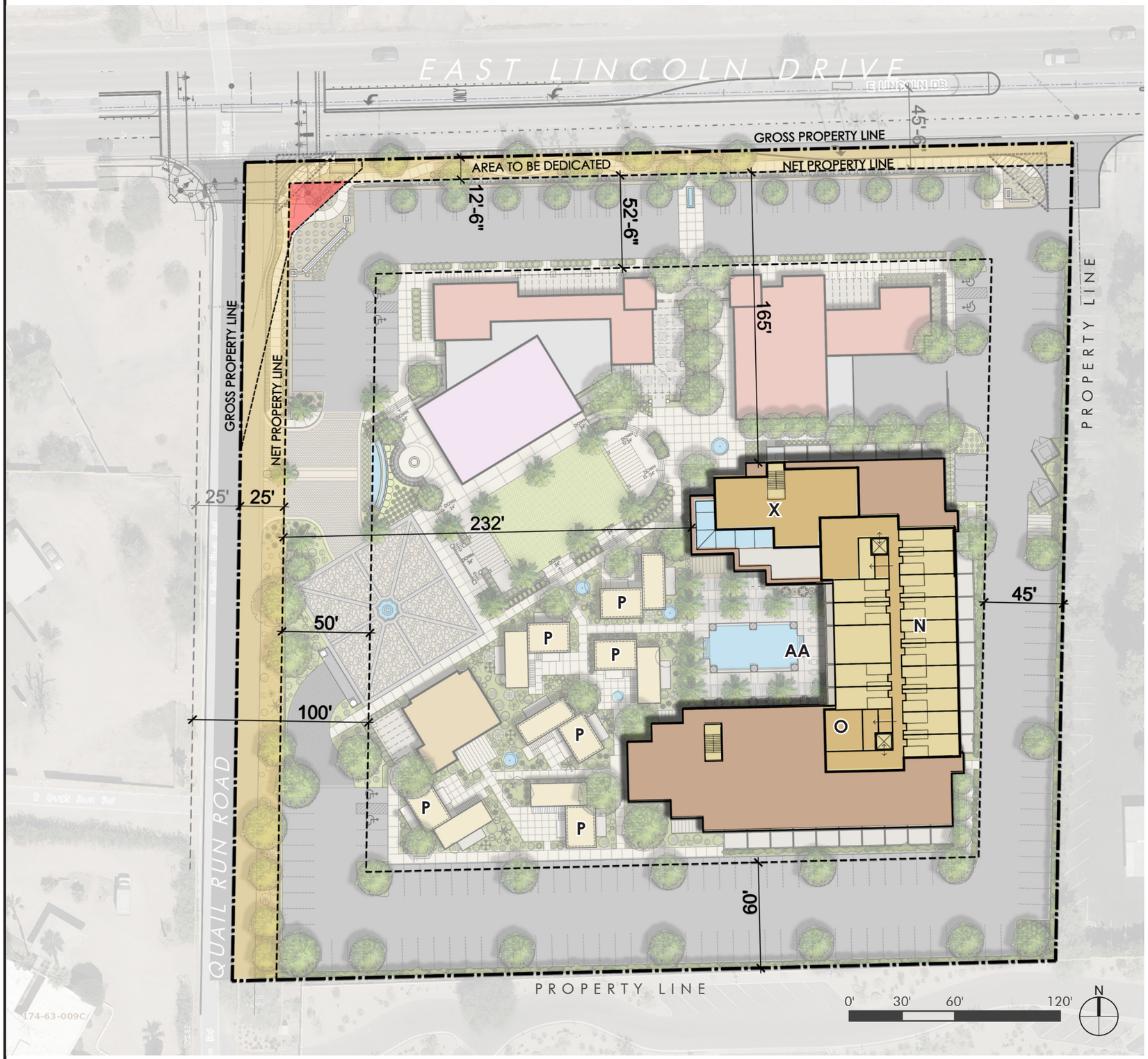
MAY 5, 2020



PROGRAM:

N. Resort Suites (guest rooms)
O. Meeting Room
X. Lounge
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - THIRD LEVEL

The smoke tree resort

7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A10

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

2.0 WASTEWATER SYSTEM DESIGN CRITERIA

The following criteria was be used in developing the sewer capacity study.

2.1 Design Criteria

This sewer study is based on criteria from the *City of Scottsdale Design Standards & Policies Manual, January 2018* and *Integrated Wastewater Master Plan, March 2008*. Design flow criteria are presented in Table 1 and hydraulic design criteria are presented in Table 2.

Table 1 - Design Flow Criteria

Description	Unit	Average Day Flow (gpd/unit)	Peak Day Flow (gpm/pool)	Peak Day Flow (gpd/unit)	Peaking Factor
Resort Hotel Room[1]	Room	380	-	1,710	4.5
Pool Backwash[2]	Pool	N/A	60	-	-
Commercial/Retail	Square Foot	0.5	-	-	3.0
Restaurant	Square Foot	1.2	-	-	6.0

[1]*Includes site amenities*
[2]*Assumes backwash rate of 60 gpm/small pool for a 10 minute duration.*

Table 2 – Hydraulic Design Criteria

Description	Criteria
Minimum Sewer Diameter	8-inch
Minimum Full Pipe Velocity	2.5 fps
Minimum Slope	
8-inch Sewer	0.0052 ft/ft
Manning's "n"	0.013
Maximum Pipe Velocity	10 fps
d/D (≤ 12-inch) at Peak Flow	0.65
d/D (> 12-inch) at Peak Flow	0.70
Manhole Spacing (8 to 15-inch)	500 ft
Minimum Drop Across Manhole	0.1 ft
Change in Sewer Diameter	Top invert of upstream pipe ≥ top invert of downstream
Minimum Depth of Cover	4 ft

2.2 Design Calculations

Table 3 contains the wastewater flow generation calculations for flows for the Smoke Tree Resort.

Table 3 – Wastewater Flow Generation

Land Use	Description	Unit	No. of Units	Average Day Unit Flow (gpd/unit)	Average Flow (gpd)	PF	Peak Flow (gpm/pool)	Peak Flow (gpd)
Room	Resort Hotel[1]	Room	122	380	46,360	4.5	N/A	208,620
Pool	Backwash Rate[2]	Pool	1	N/A	N/A	N/A	60	86,400
Restaurant	Restaurant	Sq. Ft.	3,200	1.2	3,840	6.0	N/A	23,040
Market	Commercial/Retail	Sq. Ft.	4,000	0.5	2,000	3.0	N/A	6,000
Coffee Shop	Commercial/Retail	Sq. Ft.	1,800	0.5	900	3.0	N/A	2,700
Total					53,100			326,760

[1]*Includes site amenities.*
[2]*Assumes backwash rate of 60 gpm/small pool for a 10 minute duration.*

As shown, the peak flow calculations include peak flows calculated per the City of Scottsdale design criteria.

3.0 EXISTING AND PROPOSED INFRASTRUCTURE

3.1 Existing Sewer Lines

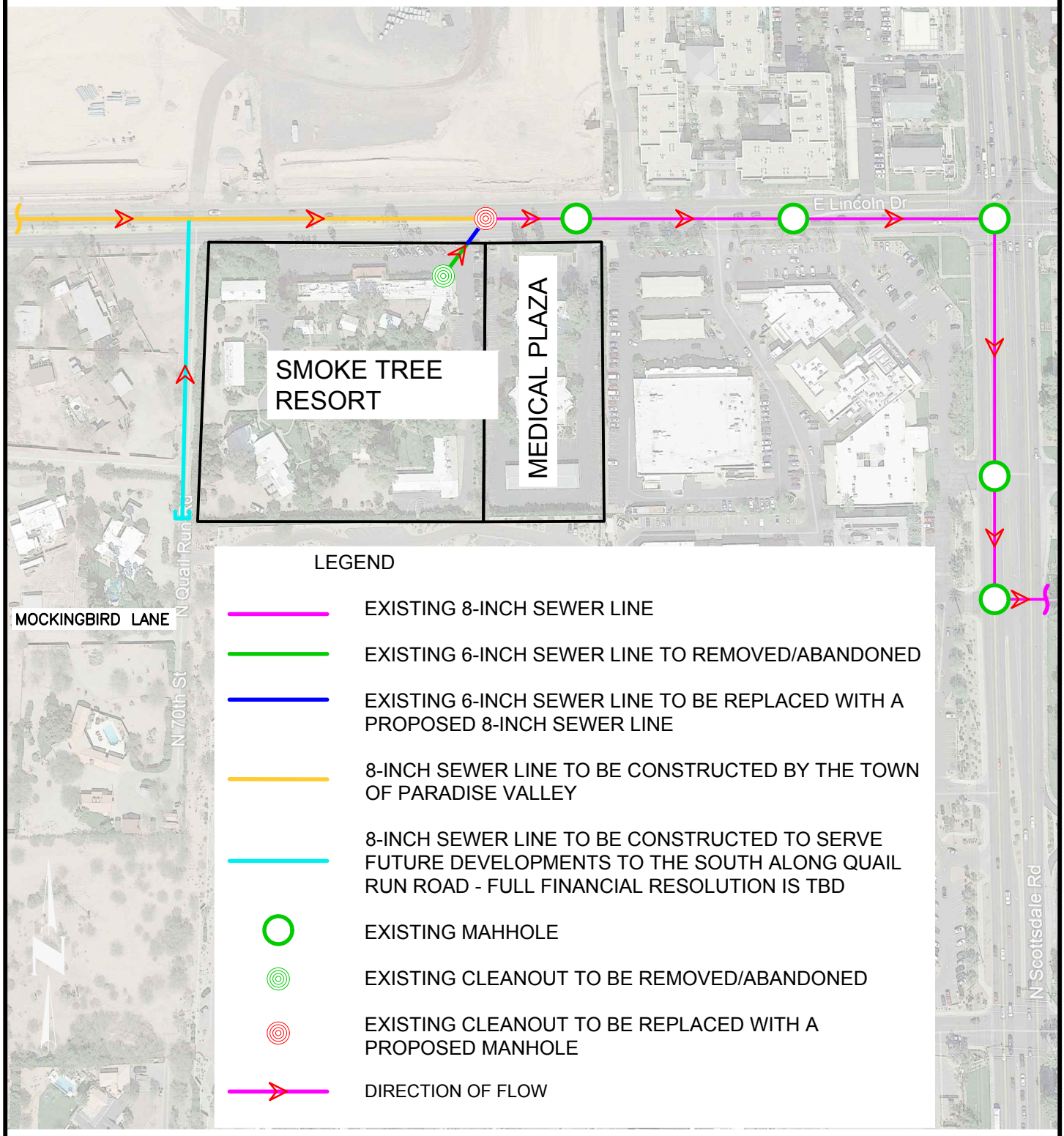
An existing 8-inch gravity sewer is adjacent to the site in Lincoln Drive and accepts flows from the existing 6-inch VCP gravity sewer serving the Smoke Tree Resort. Wastewater flows east within the existing 8-inch sewer line in Lincoln Drive to North Scottsdale Road. From here the wastewater flows south along North Scottsdale Road to McDonald Drive flowing east. (See Figure 3 and Appendix C for direction of flow.) Flow is ultimately treated at the 91st Avenue Regional Wastewater Treatment Plant in west Phoenix, which is owned and operated by the Sub-Regional Operating Group (SROG).

3.2 Proposed Infrastructure

The existing 6-inch VCP gravity sewer serving the Smoke Tree Resort will be replaced by 21.02-feet of 8-inch gravity sewer as designed by T.Y. Lin at a slope of 0.0052 ft/ft per the Town of Paradise Valley Arizona Roadway and Utility Improvements – Lincoln Drive Project No. 2016-14. Smoke Tree Resort will reimburse the Town of Paradise Valley for the replacement off the 6-inch VCP gravity sewer with the 8-inch gravity sewer and manhole as part of the Lincoln Road Improvement Project No. 2016-14.

The on-site collection system will consist of sewer service lines and is designed to convey wastewater from the south to the north where it will connect to the 8-inch gravity sewer service designed by T.Y. Lin and flow into the existing 8-inch gravity sewer line in Lincoln Drive. Wastewater will flow east within the existing 8-inch sewer line in Lincoln Drive to North Scottsdale Road. From here the wastewater flows south along North Scottsdale Road eventually to McDonald Drive flowing east. All sewer lines will be located in major streets or in easements dedicated for that use. Project No. 2016-14 is going to stub out an 8-inch gravity sewer line in Quail Run Road which will not be utilized by the development of the Smoke Tree Resort. This 8-inch stub will be extended to the south end of the proposed Quail Run Road improvements adjacent to the Smoke Tree development for use by future development to the south. Full financial resolution for the extension of the 8-inch gravity sewer along Quail Run Road adjacent to the Smoke Tree Resort is yet to be determined.

A sewer capacity analysis was completed to design the wastewater line for Smoke Tree Resort. The analysis may be seen in Appendix D. The sewer mains will be sized according to the anticipated cumulative flows as the lines are routed to the existing 8-inch gravity sewer within Lincoln Dive. The pipe size and minimum and maximum slope required will be determined based on the criteria established in Section 2.1. Manholes within the development are assumed to have 6 feet of depth to verify cover depth and allow for slope design.



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1.01.0315301

4550 North 12th Street
Phoenix, Arizona 85014
Phone 602-264-6831
http://www.cvlci.com

WASTEWATER SYSTEM LAYOUT

SMOKE TREE RESORT

CVL CONSULTANTS
CELEBRATING 60 YEARS

FIGURE 3

N:\01\0315301\Enviro\Parcel\cad\Vicinity Map.dwg **NicoleW October 7, 2019**

4.0 SUMMARY

This wastewater system analysis presents the collection system design criteria and proposed wastewater infrastructure for the Smoke Tree Resort. This wastewater system will be owned by the Town of Paradise Valley and operated by the City of Scottsdale. The sewer infrastructure conforms to the City of Scottsdale's minimum standards and is consistent with the City's current *Design Standards and Policies Manual, January 2018*.

The results of this analysis are summarized as follows:

- The proposed collection system is designed to meet the *City of Scottsdale Design Standards and Policies Manual, January 2018.*
- The proposed collection system will discharge to the 8-inch gravity sewer service designed by T.Y. Lin connecting the Smoke Tree Resort to the existing 8-inch gravity sewer line in Lincoln Drive.
- Smoke Tree Resort will reimburse the Town of Paradise Valley for the replacement off the 6-inch VCP gravity sewer with the 8-inch gravity sewer and manhole as part of the Lincoln Road Improvement Project No. 2016-14.
- Full financial resolution for the extension of the 8-inch gravity sewer along Quail Run Road adjacent to the Smoke Tree Resort is yet to be determined.
- Minimum and maximum pipe velocities were met for all proposed sewer lines.
- The average daily flow for Smoke Tree Resort is estimated at 53,100 gpd.
- The peak flow for Smoke Tree Resort including pool backwash is estimated at 326,760 gpd.
- Wastewater demands include site amenities within the Resort Hotel Room demand of 380 gpd for average daily flow and 1,710 gpd for peak flow. The Restaurant, Market, and Coffee Shop have been added as individual land uses beyond site amenities as requested by the City of Scottsdale.

The Town has noted that the Developer shall extend 8" sewer stub out on N. Quail Run Rd. to be installed with Town's Lincoln Rd. Improvement project to the end of the Developer's N. Quail Run Rd. improvements. Developer may seek sewer reimbursement agreement. Installation with N. Quail Run Rd. construction will avoid future pavement cuts and disruption to the resort and residents. The sewer reimbursement agreement may be initiated by the developer following the requirements of Chapter 15 of the Town Code. The Developer shall provide the Town with any easements and access required to install the 8" sewer lateral as part of the Lincoln Drive improvement project. The Developer shall reimburse the Town for all costs associated with design and construction of the 8" sewer lateral and required manhole. This may be included in a Development Agreement.

APPENDIX A

City of Scottsdale “Will-Serve” Letter

Water Resources

9379 E. San Salvador
Scottsdale, AZ 85258

PHONE 480-312-5685
FAX 480-312-5615
www.ScottsdaleAZ.gov

February 11, 2020

Maricopa County Environmental Services Department
1001 North Central Avenue, Suite 150
Phoenix, AZ 85004

Re: Sanitary Sewer Connection
Smoke Tree Resort
Town of Paradise Valley

Gentlemen:

This letter is provided to satisfy those submittal requirements under General Aquifer Protection Permit 4.01 for extension of a sanitary sewer collection system as indicated below:

The City of Scottsdale's sanitary sewer collection system has sufficient capacity to accept the flows generated from this project and convey those flows into the City of Scottsdale's sewer collection system.

The City of Scottsdale's sanitary sewer collection system which discharges to the Princess metering station has sufficient capacity to accept the residual waste stream resulting from the treatment of flows generated from this project. Downstream of the Princess metering station, these residual flows enter into the Sub-regional Operating Group (SROG) Salt River Outfall (SRO) trunk line.

The City of Scottsdale has established operational requirements and maintenance procedures to assure efficient conveyance of sanitary sewer flows throughout its collection system.

If you have any questions regarding this information, please contact our office at 480-312-5685.

Sincerely,

Richard Sacks, P.E.
Scottsdale Water

17984063v1

FINAL Basis of Design Report

☑ APPROVED

☐ APPROVED AS NOTED

☐ REVISE AND RESUBMIT

CITY OF SCOTTSDALE

SCOTTSDALE WATER

9379 E San Salvador Dr.
Scottsdale, AZ 85258

Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance.
For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

01/29/2020

BY rsacks **DATE** 1/29/2020

January 20, 2020

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Wastewater Capacity Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Registered Professional Engineer (Civil)
CERTIFICATE NO.
67062
CASSANDRA
ALEJANDRO
Date Signed 01/20/20
ARIZONA, U.S.A.

Cassandra Alejandro

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

Job # 1.01.0315301

CVL CONSULTANTS

WASTEWATER CAPACITY STUDY

APPENDIX B

Applicable Pages from the *Town of Paradise Valley Wastewater Master Plan (Arcadis, May 2015)*

FINAL REPORT

WASTEWATER MASTER PLAN

MAY 2015

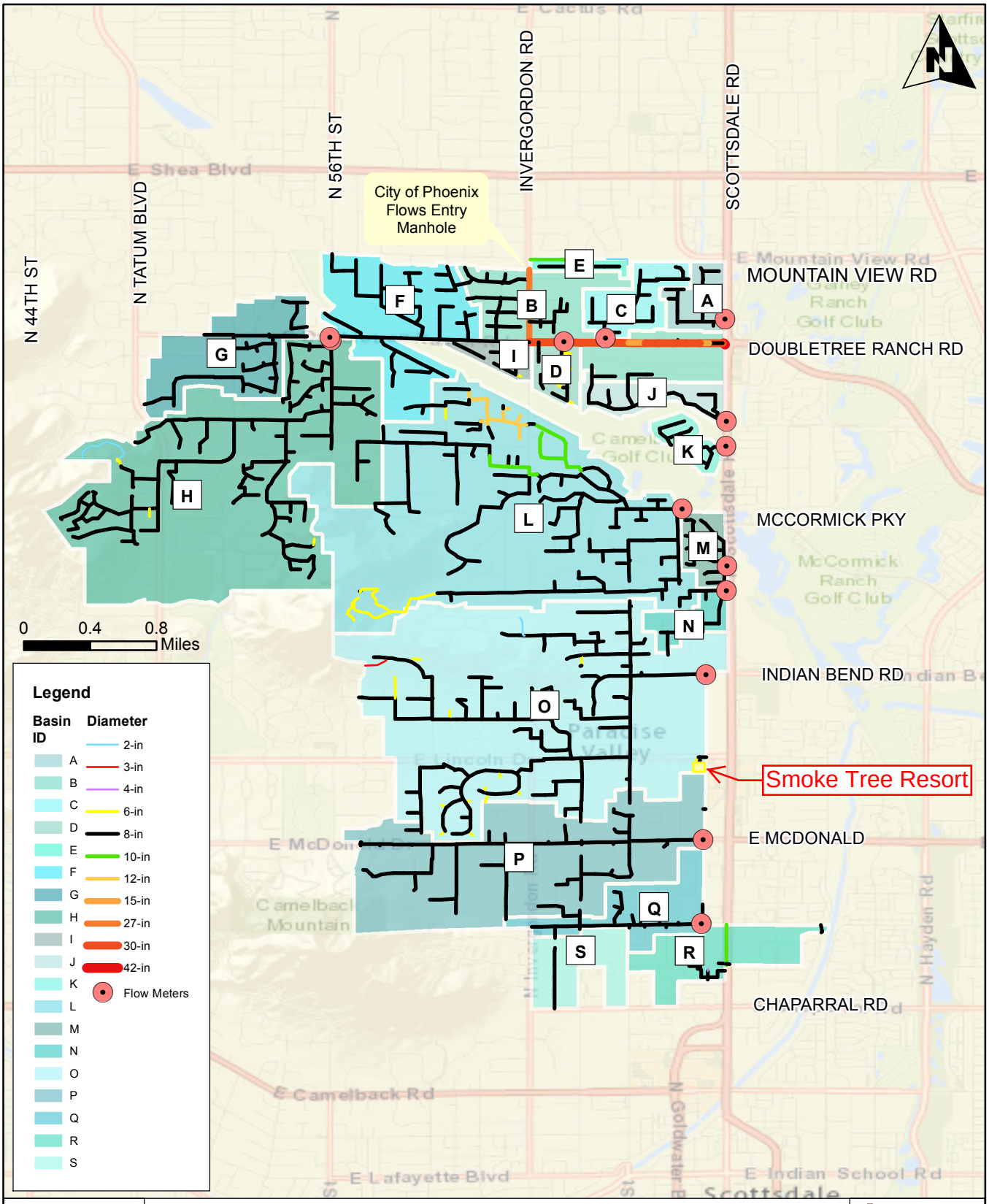
Timothy Francis

Registered Professional Engineer (Civil)
CERTIFICATE NO.
22684
TIMOTHY
FRANCIS
Date Signed 5/12/15
ARIZONA, U.S.A.

Expires 12/31/17

00776004.0001

ARCADIS
Infrastructure · Water · Environment · Buildings

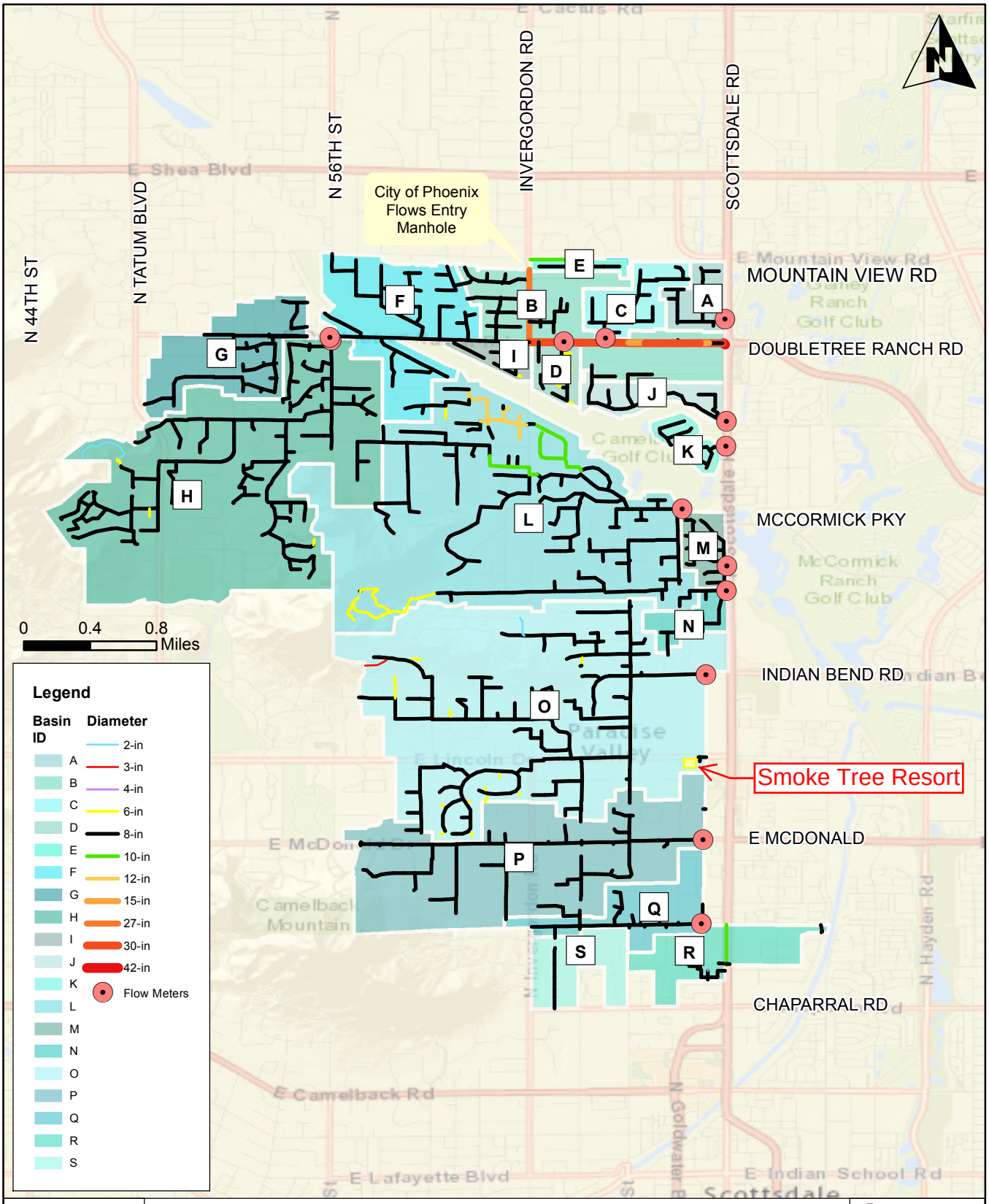


TOWN OF PARADISE VALLEY, ARIZONA
WASTEWATER MASTER PLAN

Existing Collection System

ARCADIS

May 2015
FIGURE 3-1

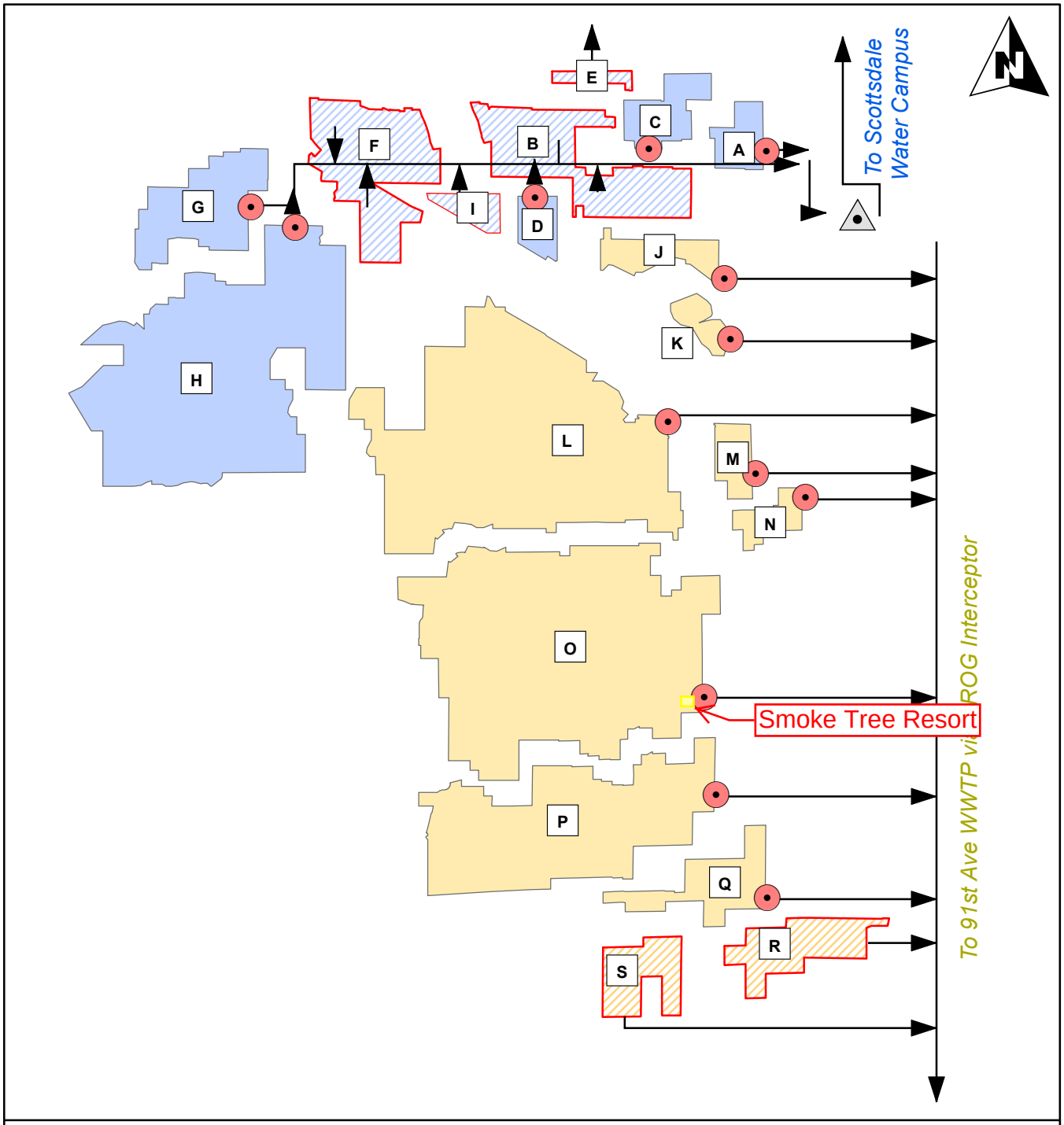


TOWN OF PARADISE VALLEY, ARIZONA
WASTEWATER MASTER PLAN

Existing Collection System

ARCADIS

May 2015
FIGURE 3-1



Legend

- Scottsdale Lift Station
- Flow Meters
- Schematic Basin Connectivity
- Flows to Scottsdale Water Campus, Metered
- Flow to Scottsdale Water Campus, Unmetered
- Flows to 91st Ave WWTP via SROG Interceptor, Metered
- Flows to 91st Ave WWTP via SROG Interceptor, Unmetered

TOWN OF PARADISE VALLEY, ARIZONA
WASTEWATER MASTER PLAN

Schematic of Existing Basin Connectivity

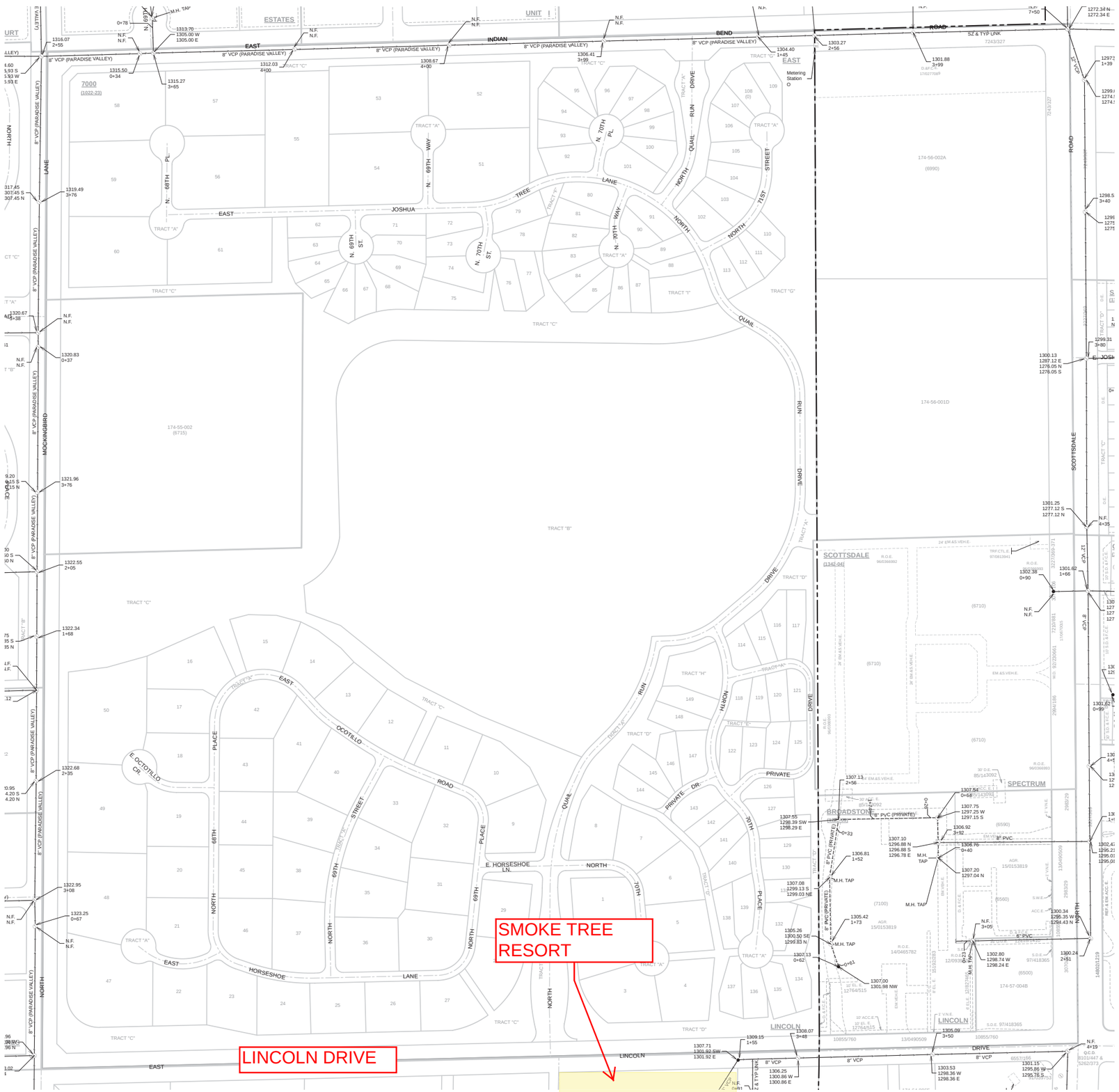
ARCADIS
Infrastructure · Water · Environment · Buildings

May 2015
FIGURE 3-2

APPENDIX C

Sewer Quarter Section Maps

23-44



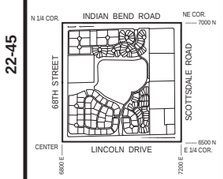
GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792.
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER, 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS 'CALCULATED' ON THE MAP.

LEGEND:

- Cleanout
- Lift Station
- Manhole
- Non-GPS Point
- Plug
- Sewer Service Point
- Sewer Tap Point
- Sewer Valve
- Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Sewer Main - Private

VICINITY MAP



NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

SEWER

QUARTER SECTION MAP

22-44

NE 1/4 SEC. 10 T2N R4E

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

N O T I C E

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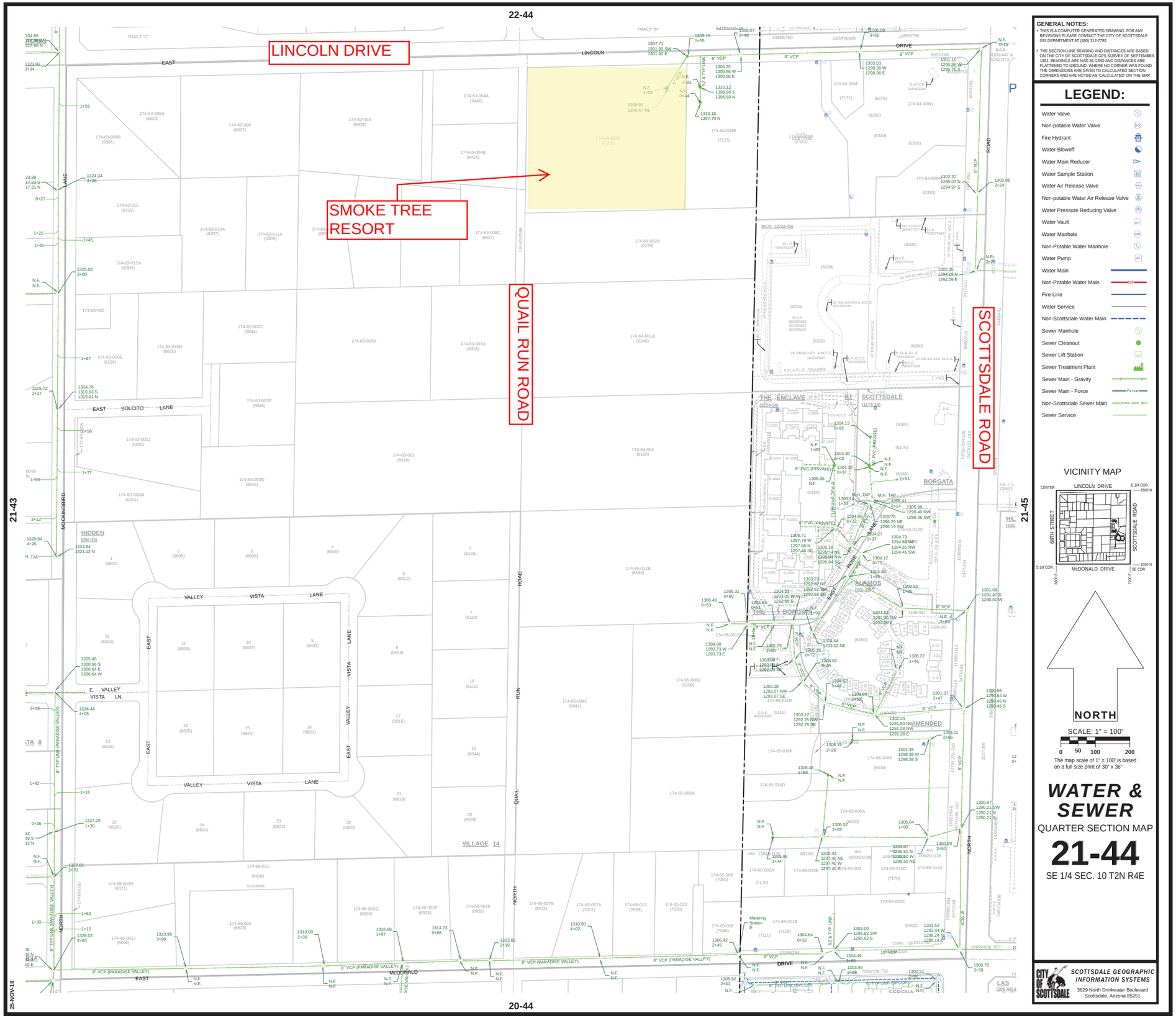
THE CITY OF SCOTTSDALE



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LEGEND:

- Water Valve
- Non-potable Water Valve
- Fire Hydrant
- Water Blowoff
- Water Main Reducer
- Water Sample Station
- Water Air Release Valve
- Non-potable Water Air Release Valve
- Water Pressure Reducing Valve
- Water Vault
- Water Manhole
- Non-Potable Water Manhole
- Water Pump
- Water Main
- Non-Potable Water Main
- Fire Line
- Water Service
- Non-Scottsdale Water Main
- Sewer Manhole
- Sewer Cleanout
- Sewer Lift Station
- Sewer Treatment Plant
- Sewer Main - Gravity
- Sewer Main - Force
- Non-Scottsdale Sewer Main
- Sewer Service

VICINITY MAP

NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

WATER & SEWER

QUARTER SECTION MAP

21-44

SE 1/4 SEC. 10 T2N R4E

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

N O T I C E

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THE CITY OF SCOTTSDALE

APPENDIX D

Sewer Analysis Results

Table B-1: Smoke Tree Resort System Calculations

Upstream MH	Downstream MH	DU or Units	Average Day Unit Factor (gpcpd)	Averge Daily Flow (gpd)	Cumlative Average Daily Flow	Peak Factor	Sewer Lines Peak Flow (gpd)	Upstream Peak Flow (gpd)	Peak Flow (gpd)	Total Estimated Peak Flow (gpd)	Estimated Ground Elevation (feet)	Estimated Length (feet)	Line Diameter (inches)	Sewer Line Slope (ft/ft)	Estimated Upstream MH Depth (feet)	Estimated Upstream Invert Elevation (feet)	Drop Through Manhole/Meeting Crowns (feet)	Estimated Downstream Invert Elevation (feet)	Sewer Line Capacity (gpd)	% Full (Q/Qf)	Velocity Flowing Full (fps)	Actual Peak Velocity (fps)	d/D
stub	MH 7	122	380.00	53,100	53,100	4.50	326,760	0	326,760	326,760.00	**1309.14**	21	8	0.0052	6.14	1302.33	0.10	1302.22	563,106	58%	2.5	2.59	0.55
	Pool Backwash	1	60 gpm/pool Peak Day Demand			86,400																	
	Restaurant	3200	1.2 gpd/sq ft			6																	
	Market	4000	0.5 gpd/sq ft			3																	
	Coffee Shop	1800	0.5 gpd/sq ft			3																	

Existing invert information from T.Y. Lin Plans for the Town of Paradise Valley Arizona Roadway and Utility Improvements Lincoln Drive Project No. 2016-14

Average Day Unit Factor includes all site amenities

May 8, 2020

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Water Service Impact Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Registered Professional Engineer (Civil)
CERTIFICATE NO.
67062
CASSANDRA
ALEJANDRO
Date Signed 05/08/20
ARIZONA, U.S.A.

Cassandra Alejandro

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

Job # 1.01.0315301

WATER SERVICE IMPACT STUDY

EPCOR

Accepted By: Brad Finke
(With comments)
Date: 5-18-2020

CVL CONSULTANTS

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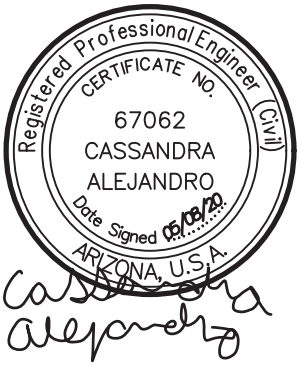

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Appendix A: Water Quarter Section Map
Appendix B: Fire Flow Test Results
Appendix C: WaterCAD Results (Domestic)
Appendix D: WaterCAD Results (Fire Flow)
Appendix E: Water Quality Report

EXECUTIVE SUMMARY

The proposed Smoke Tree Resort is the redevelopment of an existing resort complex. The proposed development will be constructed on approximately 5 acres of existing special use permit resort land on the southeast corner of East Lincoln Drive and Quail Run Road. The property lies within the Town of Paradise Valley. Water service to the property is provided by EPCOR Water. EPCOR has stubbed out a 12-inch waterline in Quail Run Road from the existing 16-inch waterline on the north side of Lincoln Drive as part of the Town's Roadway and Utility Improvement Project No. 2016-1. Smoke Tree Resort will be required to extend the 12-inch waterline to service their property from the 12-inch stub to the existing 8-inch waterline at the intersection of Quail Run road and Mockingbird Lane. Smoke Tree Resort will reimburse EPCOR the amount of $58,397.23 for the 12-inch stub as part of the Lincoln Road Improvement Project No. 2016-14 installed by EPCOR. The proposed 12-inch waterline and existing 16-inch waterline described above will serve the development.

Demand calculations were prepared based on the design requirements for the Town of Paradise Valley and EPCOR Water. Fire flow demands are per the 2018 International Fire Code with City of Phoenix Amendments. The calculated demands are as follow

- Average Day Demand: 54,763 gpd (38.03 gpm)
- Maximum Day Demand: 98,574 gpd (68.45 gpm)
- Peak Hour Demand: 164,290 gpd (114.09 gpm)
- Maximum Day + Fire Flow Demands: 2,068.45 gpm

Modeling of the system was conducted utilizing WaterCAD version 8i software. Pressures in the proposed development were found to range between 89 and 94 psi for the ADD, MDD, and PHD scenarios. Velocities during Fire Flow for all fire flow scenarios were below 10 fps. The proposed water system is designed to meet the Town of Paradise Valley design standards and EPCOR Water's *Developer and Engineering Guide,* dated January 2015.

The September 26, 2019 updated "Will-Serve" letter from EPCOR Water is provided in Appendix A.

...the Town's...

...at the intersection of Quail Run Road and Mockingbird Lane.

EXECUTIVE SUMMARY

The proposed Smoke Tree Resort is the redevelopment of an existing resort complex. The proposed development will be constructed on approximately 5 acres of existing special use permit resort land on the southeast corner of East Lincoln Drive and Quail Run Road. The property lies within the Town of Paradise Valley. Water service to the property is provided by EPCOR Water. EPCOR has stubbed out a 12-inch waterline in Quail Run Road from the existing 16-inch waterline on the north side of Lincoln Drive as part of ~~their~~ Roadway and Utility Improvement Project No. 2016-1. Smoke Tree Resort will be required to extend the 12-inch waterline to service their property from the 12-inch stub to the existing 8-inch waterline ~~in North Quail Run Road~~. Smoke Tree Resort will reimburse ~~the Town of Paradise Valley~~ for the 12-inch stub as part of the Lincoln Road Improvement Project No. 2016-14 installed by EPCOR. The proposed 12-inch waterline and existing 16-inch waterline described above will serve the development.

...EPCOR the amount of $58,397.23...

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The September 26, 2019 updated "Will-Serve" letter from EPCOR Water is provided in Appendix A.

1.0 INTRODUCTION

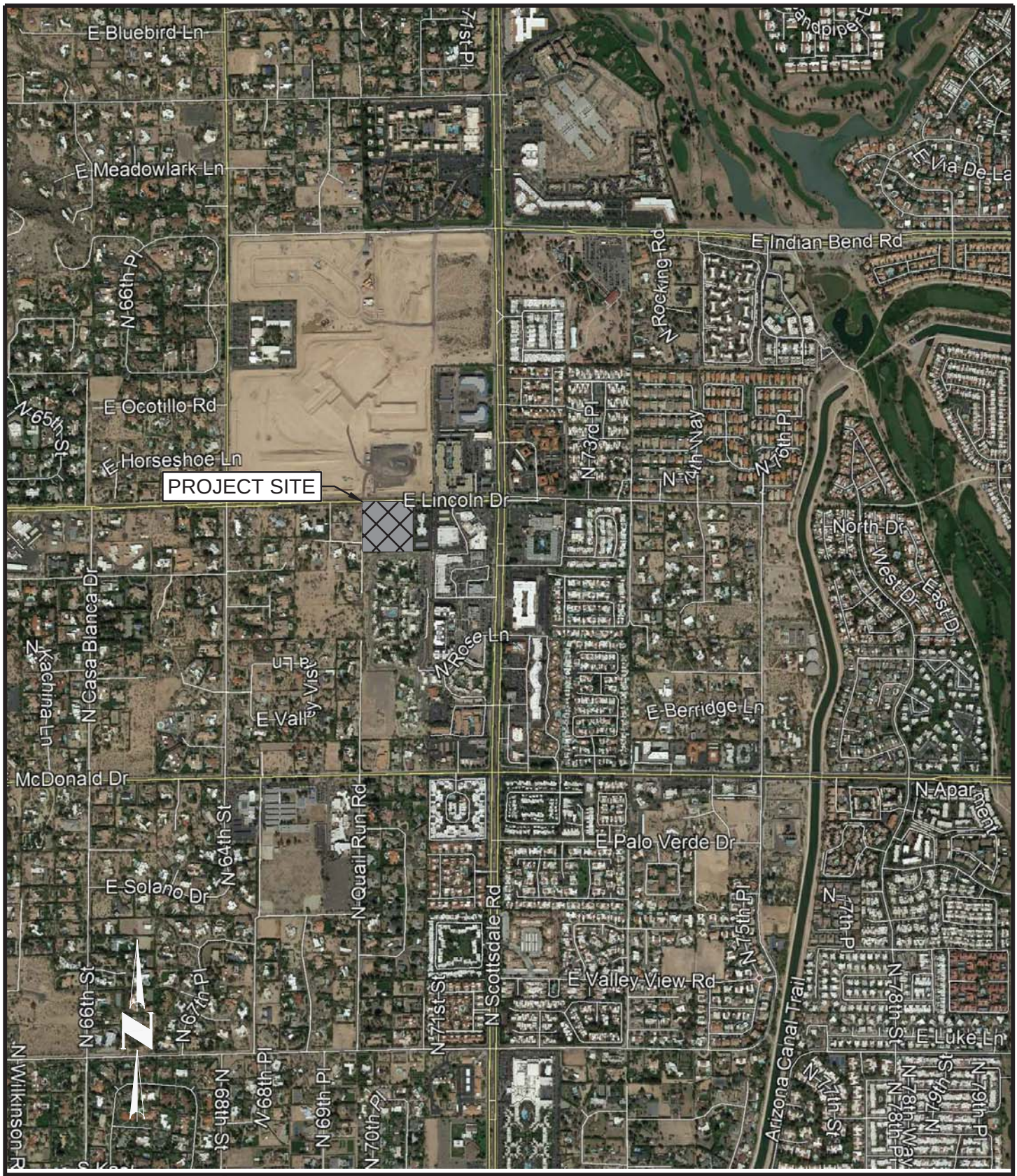
1.1 General Description

Smoke Tree Resort is a proposed redevelopment of an existing resort complex on approximately 5 acres of existing special use permit resort land located in the Town of Paradise Valley, Arizona. A total of 122 new rental rooms are proposed. Room counts have not been approved by the Town of Paradise Valley's Town Council. Room counts may be revised. The site will also include a Restaurant, Market, and Coffee Shop with square footages estimated and may be revised at 3,200; 4,000; and 1,800 respectively.

This study addresses the water service connections and fire protection requirements for the proposed development. EPCOR Water will provide water service to the development. EPCOR Water design standards in the *Developer and Engineering Guide,* Dated January 2015 will be used to determine domestic water demands. The Town of Paradise Valley will provide fire protection service to the site. Fire flow standards will be based on the Town of Paradise Valley design standards and EPCOR Water's *Developer and Engineering Guide,* dated January 2015.

1.2 Project Location

Smoke Tree Resort is located in Section 10 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The development is bordered by East Lincoln Drive to the north and Quail Run Road to the west. See Figure 1, 2, 3, and 4.



NOT TO SCALE	VICINITY MAP	CVL CONSULTANTS CELEBRATING 60 YEARS
1.01.0315301		
4550 North 12th Street Phoenix, Arizona 85014 Phone 602-264-6831 http://www.cvlci.com	SMOKE TREE RESORT	FIGURE 1

N:\01\0315301\Enviro\Parcel\cad\Vicinity Map.dwg **NicoleW December 7, 2018**

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED SITE PLAN - GROUND LEVEL

The smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A8

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

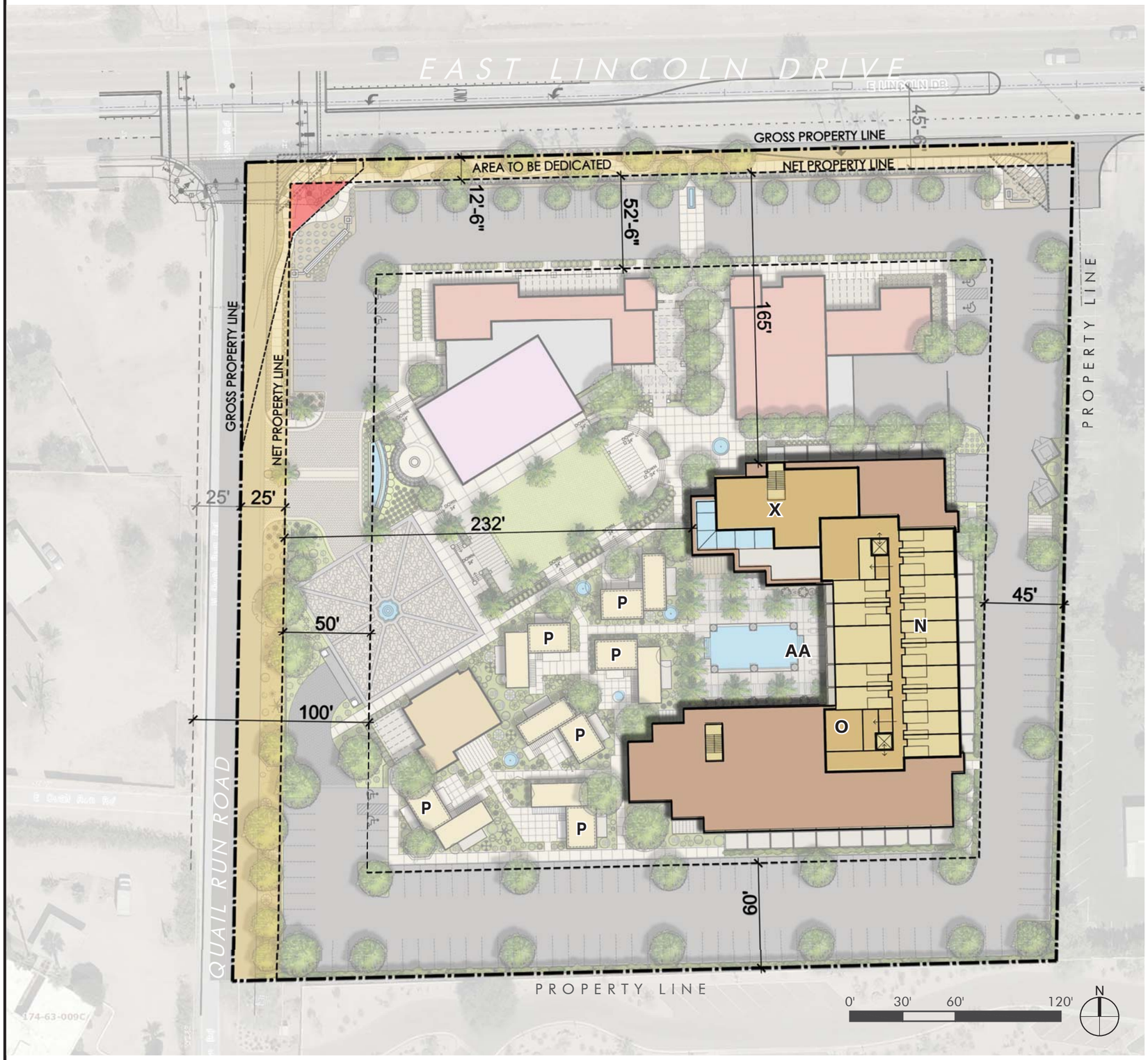
PROPOSED SITE PLAN - SECOND LEVEL

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A9

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020



PROGRAM:

N. Resort Suites (guest rooms)
O. Meeting Room
X. Lounge
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

PROPOSED SITE PLAN - THIRD LEVEL

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A10

SEP 6, 2019
11 x 17 format
REVISED
MAY 5, 2020

2.0 WATER SYSTEM DESIGN CRITERIA

The following criteria was be used in developing the water study.

2.1 Design Criteria

This water study is based on criteria from the Town of Paradise Valley and EPCOR Water's *Developer & Engineering Guide*, dated January, 2015. The following criteria were used in developing this plan:

- Demand factors
  - Resort Average Day Demand = 446 gpd/room
    - Includes site amenities
  - Commercial = 1,700 gpd/acre
  - Max day factor = 1.8 x Average Day Demand
  - Peak hour factor = 3.0 x Average Day Demand
- Pressure requirements
  - Minimum
    - 20 psi at the meter
  - Maximum = 120 psi
- Velocity
  - Maximum
    - 5 fps for maximum day demand
    - 7 fps for peak hour demand
    - 10 fps for maximum day demand plus fire flow
- Unit friction head loss
  - Maximum = 10ft/1,000 ft of distribution lines
- Hazen-Williams Coefficient = 130
- Fire Flows = 2,000 gpm

3.0 EXISTING INFRASTRUCTURE

3.1 Existing Waterlines

Existing adjacent waterlines to Smoke Tree Resort consist of a 16-inch waterline on the north side of East Lincoln Drive and an 8-inch waterline in North Quail Run Road approximately 680 feet south of the corner of Smoke Tree Resort and East Lincoln Drive. The nearest existing fire hydrants are located directly east on East Lincoln Drive. See Appendix B.

See Appendix B for an EPCOR Water quarter section for this area.

3.2 Water Quality

Appendix F contains a copy of the 2018 Water Quality Report. No violations were reported.

4.0 PROPOSED INFRASTRUCTURE

4.1 Water Demands

The water demands for Smoke Tree Resort may be seen below in Table 1.

Table 1 – Smoke Tree Resort Water Demands

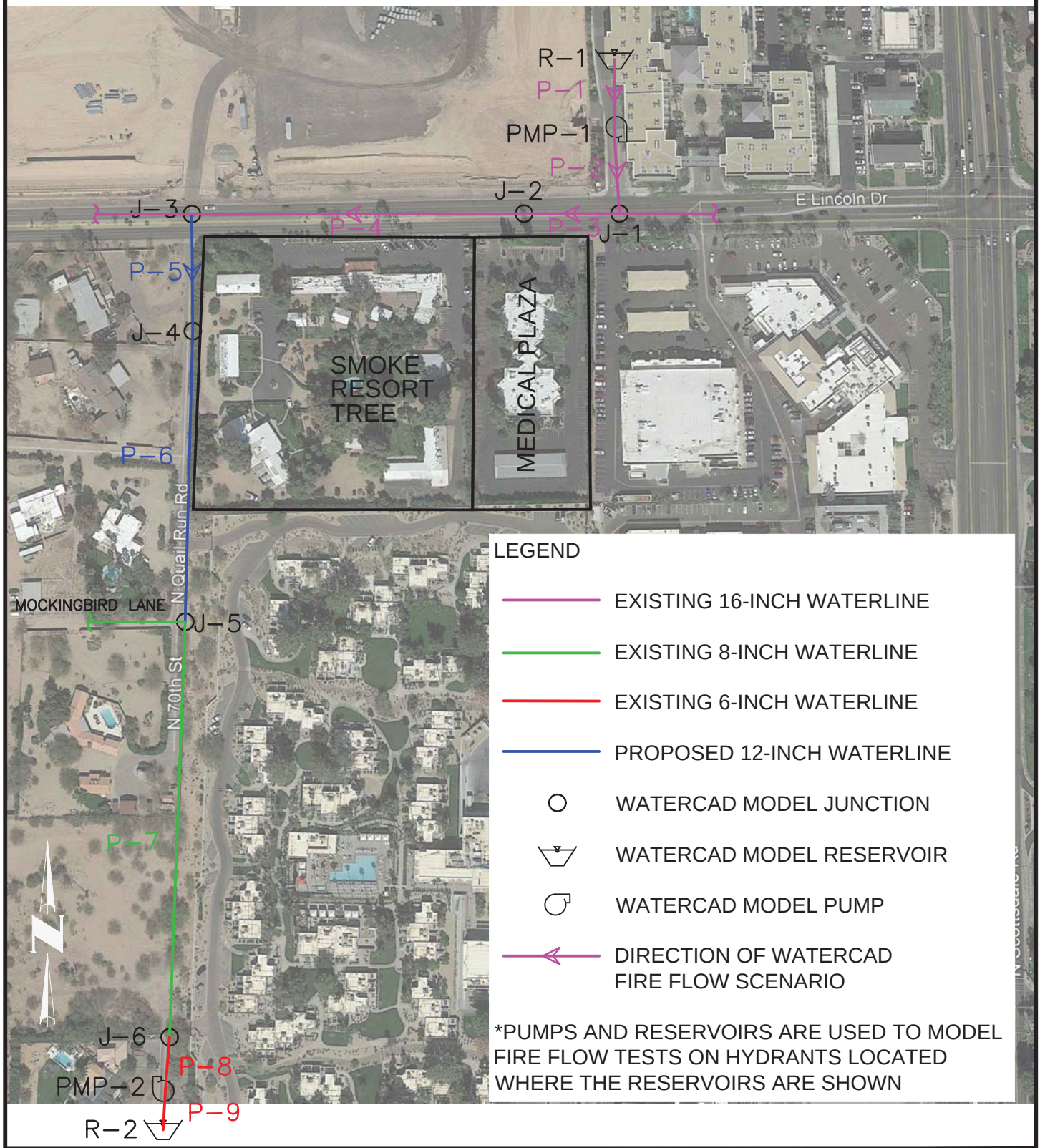
Land Use	Description	Unit	No. of Units	Unit Factor (gpd/unit)	ADD (gpd)	MDF	MDD (gpd)	PHF	PHD (gpd)
Room	Resort	room	122	446[1]	54,412	1.8	97,942	3.0	163,236
Restaurant, Market, & Coffee Shop	Commercial	acre	0.21	1,700	351	1.8	632	3.0	1,054
Total					**54,763**		**98,574**		**164,290**

[1]Includes site amenities

Fire flow demands of 2,000 gpm will be modeled.

4.2 Proposed On-Site Water Infrastructure

A proposed 12-inch waterline is to extend north from the existing 8-inch waterline in North Quail Run Road to the 16-inch waterline in Lincoln Drive. A proposed 2-inch domestic water meter will be located at the west side of the development along Quail Run Road. See Appendix B: Paradise Valley Water Company Block Map PV – 407 for a detailed map of existing conditions for this connection.



NOT TO SCALE

1.01.0315301

4550 North 12th Street
Phoenix, Arizona 85014
Phone 602-264-6831
http://www.cvlci.com

WATER LAYOUT

SMOKE TREE RESORT

CVL CONSULTANTS
CELEBRATING 60 YEARS

FIGURE 3

N:\01\0315301\Enviro\Parcel\cad\Vicinity Map.dwg **NicoleW** **March 20, 2019**

5.0 WATER SYSTEM MODELING

5.1 Network Analysis Domestic Demands

The network analysis for the proposed development's distribution system was completed using WaterCAD V8*i*. A model was created and modified as necessary to demonstrate that the existing and proposed water infrastructure meets the water system design criteria. All networks were analyzed for average day, maximum day and peak hour demand conditions. The existing conditions were determined by a fire flow test completed on October 11, 2018. Results from this fire flow test may be seen in Appendix C.

The pipes were sized based on pressure requirements for average day, max day, and peak hour as described in Section 2.0.

Input parameters of the water distribution system modeling include:

- Pipe Diameters (inches)
- Elevations of Nodes/Junctions (feet)
- System Water Demands (gpm)
- Hazen-Williams, C=130

Output parameters include but are not limited to:

- Velocities (fps)
- Pressure (psi)
- Head Loss (feet)
- Flow Rates (gpm)

5.2 Modeling Results Domestic Demands

The detailed results of the WaterCAD analysis for the domestic demands are presented in Appendix D. Table 2 summarize the results.

Table 2 – Water Model Results Summary for Domestic Demands

Scenario	Flow (gpm)	Pressure (psi)				Maximum Velocity (fps)	Pipe ID
		Minimum	Node	Maximum	Node		
Average Day	38.03	89.52	J-6	93.84	J-1	0.11	P-5
Max Day	68.46	89.51	J-6	93.84	J-1	0.19	P-5
Peak Hour	114.09	89.50	J-6	93.83	J-1	0.32	P-5

5.3 Network Analysis Fire Flows

The network analysis was performed as described in subsection 5.1 above. The detailed results of the Water CAD analysis for the fire flow scenario are shown in Appendix E. Table 3 summarizes the results.

Table 3 – Water Model Results Summary for Fire Flow Demands

Maximum Day + Fire Flow Needed (gpm)	Pressure (psi)				Maximum Velocity (fps)	Pipe ID
	Minimum	Node	Maximum	Node		
2,068.45	86.23	J-4	90.08	J-2	5.87	P-5

6.0 SUMMARY

This Water Service Impact Study presents the proposed water system connections, and an overview of existing infrastructure surrounding the project site. The following summarizes CVL's findings of the proposed water system to serve Smoke Tree Resort.

- The water service connections will be made to the existing EPCOR Water system.
- Existing adjacent waterlines to Smoke Tree Resort consist of a 16-inch waterline on the north side of East Lincoln Drive and an 8-inch waterline in North Quail Run Road approximately 680 feet south of the corner of Smoke Tree Resort and East Lincoln Drive.
- EPCOR has stubbed out the 12-inch waterline on Quail Run Road from the existing 16-inch waterline on the north side of Lincoln Drive as part of the Town's Roadway and Utility Improvement Project No. 2016-14. Smoke Tree Resort will be required to extend the 12-inch waterline to service their property from the 12-inch stub to the existing 8-inch waterline at the intersection of Quail Run Road and Mockingbird Lane. This proposed 12-inch waterline will serve the development and will be required to meet the required fire flow demand of 2,000 gpm.
- Smoke Tree Resort will reimburse EPCOR the amount of $58,397.23 for the 12-inch stub as part of the Lincoln Road Improvement Project No. 2016-14 installed by EPCOR.
- Demands from the Smoke Tree Resort are:
    - Average Day Demand: 0.0548 MGD
    - Max Day Demand: 0.0986 MGD
    - Peak Hour Demand: 0.1643 MGD
- Pressures within the proposed development are approximately 89-94 psi for all domestic demand scenarios which is within the Town of Paradise Valley's pressure requirements. Individual PRVs are required after the meter where pressures are greater than 80 psi.
- The nearest fire hydrants to the proposed development are to the east of Smoke Tree Resort along East Lincoln Drive.
- Velocities in the existing system are less than the 10 fps maximum requirement. The maximum velocity that occurs when a fire flow of 2,068.45 gpm is modeled at the site is 5.87 fps within P-5.
- Individual PRVs are needed for all sites where pressures at above 80 psi occur.
- The Restaurant, Market, and Coffee Shop have been added as individual land uses beyond site amenities to match the Wastewater Capacity Study where the City of Scottsdale requested the flows be added separately.

6.0 SUMMARY

This Water Service Impact Study presents the proposed water system connections, and an overview of existing infrastructure surrounding the project site. The following summarizes CVL's findings of the proposed water system to serve Smoke Tree Resort.

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- Demands from the Smoke Tree Resort are:
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- Individual PRVs are needed for all sites where pressures at above 80 psi occur.
- The Restaurant, Market, and Coffee Shop have been added as individual land uses beyond site amenities to match the Wastewater Capacity Study where the City of Scottsdale requested the flows be added separately.

Same comments as in Executive Summary

APPENDIX A

September 26, 2019 EPCOR Water "Will-Serve" Letter

2355 West Pinnacle Peak Road, Suite 300
Phoenix, AZ 85027 USA
epcor.com

September 26, 2019

Coe & Van Loo Consultants, Inc.
Attn: Fred Fleet, P.E.
4550 N. 12th Street
Phoenix, AZ 85014

Sent via e-mail to: fef_@cvlci.com

Re: Will-Serve Letter for Water Service
7101 E. Lincoln Drive, Paradise Valley
APN 174-64-003A

Dear Mr. Fleet;

This letter is in response to your request to EPCOR Water Arizona Inc. ("EPCOR") regarding EPCOR's willingness to provide water service to a proposed resort hotel to be located at 7101 E. Lincoln Drive in Paradise Valley (the "Development") as shown in **Exhibit A**. EPCOR provides the following information for your consideration:

1. EPCOR has confirmed that the Development is located within the area encompassed by EPCOR's Certificate of Convenience & Necessity ("CC&N") for water service as issued by the Arizona Corporation Commission.
2. Water service to the Development by EPCOR will be conditioned upon developer entering into a Main Extension Agreement (an "MXA") with EPCOR in a form acceptable to EPCOR, and upon EPCOR and developer fully performing its respective obligations under the MXA. The MXA will provide, among other things, that developer will be responsible for constructing at its cost all water main extensions necessary to distribute water from EPCOR's water system to the individual service line connections in the Development. The design and construction of all such main extensions will be subject to EPCOR's approval, and ownership of the main extensions, together with related real property easement rights, must be transferred to EPCOR prior to the initiation of water service in the Development.
3. Based on the water service currently provided by EPCOR in the CC&N, EPCOR will have adequate water capacity for normal use in the Development upon EPCOR's and developer's fulfillment of its respective obligations under the MXA. Please note that EPCOR does not guarantee the adequacy of its water capacity for fire protection.
4. Developer will also be required, as a condition to EPCOR providing water service to the Development, to pay all required fees pursuant to EPCOR's tariffs and as may be provided in the MXA.

This letter assumes that construction of the main extensions within the Development will begin within one (1) year after the date of this letter.

If developer begins construction of any water mains in the Development or any other water service infrastructure intended to serve the Development without, in each instance, the prior written approval of such construction by EPCOR, developer will be proceeding with such construction at its own risk.

This letter does not independently create any rights or obligations in either developer or EPCOR, and is provided for information only. Any agreement between developer and EPCOR for water service in the Development must be memorialized in a written agreement executed and delivered by their respective authorized representatives.

For additional information, please contact me at (623) 445-2402 or at bfinke@epcor.com.

Sincerely,

Brad Finke

Brad Finke, P.E.
Engineering Manager

Enclosure: Exhibit A – Location Description of Development

EXHIBIT A

Location of Development

August 28, 2019

Smoke Tree Resort

7101 East Lincoln Drive

Paradise Valley, Arizona 85253

Water Service Impact Study

Prepared for:

Gentree LLC

3620 East Campbell Avenue

Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

EPCOR

Accepted By: Brad Finke

Date: 9-26-2019

Prepared by:

Coe & Van Loo Consultants, Inc.

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

Registered Professional Engineer (Civil)
CERTIFICATE NO.
67062
CASSANDRA
ALEJANDRO
Date Signed 08/28/19
ARIZONA, U.S.A.
Expires 7-31-2021

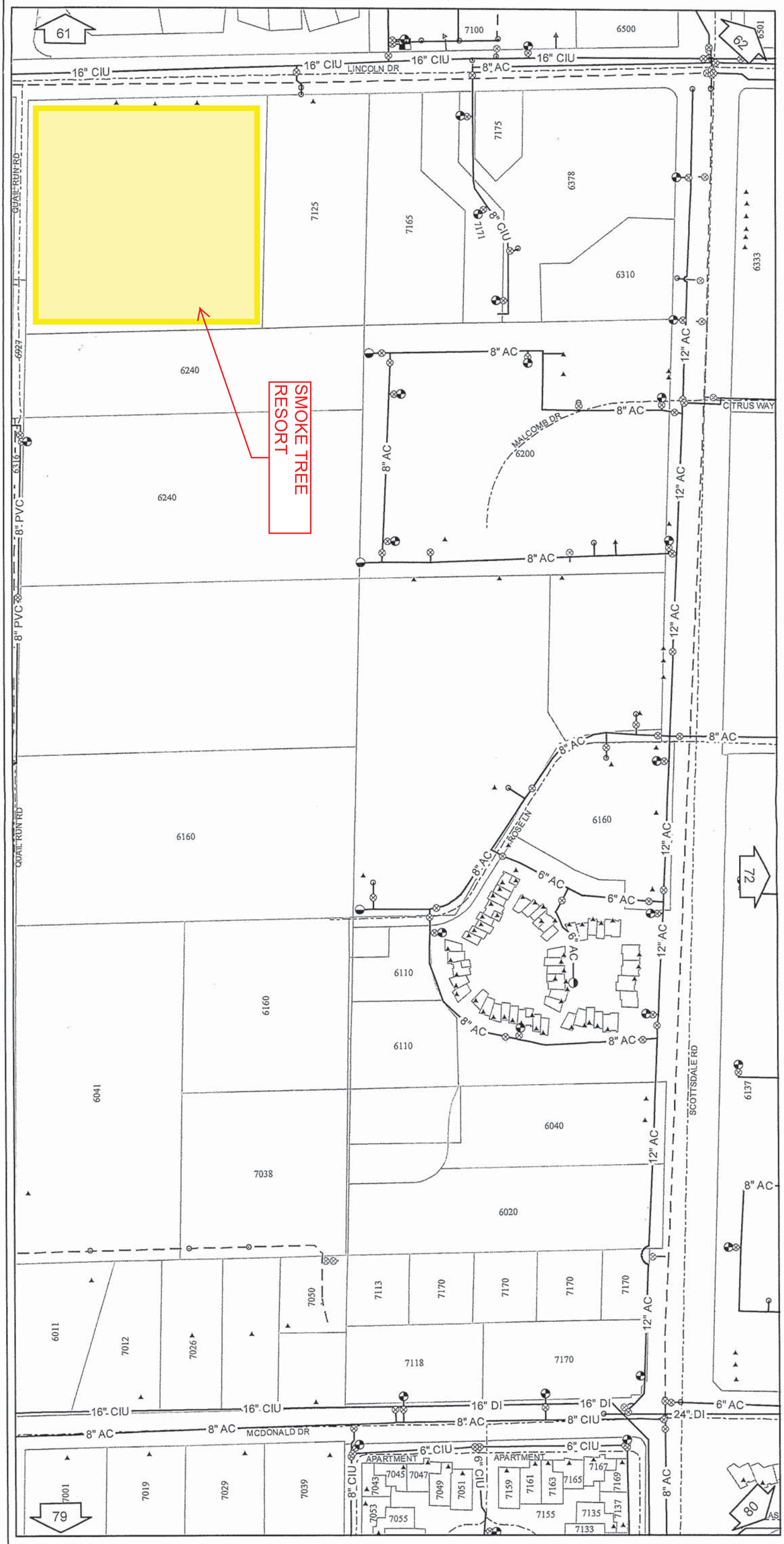
Job # 1.01.0315301

CVL CONSULTANTS

WATER SERVICE IMPACT STUDY

APPENDIX B

Water Quarter Section Map



WATER FEATURES

Street Valves

- Air Release
- Ball (Blow-off)
- Double Check
- Pressure Regulate
- Gate, Butterfly Open
- Gate, Butterfly Closed

Other

- Customer Meter
- Hydrant
- Cap/Reducer
- Pump Station
- Tank
- Well
- Water Treatment Plant
- System Interconnection

Lateral Service

- All Types

(Domestic Not Shown For Map Clarity)

Mains

- Distribution
- Plant
- Transmission

Abandoned Features

- Mains/Laterals

All Other Features Shown 50% Grey

Mapgrid: 21-44

EPCOR WATER

EPCOR Water

EASTERN DIVISION

71

RIGHT

Brad sent flow tests
Fred sent to me

N

SCALE
0 100 200
Feet

AREA BOUNDARIES

Service Area

LAND FEATURES

Street Centerline

Lotlines

TYPICAL LOT

ADDRESS NUMBER

123

MAP PAGES

60	61	62
70	71	72
78	79	80

2N4E SE10

SE 1/4 SECTION 10

Mapgrid: 21-44

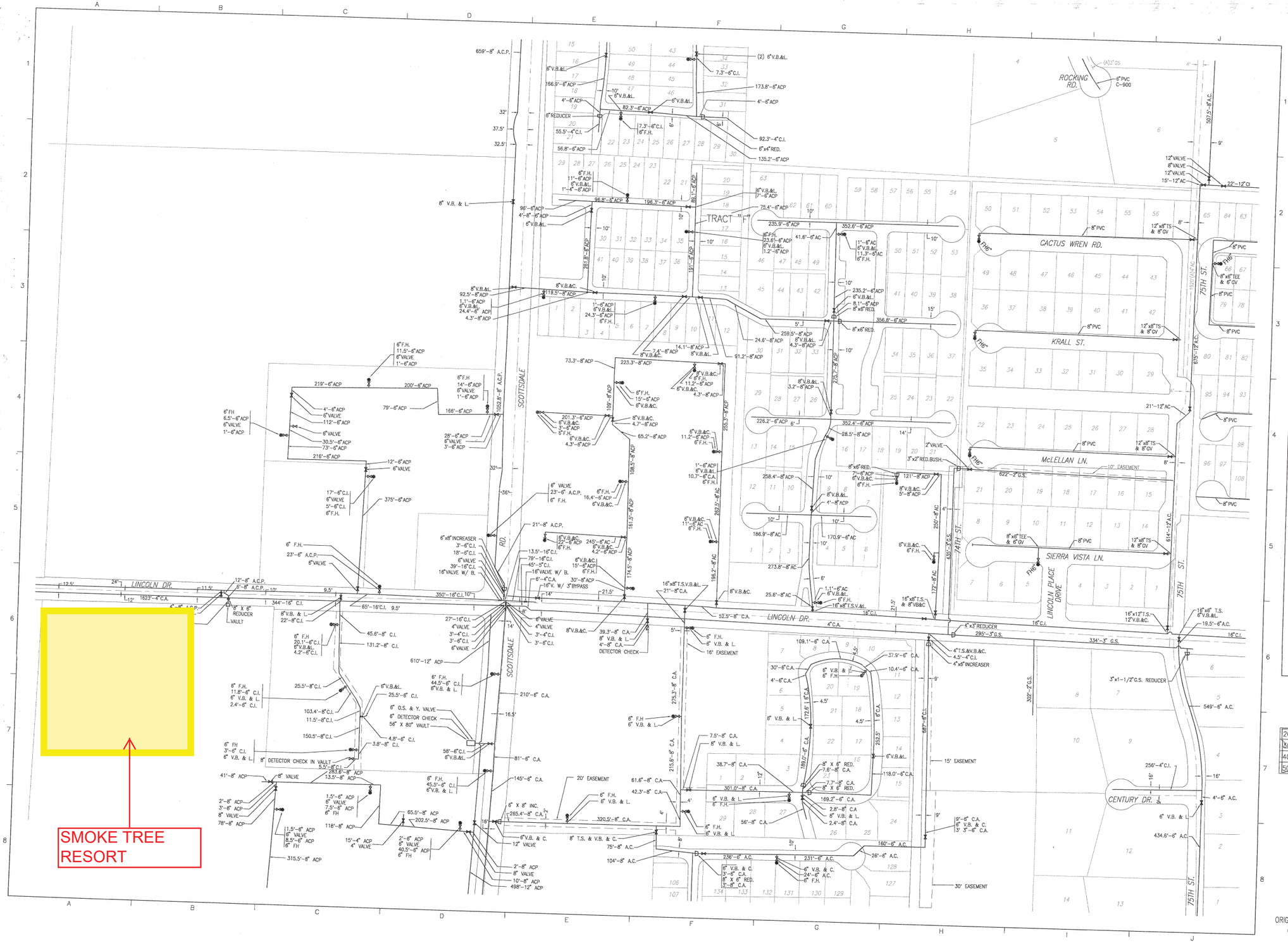
EPCOR WATER

71 PARADISE VALLEY WATER

LEFT

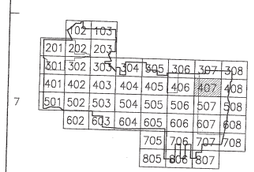
REVISED: MAY 2014

COPYRIGHT © 2012 EPCOR WATER COMPANY
EPCOR MAKES NO CLAIMS CONCERNING THE ACCURACY OF THIS MAP NOR ASSUMES ANY LIABILITY RESULTING FROM THE USE OF THE INFORMATION HERON.



Legend

SYMBOL	ABBREV.	DESCRIPTION
	F.H.	COMPANY FIRE HYDRANT
	P.F.H.	PRIVATE FIRE HYDRANT
	REDU.	REDUCER
		WATER METER
		VALVE
		BLOW-OFF
	ARV-M	AIR RELEASE VALVE (MANUAL)
	ARV-A	AIR RELEASE VALVE (AUTOMATIC)
	(A)	ABANDONED
		WELL
	P.STA./P.S.	PUMP STATION
		TANK
	A.C.	ASBESTOS CEMENT
	BRS.	BRASS
	C.A.	CEMENT ASBESTOS
	C.I.	CAST IRON
	COP.	COPPER
	D.I.	DUCTILE IRON
	G.S.	GALVANIZED STEEL
	G.V.	GATE VALVE
	M.J.	MECHANICAL JOINT
	P.V.C.	POLYVINYL CHLORIDE
	R.W.	RAW WATER
	STL.	STEEL
	T.S	TAPPING SLEEVE
	V.B.&C.	VALVE, BOX & COVER
	W.S.	WELDED STEEL
	V.	VALVE



Drawing Key

ORIGINAL PLOTTED SCALE : 1" = 100'-0"

0 50 100 200 300

Graphic Scale

Paradise Valley Water Company

7500 E. McDonald Dr., Suite 200A, Scottsdale, AZ. 85250-6000
Bus. Off.: Ph: (602) 948-5410 Ops. Ctr.: (602) 948-3865

Drawn By: W.R.E.		Date: Mar. 1999	Block Map
Checked By: RE		Approved By:	PV-407
REF. GRID		REF. MAP	
SEC. 10 SHT. 1	SEC. 11 SHT. 2		
SEC. 10 SHT. 3	SEC. 11 SHTS.2A&B		
SEC. 11 SHT. 1	SEC. 11 SHT. 4		

PVWC FILE I.D. = PV-407

APPENDIX C

Fire Flow Test Results

Flow Test Summary

Project Name:	EJFT 18296-1
Project Address:	7125 E Lincoln Dr, Paradise Valley, AZ 85253
Date of Flow Test:	2018-10-11
Time of Flow Test:	7:45 AM
Data Reliable Until:	2019-04-11
Conducted By:	Eder Cueva & Tayler Lynch (EJ Flow Tests) 602.999.7637
Witnessed By:	Garren Willey (EPCOR) 480.450.4670
City Forces Contacted:	EPCOR Water (480.450.4670)

Raw Flow Test Data

Static Pressure:	104.0 PSI
Residual Pressure:	99.0 PSI
Flowing GPM:	2,831
GPM @ 20 PSI:	12,989

Data with a 10 % Safety Factor

Static Pressure:	93.6 PSI
Residual Pressure:	88.6 PSI
Flowing GPM:	2,831
GPM @ 20 PSI:	12,094

Hydrant F_1

Pitot Pressure (1):	63	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	4	inches

Additional Coefficient 0.83 on orifice #1

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
249 ft (measured linearly)

Static-Residual Elevation
1304 ft (above sea level)

Flow Hydrant (F_1) Elevation
1306 ft (above sea level)

Elevation & distance values are approximate

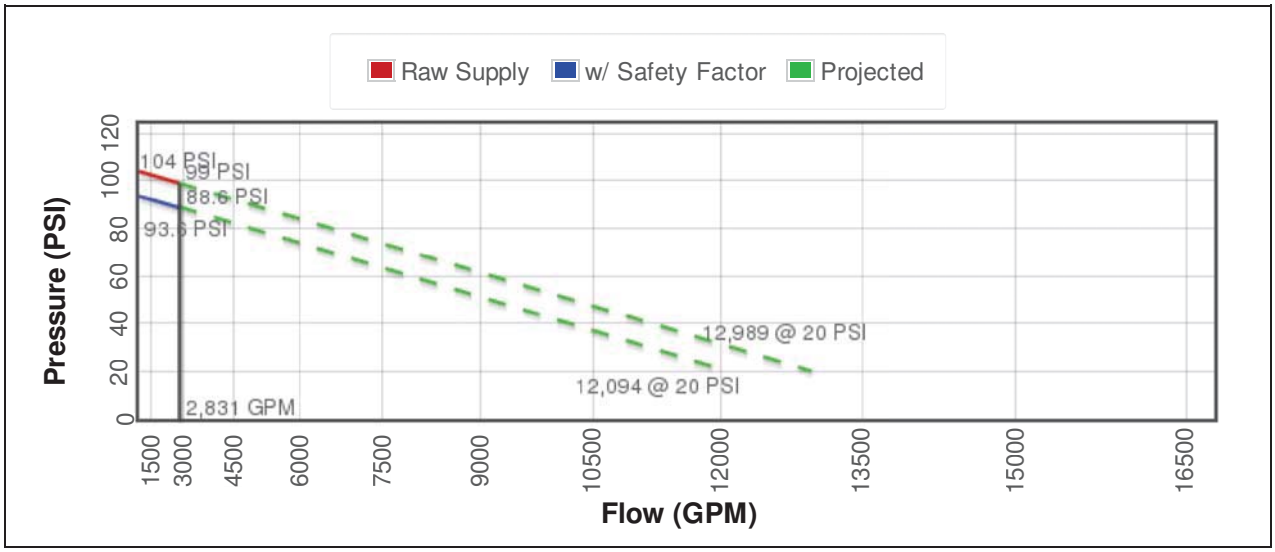
Flow Test Summary

Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site

Water Supply Curve $N^{1.85}$ Graph



Flow Test Summary

Project Name:	EJFT 18296-2
Project Address:	7125 E Lincoln Dr, Paradise Valley, AZ 85253
Date of Flow Test:	2018-12-11
Time of Flow Test:	7:55 AM
Data Reliable Until:	2019-06-11
Conducted By:	Eder Cueva & Tayler Lynch (EJ Flow Tests) 602.999.7637
City Forces Contacted:	EPCOR Water (480.450.4670)

Raw Flow Test Data

Static Pressure:	92.0 PSI
Residual Pressure:	70.0 PSI
Flowing GPM:	1,501
GPM @ 20 PSI:	2,848

Data with a 10 % Safety Factor

Static Pressure:	82.8 PSI
Residual Pressure:	60.8 PSI
Flowing GPM:	1,501
GPM @ 20 PSI:	2,645

Hydrant F_1

Pitot Pressure (1):	20	PSI
Coefficient of Discharge (1):	0.9	
Hydrant Orifice Diameter (1):	2.5	inches
Pitot Pressure (2):	20	PSI
Coefficient of Discharge (2):	0.9	
Hydrant Orifice Diameter (2):	2.5	inches

Static-Residual Hydrant

Flow Hydrant

Distance Between F_1 and R
1036 ft (measured linearly)

Static-Residual Elevation
1316 ft (above sea level)

Flow Hydrant (F_1) Elevation
1315 ft (above sea level)

Elevation & distance values are approximate

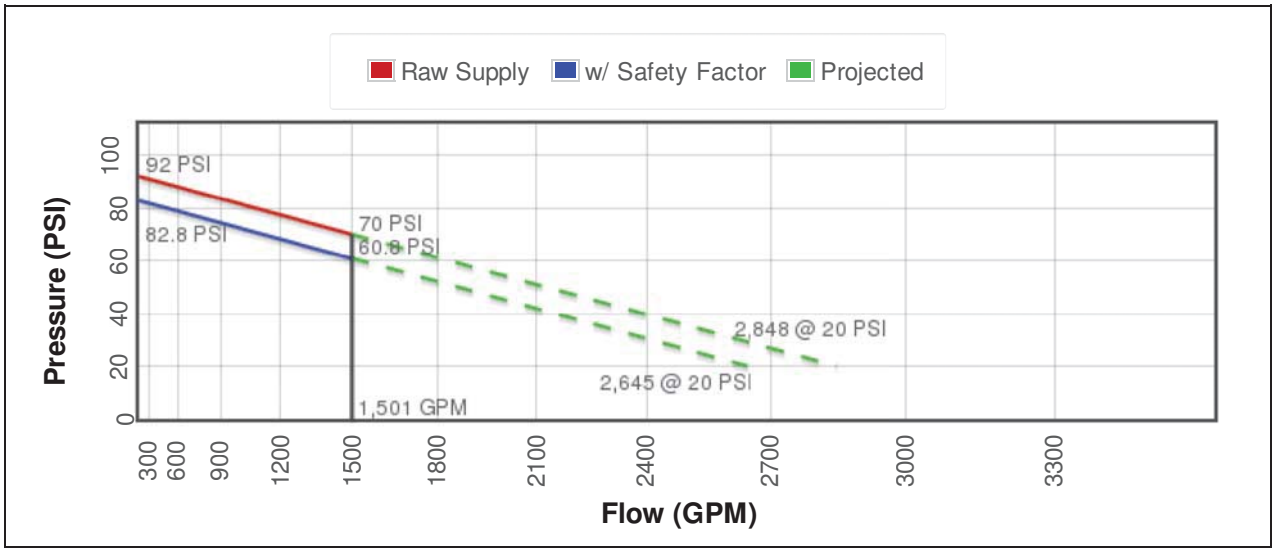
Flow Test Summary

Static-Residual Hydrant

Flow Hydrant (only hydrant F1 shown for clarity)

Approximate Project Site

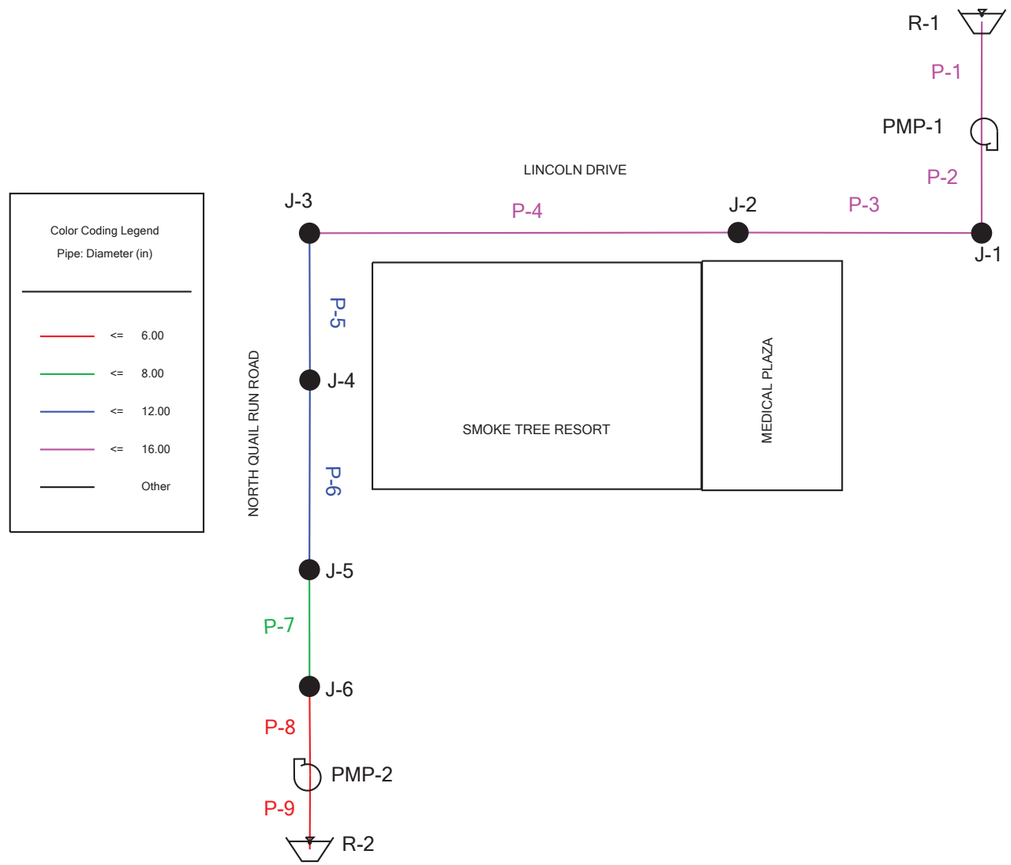
Water Supply Curve $N^{1.85}$ Graph



APPENDIX D

WaterCAD Results (Domestic)

Scenario: Base
Active Scenario: Base



FlexTable: Pipe Table

Active Scenario: Ave Day

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	38.03	0.06	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	38.03	0.06	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	38.03	0.06	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	38.03	0.06	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	38.03	0.11	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

FlexTable: Junction Table

Active Scenario: Ave Day

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.90	93.84
41	J-2	1,309.00	<None>	0.00	1,524.90	93.41
147	J-3	1,314.69	<None>	0.00	1,524.90	90.95
141	J-4	1,316.00	<None>	38.03	1,524.90	90.38
52	J-5	1,318.00	<None>	0.00	1,524.90	89.52
54	J-6	1,318.00	<None>	0.00	1,524.90	89.52

FlexTable: Reservoir Table

Active Scenario: Ave Day

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	38.03	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00

FlexTable: Pipe Table

Active Scenario: Max Day

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	68.46	0.11	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	68.46	0.11	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	68.46	0.11	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	68.46	0.11	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	68.46	0.19	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

FlexTable: Junction Table

Active Scenario: Max Day

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.89	93.84
41	J-2	1,309.00	<None>	0.00	1,524.89	93.41
147	J-3	1,314.69	<None>	0.00	1,524.89	90.94
141	J-4	1,316.00	<None>	68.45	1,524.89	90.38
52	J-5	1,318.00	<None>	0.00	1,524.89	89.51
54	J-6	1,318.00	<None>	0.00	1,524.89	89.51

FlexTable: Reservoir Table

Active Scenario: Max Day

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	68.46	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00

FlexTable: Pipe Table

Active Scenario: Peak Hour

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	114.09	0.18	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	114.09	0.18	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	114.09	0.18	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	114.09	0.18	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	114.09	0.32	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

FlexTable: Junction Table

Active Scenario: Peak Hour

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.87	93.83
41	J-2	1,309.00	<None>	0.00	1,524.87	93.40
147	J-3	1,314.69	<None>	0.00	1,524.86	90.93
141	J-4	1,316.00	<None>	114.09	1,524.86	90.36
52	J-5	1,318.00	<None>	0.00	1,524.86	89.50
54	J-6	1,318.00	<None>	0.00	1,524.86	89.50

FlexTable: Reservoir Table

Active Scenario: Peak Hour

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	114.09	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00

APPENDIX E

WaterCAD Results (Fire Flow)

Fire Flow Node FlexTable: Fire Flow Report

Active Scenario: Residential Fire Flow

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
J-1	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-2	True	2,000.00	2,001.00	2,001.00	90.08	86.19	J-6	P-2	3.30
J-3	True	2,000.00	2,001.00	2,001.00	87.11	85.68	J-6	P-2	3.30
J-4	True	2,000.00	2,001.00	2,069.45	86.23	85.36	J-6	P-5	5.87
J-5	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-6	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

APPENDIX F

Water Quality Report

PARADISE VALLEY/SCOTTSDALE

2018 WATER QUALITY REPORT

epcor.com

PWS ID AZ0407056

Safety. Quality. Community. You'll hear these words spoken often around EPCOR.

Water. It's life.

At EPCOR, we're committed to providing you safe, quality, reliable drinking water every day. It's our mission, and it's an honor. Water fuels our daily routine, quenches our thirst and breathes life into our meals.

But we can't take it for granted. Our water system needs a steward, one who's there behind the scenes 24 hours a day, 7 days a week to manage, maintain and invest in it.

EPCOR takes this responsibility seriously. From daily water quality checks that ensure safety and quality to investing in your water system, we're ensuring that water will be available for years to come, whether your water source is deep underground or from rivers and lakes.

In addition to monitoring the water that comes out of your tap, we're also maintaining and improving the miles of pipelines, water mains, wells and hydrants that make up your water system. We're ensuring that water isn't wasted, and that it's a resource that will be there for the long term.

Because every drop matters.

Sincerely,

Joe Gysel

President,
EPCOR USA, Inc.

YOU WANT TO KNOW WHAT'S IN THE WATER YOU'RE DRINKING

As your water service provider, we're committed to ensuring the quality and safety of that water. That's why you are receiving this annual water quality report from us. We hope it will help you understand your community's water a little better and what we're doing to protect it.

WHAT WILL I FIND IN THIS REPORT?

This report complies with state and U.S. Environmental Protection Agency (EPA) drinking water regulations.

In it you'll find information on:

- Where your water comes from
- Protecting your water
- What's in your water

Information in this report is compiled, in part, from analytical data generated by laboratories certified in drinking water analysis.

READ THIS REPORT – AND SHARE IT!

Reading this report and understanding your community's water is the first step. But it's also important to share this information with those who might not receive it directly. If you're a landlord, business, school or hospital, please share this report with water users in your community.

QUESTIONS?

EPCOR Customer Care:
1-800-383-0834
mywater@epcor.com

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

ABOUT YOUR WATER

PARADISE VALLEY/SCOTTSDALE

ABOUT YOUR DISTRICT

- EPCOR provides water service to approximately 4,900 service connections in the Paradise Valley district.

WHERE YOUR WATER COMES FROM

- Groundwater in the West Salt River Valley (WSRV) Sub-Basin, bordering the Phoenix Mountains

Additional information about the groundwater in your area

- The WSRV Sub-Basin is a broad, gently sloping alluvial plain, drained by the Gila and Salt Rivers.
- Sources of groundwater recharge include natural recharge from stream flows and along mountain fronts, incidental recharge from agricultural and urban uses, and intentional recharge at constructed recharge facilities.

How We Protect Groundwater Together

Both groundwater and the associated pumping and delivery facilities are part of a complex system that needs not just monitoring, but also maintenance. From pipelines to water mains, wells to hydrants, we're ensuring that the groundwater supply is protected and accessible.

How You Can Help

Properly dispose of hazardous household chemicals on hazardous material collection days and limit your pesticide and fertilizer use. For information on household hazardous material collection days in your area, contact the **Arizona Department of Environmental Quality** at **602-771-2300** or **Earth911.com**.

NOTICE OF SOURCE WATER ASSESSMENT

In 2004, the Arizona Department of Environmental Quality (ADEQ) completed a source water assessment for the seven wells used by EPCOR-Paradise Valley. The assessment reviewed the adjacent land uses that may pose a potential risk to the sources. These risks include, but are not limited to, gas stations, landfills, dry cleaners, agriculture fields, wastewater treatment plants, and mining activities. Once ADEQ identified the adjacent land uses, they were ranked as to their potential to affect the water sources. The results of the assessment were that two wells had no adjacent land uses, four wells had 10 adjacent land uses that posed a low risk to the source and each well also had one adjacent land use that posed a high risk, and one well had one adjacent land use that posed a high risk.

The complete assessment is available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington, Phoenix, AZ 85007, between the hours of 8 a.m. and 5 p.m. For more information please contact **ADEQ** at **602-771-2300**.

GETTING INVOLVED

Consulting with the community is important to us. If you have a question, concern or suggestion about your local water system, please contact our Customer Care team at **1-800-383-0834**.

WHAT YOU CAN EXPECT TO FIND IN YOUR WATER

SOURCES OF DRINKING WATER

The sources of drinking water—both tap water and bottled water—include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over land surfaces or through the ground, it can acquire naturally occurring minerals. In some cases it can also acquire radioactive material and substances resulting from the presence of animals or from human activity.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

More information about contaminants and potential health effects can be obtained by calling the **EPA's Safe Drinking Water Information Hotline** at **1-800-426-4791**.

DID YOU KNOW?

- **One-Part-Per-Million** (mg/L or ppm) is equivalent to one inch in 16 miles.
- **One-Part-Per-Billion** (ug/L or ppb) is equivalent to a single 4-inch hamburger in a chain of hamburgers long enough to circle the earth at the equator 2.5 times.
- **One-Part-Per-Trillion** (ng/L or ppt) is equal to a single drop of water being diluted into 20 Olympic-size swimming pools.

SUBSTANCES THAT MAY BE PRESENT IN SOURCE WATER

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations or wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and Herbicides, may come from a variety of sources, such as agriculture, urban stormwater runoff and residential uses.

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff and septic systems.

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

ENSURING YOUR WATER IS SAFE

To ensure that tap water is safe to drink, the EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. To ensure bottled water is safe to drink, U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water.

WHAT YOU CAN EXPECT TO FIND IN YOUR WATER

SPECIAL HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants may be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the **EPA's Safe Drinking Water Information Hotline** at **1-800-426-4791**.

Lead

EPCOR monitored the water for lead and copper in 2017 at 30 residences throughout the community and met the federal lead and copper standards. The 30 houses sampled were representative of the types of houses throughout the system. If your house was sampled you would have received the analysis results. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EPCOR is responsible for providing highquality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **Safe Drinking Water Information Hotline** or at **www.epa.gov/safewater/lead**.

HOME WATER TREATMENT UNITS

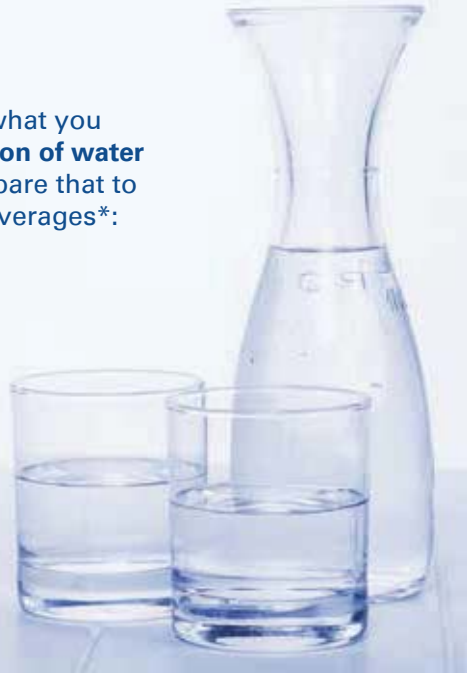
Failure to perform maintenance on your home water treatment unit can result in poor water quality. If you installed a home water treatment system such as a water softener or reverse osmosis system, please remember to follow the manufacturer's instructions on operation and maintenance. For more information, contact the manufacturer of your treatment system for maintenance instructions or assistance. Additional information about home water treatment systems is available from the **Water Quality Association** at **630-505-0160** or by visiting **wqa.org**.

DID YOU KNOW?

Tap water costs a lot less than what you pay for other beverages. **A gallon of water costs you about 1 penny.** Compare that to the cost of a gallon of these beverages*:

- Milk = $3.29/gallon
- Orange Juice = $2.55/gallon
- Beer = $15.00/gallon
- Bottled Water = $1.21/gallon
- Wine = $25/gallon

** Costs for milk, orange juice and bottled water obtained from Bureau of Labor Statistics and Beverage Marketing Association reports. Other costs determined by calculating average supermarket pricing for bottles of soda, wine and beer and converting to a gallon.*



FREQUENTLY ASKED QUESTIONS

WHAT IS THE WHITE OR COLORED DEPOSIT ON MY DISHES OR FAUCETS?

In most cases, the deposits or sediments left behind after water evaporates are calcium carbonate. The amount of calcium in the water is referred to as hardness. Cleaning with white vinegar can help to dissolve and remove deposits. Using a commercial conditioner, liquid detergents or the "air-dry" option in dishwashers can help to decrease the calcium carbonate found on dishes.

ARE THE DEPOSITS OR HARD WATER HARMFUL?

Hardness and/or the deposits left by hard water don't pose a health concern and may have health benefits. We don't treat drinking water for water hardness that can result in hard water deposits.

WHAT IS THE LEVEL OF HARDNESS IN MY WATER?

The hardness in your water ranges from 12 to 20 grains per gallon (gpg).

Degree of water hardness range (gpg)	
Soft	Less than 1
Slightly Hard	1 to 3.4
Moderately Hard	3.5 to 6.9
Hard	7 to 10.4
Very Hard	Greater than 10.5

WHY IS MY WATER CLOUDY OR MILKY IN APPEARANCE WHEN IT COMES OUT OF THE TAP?

Water that appears cloudy or milky is typically caused by trapped air (very small air bubbles) in the water. If this occurs, simply let the water stand for a few minutes—the air will dissipate leaving a clear glass of water.

The quality of your water depends on the source water itself as well as factors such as the geology and biology of the area where the water came from. For some elements that are known to have an effect on the aesthetics of the water quality parameters, the EPA has established guidance levels known as secondary maximum contaminant level standards (SMCLs). When levels of these contaminants are found to be above the SMCLs, they may impact the aesthetic quality of the water (e.g., color, taste and odor). Although aesthetic water qualities may vary, your water meets all state and federal regulatory standards and is safe to use for all drinking water purposes. Secondary contaminants include, but are not limited to, manganese, iron and total dissolved solids (TDS).

WHY IS CHLORINE ADDED TO MY DRINKING WATER?

Chlorine is added to your water for your protection and is used as a disinfectant to ensure that harmful organisms, such as bacteria and viruses, are destroyed in the treatment process.

ARE THERE OTHER WAYS TO REMOVE THE CHLORINE TASTE OR SMELL FROM MY WATER?

To remove the taste of chlorine from your water, try these tips:

- Place water in a glass container in the refrigerator overnight, uncovered. This will let the chlorine dissipate.
- Bring your water to a rolling boil for five minutes and let it stand to cool.
- Add a slice of lemon or a few drops of lemon juice to your glass of drinking water.

WILL MY HOME TREATMENT DEVICE REMOVE CHLORINE?

Some home treatment devices can remove chlorine. Once chlorine is removed, the water should be treated like any other beverage product and used as quickly as possible. We recommend that you follow the manufacturer's instructions for maintaining the device to ensure water quality.

DEFINITION OF TERMS

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

GPG (grains per gallon): Used to describe the dissolved hardness minerals contained in water and is a unit of weight that equals 1/7,000 of a pound.

HAA5 (Haloacetic Acids): Consist of Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Bromoacetic Acid and Dibromoacetic Acid.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MNR: Monitored, not regulated.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not Applicable.

ND: None Detected.

NTU: Nephelometric turbidity units.

ppb (Parts per Billion): One part substance per billion parts water (or micrograms per liter).

pCi/L (Picocuries per Liter): Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).

ppm (Parts per Million): One part substance per million parts water (or milligrams per liter).

ppt (Parts per Trillion): One part substance per trillion parts water (or nanograms per liter).

SMCL (Secondary Maximum Contaminant Level): Non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water.

Total Dissolved Solids: An overall indicator of the amount of minerals in water.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

TTHM (Total Trihalomethanes): Consist of Chloroform, Bromoform, Bromodichloromethane and Dibromochloromethane.

UCMR (Unregulated Contaminant Monitoring Rule): Unregulated substances are measured, but maximum contaminant levels have not been established by the government.

WHAT'S IN YOUR WATER

HOW TO READ YOUR WATER QUALITY TABLE

Below, you'll see an analysis of your drinking water.
Here's an example of how to read these tables:

Start here and read across	2018 or year prior	The goal level for that substance	Highest level of substance allowed	Highest amount that was found	Highest and lowest amounts found	Yes means the amount found is below gov't requirements	Where substance usually originates
Substance (units)	**Year Sampled**	**MCLG**	**MCL**	**Highest Amount Detected**	**Range of Detections**	**Compliance Achieved**	**Typical Sources**

YOUR WATER QUALITY TABLE

The data shown in the tables below are results from commercial laboratories certified in drinking water analysis by the Arizona Department of Health Services.

The table shows what substances were detected in your drinking water during 2018 or the last required sampling period within the last five years.

Regulated Substances Measured in the Water Leaving the Treatment Facility

Substance (units)	Year Sampled	MCLG	MCL	Highest Amount Detected	Range of Detections	Compliance Achieved	Typical Sources
Arsenic (ppb)	2018	0	10	8.6[1]	7.9 - 8.6	YES	Erosion of natural deposits
Barium (ppm)	2017	2	2	0.017	0.017	YES	Erosion of natural deposits
Chromium (ppb)	2017	100	100	25	25	YES	Erosion of natural deposits
Fluoride (ppm)	2017	4.0	4.0	0.37	0.37	YES	Erosion of natural deposits
Nitrate (ppm)	2018	10	10	4.77	4.77	YES	Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits
Selenium (ppb)	2017	50	50	2.2	2.5	YES	Erosion of natural deposits
Sodium (ppb)	2017	NA	MNR	65	65	YES	Erosion of natural deposits
Gross Alpha excluding radon and uranium (pCi/L)	2014	0	15	4.8	4.8	YES	Erosion of natural deposits

WHAT'S IN YOUR WATER

Regulated Substances Measured in the Distribution System

Substance (units)	Year Sampled	MCLG/ MRDLG	MCL/ MRDL	Highest Running Annual Average	Range of Detections	Compliance Achieved	Typical Sources
TTHMs (ppb)	2018	NA[2]	80	14.7	5.3 - 14.7	YES	By-product of drinking water disinfection
HAA5 (ppb)	2018	NA[2]	60	2.1	ND - 2.1	YES	By-product of drinking water disinfection
Chlorine Residual (ppm)	2018	4	4.0	0.9	0.8 - 0.9	YES	Water additive used to control microbes

Tap Water Samples: Lead and Copper Results

Substance (units)	Year Sampled	MCLG	Action Level	Number of Samples	90th Percentile	Number of Samples Above Action Level	Compliance Achieved	Typical Sources
Copper (ppm)	2017	1.3	1.3	30	0.19	0	YES	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	2017	0	15	30	ND	0	YES	Corrosion of household plumbing systems; erosion of natural deposits

Unregulated Substances Measured in the Water Leaving the Treatment Facility

Substance (units)	Year Sampled	Range of Detections	Typical Sources
Hardness (grains/gallon)	2014	11.7 - 19.8	Natural calcium and magnesium content
pH (units)	2014	7.1 - 8.5	pH is a measure of the acid/base properties
Total Dissolved Solids (ppm)	2014	470 - 640	Erosion of natural deposits

WHAT'S IN YOUR WATER

Unregulated Contaminant Monitoring Rule Substances Measured at the Treatment Facility and in the Distribution System

Substance (units)	Year Sampled	Range of Detections	Typical Sources
Vanadium (ppb)	2014	20 - 21	Erosion of natural deposits
Strontium (ppm)	2014	0.73 - 0.78	Erosion of natural deposits
Molybdenum (ppb)	2014	1.1	Erosion of natural deposits
Chromium (Total) (ppb)	2014	27 - 28	Erosion of natural deposits
Chromium VI (ppb)	2014	26 - 28	Erosion of natural deposits
Chlorate (ppb)	2014	140 - 150	By-product of drinking water disinfection
Chlorodifluoromethane (ppb)	2014	0.12	Discharge from industrial chemical factories

[1]**Arsenic:** EPCOR's groundwater arsenic removal facility continues to produce water with arsenic levels below the current federal and state standards. While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

[2]**TTHM/HAA5:** Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants: Trihalomethanes: bromodichloromethane (0.0 mg/L); bromoform (0.0 mg/L); chloroform (0.07 mg/L); dibromochloro-methane (0.06 mg/L). Haloacetic acids: dichoroacetic acid (0.0 mg/L); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid and dibromoacetic acid are regulated with this group but have no MCLGs.

EPCOR collected total coliform samples during the February 2018 timeframe as required by safe drinking water regulations. The analytical results from these samples, as established by a state licensed laboratory, showed that the water met the required state and federal safe drinking water standard for this contaminant. However, some of the data were not reported to ADEQ by March 10, 2018 as is required by rule. EPCOR updated internal data review procedures to prevent any future late reporting of analytical results.

ADDITIONAL MONITORING

In addition to the parameters listed in this table, other parameters were monitored for, including regulated pesticides, herbicides, petroleum by-products and metals. None of those parameters were detected in the water. If you have any questions about this report or your drinking water, please call our **Customer Care** team at **1-800-383-0834**.

EPCOR encourages feedback related to the quality of water that is provided to you. Please feel free to submit comments to us directly at **mywater@epcor.com**. You may also provide feedback to the Arizona Corporation Commission (ACC).

Learn more about your water at **epcor.com.**

EPCOR

SPECIAL USE PERMIT GUIDELINES

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Section 1 General Purpose

The following guidelines should not be construed as an ordinance. These guidelines are a result of joint discussions between the Town Planning Commission and Town Council to provide a generally-accepted vision of appropriate site, bulk, density, perimeter, parking, sign, lighting, and other related standards during the review of a new or amended Special Use Permit for a non-residential development in the Town of Paradise Valley. The nature of the request, the architecture of the development, the unique characteristics of the site, among other factors; may merit less or more restrictive standards as determined during a complete review of each individual request. It should be noted that meeting all the guidelines listed below does not obligate the Town to grant a Special Use Permit or amendment thereto. These guidelines supplement the regulations as set forth in Article XI, Additional Use Regulations and Special Uses, of the Town Zoning Ordinance.

Section 2 Lighting

The following lighting guidelines shall apply to all non-residential properties requiring a Special Use Permit.

a. Outdoor lighting shall be permitted so long as:

   i. the light emitting element is shielded so that no beam of light extends above a horizontal plane placed at the lowest level of any exposed portion of the light emitting element; and

   ii. the light emitting element and reflecting device of all lighting or illumination units is hooded or shielded so that it is not visible from any adjacent lot or real property; and

   iii. such outdoor lighting or illuminating units do not direct light, either directly or through a reflecting device, upon any adjacent real property.

   iv. uplighting shall be permitted so long as no Luminaire is greater than 300 Lumens.

b. Outdoor pole lighting shall be permitted subject to the provisions of subsection A.8.a of this section so long as:

   1. the height of such lights or illumination does not exceed 16 feet measured from the natural ground level; and
   2. Each lighting or illuminating device shall be set back from the nearest property line a distance equal to or greater than the height of the device above natural ground level.

c. Outdoor light levels, measured in foot candles or equivalent Lux in accordance with Illuminating Engineering Society of North America (IESNA) standards, shall not exceed the following levels in the locations specified:

i. parking lots – 1.6.

ii. entrance roadways, interior driveways and drop off areas – 5.0.

iii. adjacent to service buildings and loading docks – 5.0.

iv. in conjunction with architectural lighting adjacent to all other structures – 3.0.

v. outdoor pool decks and function areas – 5.0.

vi. outdoor dining areas – 10.0.

d. No outdoor lighting shall be permitted within any setback area adjacent to a residential property unless:

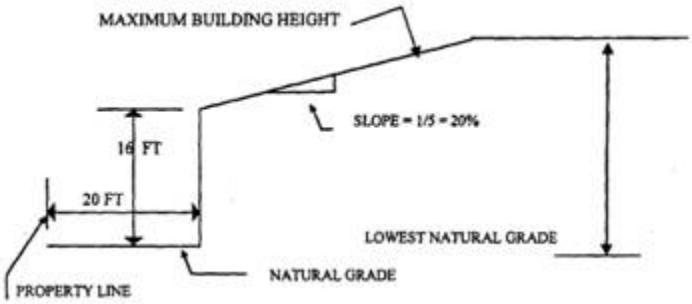
i. the lighting measured at the property line does not exceed 0.5 foot candles; and

ii. all light emitting elements are less than three (3) feet in height.

Section 3 <u>Open Space Criteria</u>

The following Open Space Criteria shall apply to all non-residential properties requiring a Special Use Permit. To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines. No building shall penetrate an imaginary plane beginning at 16 feet above the natural grade and 20 feet from exterior property lines, which plane slopes upward at a ratio of one foot vertically for each five feet horizontally measured perpendicular to the nearest property line, as illustrated in Figure 3-1. This limitation shall apply until the maximum allowable height is reached. All height measurements shall commence at the ground elevation at the 20-foot beginning line. Building height measurements shall be taken from the high points of the structure to the closest point on the 20-foot beginning line perpendicular to that portion of the structure. Notwithstanding the foregoing, no structure shall be located closer to an exterior property line than as otherwise permitted for that use.

Figure 3-1



Section 4 <u>Resorts</u>

1. Site Standards

   a. *Except for properties that have existing special use permits for resort uses, the minimum site area shall be 20 acres which shall not be bisected by any public right-of-way*.

   b. Except for properties that have existing special use permits for resort uses, the site shall have primary access from and frontage of at least 300 feet on a Major or Minor Arterial as designated in the Paradise Valley General Plan.

   c. Principal structures shall be those containing guest units or those containing guest registration areas, facility administrative offices and accessory uses. Principal structures with guest units also may contain permitted accessory uses.

   d. Accessory structures shall be those containing accessory uses.

   e. Service structures shall include those structures used for support and maintenance of the resort.

   f. All parking on a site shall be at the surface or underground.

   g. No individual retail business, office or business service shall occupy more than 2000 square feet. Entrances to any retail business, office or business service shall be from within a principal or accessory structure.

2. Bulk and Density Standards

   a. Maximum building height:

      i. *Principal Structures - 36 feet*

      ii. Accessory structures - 24 feet

      iii. *Service structures - 18 feet*

      iv. Towers and other architectural features may exceed maximum building heights, subject to special use permit or major amendment approval.

      v. To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines in accordance with the Open Space Criteria per Section 3 of the Special Use Permit Guidelines.

   b. Lot coverage

      i. *Total of all structures* - 25%

      ii. *Total of all impervious surfaces including building footprints - 60%*

      iii. *Open space, which shall consist of land and water areas retained for active or passive recreation purposes or essentially undeveloped areas retained for resource protection or preservation purposes, a minimum of* ***40****%*

   c. *Maximum density of guest units* – 1 unit for each 4000 *sq. feet of site area*

3. Perimeter Standards

   a. Minimum distance from exterior property lines where the adjacent use is residential:

      i. *Principal structures - 100 feet*

      ii. *Accessory structure - 60 feet*

      iii. Service structure - 100 feet

      iv. *Outdoor game courts and swimming pools* which are generally available to all guests - *200 feet*

      v. *Parking lots and interior drives, excluding exterior points of access* –60 *feet*

      vi. Any portion of an equestrian facility, including structures, barns, stalls and corrals - 200 feet

   b. Minimum distance from exterior property lines where the adjacent use is other than residential or is adjacent to a public street:

      i. *Principal structures - 100 feet*

      ii. *Accessory structure* - 40 *feet*

      iii. Service structure – 65 feet

      iv. *Outdoor game courts and swimming pools which are generally available to all guests - 65 feet*

      v. *Parking lots and interior drives, excluding exterior points of access - 40 feet.*

   c. There shall be a 40 foot wide landscaped area adjacent to an exterior property line where it abuts residentially zoned property.

   d. There shall be a minimum 30 foot wide landscaped area where an exterior property line abuts a public or private local or collector street and a 50 foot wide landscaped area where an exterior property line abuts a Major or Minor Arterial.

   e. The provisions of Chapter XXIV, Walls, and Fences, of the Town's Zoning Ordinance shall apply.

4. Parking and Circulation

   a. On site parking shall be provided as follows:

      i. For each guest unit - 1.2 spaces.

      ii. For each dwelling unit - 2.0 spaces.

      iii. For each 50 square feet of net dining area in restaurants - 1.0 space.

      iv. For each two seats or equivalent area in meeting rooms, auditoriums or group assembly areas - 1.0 space.

      v. For each 300 square feet of net sales areas in retail establishments – 1.0 space.

vi. For each 300 square feet of net occupied space in office and service establishments - 1.0 space.

b. These requirements may be modified in conjunction with special use permit or major amendment approval based on information documenting overlapping usage of on-site facilities by guests or visitors and as contained in an approved traffic and parking analysis.

c. *All parking and driveway areas shall be located so as to prevent lights from shining onto adjacent residential property*.

d. All parking areas and driveways located within 200 feet of adjacent residentially zoned property shall be screened with a minimum three foot high, solid, decorative wall or a landscaped berm providing equivalent screening or a combination of both.

e. *Landscaped islands shall be provided every 100 feet within surface parking areas.* Shade tree planters shall be provided between every four stalls.

f. No loading, truck parking, trash containers or outdoor storage area shall be located within 100 feet of adjacent residentially zoned property. All such areas shall provide visual and noise screening to minimize impacts on adjacent residential property.

5. Signs

a. An identification sign may be located at each entrance to the resort from a Major or Minor arterial street. The maximum height shall be 8 feet and the maximum sign area shall be 40 square feet, aggregate.

b. On entrances from all other streets, the maximum height shall be 4 feet and the maximum area shall be 32 square feet, aggregate.

c. All signs shall be only backlit or indirectly illuminated according to the standards in Article XXV, Signs, of the Town's Zoning Ordinance.

d. No moving or animated signs shall be permitted. Changeable copy is permitted within the allowable sign area.

e. Traffic and directional signs within the site shall not exceed 12 square feet in area, aggregate, and shall not exceed 5 feet in height.

f. A sign, mounted on an exterior wall of any structure shall contain only structure identification as necessary for emergency access.

6. Lighting as per Section 2 of the Special Use Permit Guidelines

Section 5 <u>Medical Office</u>

1. Bulk and Density Standards

   a. Maximum building height

      i. *Principal Structures* – 30 *feet*

      ii. Accessory structures – 24 feet

      iii. Service structures – 18 feet

      iv. Towers and other architectural features may exceed maximum building heights, subject to special use permit or major amendment approval.

      v. To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines in accordance with the Open Space Criteria per Section 3 of the Special Use Permit Guidelines.

   b. Maximum lot coverage for all buildings - 25%

   c. Minimum lot area - 5 acres

2. Perimeter Standards

   a. Building setback when property is adjoining residentially zoned property – 60 feet

   b. Building setback when property is adjoining a public street - 40 feet

   c. Parking lots and internal driveways shall be set back a minimum of 60 feet from adjoining residential zoned property

   d. Parking lots shall be shielded with a minimum 3 foot high wall or landscaped berm providing equivalent screening or a combination of both so that no vehicle lights shall shine onto adjacent residential property.

   e. Parking lots adjoining public streets shall be screened with a minimum three foot high, solid, decorative wall or a landscaped berm providing equivalent screening or a combination of both.

   f. There shall be a 40 foot wide landscaped area adjacent to an exterior property line where it abuts residentially zoned property.

   g. There shall be a minimum 30 foot wide landscaped area where an exterior property line abuts a public or private local or collector street and a 50 foot wide landscaped area where an exterior property line abuts a Major or Minor Arterial.

3. Parking

   a. On-site parking shall be provided as follows:

      i. Medical offices - 1 space for each 200 square feet of interior floor area.

      ii. Outpatient surgical facilities - 1 space for each 2 employees plus 1 space for each surgical room.

iii. Medical laboratories - 1 space for each 2 employees.

iv. Physical therapy facilities - 1 space for each 1.5 employees.

v. Pharmacy – 1 space for each 300 square feet of interior area.

b. These requirements may be modified in conjunction with special use permit or major amendment approval based on information documenting overlapping usage of on-site facilities by staff and visitors and as contained in an approved traffic and parking analysis.

4. Signage

In addition to the provisions of Chapter XXV, Signs, of the Town's Zoning Ordinance, the following regulations shall apply:

a. One ground sign that is no higher than 8 feet and no larger than 40 square feet in area shall be permitted at each principal entrance to the property.

b. No moving or animated signs shall be permitted.

c. Traffic and directional signs within the site shall not exceed 12 square feet in area or five feet in height.

5. Lighting

Lighting as per Section 2 of the Special Use Permit Guidelines

Section 6 **Religious Facility, Private School, Non-Profit Organization, Public/Quasi Public**

1. Bulk and Density Standards

   a. *Maximum building height of principal building – 35 feet*

   b. Maximum building height for all other structures - 24 feet

   c. Maximum lot coverage for all buildings - 25%

   d. Minimum lot area - 5 acres

   e. Towers and other architectural features may exceed building maximum heights subject to special use permit or major amendment approval.

   f. To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines in accordance with the Open Space Criteria per Section 3 of the Special Use Permit Guidelines.

2. Perimeter Standards

   a. Building setback when property is adjoining residentially zoned property – 60 feet

   b. Building setback when property is adjoining a public street - 40 feet

   c. Parking lots and internal driveways shall be set back a minimum of 60 feet from adjacent residentially zoned property.

   d. Parking lots shall be shielded with a minimum 3 foot high wall or a landscaped berm providing equivalent screening or a combination of both so that no vehicle lights shall shine onto adjacent residentially zoned property.

   e. Parking lots adjoining public streets shall be shielded by a minimum 3 foot high wall or landscaped berm providing equivalent screening or a combination of both.

   f. There shall be a 40 foot wide landscaped area adjacent to an exterior property line where it abuts residentially zoned property.

   g. There shall be a minimum 30 foot wide landscaped area where an exterior property line abuts a public or private local or collector street and a 50 foot wide landscaped area where an exterior property line abuts a Major or Minor Arterial.

3. Parking

   a. On-site parking shall be provided as follows:

      i. Places of assembly - 1 space for each 3 seats or for each 54 inches of total pew length

      ii. Classrooms - 1 space for each classroom

      iii. Administrative offices - 1 space for each 300 square feet of net interior floor area

      iv. Professional offices - 1 space for each 300 square feet of net interior floor area

b. These requirements may be modified in conjunction with special use permit or major amendment approval based on information documenting overlapping usage of on-site facilities by employees or visitors and as contained in an approved traffic and parking analysis.

4. Signage

In addition to the provisions of Chapter XXV, Signs, of the Town's Zoning Ordinance, the following regulations shall apply:

a. One ground sign no higher than 8 feet and no larger than 32 square feet in area shall be permitted at each principal entrance to the property.

b. No moving or animated signs shall be permitted.

c. Changeable message panels shall be permitted.

d. Traffic and directional signs within the site shall not exceed 12 square feet in area and five feet in height.

5. Lighting

Lighting as per Section 2 of the Special Use Permit Guidelines

Section 7 <u>Country Club and Golf Course</u>

1. Bulk and Density Standards

    a. Uses may be conducted indoors or outdoors.

    b. Structures associated with the facility shall not exceed one story or 24 feet in height

    c. Lot coverage of all structures on a site shall not exceed 20% excluding outdoor game courts and swimming pools, and shall not exceed 30% including outdoor game courts and swimming pools.

    d. Minimum site area - 5 acres

    e. To maintain view corridors around the perimeter of a property, building heights shall be limited around property lines in accordance with the Open Space Criteria per Section 3 of the Special Use Permit Guidelines.

2. Perimeter Standards

    a. No tee or hole within any golf course or driving range shall be closer than 100 feet from the principal structure on any residentially zoned land.

    b. No portion of any outdoor game court or swimming pool and decking shall be closer than 150 feet from the property line of any residential zoned land.

    c. Building setback when property is adjoining residentially zoned property – 40 feet.

    d. Building setback when property is adjoining a public street – 40 feet.

    e. Parking lots and internal driveways shall be set back a minimum of 60 feet from adjacent residentially zoned property.

    f. Parking lots shall be shielded with a minimum 3 foot high wall or a landscaped berm providing equivalent screening or a combination of both so that no vehicle lights shall shine onto adjacent residentially zoned property.

    g. Parking lots adjoining public streets shall be shielded by a minimum 3 foot high wall or landscaped berm providing equivalent screening or a combination of both.

    h. There shall be a 40 foot wide landscaped area adjacent to an exterior property line where it abuts residentially zoned property.

    i. There shall be a minimum 30 foot wide landscaped area where an exterior property line abuts a public or private local or collector street and a 50 foot wide landscaped area where an exterior property line abuts a Major or Minor Arterial.

3. Parking

    a. On-site parking shall be provided as follows:

        i. employees - 1 space per employee.

        ii. per golf course hole - 2 spaces.

iii. per driving range station tee area - 2 spaces.

iv. putting or chipping green - 1 space per 500 square feet.

v. tennis, racquetball or handball - 3 spaces per court.

vi. swimming pool - 1 space per 60 square feet of deck area.

vii. dining areas and bar - 1 space per 50 square feet of dining area.

viii. retail sales area - 1 space per 300 square feet of gross sales area.

ix. exercise room - 1 space per 150 square feet of gross area.

x. event hall - 1 space per 50 square feet of assembly area or 1 space per 2 fixed or portable seats.

b. These requirements may be modified in conjunction with special use permit or major amendment approval based on information documenting overlapping usage of on-site facilities by guests or visitors and as contained in an approved traffic analysis.

4. Signage

In addition to the provisions of Chapter XXV, Signs, of the Town's Zoning Ordinance, the following regulations shall apply:

a. One ground sign which shall be no higher than 8 feet and no larger than 40 square feet in area shall be permitted at each principal entrance to the property.

b. No moving or animated signs shall be permitted.

c. Changeable message panels shall be permitted.

d. Traffic and directional signs within the site shall not exceed 12 square feet in area or five feet in height.

5. Lighting

Lighting as per Section 2 of the Special Use Permit Guidelines

Section 8 <u>Guardhouse, Gatehouse, and Access Control Gates</u>

1. Bulk, density and design standards

    a. The appearance of the guardhouses, gatehouses, and access control gates and related improvements shall be architecturally and aesthetically compatible with adjacent buildings, structures and landscaping.

    b. There shall be a turnaround provided outside a guardhouse, gatehouse, or access control gate which shall meet Town standards for cul-de-sacs.

    c. An access control gate shall be set back a minimum of 150 feet from the centerline of the nearest intersecting street providing access to the facility.

    d. Guardhouses and gatehouses shall be no higher than 16 feet in height.

    e. No guardhouse or gatehouse shall exceed 250 square feet in area.

    f. No access control gate shall be higher than 8 feet.

    g. Pedestrian and non-motorized vehicle access shall be provided adjacent to roadway access.

2. Signage

    a. One wall sign, not to exceed 6 feet in height or 6 square feet in area shall be permitted.

    b. Ground signs, not to exceed 4 feet in height or 2 square feet each in area shall be permitted.

3. Lighting

Lighting as per Section 2 of the Special Use Permit Guidelines

GENERAL PLAN POLICIES
Smoke Tree Resort Major Special Use Permit Amendment (2018)
7101 E Lincoln Drive

Several General Plan policies apply related to the request for a major renovation of the Smoke Tree Resort property. Primary policies that apply include the policies of Goal LU 2.1.2, Special Use Permit Property Revitalization, and several of the policies of Goal DA 2.2.1, Development Area Policy. The subject site is located in a designed Development Area. Below is a more exhaustive list of pertinent General Plan policies for consideration in review of this application request. As applicable, other policies may be considered.

Encourage renovation of SUP sites

LU 2.1.2.4 Special Use Permit Property Maintenance. The Town shall encourage, and where subject to redevelopment require, owners of closed or poorly maintained Special Use Permit properties to upgrade existing structures and properties to improve their physical condition to acceptable standards or require such structures to be removed or demolished.

Consider alternative uses and density in Development Areas

DA 2.2.3.3 East Lincoln Drive Development Areas. The Town should encourage moderate intensity, mixed-use, and context appropriate resort development within the East Lincoln Drive Development Areas that includes reasonable separation between incompatible uses and adjacent residential areas and effective buffering of unwanted noise, light, traffic and other adverse impacts.

CC&H 3.2.1.2 Other Housing Types. The Town shall consider less than one acre per residence housing only on Special Use Permit resort properties and to serve the Town's existing resident population, including single-owner resort housing.

CC&H 3.2.1.3 Fractional Ownership & Timeshares. The Town shall not allow timeshares or fractional ownership residences anywhere in the Town.

Mitigate the impact to residential neighborhoods and adjacent land uses

LU 2.1.2.1 Encourage Revitalization. The Town shall continue to encourage Special Use Permit property revitalization and improvement within their existing geographic boundaries as long as such improvement does not adversely affect the integrity and enjoyment of adjacent residential neighborhoods.

LU 2.1.2.2 Require Impact Assessments. The Town shall require that proposals for revitalization and improvement of Special Use Permit properties include community impact assessments that address beneficial as well as adverse project impacts, including but not limited to noise, traffic, parking, open space or mountain views, and light pollution.

LU 2.1.2.3 Compatibility of Adjoining Uses. The Town shall ensure that development within Special Use Permit properties is compatible with adjacent land uses, particularly residential uses, by requiring such features as:
• Increased building setbacks from rear or side yard property lines adjoining single-family residential uses;
• Building heights stepped back from sensitive adjoining uses to maintain appropriate transitions in scale and to protect privacy;
• Landscaped off-street parking areas, loading areas, and service areas screened from adjacent residential areas, to the degree feasible;
• Lighting shielded to minimize impacts on adjacent residential uses and protect dark skies; and

• Operational restrictions to limit the adverse impact of noise, light, and traffic and minimize the risk of crime to adjacent residences.

DA 2.2.1.2 Balanced Consideration. Consideration of Development Area Special Use Permit applications should balance a need for the Town's fiscal health against a steadfast commitment to protecting adjacent low-density residential character and quality of life.

DA 2.2.1.3 Minimize Neighborhood Incompatibility. The Town shall require development or redevelopment within Development Areas to provide reasonable separation of incompatible land uses from adjacent residential areas through context- and scale appropriate land planning and architectural design, greater setback distances, noise mitigation, resort property programming, and landscape buffering.

OS 5.1.9.1 Mountain View Consideration. The Town shall place a high priority on the preservation and restoration of mountain views from public rights-of-way during any new, intermediate or major Special Use Permit amendment process.

EP 6.1.3.5 Glare. The Town shall require, through development design features, new development avoid the creation of excessive glare that makes seeing difficult due to the presence of reflected sunlight or artificial light such as floodlights.

Use context-appropriate site/building design

LU 2.1.2.5 Building Design and Site Planning. The Town shall encourage context-appropriate and responsive building design and site planning on Special Use Permit properties that mitigates the scale of larger buildings through careful use of building massing, setbacks, facade articulation, fenestration, varied parapets and roof planes, and pedestrian-scaled architectural details.

LU 2.1.3.1 Visual Openness. The Town shall maximize the benefits of visual openness throughout the Town by specific limits on floor area ratio, setbacks, side yards, and building and wall heights.

LU 2.1.3.2 Conservation. The Town shall encourage energy and water conservation by the appropriate orientation and design of buildings and the use of low-water use landscaping.

CC&H 3.1.3.2 Responsiveness to Context. The Town shall promote building design that respects and responds to the local context, and scale, including use of local materials where feasible, responsiveness to the Sonoran Desert climate, and consideration of the cultural and historic context of the Town of Paradise Valley's neighborhoods and centers.

CC&H 3.1.3.6 Architecturally Significant Buildings. The Town shall encourage the development of architecturally significant public and private buildings and resort development in key locations to create new landmarks and focal features that contribute to the Town's structure and identity and value the Town's location, climate and historic legacy.

CC&H 3.1.4.4 Dark Skies. The Town shall continue to balance the low light levels of the Town with the safety and security of residents and visitors.

OS 5.1.7.1 Landscape Guidelines. The Town shall adopt landscape guidelines and require they be used on all Town projects and in public rights-of-way while allowing a diverse range of treatments on individual properties. Residents and builders shall be encouraged to utilize the guidelines to further the preservation and enhancement of the community's natural environment.

EP 6.1.1.3 Mature Landscape Preservation. The Town shall require new development and redevelopment to preserve mature indigenous and compatible landscaping on-site where feasible.

EP 6.1.1.5 Maximum Feasible Preservation. The Town shall monitor new development and redevelopment to ensure the maximum feasible preservation of native plants and wildlife and existing vegetation.

EP 6.1.2.4 Urban Heat Island Effects. The Town shall continue to promote planting indigenous and compatible shade trees with substantial canopies, and require site design which uses trees to shade, where feasible, parking facilities, streets, and other facilities to minimize heat island effects.

EP 6.1.3.3 Standards for SUP Development. The Town shall require that Special Use Permit developments not create major adverse impacts on the town's natural and semi-urban landscapes.

WR 6.2.1.5 Water Conservation. The Town shall encourage water conservation for new and existing developments through the use of water-conserving fixtures and devices, conversion and installation of desert adapted landscaping, and other conservation techniques.

S 7.2.4.4 Impervious Surface Reduction. The Town shall limit the scope of new impervious surfaces and encourage reduction of existing impervious surfaces for all new developments in order to reduce storm water runoff.

Highlight the entrance into PV via gateway markers

LU 2.1.3.8 Community Gateways. Major entrances into the Town should be given symbolic markers and landscaping to strengthen community identity and to highlight community design standards. Symbolic markers may include signs, monuments, landscape, and hardscape.

CC&H 3.1.3.3 Enhanced Town Gateways. The Town shall ensure that public improvements and private development work together to enhance the sense of entry at key gateways to the Town through consistent decorative elements such as signage, landscaping, and art that captures the values of the Town and its setting.

CC&H 3.1.3.4 Visually Significant Corridors. The Town shall designate highly visible, prominent, streets, including Lincoln Drive and Tatum Boulevard, as Visually Significant Corridors. Streetscape design guidelines will be developed, to include a reasonable range of treatments of individual properties, to improve and manage landscape conditions as a means to demonstrate a positive and unique character and image of the Town, maintain views, and strive to mitigate the negative impact of traffic impacts while respecting private property rights.

M 4.4.3.2 Visually Significant Corridor Treatment. Town rights-of-way along Visually Significant Corridors shall have attractive, experientially rewarding, and cohesive design elements, including signage, landscaping, medians, interchanges and sidewalks while permitting a reasonable range of treatments of individual properties. Elements that create visual clutter such as unnecessary signage or utility boxes will be eliminated, or their visibility reduced.

M 4.4.3.3 Other Right-of-Way Treatment. All other public roadway right-of-way corridors will demonstrate high-quality landscaping elements consistent with Town Landscaping Guidelines while permitting a diverse range of treatments of individual properties.

Provide community spaces/public benefit

DA 2.2.2.1 Open Space. The Town shall seek to provide open spaces in Development Areas that encourage public gathering, enhance aesthetics, and serve as buffers between uses of significantly differing function and intensity.

DA 2.2.2.3 Public Space. The Town shall work with Development Area Special Use Permit properties to integrate pedestrian amenities, traffic-calming features, plazas and public areas, attractive streetscapes, shade trees, lighting, and open spaces in keeping with the character of the Town.

DA 2.2.2.4 Public Art. The Town should encourage the integration of public art into the visual character of Development Areas.

CC&H 3.1.2.3 Community Gathering Spots. The Town shall encourage Special Use Permit properties to incorporate strategically located (e.g., accessible to surrounding neighborhoods) community gathering spots that include small and appropriately scaled community-oriented services or amenities designed to support the interaction of Town residents.

R 5.2.1.2 Resort Facilities. The Town shall encourage the use of resort properties for private recreation programs and activities for Town residents.

To direct orderly and well-planned development within Development Areas to support infrastructure improvements

DA 2.2.3.1 Public Infrastructure. The Town should promote the public and private construction of timely and financially sound public infrastructure within Development Areas through the use of infrastructure funding and financing that is coordinated with development activity and funded by the developer whenever possible.

M 4.2.1.2 Comprehensive System. The Town shall maintain existing sidewalks, paths, bicycle lanes, and trails, and seek ways through transfer, gift, easement, or governmental action to extend or to fill in the system, to better serve the health, welfare, aesthetic, and sociability needs of pedestrians and cyclists.

BACKGROUND:

Request

The applicant's proposed redevelopment of this resort property will be a complete demolition of all existing structures. The proposed resort site includes the following uses:

- 122 total resort rooms between the main hotel and luxury suites.
- Restaurant and bar/lounge in a similar location to the prior on-site restaurant.
- A rooftop bar with indoor and outdoor seating, as well as a lounge.
- Accessory uses such as a fresh food market, café/eatery, micro-brewery, speakeasy, pop-up retail, coffee shop, florist, sandwicheria, bakery, and epicurean retail and sundries.
- Indoor and outdoor space for events, including a resort pavilion for banquets/meetings and pool areas.

Town Council Consideration After Planning Commission Action

After the application was recommended for denial by the Planning Commission in March 2019, the applicant updated their submittal to address some of the concerns identified by the Commission. In March 2019, Town Staff presented to Town Council the revised request in work study session. Council had concerns specifically regarding the for-sale product among other items. In May 2019, the applicant made a presentation to Council where generally the Council indicated support to redevelop the property. Specific Council opposition was unanimously expressed with regard to the project's density and its for-sale condo element. It was the expectation of Council the applicant would respond to the Council's concerns and present a revised plan to staff for review prior to placing the item on a future agenda item. The applicant submitted revised plans for staff review in September, October, and November, 2019. At that time staff and Council provided feedback that they were not supportive of the idea of the applicant's proposed "bubble zoning". Subsequent to that meeting, the applicant submitted revised plans in January and May 2020.

Council discussed the revised proposal at their June 11, 2020 Town Council meeting where staff compared it to the original Statement of Direction. Subsequent to that meeting, the applicant provided written correspondence waiving their right to a public hearing prior to sending the revised proposal back to the Planning Commission for consideration. Council requested that staff prepare a revised Statement of Direction for Council's review and action which took place on June 25, 2020. The revised Statement of Direction can be found as Attachment H.

Planning Commission Recommendation on Previous Development Proposal

On March 5, 2019 the Planning Commission recommended denial of this application by a vote of 4 - 3. Generally, the reasons for denial included density, intensity of use, height, and incomplete information.

History and Conditions

Use of the property for guest services began prior to its annexation into the Town in 1961. At annexation, the property operated as a resort and restaurant in much the same

configuration as it presently exists. The original Special Use Permit (SUP) was issued on March 13, 1969. There is limited information on past approvals and stipulations for this property. Historically, the property has not had many building permits issued or amendments to its Special Use Permit zoning. The latest activity included renovations to the restaurant in 2007 that never opened. The SUP History is included as Attachment F.

General Plan/ Zoning

The subject property has a General Plan designation of “Resort/Country Club” pursuant to the Town’s General Plan Land Use Map (Attachment B). The zoning on the property is “Special Use Permit - Resort”. The proposed resort use is in conformance with this designation and zoning.

Several General Plan policies apply related to the request for redevelopment of the Smoke Tree property. Primary policies that apply are the policies of Goal LU 2.1.2, Special Use Permit Property Revitalization, and several of the policies of Goal DA 2.2.1, Development Area Policy. The site is located in the East Lincoln Development Area that encourages moderate intensity, mixed-use, and context appropriate resort development that includes reasonable separation between incompatible uses and adjacent residential areas and effective buffering of unwanted noise, light, traffic and other adverse impacts. Also, the General Plan encourages upgrading existing structures and properties to improve their physical condition to acceptable Town standards.

Enforcement

As of the date of this report, there are no known active code violations on the subject site.

SUP History – Smoke Tree Resort

Use of the property for guest services began prior to its annexation into the Town in 1961. At annexation, the property operated as a resort and restaurant in much the same configuration as it presently exists. The original Special Use Permit (SUP) was issued on March 13, 1969. There is limited information on past approvals and stipulations for this property. Historically, the property has not had many building permits issued or amendments to its Special Use Permit zoning. The latest activity included renovations to the restaurant in 2007 that never opened.

- *December 2012. Adoption of General Plan*
  55 acres near the southeast area of Lincoln Drive and Mockingbird Lane were designated as a redevelopment area in the Town's General Plan. Smoke Tree Resort is located in the "East Lincoln Drive South Development Area." This development area is encouraged to have moderate intensity, mixed-use, and context-appropriate resort development. Refer to the attached General Plan policies for more information.

- *June 2008. Mechanical Screening on Restaurant Building*
  As part of the renovation of the long-standing "The Other Place" restaurant for a new restaurant tenant "REM." Various improvements to the restaurant building fronting along Lincoln Drive were made in 2007 and 2008. The mechanical roof screening on the restaurant building was the most visible element completed. The improvements were all in substantial compliance with the existing Special Use Permit. REM never opened.

- *2005 – 2007. Compilation of SUP records*
  The Planning Department worked on a project to compile records for all Special Use Permit properties to better monitor these properties. This included centralizing stipulations. Most of the records for Smoke Tree Resort were not found.

- *June 1972. Amendment to the Special Use Permit to add more kitchen space*
  The Town approved modification of Cottage 1 to a non-public use for more kitchen space. This same application appears to have been filed and approved in May 1971. The only plan from this period is the attached site plan from 1971.

- *March 1969. Establishment of the Special Use Permit*
  The resort was granted Special Use Permit status in 1969 with two stipulations. One stipulation that related to payment for condemnation of right-of-way on Lincoln Drive and that any new leases of commercial space be approved by Town Council. There are no site plans or other records available. From the attached March 13, 1969 minutes, it appears that the changes to the site related to façade improvements, interior remodel, adding and paving parking areas, and dedication of 7 feet of right-of-way along Lincoln Drive to comply with the then 40 feet of half-width of right-of-way. However, it does not appear the applicant dedicated or granted an easement for the additional 7 feet of right-of-way along Lincoln Drive.

7/13/1972 COUNCIL

Gulf Leisure (Con'td.): property owners were present to object. They included Mr. and Mrs. John Kronenberg, Mrs. L. E. Zuhn, Mr. and Mrs. M. J. Wilton, Mr. and Mrs. Dave Manning and Mr. W. G. Mizell, Jr. Mrs. Kronenberg read a prepared statement citing the residents' objections, which were primarily devaluation of property and invasion of privacy. A protesting petition was also presented. No reply was forthcoming to the Mayor's question as to what the residents would consider an acceptable use of the land in question. Mayor Tribken pointed out that if the present petitioners were refused, construction over which the Town would have no control could take place in the future. Vice-Mayor Donegan mentioned current litigation with respect to the property which could result in the construction of a seven story office building on the site. In answer to the question "Why are we changing our Zoning Ordinance?", Councilwoman vonAmmon advised that the Town already has resort zoning. Nearby homeowners were concerned about drainage and flood control, and Mayor Tribken assured them that if plans for such were not adequate and approved by the Town Engineer and State Flood Control Authorities, a building permit would not be issued.

In answer to objections of balconies on the second story rooms, Mr. Pierce stated that all balconies would be removed. Vice-Mayor Donegan moved to grant a Special Use Permit for a resort hotel provided flood control drainage were approved by the Town Engineer and State Authorities. The question as to the final height of the buildings was raised. Mr. Pierce stated that this would depend on how much the site would have to be elevated in order to accomplish proper drainage, something which is not known at the present time.

Councilman Kleban suggested approval of final building height be incorporated into the motion, and Mr. Pierce wanted approval of landscaping also to be included. Mr. Harry Ekdahl, assistant to the Planning and Zoning Commission, suggested that the motion state that the flood control and drainage program take into consideration the nearby property owners.

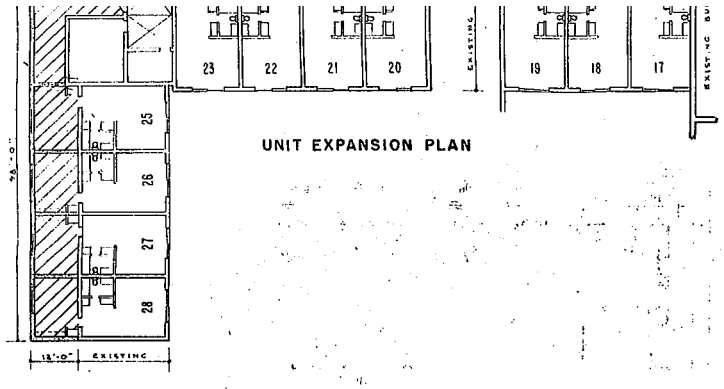
Motion: The motion, as amended, was restated: "To grant a Special Use Permit for a resort hotel with site plan approval to include landscaping, final building height and proper flood control drainage taking into consideration the needs of the surrounding homes." Councilman Worthington seconded. Mr. John Kronenberg asked the Council by what authority it could ignore the recommendation for denial by the Planning and Zoning Commission. Mayor Tribken replied that the function of the Planning and Zoning Commission is advisory only, and that final authority lies with the Town Council. A roll call vote was taken, and the motion carried four to two with the negative votes being cast by Councilman Palmer and Councilwoman vonAmmon.

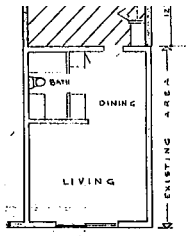
Roll Call:

Scottsdale Baptist Church: The hearing of Scottsdale Baptist Church was continued to the next Council meeting as the petitioner was not present.

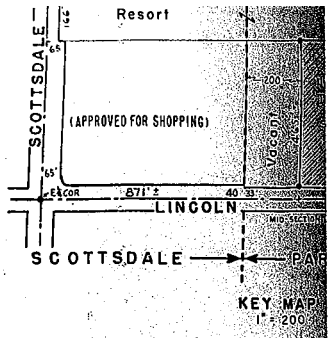
Smoke Tree Resort: Mr. Curtis Williams, owner of Smoke Tree Resort requested an amendment to a Special Use Permit to change Cottage I to a non-public use, and construct additional space by connecting Cottage I with "The Other Place" to provide additional kitchen facilities for "The Other Place" and a rest area for its employees. Councilman Palmer moved to approve the amendment to the Special Use Permit in accordance with the recommendations of the Planning and Zoning Commission and with special consideration for Fire protection with fire hydrants. Vice-Mayor Donegan seconded the motion, and it carried unanimously.

Motion:

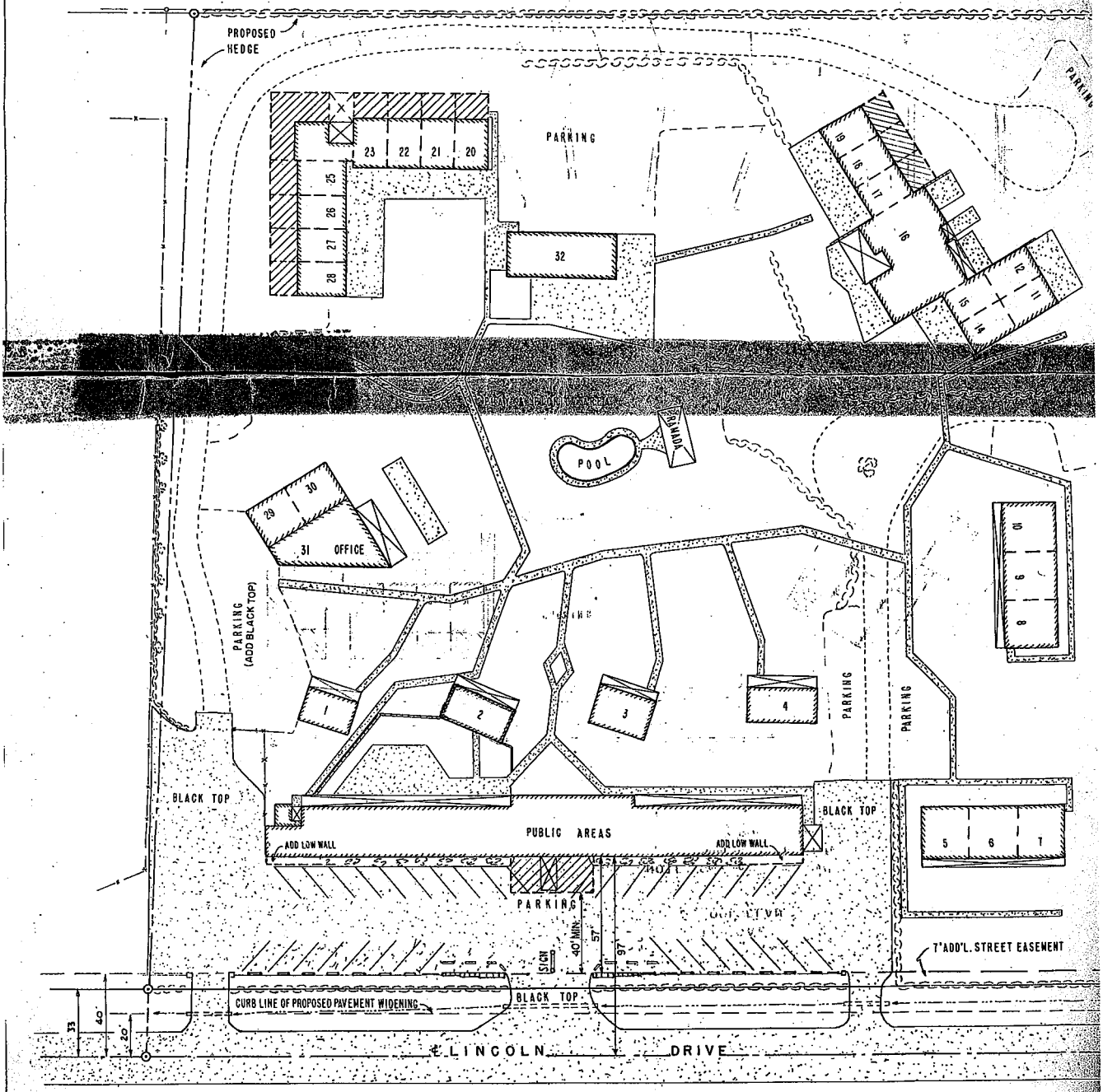




TYPICAL FLOOR PLAN



NOTE: See architural drawings for additional expasion details.
Sign, after 18 months from approval date, to be reduced to 20sq.ft. or
Proposed building expansion



	TOTAL UNITS	TOTAL BLDGS	FLOOR AREAS	NET LAND AREA
GUEST UNITS	29	10	17,100	5 ACRES
OFFICE & RES.	1			
COMMERCIAL		1	7,000	
	30	11	24,100	218,500#

BUILDING DENSITY = 10.75 % – INCREASES TO 12 %

Amendment Application 4/23/71

LAZY-K "smoke tree" G
7101 EAST LINCOLN DRIVE · TOWN
PORTION NE¼ SE¼ SECTION 10 · T2
SITE PLAN "A" - EXISTING & PRO

DONALD T. VAN ESS · ARCHITECT

0 25 50

5/27/1971 council

is reached between the City of Phoenix and the Town regarding installation and maintenance of fire hydrants. Town Attorney Robertshaw stated that he had received copies of the proper bond.
Councilman Donegan suggested a letter be written, dated May 18, 1971, stating that the Mirada Los Arcos developers agreed to install three fire hydrants, to be hooked to City of Phoenix water lines within a year provided agreement referred to above is reached between the City of Phoenix and the Town within that time. Mr. William Goodheart, representing Mirada Los Arcos, agreed to sign such a letter. Town Attorney Robertshaw composed the letter and Mayor Huntress read it.
Mr. William Goodheart signed the letter as a representative of Mirada Los Arcos Subdivision.

Motion

Councilman Donegan moved that the Final Plat for Mirada Los Arcos Subdivision be approved, subject to the provisions of the letter referred to above. Councilman Crook seconded the motion. The motion was carried unanimously.

Smoke Tree Resort-Application for Amended Special Use Permit

- Mayor Huntress read from the Minutes of the Planning and Zoning Commission of May 18, 1971 in which the Commission recommended approval of the Application for an Amendment to the Special Use Permit by Smoke Tree Resort to permit conversion of a living unit to a private dining room or meeting room and additional public dining space in connection with "The Other Place" restaurant. After the Council's discussion of seating capacity and available parking space, Councilman Crook moved that the Application as submitted be approved. Councilman Donegan seconded the motion. The motion was carried unanimously.

Town Manager's Report

- Town Manager's Report:

a. The Arizona Public Service Power Pole move back along Scottsdale Road between Jackrabbit Road and Orange Blossom Lane as previously outlined was reported upon as being caused by the Town of Paradise Valley's granting a Special Use Permit to the Scottsdale Baptist Church and widening of Scottsdale Road. A permit, to expire at the end of ten years, had been granted to Arizona Public Service Company to build this line (69 Kv) overhead. After considerable discussion it was decided that APS would have to file an application for an amendment to this permit to move the affected poles approximately 25 feet to the west along this stretch of Scottsdale Road.

b. The list of articles to be auctioned off by the Town Marshal's Office, and the date set for the auction July 15, 1971 at 10:00 a.m. was also reported upon. Instructions to post a list of articles and notice of auction on all Town bulletin boards and have an article in the Scottsdale Daily Progress

MINUTES OF REGULAR MEETING OF
THE TOWN COUNCIL OF THE TOWN
OF PARADISE VALLEY, ARIZONA

March 13, 1969

A regular meeting of the Town Council for the Town of Paradise Valley, Arizona, was called to order by Mayor Jack B. Huntress at 7:30 P.M., Thursday, March 13, 1969, in the Council Chambers at the Town Hall, 6325 North Invergordon Road. Mayor Huntress led Council members and guests in the Lord's Prayer and Pledge of Allegiance to our Flag.

The following Council members were present:

Mayor Jack B. Huntress
Vice-Mayor E. Robert Tribken
Councilman A. Irving Scherer
" Richard D. Fellars
" Oscar C. Palmer, Sr.
" J. Stephen Simon

Also present were:

Town Manager Henry Penfield
Town Attorney Fred Robertshaw
Town Engineer Gerry Sudbeck
Town Marshal Lester Naumann
Lt. Richard Kaar

Vice Mayor Tribken moved, and Councilman Simon seconded the motion that the absence of Councilman Philip E. vonAmmon be approved as he is out of town on business. Motion passed unanimously.

Regarding the minutes of February 27, 1969, there being no corrections or additions, Councilman Fellars moved they be approved as submitted; seconded by Councilman Scherer and passed unanimously.

Smoketree Inn - The Mayor proceeded to read from the minutes of the Planing & Zoning Commission meeting of February 18, 1969, regarding the application of the Smoke Tree Inn, regarding a request for a Used Permit to modify and enlarge the present premises. Mr. Frank Haze Burch, Attorney for the principals of Smoke Tree Inn presented the new site plan and explained what is proposed to the Council. He stated that the purpose of the application was to allow them to rehabilitate what is now a use which has deteriorated because of problems of ownership. Western Savings and Loan was forced to foreclose and take possession. This application will allow some changes in the rooms; in front to place a new facade on the premises so it won't be as dismal as it is now. To improve the parking by paving all the dirt areas and increased landscaping across

the front and make certain dedication as requested by the Town on Lincoln Drive, it will provide total off-street parking. It will have a Spanish style, patio effect. Als interior of the public building will be redone. Prime te: ants will be the Restaurant operated by Dale Andersen, and a beauty shop. There will be ample guest parking, it will be double what is there now, or about 70 spaces for the restaurant alone. Seven feet will be dedicated across the front on Lincoln Drive, since 80' is required for a full 4-lane road.

Town Engineer Sudbeck stated that the County is thinking about 55 feet on each side of Lincoln Road to provide a wide divider between the proposed 4-lane highway. A minimum of 110' would be required for such construction, if approved.

The Council requested Mr. Burch to ask his applicant to come back and check with them before leasing to other tenants on this proposed site. That the seating capacity inside would be 90-100 plus the patio, and the additional parking would permit 70 spaces around the restaurant. More discussions about proposed federal funding of a 4-lane highway, which would create expensive land for condemnation purposes, especially further up Lincoln.

Motion - Councilman Simon moved that the Council approve the Use Permit subject to two conditions: (1) That a condition, approved by the Town Attorney and with approval of the Applicant that in the event of condemnation, the condemnor shall pa: the actual cost to the then owner of the property as to that portion taken; and (2) that any new leases of commercial space within the resort be approved by the Council ; motion was seconded by Councilman Fellars. Councilman Simon stated further that the representations made by the applicant as to the use of the property as recommended by Planning & Zoning Commission be further approved and that any other new use would have to be approved by the Council. Vice Mayor Tribken asked how one determines cost for condemnation, and Mr. Burch explained the procedure. That an appraiser will break down a property to a square foot value based on the financial statement of the owner's cost of the land aside from the special use thereof. Councilman Simon added to his motion that this apply only in the event that the condemnor uses federal funds. The motion passed unanimously.

Traffic lights - Final action on Traffic Control Lights. The Mayor indicated the amount of the bids again and that they were about $3,000. over our estimate. Much discussion ensued. The Town Engineer recommended that we reject the bids and hope to do this work in combination with another project later in the year, in cooperation with Scottsdale. Councilman Fellars stated his position that since the need was there and just because it would cost $2,800.-$3,000. more than we estimated is not sufficient reason to reject the bids now. Councilman Simon proposed lowering the speed limit and posting a stop sign on Lincoln Drive. The Marshal gave a complete picture of the traffic situation, and stated the offending cars are not on Lincoln Drive, but on cross-traffic. Three

Date	Comment	Type
8/22/2020	Jane Horn concerned with traffic and not meeting SUP guidelines	Email
8/20/2020	Applicant neighborhood meeting - waiting for meetign summary	
8/13/2020	Gary Stougaard of Andaz Resort concerned with density, setback, and landscape barrier along south property line	Email
8/7/2020	Maria Ruttle, resident southwest of site, had concerns with stacking of vehicles and drivers turning around if the pass the resort entrance on Quail Run Road	Phone and Email
8/4/2020	Michael Shoen, a resident further west of the site, sent an email related to the Town's property tax model	Email
7/7/2020	Melvin Comstock who lives north of the Judson development on Cheney Drive. He respects the risk of the developer in that a certain number of guest units is necessary to make a project feasible, but has concerns with a density since it is almost 2.5 times that of the Special Use Permit Guidelines. He noted that density impacts traffic in an area with a lot of congestion which will be more challenged as the Five Star property fully develops.	PC Meeting
6/26/2020	Patti McCaleb email not support the density	Email

From: Vice Mayor Julie Pace
To: Paul Michaud
Subject: Fwd: Smoke Tree Resort
Date: Saturday, August 22, 2020 12:27:58 PM

Vice Mayor Julie Pace
[redacted]
Dictated but often not proofed. Have a great day!

Paradise Valley is a comprised of residences and resorts, with no commercial businesses, no local property tax, and protected by a concierge police department.

6401 E. Lincoln Drive
Paradise Valley, Arizona 85253

Begin forwarded message:

> **From:** Jane h Horn [redacted]
> **Date:** August 22, 2020 at 12:11:22 PM MST
> **To:** Vice Mayor Julie Pace <jpace@paradisevalleyaz.gov>
> **Subject: Re: Smoke Tree Resort**
>
> EXTERNAL
>
> Hello, Julie,
> The meeting was interesting what I could hear of it. Our internet was very patchy and then went down during the storm.
> To me, Smoke Tree Resort looks like a tarted up Motel 6. If they cannot make it following the Town's guidelines, they should not
> have bought the property. What gall!
> Andaz (sp?) is lovely. They followed the rules.
> I do not think these people should be given special privileges.
> The Town made terrible decisions with Montelucia and especially with Mountain Shadows. Please don't let them make
> another one.
> Sincerely,
> Janie Horn
>
> > On Oct 22, 2018, at 5:27 AM, Council Member Julie Pace <jpace@paradisevalleyaz.gov> wrote:

Thank you for your comments and participation in the Town.

Julie Pace [redacted]

[redacted] Oct 20, 2018, at 4:46 PM, Jane Horn
[redacted]

Dear Ms. Pace,

I am very concerned about the traffic and general congestion that this new plan for the Smoke Tree Resort will cause.

How can the developer possibly build what they are proposing on only five acres!!!!!?????

With the Ritz coming and added traffic it will bring will make that intersection a nightmare.

It's already bad with the apartment complex on the north west corner.

According to the article in The Independent, the resort is and has been open and making money. I can see why the new

owners want to update, etc., but to go from under 40 units to well over 100 and then add residential. It's ridiculous and greedy.

Please consider the horrible impact this plan will have on congestion and traffic in our town.

Sincerely,

Jane Horn

[redacted]

PV

Paul Michaud

Subject: FW: Smoke Tree Resort - Comments on Revised Proposed Development Plan

From: Gary Stougaard [redacted]
Sent: Thursday, August 13, 2020 10:54 PM
To: George Burton <gburton@paradisevalleyaz.gov>
Subject: Smoke Tree Resort - Comments on Revised Proposed Development Plan

EXTERNAL

George –

Here are my concerns about the Smoketree redevelopment project, my apologies for not getting this to you earlier today.

1. ***Density***:
   - Most importantly, I am concerned about density, even with the reduction in density from their original proposed development plan reflected in this new plan, the proposed density is well in excess ot that allowed on the Andaz Scottsdale siteI note that they are requesting approval to construct 120 guest rooms – about 2/3 of those at the Andaz Scottsdale, on a 5 +/- acre parcel which is approximately 20% of the land area of our Resort.

   In order to achieve this density, they are proposing maximum building heights of 36 feet – 12 feet higher than any structure on the Andaz site. While I appreciate that the highest point on the site is close to the center of the site, when completed, the structure will be significantly taller than anything we were allowed to construct.

   In addition the proposed density will result in significantly more activity in a smaller space, likely resulting in a higher noise levels than those generated from the Andaz Resort and Bungalows

2. ***Set back requirements:***
   - My understanding is that the proposed setbacks for the revised project will be 60 feet. This amount is far less than the 100 foot setback required on our immediately adjacent site. Combined with the height of the proposed structures, I am concerned that this project will "loom" over the Andaz Scottsdale Resort & Bungalows and that the increased noise levels from the significantly more dense Smoketree redevelopment will negatively impact the tranquil experience currently provided to guests at the Andaz Scottsdale.

3. ***Landscape barrier on the South property line of the proposed project:***
   - Both of the above issues **may** be mitigated by the retention of the existing landscape barrier located on the south side of the Smoketree site. Currently, a 15 foot +/- mature oleander hedge exists on the south side of the Smoketree Resort site, which provides an effective visual and noise barrier between the Smoketree and Andaz sites. Retention of this hedge is essential to maintain the visual separation of the properties – as well as an effective noise barrier between the properties.

George, let me know if you need anything else from me relative to this issue.

Thank you,

Gary

Gary A. Stougaard
Chelsea Hospitality Partners
[redacted]

Paul Michaud

Subject: FW: FW: Smoke Tree neighbor Question

From: Paul Michaud
Sent: Monday, August 10, 2020 4:46 PM
To: [redacted]
Subject: RE: FW: Smoke Tree neighbor Question

Maria:

Staff discussed your questions this morning and better understand the issue.
Your concerns will be noted in the upcoming August 18th Planning Commission meeting packet on the Smoke Tree Resort.
There will likely need to be a meeting with Smoke Tree, the Town, and your family to discuss potential solutions.

Regards,

Paul E. Michaud, AICP
Planning Manager
Community Development – Planning Division
6401 E Lincoln Drive
480-348-3574 (phone)
pmichaud@paradisevalleyaz.gov
Office Hours: Mon-Fri 7:00 a.m. – 4:00 p.m., closed noon-1:00 p.m. and holidays

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Sign up to receive emergency alerts & notifications from Alert PV: www.paradisevalleyaz.gov/AlertPV
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From: Maria Hontzas Ruttle at World [redacted]>
Sent: Monday, August 10, 2020 12:17 PM
To: Paul Michaud <pmichaud@paradisevalleyaz.gov>
Subject: Re: FW: Smoke Tree neighbor Question

EXTERNAL

Happy Monday Paul, I am just checking in to see if you had any confirmation and additional discussions regarding solutions? Sorry to rush you but we would like to give the ok to Jason Harris asap.

Thanks again for your help,
Maria

On Fri, Aug 7, 2020 at 9:42 AM Paul Michaud <pmichaud@paradisevalleyaz.gov> wrote:

> Maria:
>
> This helps. As I get more information I will let you know.
>
> Regards,
>
> Paul E. Michaud, AICP
>
> Planning Manager
>
> Community Development – Planning Division
>
> 6401 E Lincoln Drive
>
> 480-348-3574 (phone)
>
> pmichaud@paradisevalleyaz.gov
>
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From: Maria Hontzas Ruttle at World [redacted]
Sent: Friday, August 7, 2020 9:39 AM
To: Paul Michaud <pmichaud@paradisevalleyaz.gov>
Subject: Re: FW: Smoke Tree neighbor Question

EXTERNAL

Thanks Paul for your call and help with these serious encroachments on all the private properties here on Quail Run.

I have the map highlighted below to show the ownerships.

Red the areas that were Quick Claim deeded to the Town as private access and has never been changed.

Green Owned by Livi

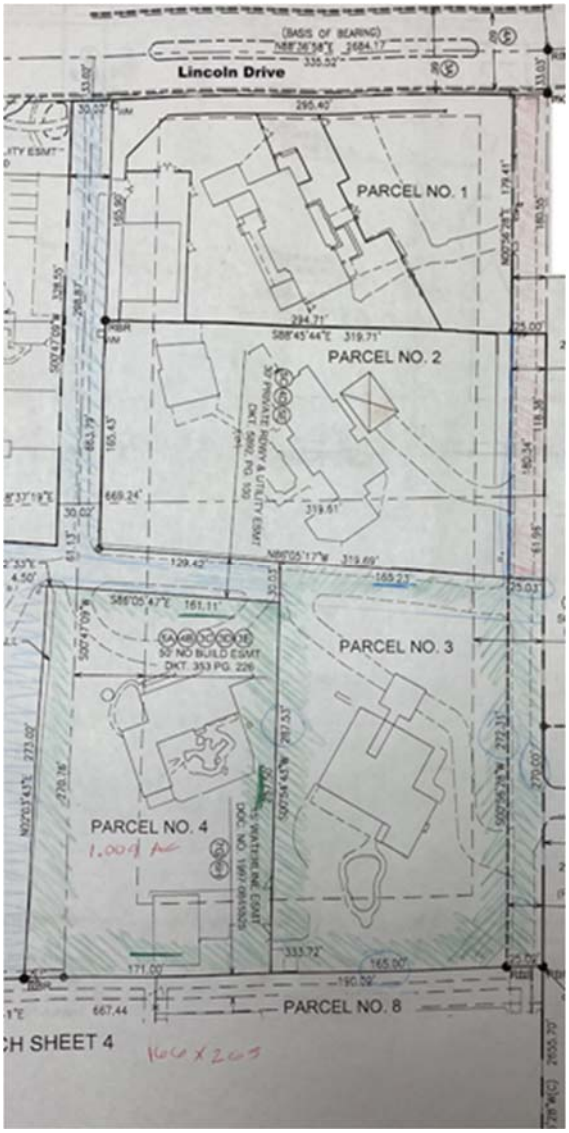
Blue Owned by Cody at the Dog Kennel

We/Ruttle's own the property directly along south lines of the Green lots.

Hope this helps show all the lines and I hope to hear from you soon,

Maria

Direct [redacted]



--

Maria Ruttle

Sr Account Executive

World Advertising and Marketing Corp.

[redacted]

From: Michael Shoen
To: Paul Michaud
Subject: Smoke Tree
Date: Tuesday, August 4, 2020 9:16:33 AM

EXTERNAL

To: Town of Paradise Valley Planning Commission

Re: Smoke Tree Development Sept. 15, 2020 Public Meeting

Dear Sirs/Madam:

Please read my comments into the record.

The property tax model for the Town of Paradise Valley is toxic because it continually requires more and more commercial development to pay for the increased town services for past commercial development which, in turn, occurred to pay for services for previous commercial development (and increased density), etc.

On April 21, 2018, I explained this to then-mayor Michael Collins, "The resorts damage our peace, tranquility and beauty. They increase noise, traffic, congestion and transients. Wish I could pay my own PV share of property taxes. The property tax model is toxic."

Mayor Collins responded, "I don't disagree. However the revenue model in place is dependent on this resort industry. Changing the revenue model would take a different Council makeup."

So we can agree that the resorts damage our peace, tranquility and beauty and increase noise, traffic congestion and transients, but the "leaders" of TPV are going to do it anyway. A simple solution is to tax residents for services they receive, like every other residential community in America.

I moved to PV in 1964 and have witnessed the transformation AWAY from an extraordinary one home-one acre residential paradise. The property tax model is suicidal. We are killing the goose that laid the golden egg.

Thank you. Sincerely,

Michael L. Shoen
[redacted]
Paradise Valley 85253

[redacted]

From: Paul Michaud
To: [redacted]
Subject: Smoke Tree Comment
Date: Thursday, July 2, 2020 2:53:00 PM

Ms. McCaleb:

Thank you for your interest again in the Smoke Tree Resort Special Use Permit Major Amendment application request. As noted previously, your email comment from June 26th was in the July 7th Planning Commission packet.
The Planning Commission may wish to address your question separately, but I did want to respond from a Town staff perspective.

The short answer to your question is that there are several factors that the Town looks at in determining whether to approve an application request. There is no precedent set with the approval of a different amendment application on a current request. Although, comparisons to past approvals for information do come up in the review process. Some of these factors the Town looks at include Article XI of the Zoning Ordinance that provide general purpose, intent, and allowed uses. Being a rezoning matter, the goals and policies of the Town's General Plan comes into play as well. Another important document is the Special Use Permit Guidelines. As you may be aware, the proposed density does exceed the Special Use Permit guidelines. Each member of the Planning Commission for their recommendation and each member of Town Council for their action will weigh all these factors as they review the material provided, get input from the applicant, and get comments from residents like yourself.

Regards,

Paul E. Michaud, AICP
Planning Manager
Community Development – Planning Division
6401 E Lincoln Drive
480-348-3574 (phone)
pmichaud@paradisevalleyaz.gov
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New eComment for Planning Commission on 2020-07-07 6:00 PM - IN-PERSON ATTENDANCE AT PUBLIC MEETINGS HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. WATCH LIVE STREAMED MEETINGS AT: https://paradisevalleyaz.legistar.com/Calendar.aspx

Patti McCaleb submitted a new eComment.

Meeting: Planning Commission on 2020-07-07 6:00 PM - IN-PERSON ATTENDANCE AT PUBLIC MEETINGS HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. WATCH LIVE STREAMED MEETINGS AT: https://paradisevalleyaz.legistar.com/Calendar.aspx

Item: A. 20-307 Discussion of a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

eComment: Can you specify on what grounds a variance or SUP could be granted to Smoke Tree Resort that would allow them to bypass the same building density and height requirements that the Town of Paradise Valley council and planning commission required of the Andaaz Resort?

View and Analyze eComments

This email was sent from https://granicusideas.com.

Unsubscribe from future mailings

Paul Michaud

Subject: FW: Smoke Tree Resort

From: Vice Mayor Julie Pace <jpace@paradisevalleyaz.gov>
Sent: Sunday, June 28, 2020 7:16 AM
To: Jill Keimach <JKeimach@paradisevalleyaz.gov>; Jeremy Knapp <jknapp@paradisevalleyaz.gov>; George Burton <gburton@paradisevalleyaz.gov>
Cc: Duncan Miller <dmiller@paradisevalleyaz.gov>
Subject: Fwd: Smoke Tree Resort

Public Comments for the file that goes to planning. Thx

Vice Mayor Julie Pace
602.256.4488
Dictated but often not proofed. Have a great day!

Paradise Valley is a comprised of residences and resorts, with no commercial businesses, no local property tax, and protected by a concierge police department.

6401 E. Lincoln Drive
Paradise Valley, Arizona 85253

Begin forwarded message:

> **From:** Patti McCaleb [redacted]
> **Date:** June 26, 2020 at 6:46:21 PM MST
> **To:** Mayor Jerry Bien-Willner <jbienwillner@paradisevalleyaz.gov>, Council Member Scott Moore <smoore@paradisevalleyaz.gov>, Council Member Ellen Andeen <eandeen@paradisevalleyaz.gov>, Vice Mayor Julie Pace <jpace@paradisevalleyaz.gov>, Council Member Mark Stanton <mstanton@paradisevalleyaz.gov>, Council Member Anna Thomasson <athomasson@paradisevalleyaz.gov>, Council Member Paul Dembow <pdembow@paradisevalleyaz.gov>
> **Subject: Fwd: Smoke Tree Resort**

EXTERNAL

---------- Forwarded message ---------
From: **Patti McCaleb** <[redacted]>
Date: Fri, Jun 26, 2020 at 6:39 PM
Subject: RE: Smoke Tree Resort
To: <JBienwillner@paradisevalley.az.gov>, <smoore@paradisevalleyaz.gov>, <EAndeen@paradisevalleyaz.gov>, <pdembow@paradisevalleyaz.gov>, <JPace@paradisevalley.az.gov>, <mstanton@paradisevalleyaz.gov>, <AThomasson@paradisevalleyaz.gov>

Dear Commissioners:

I read with great interest and no small amount of concern the article on page one of the Independent newspaper of June 24th regarding the Smoke Tree Resort. I am happy to see Mayor Bien-Willner feels the town council and planning committee need to have the public weigh in on this matter. I was also gratified to see that Ms. Thomasson had genuine concern over the latest proposal from Smoke Tree which did not significantly reduce density.

Over 16 months ago the new owners of the resort brought to the planning committee and the town council a proposal that was outlandish in it's request for building height, condo element, and overall density. Mr. Stougaard, owner of the Andaaz Resort, rightfully addressed the inequity of allowing such concentration of hotel keys when he himself was made to abide within the town's density requirements.

My research shows the following:
Andaaz Resort
185 rooms on 26 acres 7.1 rooms per acre

Smoke Tree Resort (current)
26 suites on 5 acres 5.2 rooms per acre

Newest Smoke Tree Resort proposal
122 rooms on 5 acres 24.4 rooms per acre

I would like to see some clarification as to why the TPV would even consider a proposal that on a side by side comparison with Andaaz Resort, is requesting an increase in density of over 242.%. Again, that is an increase of 242% over what the TPV allowed Andaaz to build.

Factoring in the Lincoln apartments and Ritz Carlton, the increase in traffic (as well as noise, pollution, and increased congestion), I fail to see why Smoke Tree Resort should not adhere to the same density rules that applied to Andaaz.

I thank you for your hard work and attention to detail and would enjoy any feedback you might give.

Respectfully,
Patti McCaleb
[redacted]
Paradise Valley, AZ

Affidavit of Sign Posting
for Planning and Zoning Commission Hearing

Rezoning Application No.: SUP-18-05

Applicant Name: Gentree, LLC

Location: 7101 E. Lincoln Drive, Paradise Valley, AZ 85253

I confirm that signs were posted on the property with notice of the Planning Commission Hearing as required for the case noted above in accordance with Section 1102.3(C)(4) of the Town of Paradise Valley's Zoning Ordinance.

Application/Representative Signature

8/25/2020
Date

This instrument was acknowledged before me on this 25 day of August, 2020, by Taylor Robinson. In witness whereof, I hereunto set my hand and official seal.

LUCY A. GREEN
Notary Public - State of Arizona
MARICOPA COUNTY
Commission # 560113
Expires March 21, 2023

Lucy A. Green
Notary Public

My commission expires: March 21, 2023

ZONING
HEARING

ZONING
HEARING
TOWN OF PARADISE VALLEY
Planning and Zoning Commission
6401 E. Lincoln Dr., Paradise Valley, Arizona
6:00 P.M. O'CLOCK 15TH DAY OF SEPT 2020
PENALTY FOR DEFACING POSTER PRIOR TO DATE OF HEARING

THRU
TRAFFIC
MERGE
LEFT
ZONING
HEARING

ZONING
HEARING
TOWN OF PARADISE VALLEY
Planning and Zoning Commission
Paradise Valley, Arizona

AFFIDAVIT OF MAILING NOTIFICATION

STATE OF ARIZONA)

) ss:

County of Maricopa)

In accordance with the requirements of the Town of Paradise Valley, the undersigned hereby certifies that the mailing list for the proposed project is a complete list of property owners within 1,500 feet of the subject property, as obtained from the Maricopa County Assessor's Office on the following date July 27, 2020, ~~201~~__, and such notification has been mailed on the following date July 31, 2020, ~~201~~__.

_____

Signature

The foregoing instrument was acknowledged by me this 3rd day of August, 2020, by Cassandra Ayres.

Name

Wendy Peterson

NOTARY PUBLIC

My commission expires:

9-14-2020

WENDY PETERSON
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
September 14, 2020

LINSCOTT HOTEL CORP LEASE
6333 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

CPVF III SCOTTSDALE FORUM LLC (LEASE)
7600 N CAPITAL OF TEXAS HWY
BUILDING B STE 130
AUSTIN TX 78731

RED HILTON VILLAGE LLC (LEASE)
ONE E WASHINGTON ST STE 300
PHOENIX AZ 85004

ANDREW B GREESS AND WENDY J GREESS TRUST
6314 N 73RD ST
SCOTTSDALE AZ 85250

JAPPE BROOKE
6308 N 73RD ST
SCOTTSDALE AZ 85250

WINN KURT/PATRICIA
1344 E SHAYS GROVE LN
SALT LAKE CITY UT 84121

WEISSBLUTH JOY
6264 N 73RD ST
SCOTTSDALE AZ 85250

MCFARLAND BRYAN A/ANITA
6258 N 73RD ST
SCOTTSDALE AZ 85250

6252 N 73 LLC (IMPROVEMENTS)
2050 S ALMA SCHOOL RD
CHANDLER AZ 85286

W J SMALL GRANDCHILDRENS TRUST/ETAL
14100 N 83RD AVE STE 200
PEORIA AZ 85381

ARIZONA BANK
101 N TRYON ST
CHARLOTTE NC 28255

GARREY D REID/PAMELA J
6611 N SCOTTSDALE RD
GIBRALTER BLDG F
SCOTTSDALE AZ 85250

LINCOLN SCOTTSDALE BUILDING LLC
6607 N SCOTTSDALE RD STE H100
SCOTTSDALE AZ 85250

3T PROPERTIES & INVESTMENT COMPANY LP
1137 ROOSEVELT AVE
TRACY CA 95376

NARNIA II LLC
6621 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

LEWIS JULIANNE N TR
6044 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

ROBERT ONG HING AND ALICE Y HING FAMILY TRUST
6145 E JOSHUA TREE LN
PARADISE VALLEY AZ 85253

PNEUM INVESTMENTS LLC
6619 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

6617 INVESTORS LLC
6617 N SCOTTSDALE RD STE 1-1
SCOTTSDALE AZ 85250

CITY OF SCOTTSDALE
7447 E INDIAN SCHOOL RD
STE 205
SCOTTSDALE AZ 85251

M T OFFICE BUILDINGS LLC
6623 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

NARNIA LLC
6621 N SCOTTSDALE RD
SCOTTSDALE AZ 85250

SAVAGE FAMILY PARTNERSHIP LTD/SAVAGE JACK W
4037 COTSWOLD CT
DALLAS TX 75220

CAVANAUGH JAMES/MARILYN
6701 N SCOTTSDALE RD LOT 3
SCOTTSDALE AZ 85250

SANDS RESIDENTIAL LLC
6130 W FLAMINGO RD
SUITE 3006
LAS VEGAS NV 89103

SIMMONS FAMILY TRUST
6701 N SCOTTSDALE RD UNIT 5
SCOTTSDALE AZ 85250

FALCONE SONIA M
120 N LASALLE ST 38TH FL
CHICAGO IL 60602

HASHEMI KAMRAN
6701 N SCOTTSDALE RD LOT 7
SCOTTSDALE AZ 85250

SMF REVOCABLE TRUST
6701 N SCOTTSDALE RD NO 40
SCOTTSDALE AZ 85250

6701 SCOTTSDALE LLC
27757 N 67TH WAY
SCOTTSDALE AZ 85266

CUERNAVACA HOMEOWNERS ASSOC INC
7255 E HAMPTON AVE STE 101
MESA AZ 85209

FIVE STAR LAND OWNER LLC
6720 N SCOTTSDALE RD STE 130
SCOTTSDALE AZ 85253

NARAZONA CORPORATION
PO BOX 61655
PHOENIX AZ 85082-1655

THIRD AVENUE INVESTMENTS LLC
51 S MAIN ST STE 301
SALT LAKE CITY UT 84111

HRA LINCOLN SCOTTSDALE LP
2999 N 44TH ST STE 400
PHOENIX AZ 85018

SCOTTSDALE SPECTRUM LLC
6730 N SCOTTSDALE RD
SCOTTSDALE AZ 85253

FIVE STAR LAND OWNER LLC
6720 N SCOTTSDALE RD STE 130
SCOTTSDALE AZ 85253

FIVE STAR RESORT OWNER LLC
6720 N SCOTTSDALE RD SUITE 130
SCOTTSDALE AZ 85253

FSPV RES C LLC
6720 N SCOTTSDALE RD STE 130
SCOTTSDALE AZ 85253

DALTON FAMILY TRUST
5304 E SAGUARO PL
PARADISE VALLEY AZ 85253

GARY L BRIDGE REVOCABLE TRUST
181 FREMONT ST UNIT 67B
SAN FRANCISCO CA 94105

MONTENEGRINO VINCENT J/NATALIE
6740 E LINCOLN DR
PARADISE VALLEY AZ 85253

SYLVIA L SHINE REVOCABLE TRUST
PO BOX 737
SPENCER IA 51301

SPIGNER BRUCE A/GENEVA MARIE
6748 E HORSESHOE LN
PARADISE VALLEY AZ 85253

MAJORS K WAYNE II/OSWALT SANDRA C
6350 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

JOHN AND KELLY PARKER LIVING TRUST
6316 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

BRICK MICHELE/TIMOTHY P
6306 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

FRANK C SKRUPA RESIDENCE TRUST/ETAL
6212 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

HARKINS KAREN A
6226 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

MICHAEL L SHOEN FAMILY TRUST
6719 E MALCOMB DR
PARADISE VALLEY AZ 85253

SUNCHASE CENTURY LLC
5665 N SCOTTSDALE RD STE 135
SCOTTSDALE AZ 85250

GIRAUDO SHEELA/MARK
6844 E SOLCITO LN
PARADISE VALLEY AZ 85253

CHRISTOPHER AND HELEN YEUNG FAMILY TRUST
6845 E SOLCITO LN
PARADISE VALLEY AZ 85253

WARREN F AND NANCY J BRYANT TRUST
6846 E SOLCITO LN
PARADISE VALLEY AZ 85253

SUD ROHIT/PRITI
6835 E SOLCITO LN
PARADISE VALLEY AZ 85253

MERKOS CHABAD-LUBAVITCH ORGANIZATION INC
6201 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

LOVELADY TROY J
5808 E MORNING VISTA LN
CAVE CREEK AZ 85331

COADY ENTERPRISES INC
6909 E LINCOLN DR
PARADISE VALLEY AZ 85253

LIVI ANGIOLO/PATRICIA
6927 E QUAIL RUN RD
PARADISE VALLEY AZ 85253

SUNCHASE CENTURY LLC
5665 N SCOTTSDALE RD STE 135
SCOTTSDALE AZ 85250

SUNCHASE HOLDINGS INC
5665 N SCOTTSDALE RD STE 135
SCOTTSDALE AZ 85250

GORDON ANDREW W/CAROL L TR
6837 E LINCOLN DR
PARADISE VALLEY AZ 85253

RUTTLE CURT J/MARIA D H TR
6316 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

POLERA JENNIFER KANZELBERGER/ROBERT A
6341 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

6823 E LINCOLN DR LLC
5474 E. DESERT JEWEL DRIVE
PARADISE VALLEY AZ 85253

LIVI ANGIOLO
6316 E QUAIL RUN
PARADISE VALLEY AZ 85253

LIVI ANGIOLO/PATRICIA
6927 E QUAIL RUN RD
PARADISE VALLEY AZ 85253

CLAYTON W COADY LIVING TRUST
6909 E LINCOLN DR
PARADISE VALLEY AZ 85253

MARK DANIEL DETMER & SHELLY ANN DETMER TRUST
6826 E SOLCITO LN
PARADISE VALLEY AZ 85253

LIPPERT FAMILY TRUST
6225 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

MCCARTHY WILLIAM P/MCMULLEN ELIZABETH A TR
6309 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

GIEDRAITIS JOHN B/CATHERINE N TR
6305 N MOCKINGBIRD LN
PARADISE VALLEY AZ 85253

FOUR E FAMILY LLC
10960 WILSHIRE BLVD 5TH FL
LOS ANGELES CA 90024

BIRD RANDALL R
500 RED LANDS
NEWPORT BEACH CA 92663

PARADISE VALLEY WATER CO
2355 W PINNACLE PEAK RD
STE 300
PHOENIX AZ 85027

GENTREE LLC
3620 E CAMPBELL AVE STE 8
PHOENIX AZ 85018

JAMEL GREENWAY LLC
4771 N 20TH ST SUITE 22
PHOENIX AZ 85016

RN PROPERTIES LINCOLN PLAZA LLC
2021 E CAMELBACK RD STE A38
PHOENIX AZ 85016

GRI LINCOLN VILLAGE LLC
4350 EAST-WEST HIGHWY
STE 400
BETHESDA MD 20814

BORGATA LLC
6621 NORTH SCOTTSDALE RD
SCOTTSDALE AZ 85250

WILSON LIVING TRUST
6166 N SCOTTSDALE RD
UNIT A1001
SCOTTSDALE AZ 85253

DHILLON REVOCABLE LIVING TRUST
6166 N SCOTTSDALE RD UNIT A1002
PARADISE VALLEY AZ 85253-5429

BLACKSTONE ROBIN P
6166 N SCOTTSDALE RD
UNIT A1003
PARADISE VALLEY AZ 85253-5429

PLEMMONS HUTCHENS LLC
PO BOX 432
CLE ELUM WA 98922

WITHERS ROBERT E/PEGGY P
6166 N SCOTTSDALE RD
UNIT A1005
SCOTTSDALE AZ 85253

DIETHRICH GLORIA B
6166 N SCOTTSDALE RD
UNIT A1006
SCOTTSDALE AZ 85253

STAC A L P
6 LANDMARK SQ NO 411
STAMFORD CT 06901-2704

RICHARD T WINTERMANTEL REVOCABLE TRUST
6166 N SCOTTSDALE RD
UNIT A1008
SCOTTSDALE AZ 85253-5429

MICHAELS JAMES/LINDA F
6166 N SCOTTSDALE RD
UNIT A2001
PARADISE VALLEY AZ 85253

LILIEN FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT A2002
SCOTTSDALE AZ 85253

GOLDBERG LARRY
6166 N SCOTTSDALE RD
UNIT A2003
SCOTTSDALE AZ 85253

MIELO LOTZ FAMILY TRUST
6166 N SCOTTSDSALE RD
UNIT A2004
SCOTTSDALE AZ 85253

BLAIK ROBERT M/DOROTHY E
6166 N SCOTTSDALE RD
UNIT A2005
PARADISE VALLEY AZ 85253-5430

MICHAEL T HOGAN LIVING TRUST
6166 N SCOTTSDALE RD
UNIT A2006
SCOTTSDALE AZ 85253-5430

HERNDON FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT A2007
PARADISE VALLEY AZ 85253

SANFORD ED R/BROTMAN JUDITH ANN
6166 N SCOTTSDALE RD
UNIT A2008
SCOTTSDALE AZ 85253

RANDALL E BROWN AND ELIZABETH D BROWN JOINT REVOCABLE TRUST
38167 WEST DR UNIT 719
REHOBOTH BEACH DE 19971-1773

SCRIBNER FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT A3002
PARADISE VALLEY AZ 85253-5431

BENADERET LINDA B
6166 N SCOTTSDALE RD
UNIT A3003
SCOTTSDALE AZ 85253

NORMAN WILLIAM FAIN II AND NANCY LEE FAIN REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT A3004
SCOTTSDALE AZ 85253

RICHARD C CARR TRUST
1418 N LAKESHORE DRIVE APT H9
CHICAGO IL 60610

ROBERT SARVER TRUST
5710 N YUCCA RD
PARADISE VALLEY AZ 85253

JILL A GOLD REVOCABLE TRUST
6166 N SCOTTSDALE RD
UNIT A3007
SCOTTSDALE AZ 85253

PEGGY KEALEY OUSLEY TRUST
6166 N SCOTTSDALE RD
UNIT A3008
SCOTTSDALE AZ 85253

RODIN RICHARD S/ELLEN S
5610 WISCONSIN AVE UNIT 806
CHEVY CHASE MD 20815

DLS REVOCABLE TRUST/ETAL
925 LAKE ST S UNIT 302
KIRKLAND WA 98033

PLONE BARBARA A
100 LAKESHORE DR APT 551
NORTH PALM BEACH FL 33408

STEVEN E SIVERSON AND MICHELE SIVERSON TRUST
9600 N 96TH ST APT 208
SCOTTSDALE AZ 85258

POMPLIANO LIVING TRUST
36 GREEN HARBOUR LN LAKE GEORGE NY 12845

WILLLIAM C WEESE TRUST
6166 N SCOTTSDALE RD
UNIT B1002
SCOTTSDALE AZ 85253

BELLSTEDT NANCY JANE
5 PROSPECT CT
CANMORE AB T1W2S4
CANADA

HOWARD WEISS FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT B1004
SCOTTSDALE AZ 85253

DEIHL FAMILY TRUST
6166 N SCOTTSDALE RD B1005
SCOTTSDALE AZ 85253

LARSON GREGG D/LISA
6166 N SCOTTSDALE RD
UNIT B1006
SCOTTSDALE AZ 85253

DAVIS SANDRA C
10509 PEORIA AVE
LUBBOCK TX 79423

NORWOOD FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT B2002
SCOTTSDALE AZ 85253

ONEIL MICHAEL
50 VANDERBILT MOTOR PKWY
COMMACK NY 11725

MADELAINE R BERG REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT B2004
PARADISE VALLEY AZ 85253

RICHARD BESSERMAN FAMILY TRUST
6166 N SCOTTSDALE RD UNIT B2005
SCOTTSDALE AZ 85251

MILNE FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT B2006
SCOTTSDALE AZ 85253

NANCY A SOPER REVOCABLE TRUST
6166 N SCOTTSDALE RD
UNIT B2007
SCOTTSDALE AZ 85253

MAHAY HEIDI
7760 E GAINEY RANCH RD
UNIT 24
SCOTTSDALE AZ 85258-1634

GAO SHAN/BRIANNA
6166 N SCOTTSDALE RD
UNIT B3001
SCOTTSDALE AZ 85253

MARK H HOFFMAN AND DEBORAH M HOFFMAN REV TR
6166 N SCOTTSDALE RD
UNIT B3002
SCOTTSDALE AZ 85253

JAYE MICHAEL/REGINA
6166 N SCOTTSDALE RD
UNIT B3003
SCOTTSDALE AZ 85253

VICTOR C FARACI TRUST/DIANNE C FARRACI TRUST
6166 N SCOTTSDALE RD
UNIT B3004
SCOTTSDALE AZ 85253

WALTIS TRUST
6166 N SCOTTSDALE RD
UNIT B3005
SCOTTSDALE AZ 85253

ALLAN F KNOLL IRREVOCABLE TRUST
420 HARWOOD DR S
FARGO ND 58104

KAHLE MARK/MARILYN
19 BOBBIE LN
WILLIAMSVILLE NY 14221

RANDOLPH SCOTT MAHONEY LIVING TRUST
6166 N SCOTTSDALE RD
UNIT B3008
SCOTTSDALE AZ 85253

VAN BERKEL FAMILY REVOCABLE TRUST
6166 N SCOTTSDALE RD
UNIT B4001
SCOTTSDALE AZ 85253

OKINOW SANDRA L
11472 FAIRFIELD RD WEST
UNIT 402
MINNETONKA MN 55305

MARK AND MICHELLE JUNG TRUST
60 MICHAELS WAY
ATHERTON CA 94027

KRAFT MICHAEL/TERI
1533 GALLEON PL
BISMARCK ND 58504

LMB II CONDO LLC
11615 MOHAWK LN
LEAWOOD KS 66211

BARBARA ANN TRINEN REVOCABLE TRUST
2371 T A RIODAN
FLAGSTAFF AZ 86005

HOLLIS TROY L/DEBORAH M
6166 N SCOTTSDALE RD
UNIT C1001
SCOTTSDALE AZ 85251

MICHELLE D SCHECHNER REVOCABLE TRUST
6116 N SCOTTSDALE RD
UNIT C1002
PARADISE VALLEY AZ 85253

REICHLER FAMILY LIVING TRUST
6166 N SCOTTSDALE RD
UNIT C1003
SCOTTSDALE AZ 85253

NOSTRAND ROBERT D/SUZANNE KNIGHT
251 STEELE ST
DENVER CO 80206

PK PATEL CP TRUST
6166 N SCOTTSDALE RD
UNIT C1005
PARADISE VALLEY AZ 85253

EDMUND G ZITO AND PATRICIA M ZITO REV TRUST
6166 N SCOTTSDALE RD
UNIT C 1006
SCOTTSDALE AZ 85253

SCHROECKENSTEIN DAVID C/CHRISTINE H
5000 FRANCE AVE SOUTH UNIT 26
EDINA MN 55410

JANAS ROBERT
6166 N SCOTTSDALE RD
UNIT C1008
SCOTTSDALE AZ 85253

ELLIS MICHAEL/ANGELA
6166 N SCOTTSDALE RD
UNIT C2001
SCOTTSDALE AZ 85251

SANTELER RAYMOND III/GAIL
6166 N SCOTTSDALE RD
UNIT C2002 BLDG C
SCOTTSDALE AZ 85253-5439

ELIZABETH A BAUER LIVING TRUST
226 MONROE ST
DENVER CO 80206

BECKER ROGER P/LAURIE A
6166 N SCOTTSDALE RD
UNIT C2004
SCOTTSDALE AZ 85253

COHEN S DAVID/DOROTHEE N
6166 N SCOTTSDALE RD
UNIT C2005
SCOTTSDALE AZ 85253

CARROLL JENNIFER
6166 N SCOTTSDALE RD
UNIT C2006
SCOTTSDALE AZ 85253

DAVID WINOGRAD AND WENDY WINOGRAD 2011 REVOCABLE LIVING TRUST
10124 N ANNE CT
MEQUON WI 53092

GAO BRIANNA/SHAN/YUQING
6166 N SCOTTSDALE AZ
UNIT C2008
SCOTTSDALE AZ 85253

JEFFREY A BEACH AND THERESA A BEACH LIV TRUST
6166 N SCOTTSDALE RD
UNIT C3001
SCOTTSDALE AZ 85253

2012 REVOCABLE TRUST OF PAMELA K NOLAN
6166 N SCOTTSDALE RD
UNIT C3002
SCOTTSDALE AZ 85253

LINDA CHRISTIAN REVOCABLE TRUST
6166 N SCOTTSDALE RD
UNIT C3003
SCOTTSDALE AZ 85253

SURIVING SETTLORS TRUST UNDER THE BOWERS FAMILY REVOCABLE TRUST
6166 N SCOTTSDALE RD UNIT C3004
SCOTTSDALE AZ 85253

WITT WILLIAM D/GAIL L
6166 N SCOTTSDALE RD
UNIT C3005
PARADISE VALLEY AZ 85253

THOMAS CRAMSIE TRUST/CRAMSIE JANICE E
6166 N SCOTTSDALE RD
UNIT C3006
SCOTTSDALE AZ 85253

DONNA A STONE 2020 EXEMPT GIFT TRUST
3379 KRENN AVE
HIGHLAND PARK IL 60035

CLARK FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT C3008
SCOTTSDALE AZ 85253

NEWELL FAMILY TRUST
6166 N SCOTTSDALE RD
UNIT C4001
SCOTTSDALE AZ 85253

KAREN K SCHWARTZ REV TR/GARY R SCHWARTZ REV T
6166 N SCOTTSDALE RD
UNIT C4002
SCOTTSDALE AZ 85253

FARRELLY JAMES K/STAPLES-FARRELLY SHARON
6166 N SCOTTSDALE RD
UNIT C4003
SCOTTSDALE AZ 85253

JAMES AND BARBARA WOPNFORD TRUST
6166 N SCOTTSDALE RD
UNIT C4004
SCOTTSDALE AZ 85253

WOOLDRIK JOHN G/CAROLE
6166 N SCOTTSDALE RD
UNIT C4005
SCOTTSDALE AZ 85253

CAMPOS MIGUEL/MARIA DEL PILAR
6166 N SCOTTSDALE RD
UNIT C4006
PARADISE VALLEY AZ 85253

ENCLAVE AT BORGATA COMMON ELEMENT
2222 W PINNACLE PEAK RD
STE 140
PHOENIX AZ 85027

PV HOTEL VENTURE SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

PV SCOTTSDALE HOTEL OWNER SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

ARIZONA BOARD OF REGENTS
PO BOX 870401
TEMPE AZ 85287-0401

PV SCOTTSDALE HOTEL OWNER SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

PV SCOTTSDALE HOTEL OWNER SPE LLC
6160 NORTH SCOTTSDALE ROAD
PARADISE VALLEY AZ 85253

PV HOTEL VENTURE SPE LLC
2929 ARCH ST
PHILADELPHIA PA 19104

JOHNSTON STEVEN A/WENDY E
9311 OLYMPIC VIEW DR
EDMONDS WA 98020

WOOKEY BRENT A/CHRISTIE L
1617 12TH AVE NE
WATERTOWN SD 57201

ROGERS DAVID J/CAROLYN M TR
2745 HIGHLAND TER
SHEBOYGAN WI 53083

MOORE LAURA E
9400 N FRYER RD
PEORIA IL 61615

AYRES MICHAEL O/DELYTE
BOX 59554
POTOMAC MD 20859

BANKSON KEN J/MAUREEN A
6150 N SCOTTSDALE RD UNIT 6
PARADISE VALLEY AZ 85253

MENSCH KATHRYN G
6126 N SCOTTSDALE RD NO 7
PARADISE VALLEY AZ 85253

BROWNFIELD EDWARD
H/ROBERTA F
1126 DRYDEN LANE
CHARLOTTESVILLE VA 22903

MURPHY MICHAEL T/NANNEN
DAWN M TR
2543 E 21ST ST
FREMONT NE 68025

WEBER WINSTON D/PHYLLIS D
TR
16140 KENNEDY RD
LOS GATOS CA 95032

HONORA E LOGAN FAMILY
TRUST
3709 RANCH VIEW CT
RENO NV 89509

HARMS ZUM SPRECKEL
CORD/JANE KRISTN TR
19815 107TH SW
VASHON WA 98070

GRAYTON LESLIE/ROBERT/
THOMAS M/DEXTER STEVEN
12 TOMAH DR
PEABODY MA 01960

DEWEY DOUGLAS
CRAIG/SHELLEY KATHLEEN
689 TERRACE DR LAKE
OSWEGO OR 97034

SHRIMPLIN MALCOLM R
6130 N SCOTTSDALE RD STE 15
SCOTTSDALE AZ 85250

MARSHA L FINCH GST TR/LESLIE
J SAVANT GST TR
205 REGAL LN EAST
PEORIA IL 61611

SNOWDEN JAMES PATRICK
8514 E SAN BRUNO DR
SCOTTSDALE AZ 85258

CORVENT GROUP INC
3044 BLOOR ST W STE 256
TORONTO ON M8X 1CA
CANADA

HURWORTH SAMUEL G
713 GASMAN
PORT ANGELES WA 98362

DICKINSON5 LLC
6007 S ZUNI DR
SPOKANE WA 99206

ANN R DOVE REVOCABLE TRUST
THE
20 MOULTON DR
SHELBYVILLE IL 62565

HERD JAMES V/JANET/WARE
RAYMOND T/RENDA
2336 N ALDERCREST PL
EAGLE ID 83616

EVERETT PROPERTIES LLC
3343 WYNDHAM CT
EUGENE OR 97408

J AND D MARQUARDT FAMILY
TRUST
PO BOX 92621
ANCHORAGE AK 99509

DEWEY DOUGLAS C/SHELLEY K
689 TERRACE DR
LAKE OSWEGO OR 97034

DEWEY DOUGLAS
CRAIG/SHELLEY K
689 TERRACE ST
LAKE OSWEGO OR 97034

J SCOTT PROPERTIES LLC
4111 E MADISON ST SUITE 438
SEATTLE WA 98112

BRAGA STANLEY A/VALERIE A
TR/ETAL
25513 PASEO DE CUMBRE
MONTEREY CA 93940

BRAGA REVOCABLE LIVING
TRUST
25513 PASEO DE CUMBRE
MONTEREY CA 93940

EILTS PATRICIA S
6706 LUPINE CIR
ARVADA CO 80007

LEGROW HAROLD R/MARY F
28 EDGEMERE RD
LYNNFIELD MA 01940

J AND D MARQUARDT FAMILY
TRUST
PO BOX 92621
ANCHORAGE AK 99509

PALMER JANET S TR
8118 SANDY HOOK DR
CLINTON WA 98236

JANET S PALMER TRUST
8118 SANDY HOOK DR
CLINTON WA 98236

MANERI CAMILLE A/DERRICO
CELIA
7760 E GAINEY RANCH RD
UNIT 43
SCOTTSDALE AZ 85258

DERRICO CELIA/MANERI
CAMILLE A
7760 E GAINEY RANCH RD
UNIT 43
SCOTTSDALE AZ 85258

THOMAS MARGARET R/DEXTER
STEVEN
6150 N SCOTTSDALE RD UNIT 37
PARADISE VALLEY AZ 85253

SHARPLES COLIN
41 FIADOR COURT
MIDWAY QUAY
EASTBOURNE BN235DG
UNITED KINGDOM

BAILEY PATRICIA
6150 N SCOTTSDALE RD UNIT 39
PARADISE VALLEY AZ 85253

JOSHUA AND LORIN SWIFT TRUST
5126 E FLOWER ST
PHOENIX AZ 85018

MCCALLISTER DAVID A/ CHERYL S
PO BOX 605
PENROSE CO 81240

ORVIS PAUL W JR & CELIA C
234 FIDDLERS POINT DR
ST AUGUSTINE FL 32080

JOEL LUTZ LIVING TRUST/JUDITH LUTZ LIV TRUST
29508 SOUTHFIELD RD STE 200
SOUTHFIELD MI 48076

HARMS ZUM SPRECKEL CORD/JANE HARMS ZUM TR
19815 107TH AVE SW
VASHON WA 98070

CONWAY DENNIS D/MARY C TR
585 3RD ST S
WISCONSIN RAPIDS WI 54494

HOLMES BRIAN G
89 BRAID BEND
STOUFFVILLE ON L4A1R8
CANADA

HADL JOHN/DIANA
3700 QUAIL CREEK CT
LAWRENCE KS 66047

NOWAK JOYCE L LOMBARDO TR
P O BOX 50786
MENDOTA MN 55150

WALKER ANDREW J/ ELIZABETH A
6150 N SCOTTSDALE RD 49
PARADISE VALLEY AZ 85253

BAYSE MICHELLE MITCHELL/ HAGEMANN BRUCE A
6817 COLUMBINE WY
PLANO TX 75093

GOLDEN KAREN
15997 N 110TH PL
SCOTTSDALE AZ 85255

RICHARD G LAVIGNE TRUST
2523 HAVERTON RD
SAINT PAUL MN 55120

PV SCOTTSDALE HOTEL OWNER SPE LLC
6160 NORTH SCOTTSDALE ROAD
PARADISE VALLEY AZ 85253

BELL AND 63RD INVESTMENTS LLC
3641 N 39TH AVE
PHOENIX AZ 85019

ROSS GENO G
6806 E HAPPY VISTA LN
PARADISE VALLEY AZ 85253

PFITZER KARL F/VICKIE RAE
6808 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

SCOTT WRIGHT SMITH REVOCABLE TRUST
6810 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

YAMASHIRO DANIEL/KRISTINE
6812 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

KAMMERLE ROBERT F/MANLEY COLLEEN CHRISTA
6136 N QUAIL RUN RD
PARADISE VALLEY AZ 85253

FRED AND COLLEEN STEINBERG TRUST
6118 N QUAIL RUN RD
PARADISE VALLEY AZ 85253-5321

CASA DE VALLEY VISTA LLC
6818 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

SOLE AND SEPARATE LLC/ETAL
6809 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

DOYLE D JAMES/PHYLLIS J TR
6807 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

COBB REVOCABLE LIVING TRUST
6805 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

CAIRNS RICHARD A
6821 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

WUNDERLICH LOUIS J/FRANCES L TR
6816 E VALLEY VISTA LN
PARADISE VALLEY AZ 85253

RASMUSSEN LIVING TRUST
6102 N QUAIL RUN RD
SCOTTSDALE AZ 85253

BEUS GILBERT McGRODER
PLLC

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FILE NUMBER
39039.23

July 31, 2020

INVITATION TO:
(1) NEIGHBORHOOD MEETING, (2) CITIZEN REVIEW MEETING WITH THE PLANNING COMMISSION, AND (3) PLANNING COMMISSION HEARING
SMOKE TREE RESORT
SPECIAL USE PERMIT – MAJOR AMENDMENT APPLICATION (SUP 18-05)

Dear Neighbor:

This letter is being sent to advise you of several upcoming meetings and a public hearing in connection with the Smoke Tree Resort Special Use Permit ("SUP") Major Amendment Application. There is a great deal of information in this letter, so please read the letter in its entirety.

(1) NEIGHBORHOOD MEETING (HOSTED BY APPLICANT)

We will be hosting an in-person neighborhood informational meeting on **Thursday, August 20, 2020 at 7:00 p.m. at the Smoke Tree Resort ("Resort") located at 7101 E. Lincoln Drive, Paradise Valley, Arizona 85253**. You are invited to attend to learn about the application and make your opinion known. Parking will be available in the Resort parking lot. In consideration of those who may not want to attend in person due to the COVID-19 pandemic, we will also be live streaming the neighborhood meeting via Zoom. The information on how to access the live stream is below. You will be able call in and ask questions, or you can post your questions in the chat section. If you would prefer to attend in person, please let us know ahead of time so that we can maintain social distancing protocols. If you have questions or comments about the SUP, you may contact the undersigned, Cassandra Ayres, at 480.429.3010 or cayres@beusgilbert.com. Contact my assistant, Wendy Peterson, at 480.429.3138 or wpeterson@beusgilbert.com if you would like to attend the meeting in person.

Join Zoom Meeting
https://us02web.zoom.us/j/81727944709?pwd=OWgra0RidXVPUStVN2hURlBtcEZ1Zz09

Meeting ID: 817 2794 4709
Passcode: 476198
One tap mobile
+16699006833,,81727944709#,,,,,,0#,,476198# US (San Jose)
+12532158782,,81727944709#,,,,,,0#,,476198# US (Tacoma)

Dial by your location
+1 669 900 6833 US (San Jose)
+1 253 215 8782 US (Tacoma)
+1 346 248 7799 US (Houston)
+1 646 558 8656 US (New York)
+1 301 715 8592 US (Germantown)
+1 312 626 6799 US (Chicago)
Meeting ID: 817 2794 4709
Passcode: 476198
Find your local number: https://us02web.zoom.us/u/kEhEaidtL

The approximately 5-acre Resort originally opened in 1966 and, until recently, had operated continually since that time. Other than general maintenance and upkeep, the Resort has not had any significant upgrades since it first opened. A previous neighborhood meeting was held in February 2019. However, the scope of the SUP application has changed significantly since then (e.g., resort residential units were eliminated, density was reduced, height was limited to 36 feet for the entire Resort, and setbacks were increased). Both the owners of the Resort and the Town thought it appropriate to hold another neighborhood meeting as well as a Citizen Review Meeting with the Planning Commission in order to keep the community informed about the SUP.

The SUP redevelopment currently proposes to take down the existing structures and construct a new 122-room, three-story resort hotel and related uses, such as a restaurant, event/meeting space, pool, at grade parking, and neighborhood market. The redevelopment proposes a maximum building height of 36 feet, with the only three-story elements oriented on the east side of the Resort. The redevelopment also proposes generous setbacks in order to protect adjacent neighbors and provide a buffer from typical sounds associated with resorts.

If you require additional information from the Town of Paradise Valley Planning and Development Department, please contact Paul Michaud, AICP, Community Development Planning Division at 480.348.3574 or pmichaud@paradisevalleyaz.gov. You may also contact the Town by writing to the Planning and Development Department at 6401 East Lincoln Drive, Paradise Valley, Arizona, 85253-4399, and referencing SUP 18-05. Your letter will be made part of the case file.

(2) CITIZEN REVIEW MEETING WITH THE TOWN OF PARADISE VALLEY PLANNING COMMISSION

Please be advised that additional meetings and hearings before the Planning Commission and Town Council are planned to review this case. Upcoming Planning Commission work sessions include August 4, August 18, and September 1. **The Planning Commission will hold a Citizen Review Meeting in order to take public comment on September 1 at 6:00 p.m.** at Town Hall, 6401 East Lincoln Drive, Paradise Valley, Arizona, 85253**.** All Planning Commission meetings may be held virtually until further notice. The information to log on to the Planning Commission meeting is below. Town Council hearing dates to consider the Smoke Tree Resort have not been set yet.

(3) TOWN OF PARADISE VALLEY PLANNING COMMISSION HEARING

The Planning Commission will hold a **public hearing at 6:00 p.m. on Tuesday, September 15, 2020** at Town Hall, 6401 East Lincoln Drive, Paradise Valley, Arizona, 85253 for the purpose of making a recommendation to the Town Council on the SUP. The public hearing may be held virtually.

Please check the meeting agenda at https://paradisevalleyaz.legistar.com/Calendar.aspx and/or contact Paul Michaud, Planning Manager, at 480.348.3574 or pmichaud@paradisevalleyaz.gov to determine if the Planning Commission Citizen Review Meeting or Hearing will be held by remote participation. If held by remote participation, members of the public are encouraged to participate in the meeting via the following options:

PUBLIC PARTICIPATION IN THE MEETING

Members of the public are encouraged to participate in the meeting via the following options:

1. View the live stream at https://paradisevalleyaz.legistar.com/Calendar.aspx
   a) Click on Calendar Tab
   b) Look for Planning Commission meeting (you may have to select it from the dropdown list) and find the meeting date
   c) Click the "In Progress" link in the column titled Video
2. Attend the Zoom Conference
   a) Computer: https://zoom.us/j/6678902153
   b) Telephone: 1 669 900 6833 Meeting ID 667 890 2153
3. Submit questions and comments:
   a) Visit https://paradisevalleyaz.legistar.com/Calendar.aspx, search for the meeting date, and click "eComment." Locate the agenda item you are interested in and click "Comment." (Please submit comments at least 1 hr prior to meeting.)
   b) Email pmichaud@paradisevalleyaz.gov (Please submit comments at least 1 hour prior to meeting.)
4. Speak during Call to the Public / Public Hearings

a) Visit https://paradisevalleyaz.legistar.com/Calendar.aspx, search for the meeting date, and click "eComment." Locate the agenda item and click "Register to Speak." Join the meeting by dialing 1.669.900.6833 Meeting ID 667 890 2153
b) If attending by Zoom Video Conference, click the chat button and enter your name and the agenda item you would like to address

(These meeting participation guidelines are pursuant to Town Council Resolution 2020-08 adopted March 17, 2020.)

Notice is hereby given pursuant to A.R.S. §38-431.02. that members of the Planning Commission will attend by audio/video conference call.

Notice is hereby given that members of the Public Body will attend either in person or by telephone conference call, pursuant to A.R.S. §38-431(4).

If you have any questions about this application, please call the Community Development Department at 480.348.3574.

We look forward to maintaining an open and productive dialogue throughout this process. Thank you for your time and consideration. We look forward to seeing you.

Sincerely,

BEUS GILBERT McGRODER PLLC

Cassandra H. Ayres

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Meeting Room
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

Total Self-Park Spaces = 170
Dimensions: 9' x 18' + 2' overhang

or

Total Valet Spaces = 196

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

PROPOSED SITE PLAN - GROUND LEVEL

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A8

SEP 6, 2019
11 x 17 format
REVISED
MAY 14, 2020

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

CONCEPT RENDERING

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A17

SEP 6, 2019
11 x 17 format
REVISED
MAY 14, 2020

SUP-18-05 Smoke Tree Resort
-Revised Statement of Direction-
June 25, 2020

Gentree LLC submitted a Major Special Use Permit amendment application for redevelopment of the Smoke Tree Resort located at 7101 E Lincoln Drive. The current proposal is for a complete redevelopment of the 4.6 net acre site with 122 hotel guest rooms, a restaurant, bar, rooftop lounge, associated resort retail, group meeting function space, event gardens, and resort pool areas.

In March of 2019, the Planning Commission voted 4-3 to deny the previous application based on a site plan and proposal that included 150 hotel rooms, 30 for sale resort residences, limited right-of-way dedication along the adjoining public streets, and a different site layout from the current application since the Planning Commission recommendation. Based on the revisions of the modified proposal the applicant and the Town Council agree that the Planning Commission should further consider the amended application.

The Statement of Direction is not a final decision of the Town Council and does not create any vested rights to the approval of a Special Use Permit. Any applicant for a Special Use Permit shall not rely upon the matters addressed in the Statement of Direction being the same as those that may be part of an approved Special Use Permit.

Therefore, the Town Council issues the following Statement of Direction for the Smoke Tree Resort:

- The General Plan encourages the continued revitalization and improvement of the Town's Special Use Permit properties while protecting the adjacent residential neighborhoods (General Plan Land Use Policy 2.1.2).

- The site is in a designated Development Area pursuant to the General Plan. As such, in addition to other applicable policies, the following policies may be considered:

    a. Consideration of Development Area Special Use Permit applications should balance a need for the Town's fiscal health against a steadfast commitment to protecting adjacent low-density residential character and quality of life (General Plan Land Use Policy 2.2.1.2).

    b. The Town shall require development or redevelopment within Development Areas to provide reasonable separation of incompatible land uses from adjacent residential areas through context and scale appropriate land planning and architectural design, greater setback distances, noise mitigation, resort property programming, and landscape buffering (General Plan Land Use Policy 2.2.1.3).

    c. The Town should encourage moderate intensity, mixed-use, and context appropriate resort development within the East Lincoln Drive Development Areas that includes reasonable separation between incompatible uses and adjacent residential areas and effective buffering of unwanted noise, light, traffic and other adverse impacts (General Plan Land Use Policy 2.2.3.3).

The Planning Commission shall focus their review on the visible, audible, and operational effects the major amendment may have on the neighbors. Additionally, the Planning Commission shall receive public feedback on the current proposal including, but not limited to, a Citizen Review Session to allow for public comment and a Public Hearing for recommendation of the amended application to the Town Council. The Citizen Review Session may include a separate neighborhood meeting(s) by the applicant and at least one Planning Commission Work Session meeting open for public comment. The applicant shall provide at least a 10-day advance notice of the Citizen Review Session and at least a 15-day advance notice of the Public Hearing to property owners within 1,500 feet of the site. Due to the circumstances surrounding the current Covid-19 Pandemic, the Town Staff and Planning Commission shall be cognizant that some members of the public may not be comfortable with providing comments through technology and should look for other ways to maximize

public input. Notice for both meetings can be combined into one notice. In particular, the Planning Commission shall focus their review on:

1. Use.
   While the primary resort use will not change, more information is needed regarding the hotel quality standards and the new accessory uses. The applicant has proposed fourteen accessory uses for the forward-facing portions of the site that should be considered and defined or narrowed as appropriate as well as the specific operational factors (hours of operation, outdoor seating, etc.) shall be studied.

2. Density.
   The proposed 122 units creates a density of approximately 26 units per acre. The Planning Commission shall take into consideration the 4.6 net acre site area and reduced density on the west and south sides of the site, particularly how the density impacts safety and quality of life of town residents.

3. Lot Coverage/Floor Area Ratio.
   The Planning Commission shall consider lot coverage and floor area ratio while acknowledging the unique characteristics considered in the Development Area and the amendments made to the proposed site development since the Planning Commission last heard this request on March 5, 2019. The review shall address reasonable separation between incompatible uses and effective buffering of unwanted noise, light, traffic, views of the buildings offsite, and other adverse impacts. The lot coverage and floor area ratio shall both be calculated based on net lot area, excluding all dedicated area. There may be consideration of lowering the proposed lot coverage and floor area ratio and/or requiring specific mitigation measures.

4. Height.
   The Planning Commission shall evaluate the proposed height and its impact on adjacent properties. The minimum height is encouraged on the west side of the site closest to existing residential properties, transitioning to higher heights on the east side of the site adjacent to Lincoln Medical Plaza. A compelling reason must be given for heights proposed over 36', with such height to be limited in area and considered when necessary for mechanical screening and architectural elements. It is recommended that all heights be taken from original natural grade. If any portion of the rooftop is visible off-site, care should be taken to minimize the impact and screen mechanical equipment. White roofing material is discouraged if visible off-site.

5. Viewsheds.
   The Planning Commission shall consider the impact to adjoining properties of any encroachment outside of the imaginary plane suggested by the Open Space Criteria. Due to the size of this property being one quarter the suggested 20-acre size per the Special Use Permit Guidelines and the location adjoining other commercial uses, a limited amount of encroachment is proposed and may be permissible. Structures are suggested to generally stair-step from one-story/lowest height closer to the subject site property lines to not more than three-story/36 feet in height from Lincoln Drive, Quail Run Road, and the adjoining Andaz resort. Planning Commission focus shall be that the overall mass of the structures are of an appropriate scale, with special consideration given to the views from the south side bordering the Andaz resort and the west side bordering Quail Run Road.

6. Setbacks.
   The amended proposal increased building setbacks along much of the perimeter of the site. The Planning Commission shall explore appropriate setbacks, with particular attention to the privacy and noise levels for residents west of the site and resort guests south of the site. Consideration should be given to a 100-foot SUP guideline setback to the adjacent residential property lines. The Commission shall also identify any mitigating circumstances that may buffer the development (e.g. the use of vegetation, modified setbacks or heights, reorientation of the structures, etc.).

7. Impact to Adjacent Uses.
   The proposal has the resort restaurant and market (with outside tables) along the north side of the property near Lincoln Drive. Additionally, a third story bar/lounge with indoor/outdoor space is proposed, which should be evaluated for square footage (bar/rooftop deck), types of uses, impacts of light and noise trespass off-site; a sound study shall be required and certified by an acoustical engineer. The Planning Commission shall consider impacts including noise, light, traffic and any other adverse impacts, particularly for those existing residential properties west of the site along Quail Run Road. In particular, outdoor employee areas and service uses such as maintenance, maid service/laundry, trash collection/storage, mechanical equipment (roof/ground), and all other noise generating elements shall be studied and buffering of uses shall be considered.

8. Landscaping, Utilities and Exterior Lighting.
   Planning Commission focus on landscaping and exterior lighting shall be along the perimeter of the site, including review of appropriate screening or relocation of the utility cabinets along Lincoln Drive. Consideration for possible relocation of utility cabinets shall consider aesthetics, long-term maintenance and operation, safety and cost. Elements of the Visually Significant Corridors Plan shall be considered for landscaping along Lincoln Drive. A stipulation shall be considered to ensure replacement of any landscaping should it die.

9. Traffic, Parking, Access, and Circulation. The proposed density and location within a heavily-traveled and mixed-use density area near the City of Scottsdale creates a heightened need for ensuring the proposed redevelopment does not have a negative impact on traffic safety, parking, and circulation. The Town Council has worked with the owner of Smoke Tree Resort and Lincoln Plaza Medical Center on access with a solution for a shared driveway, along with right-of-way improvements. The Planning Commission shall focus their review on the following:

   - Location and screening of loading zones and dumpsters
   - Deceleration turn lane for eastbound traffic entering the site
   - Cross-access easement(s) with Lincoln Medical Plaza
   - Sidewalk and other pedestrian circulation
   - Necessary roadway dedication for Lincoln Drive and Quail Run Road
   - Adequacy of the required and provided parking spaces based on the proposed use(s) which shall allow for adequate parking throughout the life of the project that shall be identified in a Parking Management Plan.
   - Full build-out of The Ritz-Carlton Resort Special Use Permit
   - Uses that generate quick turn-around trips such as a coffee shop or take-out food

10. Signage.
    Planning Commission review shall focus on the impact of project sign location, dimensions, and illumination on the resulting impact to the streetscape. The Commission shall look at the broader signage plan for Lincoln Drive including proposed gateway signs, identification signs, and Ritz-Carlton and Lincoln Medical Plaza signage.

As per Section 1102.3.C.3.c of the Zoning Ordinance, at any time during the review process, the Planning Commission may request clarification and/or expansion of this Statement of Direction based on additional information that has evolved. However, the Planning Commission shall complete their review of this application and make a recommendation to Town Council, including a draft Ordinance, no later than September 30, 2020.

TENTATIVE SCHEDULE

~~June 25, 2020~~	~~Town Council approved revised SOD~~
~~July 21, 2020~~	~~PCWS: Uses, Impact to Adjacent Uses, Setbacks, & Traffic/Access/ Circulation/Right-of-Way~~
~~August 4, 2020~~	~~PCWS: Parking/Landscaping/Utilities/Lighting & Signage~~
~~August 18, 2020~~	~~PCWS: Lot Coverage/FAR & Revisit past items~~
~~August 20, 2020~~	~~Applicant's Neighborhood Meeting at resort 7:00 p.m.~~
September 1, 2020	PC Citizen Review Session, Revised Lighting, Revisit any prior items, Possible action for TC extension
September 15, 2020	Public Hearing or Action to request TC extend PCPH date
September 10 or 24, 2020	Council meeting to extend PC review deadline
September 30, 2020	SOD PCPH deadline
October/November	Continued PC meetings/hearing

Smoke Tree Resort Draft Use Stipulations from March 3, 2020

28. The **maximum** hours of public operation of the following specific uses/facilities shall be as set forth below:

a. Vendor deliveries (generally): 7 am - 7 pm. US Mail, private courier services such as UPS or FedEx, and emergency deliveries: at any time.

b. Pools, spas and jacuzzies (except pools, spas and Jacuzzis located indoors or in enclosed private yards including yards such as presidential suites or Resort Hotel suites, which may be used 24 hours/day): 6 am – midnight.

c. Restaurants and other food service facilities: 6 am - 2 am

d. Bars/lounges: 10 am – 3 am

e. Banquet facilities, receptions, weddings and socials: 6 am – 2 am

f. Resort retail: 7 am – midnight

g. Room service: 24 hours/day

h. Guest reception and guest services, including up to 400 square feet of retail for guest purchases: 24 hours/day

j. Parking facilities: 24 hours/day

k. Spa & fitness facilities: 24 hours/day (use of such facilities by those who are not guests of the Resort, or owners or renters within the Resort and their guests shall be limited to 5 am – **midnight**).

l. Trash pickup: **7** am – 7 pm

m. Outdoor venues, events, or functions with music and/or amplified sound shall comply with the allowable noise levels as defined by the Town's current noise ordinance.

Five Star Draft Rooftop Amenity Stipulations from November 19, 2015 TC Meeting (Withdrawn Item)

Rooftop Resort Hotel Amenity

i. No activities or events shall occur between 10:00 p.m. and 7:00 a.m.; with the exception of event setup and breakdown procedures conducted by resort staff which shall not exceed thirty minutes before or after the aforementioned times;
ii. No amplified sound shall be permitted at anytime;
iii. No permanent shade structures may be constructed. Temporary shade structures are permitted as needed for specific events. Temporary structures shall be erected and removed the same day as the event;
iv. No outward projected lighting shall be permitted from the Rooftop Resort Hotel Amenity;
v. At no time may the noise level exceed current Town Code standards at or beyond the SUP boundary line. To remedy any violation of the Town's noise or nuisance regulations and this Special Use Permit the Town reserves the right to require additional noise mitigation measures such as sound deadening materials and/or modifying hours of operation;
vi. The maximum occupancy shall be limited to the applicable building and fire codes;
vii. Food and alcohol service may be provided at any time between 7:00 a.m. and 10:00 p.m.

Mountain Shadows Resort

Deliveries, trash pickups, or other noise generating outside services involving mechanical equipment (excluding those addressed in Stipulation 41 and Stipulation 42 – *which pertain to the Golf Course*), including large commercial trucks, shall be allowed to operate at the maintenance facility only between 7:00 a.m. to 5:00 p.m., Monday through Friday. No such activity, defined above, shall be allowed on weekends or legal holidays. These limitations above shall not apply for emergency situations or for overseeding and related turf maintenance activity.

Five Star Resort

The hours of public operation for the Resort Hotel shall be twenty-four (24) hours per day, seven (7) days a week, except for the hours and operational standards set forth below:

a. Indoor bars/lounges: 6:00 a.m. to close per state statute.

b. Outdoor banquets, receptions, weddings, and socials: 6:00 a.m. to 2:00 a.m.

c. Spa & fitness facilities: Outside members limited to 5:00 a.m. to midnight; and resort guests up to twenty-four (24) hours a day.

d. Trash pickup: 7:00 a.m. to 7:00 p.m.

Sanctuary Resort

The hours of operation on the Property shall be as follows:

a. Except as modified in this Special Use Permit, food service and bar/lounge facilities may operate from '6:00 a.m. until close per Arizona State Statute;

b. Spa hours shall be limited to 6:00 a.m. to 7:30 p.m. for regular members, with extended hours for resort guests from 5 :00 a.m. to 10:00 p.m. No organized activities shall be allowed at the spa facility during the extended hours;

c. No **delivery** trucks shall be permitted to either pick up or drop off deliveries to or from the Views Ballroom prior to 7:00 a.m. or later than 10:00 p.m.;

d. All **delivery** and service vehicles shall use the northern entrance on Superstition Lane, and all vendor deliveries and pickups shall be made at the Receiving/Maintenance facility.
No delivery or service vehicles shall be permitted before 7:00 a.m. or after 6:00 p.m.;

e. No outdoor parties, weddings, banquets or entertainment shall be permitted on the balconies or patios of the Views Ballroom after the hour of 11 :00 p.m. All guests shall leave the Views Ballroom by 2:00 a.m.;

f. There shall be no food or beverage service on the balconies or patios of the Views Ballroom after I 1 :00 p.m.;

g. No takedown and/or set-up activities or congregating of employees on the balconies or patios of the Views Ballroom or in the adjacent exterior service areas located to the east of the Views Conference Center before 7:00 a.m. or after 11 :30 p.m.; and

h. Activities on the Garden Terrace and Pool Deck shall cease at
11 :00 p.m.

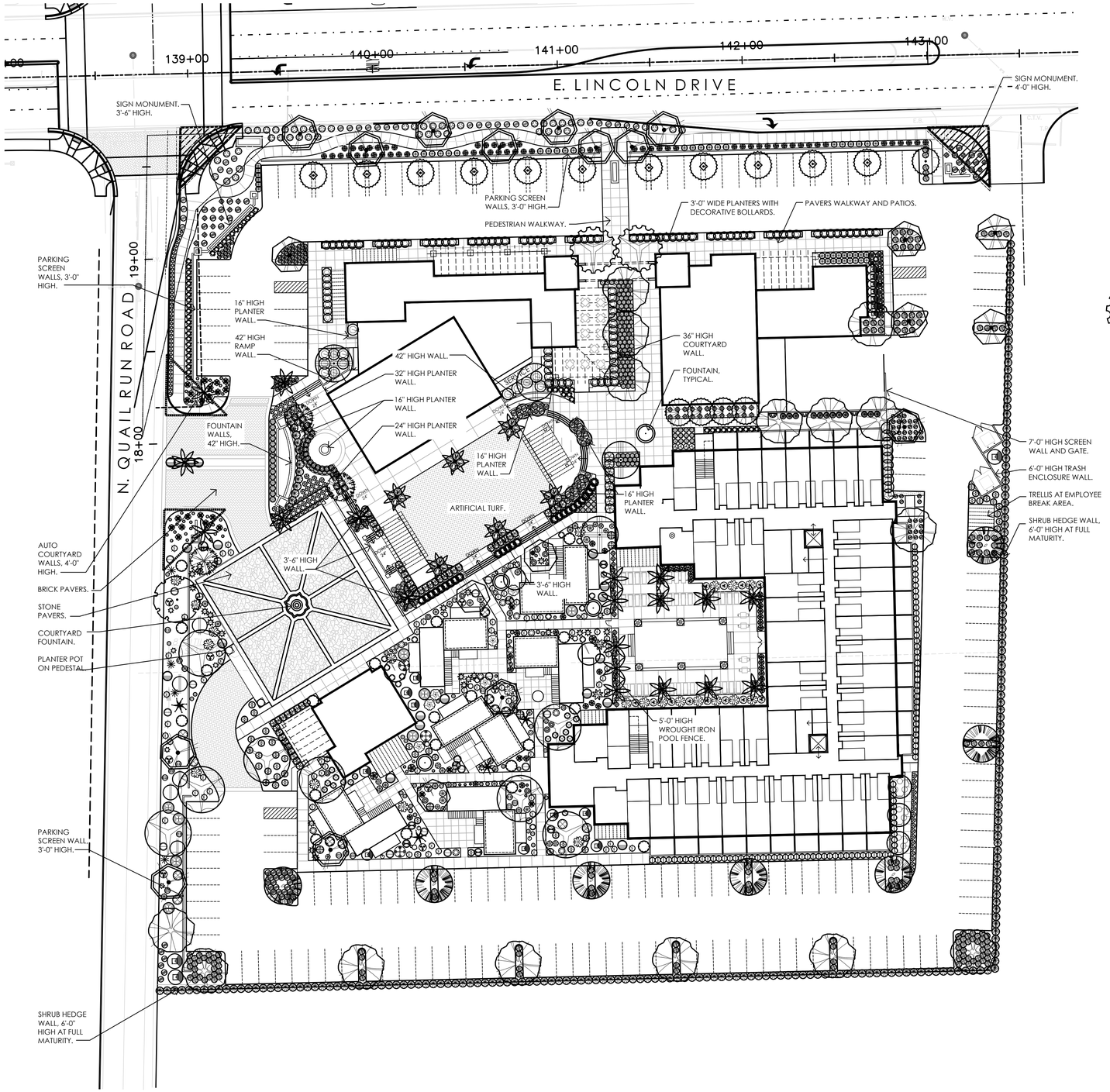
i. The hours of operation for the Casita Pool and Snack Bar area (per SUP 16-08), shall be limited to daylight hours (from 7 am to sunset). There shall be no amplified sound in this Pool and Snack Bar area.

J. The hours of operation for the Storage Building (per SUP 16- 08), shall be limited to daylight hours (from sunrise to sunset).

Montelucia

The maximum hours of public operation of the following specific uses/facilities shall be as follows:

a. Vendor **deliveries** (other than US Mail or emergencies): 6 am - 7 pm
b. Pools, spas and jacuzzis (except pools, spas and jacuzzis located in enclosed private yards, which may be used 24 hours/day): 7 am midnight
c. Restaurants and other food service facilities: 6 am - 1 am
d. Bars/lounges: 10 am - 2 am
e. Banquet facilities, receptions, weddings and socials: 6 am - 2 am
f. Resort retail: 7 am - 11 pm
g. Room service: 24 hours/day
h. Guest reception and guest services: 24 hours/day
1. Parking facilities: 24 hours/day
J. The Spa & Fitness facilities: 24 hours/day (outside members limited to 5 am - midnight).
k. Trash pickup: 7 am - 7 pm



PLANT MATERIALS LEGEND

Sym.	Plant Name	Size	Qty	Zones
Trees				
	Acacia aneura Mulga Acacia	24" box	12	-
	Acacia stenophylla Shoestring Acacia	24" box	4	-
	Caesalpinia cacalaco 'Smoothie' Thornless Cascalote	24" box	1	-
	Chilopsis linearis 'Bubba' Bubba Desert Willow	24" box	7	-
	Chitalpa tashkentensis Chitalpa	24" box	1	-
	Nerium Oleander White Oleander	15 gallon	3	Standard
	Olea europaea 'Swan Hill' Swan Hill Olive	24" box	4	-
	Olney tesota Ironwood	24" box	3	-
	Parkinsonia hybrid 'Desert Museum' Desert Museum Palo Verde	24" box	13	-
	Parkinsonia praecox Palo Brea	24" box	5	-
	Phoenix dactylifera 'Medjool' Medjool Date Palm	16'	25	-
	Prosopis alba 'Cooperi' Cooper's Mesquite	24" box	2	-
	Prosopis glandulosa 'Maverick' Thornless Texas Honey Mesquite	24" box	8	-
	Quercus virginiana Southern Live Oak	24" box	15	-
	Sophora secundiflora Texas Mountain Laurel	24" box	9	-
	Tabebuia impetiginosa Pink Trumpet Tree	24" box	3	-
Shrubs				
	Alyogyne hueglii Blue Hibiscus	5 gal.	20	-
	Bougainvillea 'Rosenka' Bougainvillea	5 gal.	20	-
	Calliandra eriophylla Pink Fairy Duster	5 gal.	5	-
	Citrus aurantium Sour Orange Hedge	5 gal.	226	-
	Dodonaea viscosa Hop Bush	5 gal.	101	-
	Ilex vomitoria nana Dwarf Yaupon Holly	5 gal.	18	-
	Jasminum sambac Arabian Jasmine	5 gal.	29	-
	Justicia californica Chuparosa	5 gal.	6	-
	Justicia californica 'Yellow' Yellow Chuparosa	5 gal.	6	-
	Justicia spicigera Mexican Honeysuckle	5 gal.	16	-
	Leucophyllum prunosum 'Sierra Bouquet' Sierra Bouquet TM	5 gal.	25	-
	Leucophyllum zygophyllum 'Cimarron' Cimarron Sage	5 gal.	52	-
	Nerium oleander 'Petite Pink' Petite Pink Oleander	15 gal.	109	-
	Olea europaea 'Montra' Little Ollie Dwarf Ollie	5 gal.	57	-
	Perovskia atriplicifolia Russian Sage	5 gal.	12	-
	Rosmarinus officinalis 'Tuscan Blue' Upright Rosemary	5 gal.	24	-
	Ruellia brittoniana Ruellia	5 gal.	154	Purple Flov
	Russelia equisetiformis Coral Fountain	15 gal.	48	-
	Salvia clevelandii Chaparral Sage	5 gal.	8	-
	Salvia greggii Autumn Sage	5 gal.	5	-
	Sphaeralcea ambigua Globe Mallow	1 gal.	14	-
	Tecoma stans Yellow Bells	5 gal.	19	-
Groundcovers				
	Baileya multiradiata Desert Marigold	1 gal.	27	-
	Carissa macrocarpa Boxwood Beauty	5 gal.	121	-
	Chrysactinia mexicana Damianita	1 gal.	69	-
	Dalea greggii Trailing Indigo Bush	5 gal.	44	-
	Eremophila glabra Mingirnew Gold	5 gal.	48	-
	Gazania x 'Copper King' Copper King Gazania	5 gal.	6	-
	Glandularia gooddingii Goodding Verbena	1 gal.	17	-
	Hymenoxys acaulis Angelita Daisy	1 gal.	20	-
	Lantana montevidensis Purple Trailing Lantana	1 gal.	69	-
	Lantana montevidensis 'White' White Lantana	1 gal.	82	-
	Lantana 'New Gold' New Gold Lantana	1 gal.	137	-
	Melampodium leucanthum Blackfoot Daisy	1 gal.	92	-
	Viguiera deltoidea Goldeneye	1 gal.	17	-
Accents Cactus				
	Agave americana Century Plant	5 gal.	2	-
	Agave deserti Desert Agave	5 gal.	5	-
	Agave nickelsiae x scabra 'Sharkskin' Sharkskin Agave	15 gal.	6	-
	Agave ovatifolia Whale's Tongue Agave	15 gal.	25	-
	Agave weberi Blue Agave	5 gal.	11	-
	Aloe barbadensis Medicinal Aloe	5 gal.	74	-
	Aloe 'Hercules' Hercules Aloe	24" Box	6	-
	Aloe Ferox Cape Aloe	5 gal.	10	-
	Aloe rudikoppe Little Red Riding Hood Aloe	5 gal.	42	-
	Aloe x 'Blue Elf' Blue Elf Aloe	5 gal.	9	-
	Asclepias subulata Desert Milkweed	1 gal.	3	-
	Carnegiea gigantea Saguaro	8' min.	7	-
	Dasylirion wheeleri Desert Spoon	5 gal.	4	-
	Euphorbia antissyphilitica Candelilla	5 gal.	10	-
	Euphorbia biglandulosa Gopher Plant	5 gal.	26	-
	Ferocactus wislizenii Fishhook Barrel Cactus	bare root	3	-
	Fouquieria splendens Ocotillo	bare root	4	-
	Hesperaloe funifera Giant Hesperaloe	5 gal.	3	-
	Hesperaloe parviflora-red Red Hesperaloe	5 gal.	11	-
	Hesperaloe parviflora 'Perpa' Brakelights Brakelights Red Yucca	3 gal.	59	-
	Kalanchoe beharensis 'Blue Slick'	1 gal.	7	-
	Muhlenbergia rigens Deer Grass	5 gal.	12	-
	Opuntia basilaris Beavertail Prickley Pear	5 gal.	8	-
	Pedilanthus bracteatus Tail Slipper Plant	5 gal.	4	-
	Pedilanthus macrocarpus Lady's Slipper	5 gal.	37	-
	Rosa 'Korbin' Iceberg Floribunda Rose	5 Gal.	18	-
	Rosa x 'Noatraum' Pink Flower Carpet	5 Gal.	16	-
	Stenocereus thurberi Organ Pipe	5' min.	2	-
	Yucca elata Soaptree Yucca	5 gal.	6	-
Vines				
	Campsis radicans Common Trumpet Creeper	5 gal.	3	-

MASS PLANTING

ARTIFICIAL TURF, PIONEER BUILDING MATERIALS 'DARBY', 3,794 SQ. FT.

INERTS

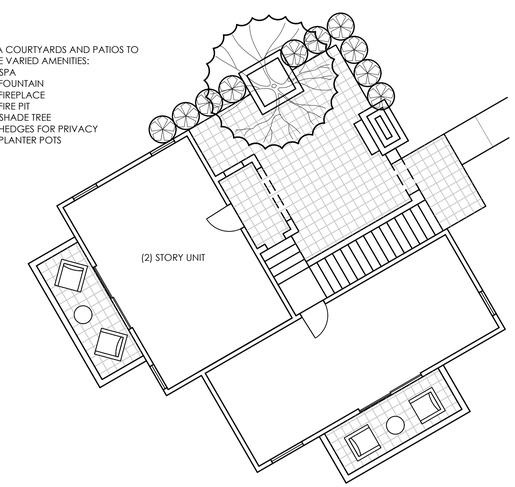
Sym.	Description
	¾" SCREENED DECOMPOSED GRANITE, ROCK PROS USA, 'MAHOGANY', 2" THICK MINIMUM.

NOTES:

1. ALL PLANTS SHALL BE WATERED WITH AUTOMATIC DRIP IRRIGATION SYSTEM.
2. ALL LANDSCAPE AREAS EXCLUDING TURF TO BE COVERED WITH CRUSHED ROCK.
3. LANDSCAPE ARCHITECT TO APPROVE FINAL GRADING. PLANTING SHALL NOT OCCUR UNTIL FINAL GRADING IS APPROVED.
4. LOCATIONS OF PLANTS SHOWN ON DRAWING ARE APPROXIMATE. LANDSCAPE ARCHITECT TO FIELD APPROVE ALL FINAL LOCATIONS PRIOR TO INSTALLATION.
5. DUE TO SEASONAL AND OR UNFORESEEN CONSTRAINTS SOME PLANT MATERIAL WILL POSSIBLY NOT BE AVAILABLE AT TIME OF INSTALLATION. LANDSCAPE CONTRACTOR TO SUBMIT LIST OF ANY NON-AVAILABLE MATERIAL TO LANDSCAPE ARCHITECT FOR REPLACEMENTS TO BE SELECTED.
6. PLANT MATERIAL SHALL BE ADJUSTED IN FIELD TO AVOID TREE ROOT BALLS.
7. ALL PLANT MATERIAL IS TO BE RETAIL QUALITY.
8. LANDSCAPE CONTRACTOR TO PROVIDE PICTURES OR SAMPLES OF ALL PLANT MATERIAL PRIOR TO INSTALLATION FOR APPROVAL.
9. ALL PLANT MATERIAL SOURCED FROM OUTSIDE OF ARIZONA TO BE PROPERLY ACCLIMATED TO ARIZONA CLIMATE DEPENDING ON TIME OF YEAR OF INSTALLATION.
   METHODS: SUN-SCREEN CLOTH/FABRIC TO BE INSTALLED ABOVE PLANT MATERIAL.

VILLA COURTYARDS AND PATIOS TO HAVE VARIED AMENITIES:

- SPA
- FOUNTAIN
- FIREPLACE
- FIRE PIT
- SHADE TREE
- HEDGES FOR PRIVACY
- PLANTER POTS



A *Villa Courtyard Concept*
Scale: 1/8" = 1'-0"

Smoke Tree Resort
Paradise Valley, Arizona

Landscape Site Plan

0' 30' 60' 90'

July 9, 2020

GREEY | PICKETT
landscape architecture | community design

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Smoke Tree Resort
Paradise Valley, Arizona

Landscape Site Plan with Aerial

GREEY | PICKETT

1"=40'-0" July 10, 2020

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Call at least two full working days before you begin excavation.
ARIZONA811
Blue Stake, Inc.
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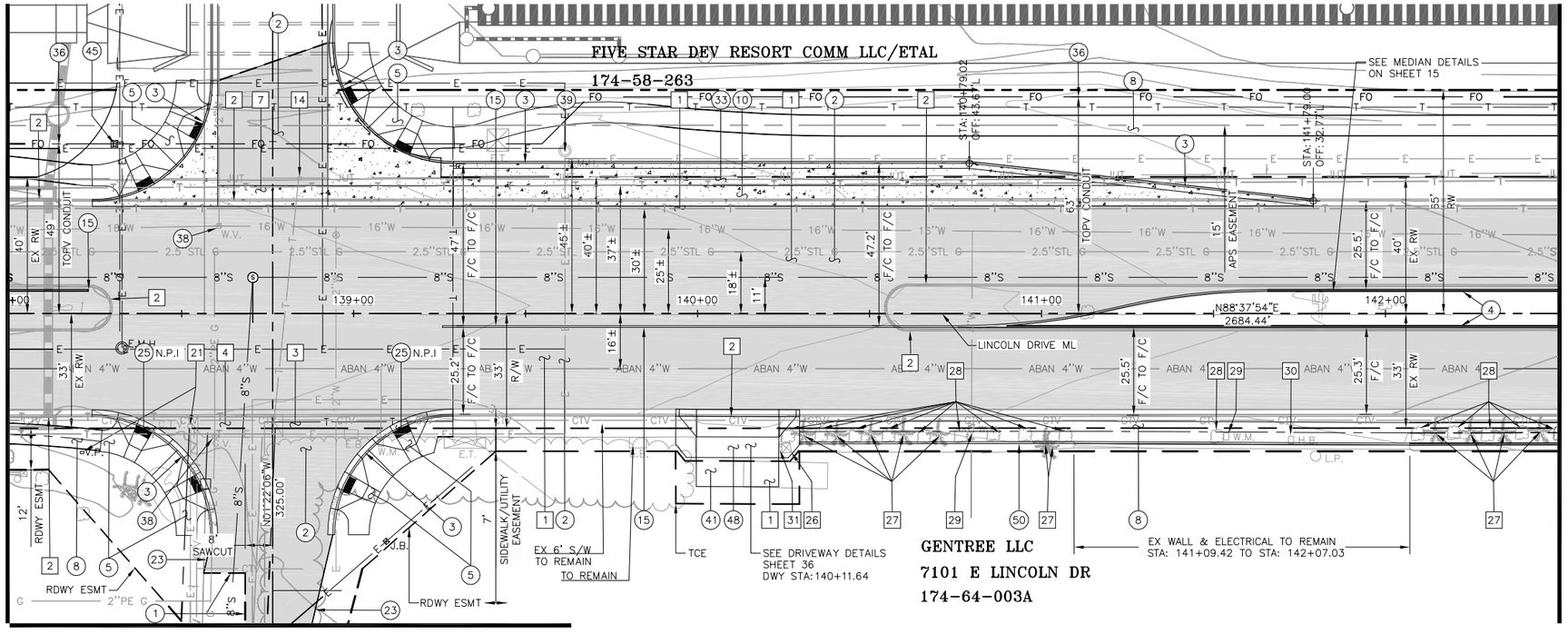
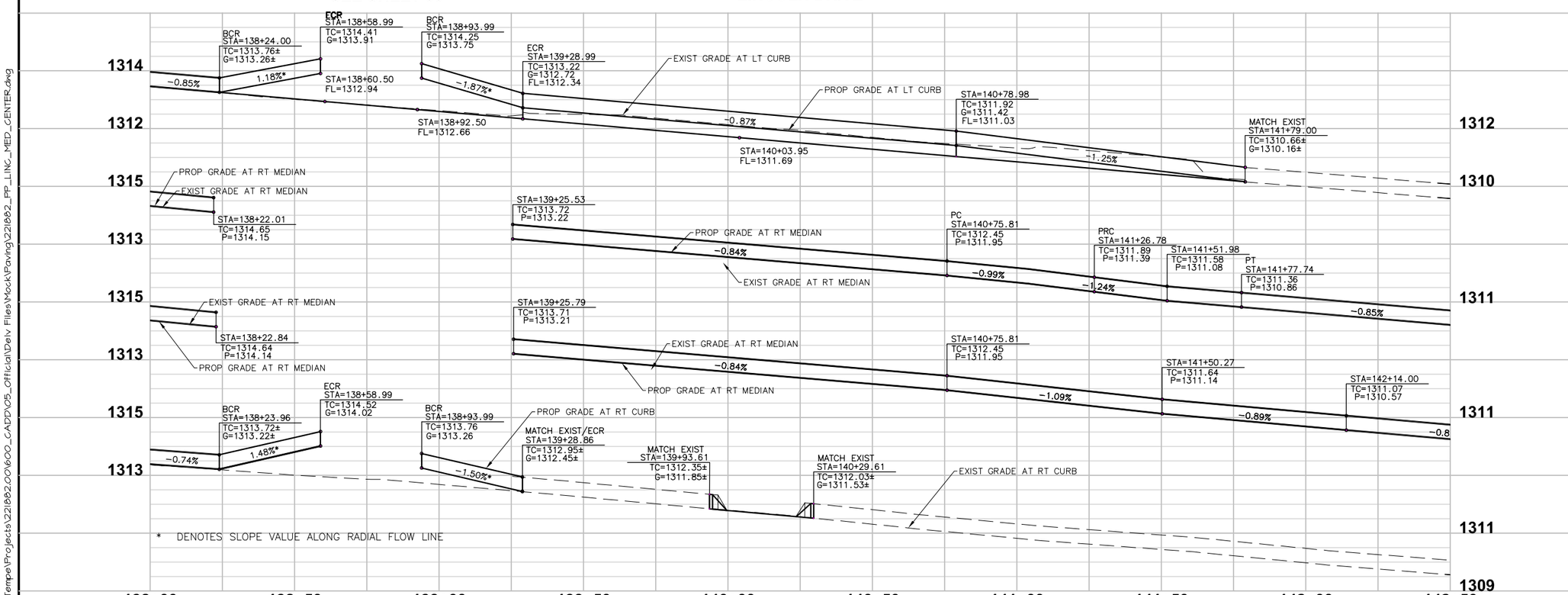
In Maricopa County: (602) 263-1100



LINCOLN DRIVE



T-Y LIN INTERNATIONAL
engineers | planners | scientists
60 East Rio Salado Parkway
Tempe, AZ 85281

SHEET NO:	TOTAL SHEETS
48	156

SCALE: 1"=2' VERTICAL, 1"=20' HORIZONTAL (0 10 20 40)

REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 51336 CHRISTOPHER E. MILNER ARIZONA U.S.A. Expires 6/30/2021

PAVING CONSTRUCTION NOTES

	DESCRIPTION	UNIT
1	SAWCUT 2' MIN EXISTING PAVEMENT TO NEAT CLEAN EDGE & MATCH WITH PAVING PER TYPICAL SECTIONS	N.P.I.
2	CONSTRUCT PAVEMENT PER TYPICAL SECTIONS	3,189 SY
3	CONSTRUCT 6" VERTICAL CURB AND GUTTER PER MAG STD DET 220-1, TYPE "A"	506 LF
4	INSTALL 6" SINGLE VERTICAL CURB PER MAG STD DET 222, TYPE "A"	349 LF
5	CONSTRUCT CURB RAMP (SAN DIEGO BUFF) PER CITY OF PHOENIX STD P1234, A=35, B=8, C=25, SECTION A-A(TYP)	1,797 SF
8	CONSTRUCT 6' CONCRETE SIDEWALK (SAN DIEGO BUFF) UNLESS OTHERWISE SPECIFIED, PER MAG STD DET 230	3,557 SF
10	CONSTRUCT VALLEY GUTTER PER MAG STD DET 240, W=6'	2,673 SF
15	CONSTRUCT 6" MODIFIED VERTICAL CURB PER TYPICAL SECTIONS	150 LF
23	CONSTRUCT SAFETY EDGE PER DETAIL ON TYPICAL SECTIONS SHEETS (NPI)	38 LF
25	CONSTRUCT DETECTABLE WARNING RAMP(TERRACOTTA)	N.P.I
33	CONSTRUCT PORTLAND CEMENT CONCRETE PAVEMENT PER TYPICAL SECTIONS ON SHEET TYP-2.03	857 SF
36	CONSTRUCT INTERCONNECT TRENCH 4" PVC SCHEDULE 40 CONDUIT PER TOWN OF GILBERT DET NO. GIL-831	450 LF
38	ADJUST VALVE COVER TO FINISHED GRADE PER MAG STD DET 391-1, TYPE A	2 EA
39	ADJUST MANHOLE FRAME AND COVER TO FINISHED GRADE PER MAG STD DET 422	1 EA
41	CONSTRUCT 3" AC ON 6" ABC	204 SF
45	CONSTRUCT NO. 9 VAULT AND COVER DETAIL PER TOWN OF GILBERT DET NO. 102	1 EA
48	CONSTRUCT DRIVEWAY ENTRANCE (SAN DIEGO BUFF) PER MAG STD DET 250-2	420 SF
50	INSTALL SINGLE CURB (SAN DIEGO BUFF) PER MAG STD DET 222, TYPE "B", H=8"	220 LF

REMOVAL/RELOCATE NOTES

	DESCRIPTION	UNIT
1	REMOVE EXISTING ASPHALT PAVEMENT	2,696 SY
2	REMOVE EXISTING CONCRETE CURB (VERT. C&G, ROLL OR SINGLE)	1,010 LF
3	REMOVE EXISTING CONCRETE SIDEWALK	298 SF
4	REMOVE EXISTING DRIVEWAY	650 SF
7	REMOVE ASPHALT PATHWAY	2,694 SF
18	RELOCATE EXISTING PEDESTAL BY COX	1 EA
21	REMOVE AND REPLACE EXISTING PEDESTAL WITH VAULTED PEDESTAL BY CENTURYLINK	1 EA
26	REMOVE ENTRY WAY FEATURE, SALVAGE DECORATIVE ELEMENT TO PROPERTY OWNER	1 EA
27	REMOVE PALM TREES	11 EA
28	REMOVE SHRUBS	15 EA
29	RELOCATE POTABLE WATER SERVICE METER TO BACK OF CURB PER EPCOR DET 342-2(METER ORIENTED PARALLEL WITH STREET)	2 AL
30	HAND FORM CONCRETE AT PRIVATE HOSE BIB TO PROTECT IN PLACE	1 AL
31	PRIVATE ELECTRICAL TO BE CUT AND CAPPED	1 AL

REVISION BY TOWN OF PARADISE VALLEY

NO.	DESCRIPTION	REV BY	CKD BY

TOWN OF PARADISE VALLEY
ARIZONA

ROADWAY AND UTILITY IMPROVEMENTS
LINCOLN DRIVE
PROJECT NO. 2016-14

DR: JCG, TL	DES: CEM,DPF	CK: JAB	DWG SERIES NO.
DATE: 03/2020	DATE: 03/2020	DATE: 03/2020	
PLAN & PROFILE			PP-2.04

PROJECT NO. 2016-14, ROADWAY AND UTILITY IMPROVEMENTS

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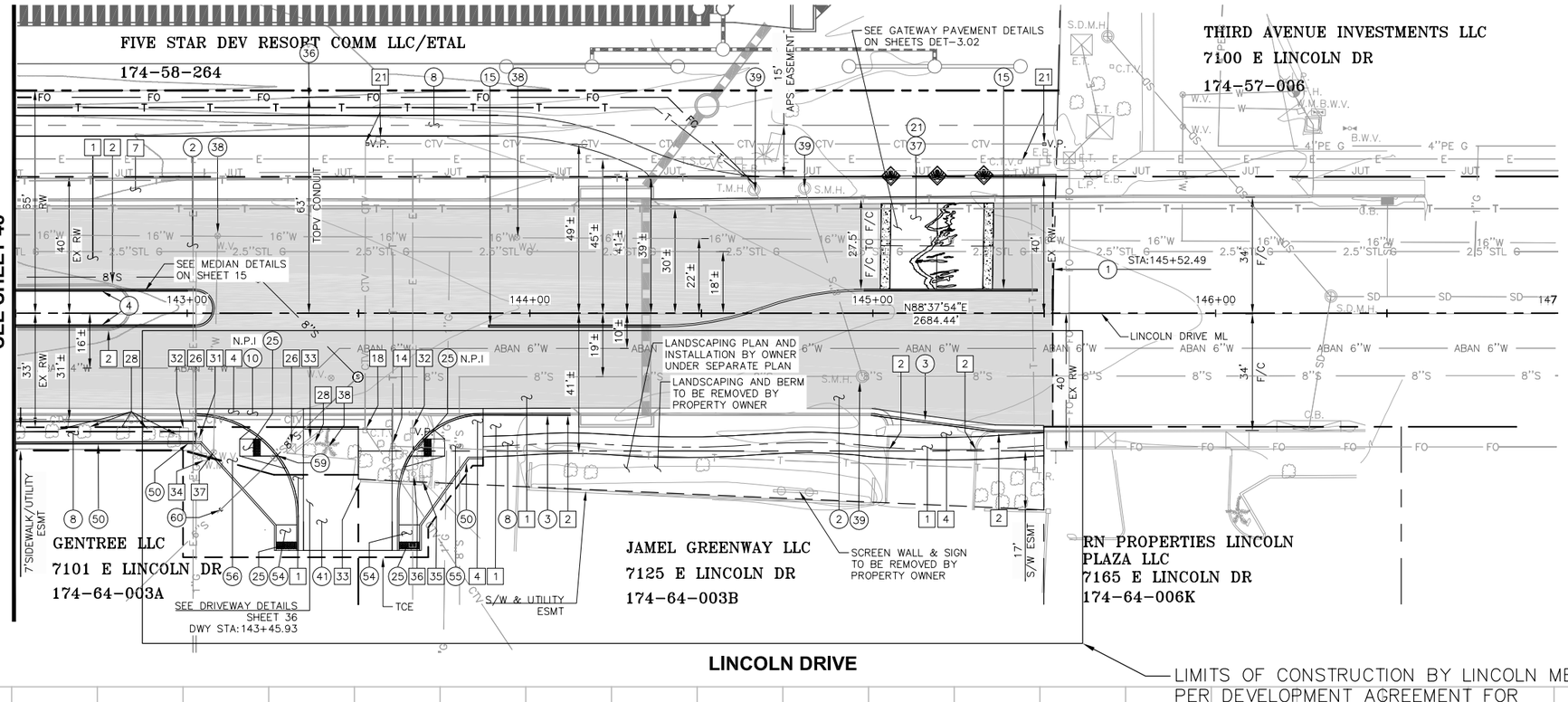

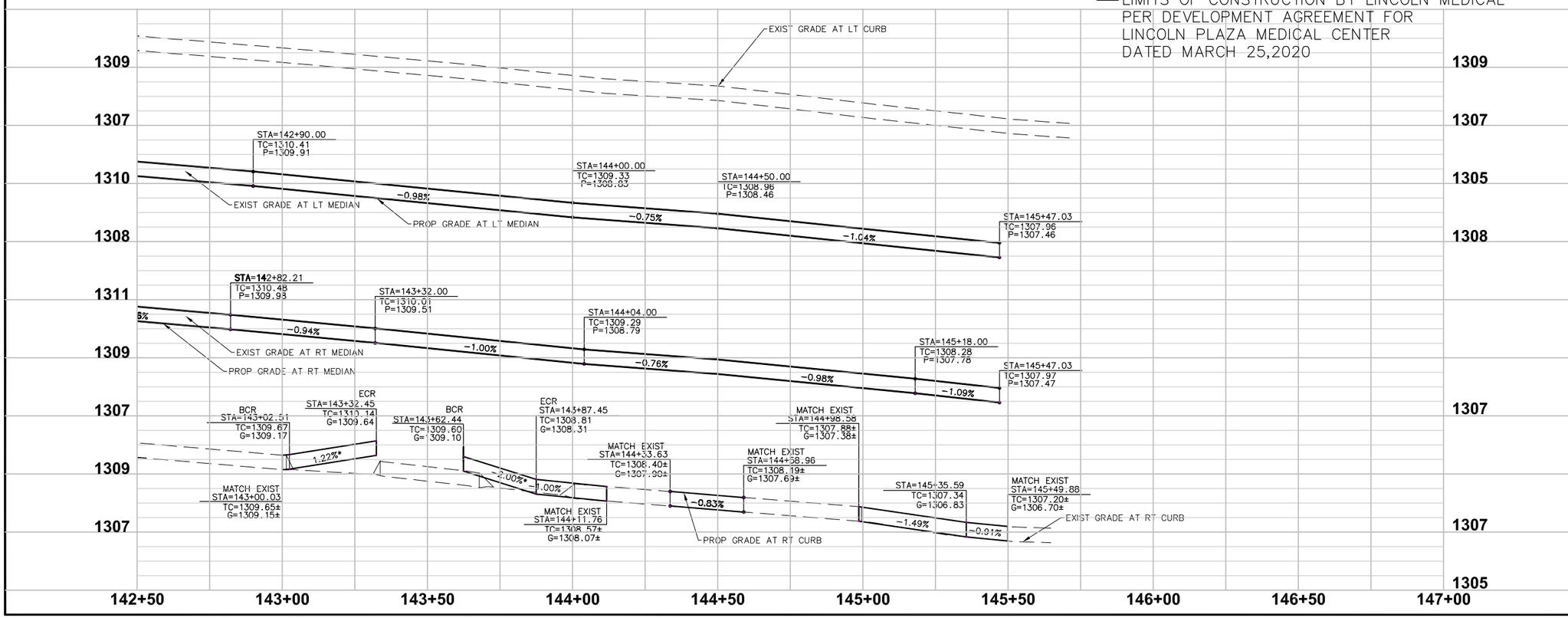

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60 East Rio Salado Parkway
Tempe, AZ 85281

SHEET NO:	TOTAL SHEETS
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SCALE: 1"=2' VERTICAL, 1"=20' HORIZONTAL (0 10 20 40)

REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 51336 CHRISTOPHER E. MILNER ARIZONA U.S.A. Expires 6/30/2021

PAVING CONSTRUCTION NOTES

	DESCRIPTION	UNIT
1	SAWCUT 2' MIN EXISTING PAVEMENT TO NEAT CLEAN EDGE & MATCH WITH PAVING PER TYPICAL SECTIONS	N.P.I.
2	CONSTRUCT PAVEMENT PER TYPICAL SECTIONS	1,847 SY
3	CONSTRUCT 6" VERTICAL CURB AND GUTTER PER MAG STD DET 220-1, TYPE "A"	80 LF
4	INSTALL 6" SINGLE VERTICAL CURB PER MAG STD DET 222, TYPE "A"	116 LF
8	CONSTRUCT 6' CONCRETE SIDEWALK (SAN DIEGO BUFF) UNLESS OTHERWISE SPECIFIED, PER MAG STD DET 230	3,259 SF
10	CONSTRUCT VALLEY GUTTER PER MAG STD DET 240, W=6'	500 SF
15	CONSTRUCT 6" MODIFIED VERTICAL CURB PER TYPICAL SECTIONS	161 LF
21	CONSTRUCT 7" AGGREGATE BASE COURSE PER MAG SECTION 702	819 SF
25	CONSTRUCT DETECTABLE WARNING RAMP(TERRACOTTA)	30 SF
36	CONSTRUCT INTERCONNECT TRENCH 4" PVC SCHEDULE 40 CONDUIT PER TOWN OF GILBERT DET NO. GIL-831	239 LF
37	CONSTRUCT 8" CLASS A PORTLAND CEMENT CONCRETE PAVEMENT PER MAG SECTION 725	936 SF
38	ADJUST VALVE COVER TO FINISHED GRADE PER MAG STD DET 391-1, TYPE A	3 EA
39	ADJUST MANHOLE FRAME AND COVER TO FINISHED GRADE PER MAG STD DET 422	3 EA
41	CONSTRUCT 3" AC ON 6" ABC	508 SF
50	INSTALL SINGLE CURB (SAN DIEGO BUFF) PER MAG STD DET 222, TYPE "B", H=8"	124 LF
54	CONSTRUCT 7 ½' X 5' CURB RAMP, H=6"	100 SF
55	CONSTRUCT SINGLE DIRECTIONAL CURB RAMP (SAN DIEGO BUFF) PER MAG STD DET 237-1, R=25' (MODIFIED)	430 SF
56	CONSTRUCT SINGLE DIRECTIONAL CURB RAMP (SAN DIEGO BUFF) PER MAG STD DET 237-1, R=30'	448 SF
59	FURNISH & INSTALL 8" VCP SEWER LINE PER ASTM C700.	35 LF
60	INSTALL 6" TO 8" VCP SEWER COUPLING	1 EA

REMOVAL/RELOCATE NOTES

	DESCRIPTION	UNIT
1	REMOVE EXISTING ASPHALT PAVEMENT	1,970 SY
2	REMOVE EXISTING CONCRETE CURB (VERT. C&G, ROLL OR SINGLE)	200 LF
4	REMOVE EXISTING DRIVEWAY	1,443 SF
7	REMOVE ASPHALT PATHWAY	1,695 SF
14	RELOCATE EXISTING PEDESTAL BY CENTURYLINK	1 EA
18	RELOCATE EXISTING PEDESTAL BY COX	1 EA
26	REMOVE ENTRY WAY FEATURE, SALVAGE DECORATIVE ELEMENT TO PROPERTY OWNER	1 EA
27	REMOVE PALM TREES	1 EA
28	REMOVE SHRUBS	17 EA
31	PRIVATE ELECTRICAL TO BE CUT AND CAPPED	1 AL
32	RELOCATE EXISTING PULL BOX BY APS	1 EA
33	REMOVE EXISTING BLOCKWALL	28 LF
34	RELOCATE POTABLE WATER SERVICE METER BOX PER EPCOR DET 342-2(METER ORIENTED PARALLEL WITH STREET)	1 EA
35	CAP PRIVATE IRRIGATION SYSTEM	1 EA
36	REMOVE PRIVATE LIGHT AND CAP ELECTRICAL FEED	1 EA
37	REMOVE WATER VALVE	1 EA
38	REMOVE PALO VERDE TREE	1 EA

REVISION BY TOWN OF PARADISE VALLEY

NO.	DESCRIPTION	REV BY	CKD BY

TOWN OF PARADISE VALLEY
ARIZONA

ROADWAY AND UTILITY IMPROVEMENTS
LINCOLN DRIVE
PROJECT NO. 2016-14

DR: JCG, TL	DES: CEM,DPF	CK: JAB	DWG SERIES NO.
DATE: 03/2020	DATE: 03/2020	DATE: 03/2020	
PLAN & PROFILE			PP-2.05

PROJECT NO. 2016-14, ROADWAY AND UTILITY IMPROVEMENTS

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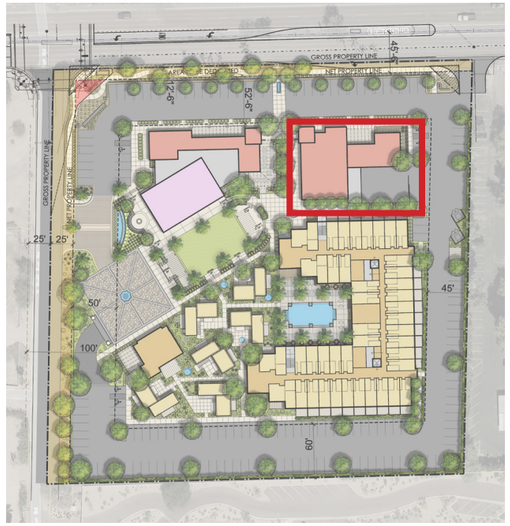


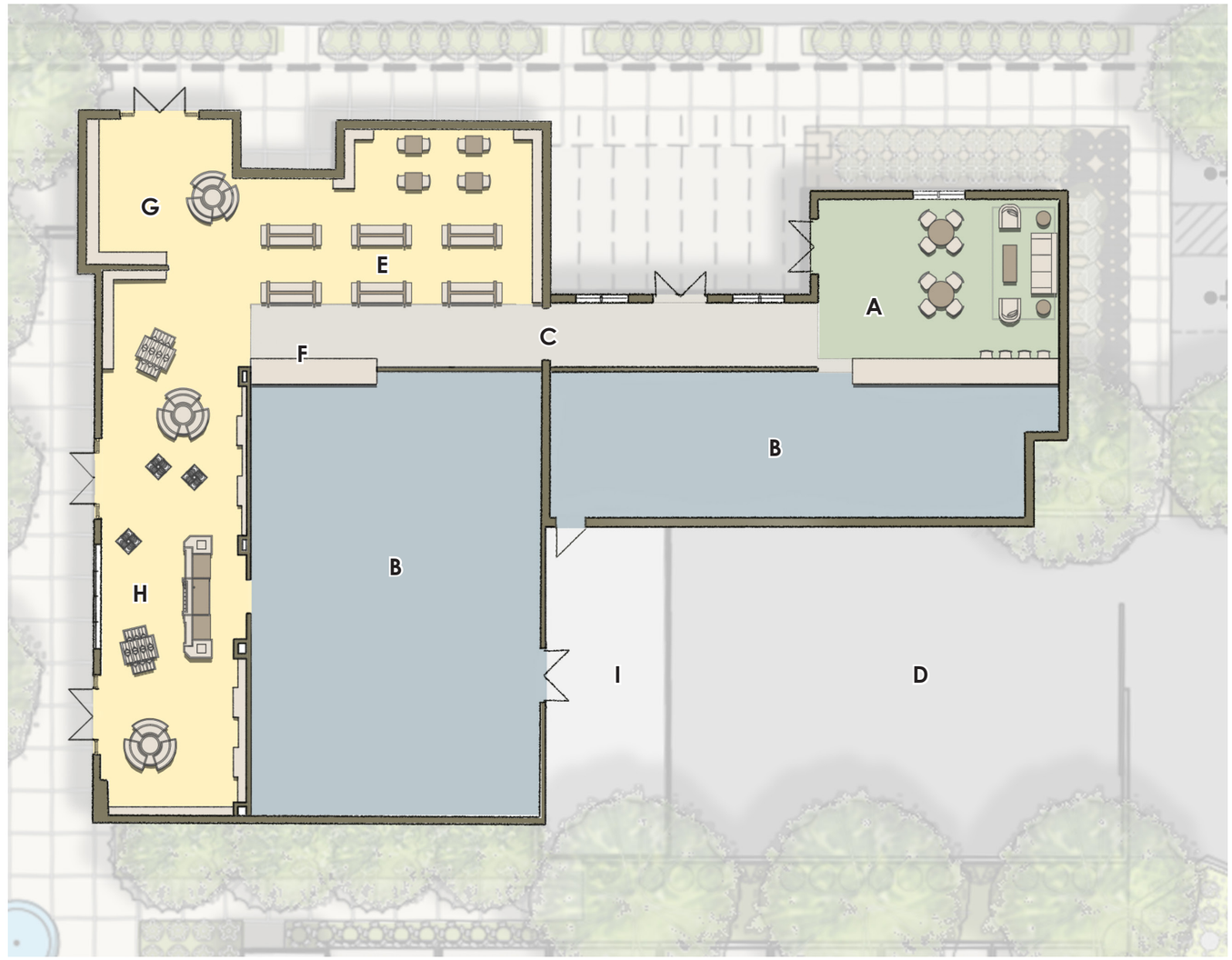
KEY MAP - NOT TO SCALE

PROGRAM:

- A Coffee Pick-Up
- B Back of House for Resort
- C Circulation
- D Deliveries
- E Sundries
- F Gelato
- G Grab 'n' Go
- H Retail
- I Loading Dock

Coffee Shop - 500 sf

Market - 2000 sf



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ENLARGED FLOOR PLAN | market and coffee shop

scale: 1/16" = 1'-0"

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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ENLARGED FLOOR PLAN

the smoke tree resort

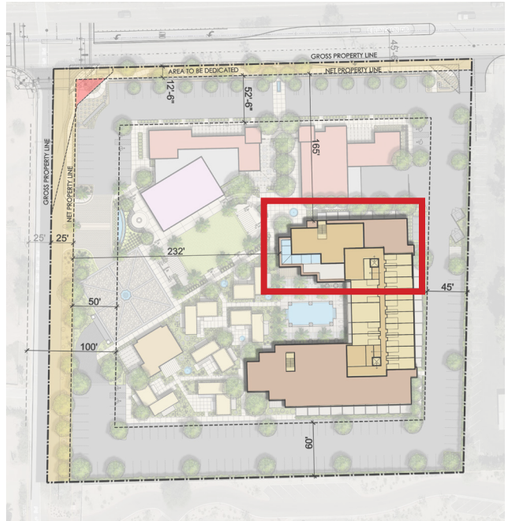
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

11 x 17 format

ADDED

JULY 24, 2020

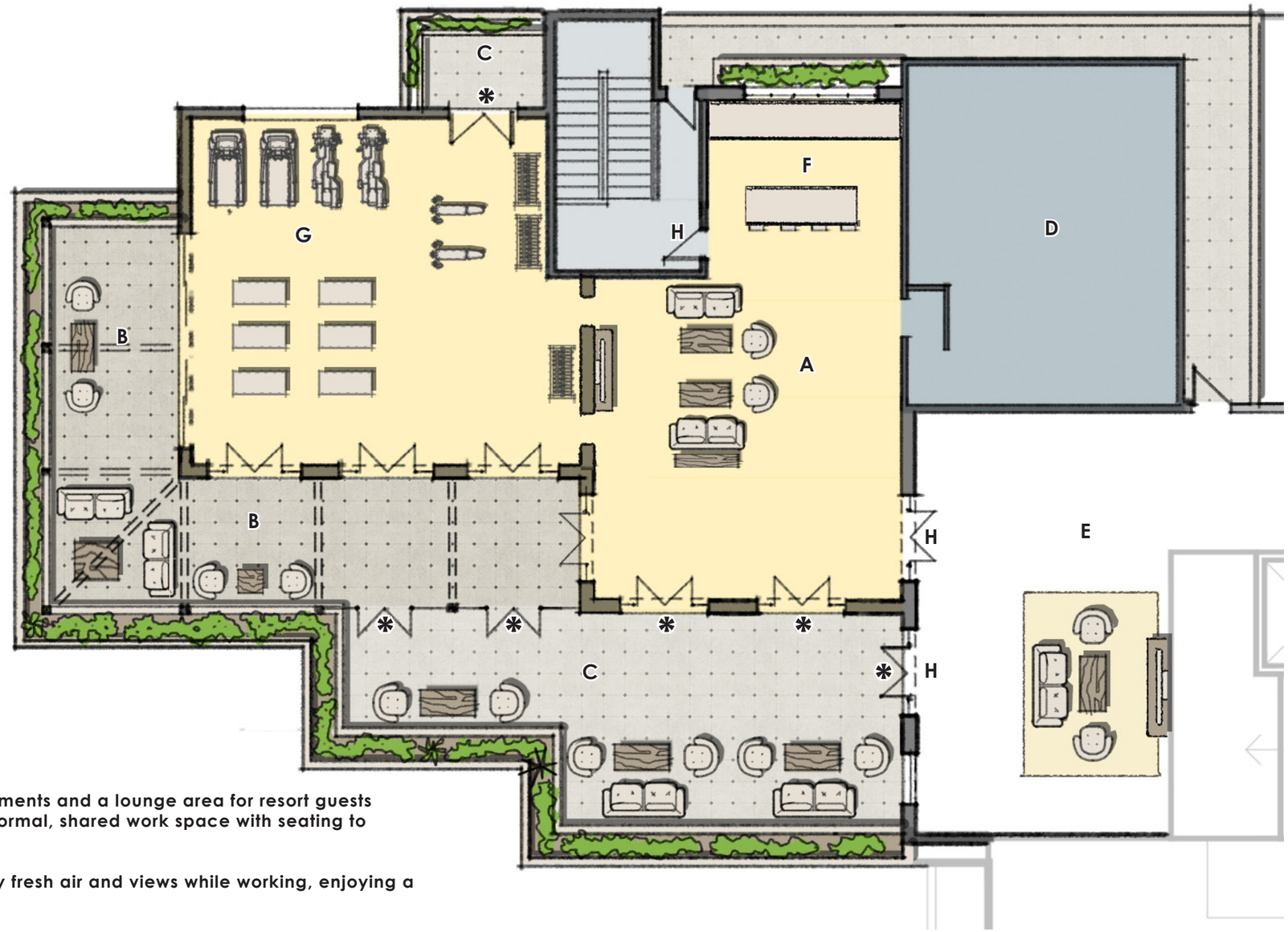


KEY MAP - NOT TO SCALE

PROGRAM:

- A Communal Amenity
- B Enclosed Terrace
- C Exterior Terrace
- D Restrooms / Storage
- E Third Floor Lobby
- F Kitchenette and Wet Bar
- G Fitness Corner
- H Key Card Access Only

✱ All exterior doors to be closed before 10 pm to comply with Town Noise Ordinance.



ENLARGED FLOOR PLAN at third floor guest amenity
scale: 1" = 10'-0"

Area A is a tidy kitchenette that provides refreshments and a lounge area for resort guests only. This area will be self-serve and includes informal, shared work space with seating to bring a laptop and connect to a printer.

Areas B and C provide spaces for guests to enjoy fresh air and views while working, enjoying a small snack, or relaxing.

Area D includes restroom facilities as well as storage space for back of house supplies.

Area G is a fitness studio with free weights, cardio equipment, and yoga available only to guests. This area has operable doors and windows for fresh air and light.

The entire Guest Amenity area will be controlled via electronic key card both for the elevator and entry doors.

No outdoor speakers or amplified music will be permitted.

After hours access will not be permitted.

PHX ARCHITECTURE
GREEY|PICKETT
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ENLARGED FLOOR PLAN

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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SEP 6, 2019
11 x 17 format
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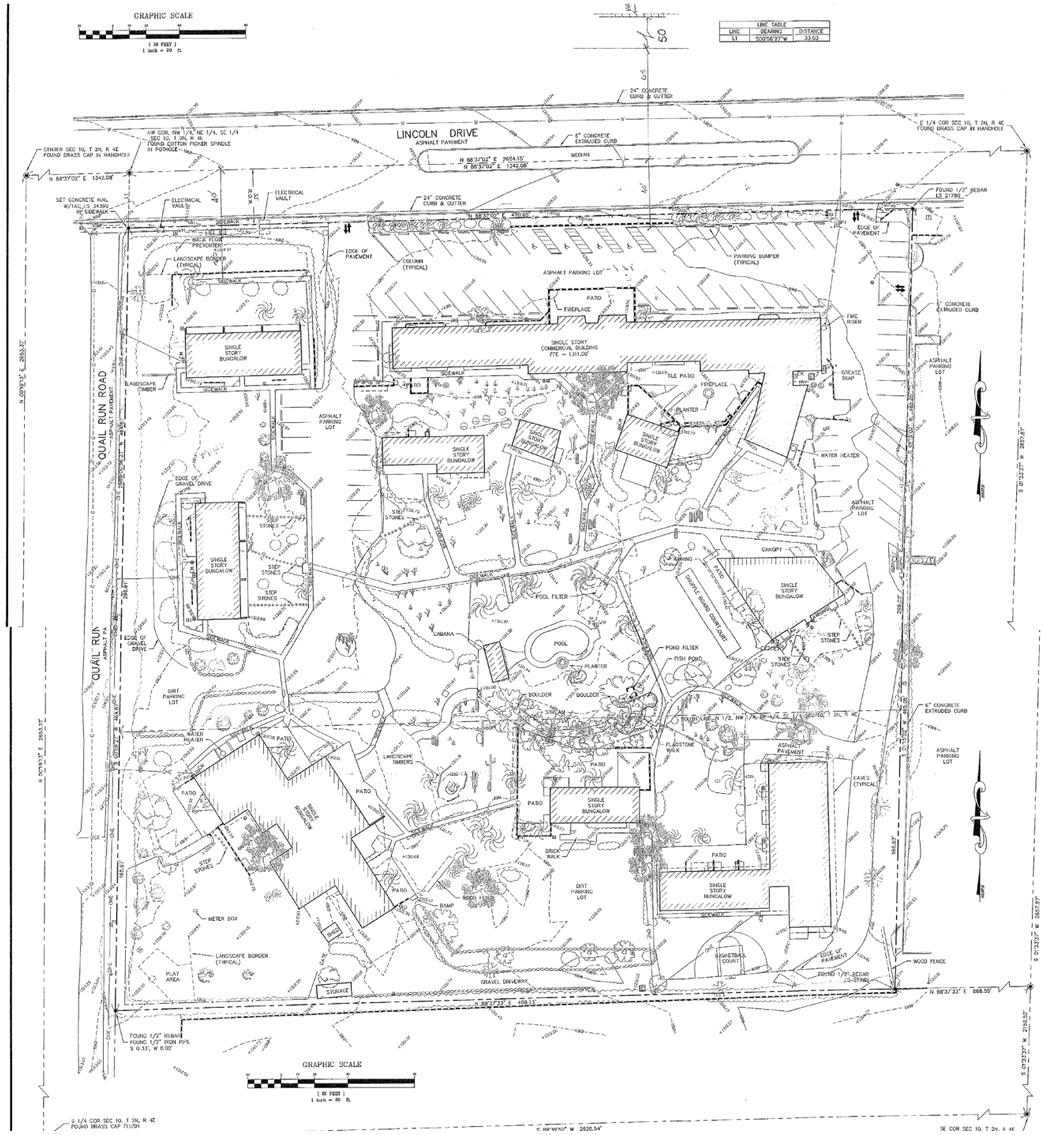
JULY 10, 2020

EXISTING TOPOGRAPHIC SURVEY



REVISED JULY 23, 2020

PHX ARCHITECTURE
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BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
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the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A69
SEP 6, 2019
11 x 17 format

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

F.F. at 0'-0"

F.F. at -1'-0"

F.F. at -2'-0"

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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PROPOSED SITE PLAN - FINISH FLOOR EXHIBIT

The Smoke Tree Resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A87

SEP 6, 2019
11 x 17 format
REVISED
JULY 20, 2020

PROGRAM:

A. Pedestrian entry
B. Resort Reception Entry Plaza and Valet
C. Resort Reception and Lobby
D. Pavilion
E. Event Lawn
F. Shade Trellis
G. Restaurant
H. Market
I. Coffee Shop
J. Outdoor Patio
K. Resort Pool
L. Pool Lounge
M. Entry Lounge
N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
P. Luxury Suites (guest rooms)
Q. Signage
R. Surface Parking
S. Quail Run Road Access Point
T. Garbage Bins
U. Delivery Location
V. Employee Break Area
W. Back of House
AB. Sight Visibility Triangle - 33' x 33'
AC. APS Utility Box

RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	102 keys
Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	20 keys
Total Keys	= 122 keys

Total Self-Park Spaces = 170
Dimensions: 9' x 18' + 2' overhang

or

Total Valet Spaces = 196

PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
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PROPOSED SITE PLAN - GROUND LEVEL

the smoke tree resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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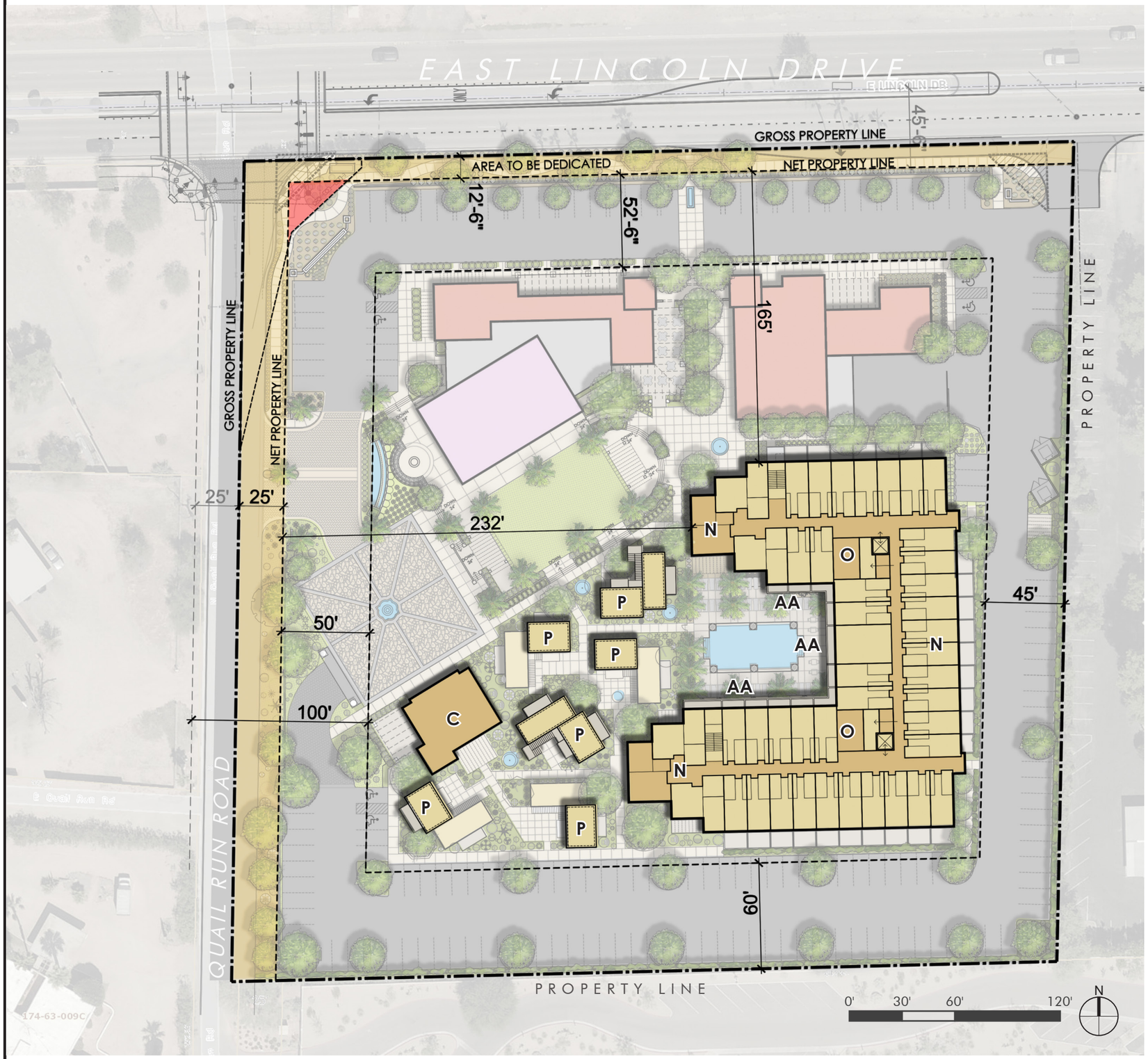
JULY 20, 2020



PROGRAM:

C. Resort Reception and Lobby
N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
P. Luxury Suites (guest rooms)
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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PROPOSED SITE PLAN - SECOND LEVEL

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

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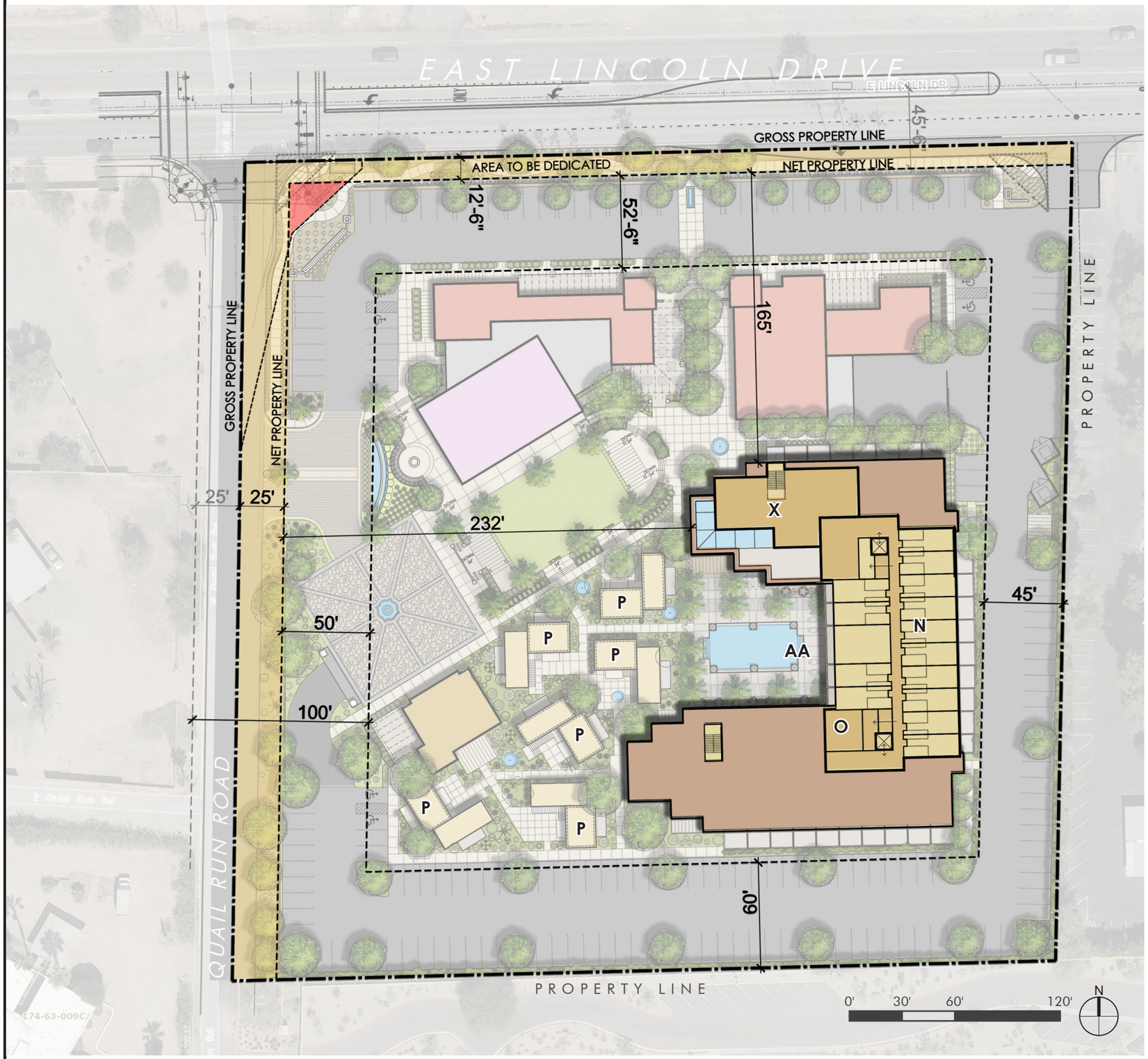
JULY 20, 2020



PROGRAM:

N. Resort Suites (guest rooms)
O. Resort Guest Flex Space
X. Resort Guest Amenity
AA. Balconies

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

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PROPOSED SITE PLAN - THIRD LEVEL

The smoke tree resort

7101 E LINCOLN DR., PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A10

SEP 6, 2019
11 x 17 format
REVISED
JULY 20, 2020

WEST ELEVATION | as viewed from quail run road

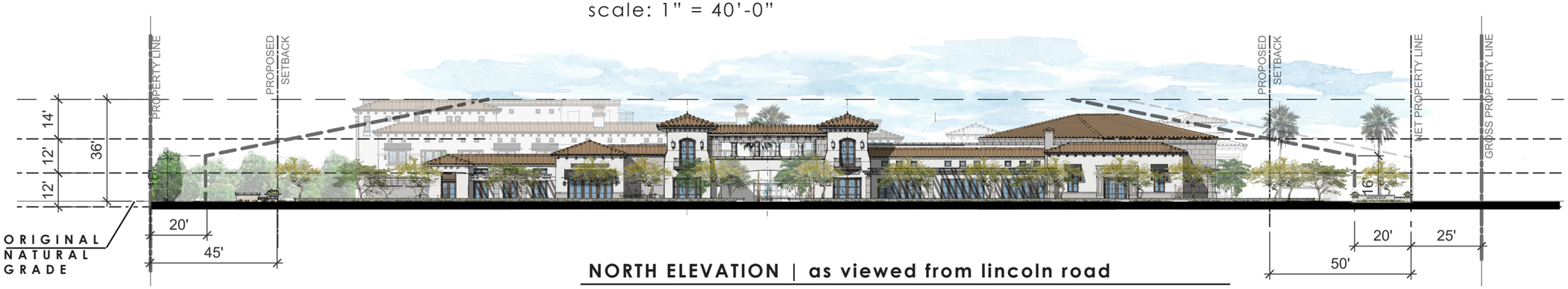
scale: 1" = 40'-0"

SOUTH ELEVATION | as viewed from andaz resort

scale: 1" = 40'-0"

EAST ELEVATION | as viewed from lincoln medical center

scale: 1" = 40'-0"



NORTH ELEVATION | as viewed from lincoln road

scale: 1" = 40'-0"

PHX ARCHITECTURE

GREEY|PICKETT

BEUS GILBERT

CREATIVE DESIGNS IN LIGHTING

CVL CONSULTANTS

GH

EXTERIOR ELEVATIONS

the smoke tree resort

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

A18

SEP 6, 2019

11 x 17 format

REVISED

JULY 24, 2020

ORDINANCE NUMBER 2020-09

AN ORDINANCE OF THE TOWN OF PARADISE VALLEY, ARIZONA, APPROVING A MAJOR AMENDMENT TO THE SPECIAL USE PERMIT FOR PROPERTY ZONED SUP DISTRICT (RESORT) KNOWN AS SMOKE TREE RESORT LOCATED AT 7101 EAST LINCOLN DRIVE, PROVIDING FOR REDEVELOPMENT WITH DEMOLITION OF ALL EXISTING STRUCTURES AND CONSTRUCTION OF A NEW RESORT HOTEL WITH 122 HOTEL KEYS WITH RESORT RELATED RESTAURANT, RETAIL, MEETING SPACE, AND SITE IMPROVEMENTS INCLUDING SURFACE PARKING, LANDSCAPING, LIGHTING, AND IMPROVEMENTS TO SITE INFRASTRUCTURE; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, the Town of Paradise Valley (the "Town") Planning Commission held a public hearing on March 5, 2019, in the manner prescribed by law, for the purpose of considering an application for an amendment to the Special Use Permit for The Smoke Tree Resort (the Application"), and recommended denial of the Application to the Town of Paradise Valley Council ("Town Council") ; and

WHEREAS, the Town Council held several study sessions which discussed the possibility of having a reduced overall density and removing for-sale units from the Application; and

WHEREAS, the owner of the Smoke Tree property subsequently submitted a significantly revised submittal (the "Amended Application") of the initial Application; and

WHEREAS, the Town Council reviewed the Amended Application and determined that a more thorough review of the Amended Application was necessary; and thereafter approved (on June 25, 2020) a revised statement of direction for Smoke Tree Resort and remanded the Amended Application to the Planning Commission for further study and for a recommendation on the Amended Application; and

WHEREAS, the Planning Commission held a public hearing on _____, in the manner prescribed by law, for the purpose of considering the Amended Application for an amendment to the Special Use Permit for The Smoke Tree Resort property and recommended _____of the Amended Application to the Town Council; and

WHEREAS, the Town Council held a public hearing on _____, in the manner prescribed by law, to hear and to take action on the amendment to the Special Use Permit for The Smoke Tree Resort; and

WHEREAS, the Town Council finds that the requirements of Section 2-5-2.F, Citizen Review Process, including holding Citizen Review Sessions on February 18, 2019, and August 20, 2020, to provide a reasonable opportunity for the applicant, adjacent landowners, and other potentially affected citizens to discuss issues or concerns they may have with the application has been met; and

WHEREAS, this amendment to the Special Use Permit for The Smoke Tree Resort is consistent with the property's designation as "Resort" in the Town's General Plan Land Use Map; and

WHEREAS, in accordance with Article II, Section 1 and 2, Constitution of Arizona, the Town Council has considered the individual property rights and personal liabilities of the residents of the Town before adopting Ordinance #2020-__ (the "Ordinance").

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND TOWN COUNCIL OF THE TOWN OF PARADISE VALLEY, ARIZONA THAT:

SECTION I. <u>In General</u>

1. The Special Use Permit ("SUP") zoning for Smoke Tree Resort allows for resort uses on approximately _____net acres of land (the "net acres" being calculated by subtracting the public road dedications provided for in this SUP from the approximately 5.0 gross acres contained in the Amended Application) located at 7101 East Lincoln Drive in the Town of Paradise Valley, Arizona, more particularly described on Exhibit "A," attached hereto (the "Property").

2. This Major Amendment to the Special Use Permit (SUP 18-05) for Smoke Tree Resort hereby amends all prior Special Use Permits for the Property and creates a new Special Use Permit to allow for redevelopment with demolition of all existing structures and construction of a new resort hotel with 122 hotel keys with resort related restaurant, retail, meeting space, and onsite and offsite improvements including surface parking, landscaping, lighting, and improvements to onsite and off-site infrastructure, including within N. Quail Run Road and E. Lincoln Drive, subject to the Conditions set forth in Section II of this Ordinance. **[Note: Additional edits may be necessary]**

3. To provide historical reference of what is being superseded, a description of prior amendments to the Special Use Permit for the Property is summarized in Exhibit "B," attached hereto.

4. Upon the Effective Date of this Ordinance the zoning district of "Special Use Permit – Resort" shall now be shown on the Town's official Zoning Map for the Property along with a reference to the new major amendment special use permit reference number on the Town's official Zoning Map of "SUP 18-05";

5. This Major Amendment to the Special Use Permit for this Property is in accordance with Section 1102.7 of the Zoning Ordinance.

SECTION II. <u>Conditions</u>. Pursuant to Article XI of the Zoning Ordinance of the Town of Paradise Valley, Arizona (the "Town"), the Town hereby grants to Gentree LLC, an Arizona Limited Liability Company, its successors and assigns, Special Use Permit 18-05 by its approval of this

Ordinance governing the use of the Property. All capitalized terms contained herein shall have the meanings ascribed to them parenthetically or otherwise in this Ordinance.

This amendment is one of many amendments to the first Special Use Permit on the Property approved by the Town in 1969. This Special Use Permit is intended to amend all prior Special Use Permits for this Property. This Special Use Permit is being granted by the Town to permit the continued use and operation of the Property for resort use subject to and in accordance with the stipulations and other provisions set forth herein as shown in Exhibit "C," attached hereto. **[Note: Additional edits may be necessary]**

SECTION III. Severability. If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held invalid or unconstitutional by a court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and such holding shall not affect the validity of the remaining portions thereof.

SECTION IV. Effective Date. This Ordinance shall become effective at the time and in the manner prescribed by law.

PASSED AND ADOPTED by the Mayor and Town Council of the Town of Paradise Valley, Arizona, this _____ day of _____, 2020.

_____
Jerry Bien-Willner, Mayor

SIGNED AND ATTESTED THIS ____ DAY OF _____ 2020.

ATTEST:

_____
Duncan Miller, Town Clerk

APPROVED AS TO FORM:

_____
Andrew Miller, Town Attorney

Date: 08/13/2020

EXHIBIT "A"
TO
ORDINANCE NUMBER 2020-09

Legal Description of Net Acres

TOWN OF PARADISE VALLEY
SPECIAL USE PERMIT FOR THE SMOKE TREE RESORT

[*Note: Insert legal description of the "Net Acres" by taking the submitted legal description and subtracting the dedicated areas for both Lincoln Drive and Quail Run Road. The zoning for the Property should not apply to the areas that will be in the Town right-of-way (ROW)*]

EXHIBIT "B"
TO
ORDINANCE NUMBER 2020-09

Description of Prior SUP Amendments that are amended upon the Effective Date

TOWN OF PARADISE VALLEY
SPECIAL USE PERMIT FOR THE SMOKE TREE RESORT

The Town annexed the property in 1961. The Town approved the original Special Use Permit on March 13, 1969. The list below summarizes the known amendments to the original Special Use Permit, all of which are amended upon the Effective Date of this Ordinance.

[Note: Additional edits may be necessary]

June 2008	Amendment to the Special Use Permit to renovate the restaurant for a new tenant. Various improvements to the restaurant building along Lincoln Drive were made including the screening of roof mounted mechanical equipment.
May 1971	Amendment to the Special Use Permit to add more kitchen space. The Town approved modification of Cottage 1 to a non-public use for more kitchen space.
March 1969	Establishment of the property for resort use by Special Use Permit, subject to 2 conditions: 1) the dedication of 7 feet of additional right-of-way so that the Town would own 40 feet of right-of-way and payment by Maricopa County should it decide to condemn an additional 15 feet of right-of-way on Lincoln Drive (for a total of 55 feet of right-of-way as measured from the centerline of Lincoln Drive) in the event that Maricopa County used federal funds for such condemnation; and 2) that new leases of commercial space be approved by Town Council.

EXHIBIT "C"
TO
ORDINANCE NUMBER 2020-09

SUP STIPULATIONS

TOWN OF PARADISE VALLEY
SPECIAL USE PERMIT FOR THE SMOKE TREE RESORT
SUP-18-05

I. PROJECT DESCRIPTION

Redevelopment of the Property, that includes a complete demolition of all existing structures and construction of a new resort hotel with 122 hotel keys with resort related restaurant, retail, meeting space, and site improvements including surface parking, landscaping, lighting, and improvements to onsite and offsite infrastructure.

II. DEFINITIONS

"**Affiliate**" as applied to any person, means any person directly or indirectly controlling, controlled by, or under common control with, that person or spouse or children of such person, if such person is a natural person. For the purposes of this definition, (i) "control" (including with correlative meaning, the terms "controlling," "controlled by" and "under common control"), as applied to any person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of that person, whether through the beneficial ownership of voting securities, by contract or otherwise, and (ii) "person" means and includes natural persons, corporations, limited partnerships, general partnerships, joint stock companies, joint ventures, associations, limited liability companies, limited liability partnerships, limited liability limited partnerships, trusts, land trusts, business trusts or other organizations, whether or not legal entities.

"**Approval Date**" means the date on which both of the following have occurred (i) Ordinance No. 2020-09 is approved (i.e., voted on) by the Town Council of the Town of Paradise Valley, Arizona and (ii) signed by the Mayor.

"**Approved Plans**" means those certain plans and other documents certified by the Town Clerk that are listed in Section "IV," attached hereto and incorporated herein by this reference.

"**Applicable Laws**" means all federal, state, county, and local laws (statutory and common law), and ordinances, rules, regulations, permit requirements, and other requirements and official policies of the Town that apply to the development of the Property.

"**Development Agreement**" means that certain Development Agreement by, between, and among, the Town of Paradise Valley, Arizona, an Arizona municipal corporation, and Gentree, LLC, an Arizona limited liability company, adopted and entered into by the Town on _____, 2020, by Ordinance #2020-09.

"**Effective Date**" means the date on which all of the following have occurred: (i) this SUP has been adopted and approved by the Town Council, executed by duly authorized representatives of the Town and Owner, and recorded (if applicable) in the office of the Recorder of Maricopa County, Arizona;(ii) the Development Agreement (as defined herein) has been adopted and approved by the Town Council, executed by duly authorized representatives of the Town and Owner, and recorded (if applicable) in the office of the Recorder of Maricopa County, Arizona; and (iii) any applicable referendum period has expired without referral, or any proposed referendum has been declared invalid in a final non-appealable judgment by a court of competent jurisdiction, or this SUP has been approved by the voters at a referendum election conducted in accordance with Applicable Laws

"**Event Lawn**" means program letter E as shown on Sheet A8 of the Approved Plans.

"**Floor Area**" means the area under roof added to the floor area of any second and third story; provided, however that "Floor Area" also includes the horizontal solid portion(s) of trellises and/or open weave roofs, and all the horizontal solid portion of area under roof in accessory buildings such as gazebos, ramadas and other accessory buildings. Floor Area excludes the floor area of any fully subterranean portions of a building, any utility and/or storage facilities that are located subterraneously in order to avoid unsightly view from ground level, courtyard areas, and the portion of any roof overhangs which are not over useable exterior spaces. **[*Note: Square footage maximums for particular uses and the overall set of resort structures may need to be discussed, perhaps by adding a table for such. See Sheets A30 and A31 of the Approved Plans for a start.*]**

"**Gentree**" means Gentree, LLC, an Arizona limited liability company, its successors and assigns. An Owner may be an individual, corporation, partnership, limited liability company, trust, land trust, business trust or other organization, or similar entity, which in turn may be owned by individuals, shareholders, partners, members or benefitted parties under trust agreements, all of which may take any legal form, and may allocate interests in profits, loss, control or use.

"**Hotel Key**" means a Resort Hotel Unit, served by a single key, which is part of a Resort Hotel (as defined herein), designed and constructed with all furnishings, fixtures and equipment necessary to operate as a single unit for transient occupancy use as a part of such Resort Hotel. Each Hotel Key shall have at least one bathroom and a direct lockable connection from the exterior or a corridor. A Hotel Key may be located in a primary Resort Hotel structure (in a building that includes guest registration, reception and other allowed uses) or in any number of other buildings integrated or associated with such Resort Hotel through landscaping or otherwise. A Hotel Key may be interconnected with another Hotel Key unit through a lockable connection, so that more than one Hotel Key may be rented as a single unit.

"**Minimum Hotel Keys**" means the 122 Hotel Keys included as part of the Resort Hotel and owned by a single legal owner which also owns the Minimum Resort Hotel Improvements (as defined herein).

"**Minimum Resort Hotel Improvements**" means the minimum improvements included in the initial design and construction of the Resort Hotel and including not less than all of the following elements:

(a) The Minimum Hotel Keys.

(b) One (1) restaurant that provides full-service dinner, which together with food service areas, are collectively capable of serving three (3) daily meals, and as demand warrants, providing room service to the Minimum Hotel Keys.

(c) At least one (1) swimming pool.

(d) A designated reception area to accommodate guest check-in., concierge and cashier.

(e) A designated area to accommodate vehicle or passenger drop off (such as valet parking services) for Resort Hotel guests

"**Open Space Criteria**" means the following criteria related to the height and setback of buildings: No building shall penetrate an imaginary plane beginning at sixteen (16) feet above Original Natural Grade and twenty (20) feet from the exterior property lines of the Property, which plane slopes upward at a ratio of one (1) foot vertically for each five (5) feet horizontally measured perpendicular to the nearest exterior property line of the Property. This limitation shall apply until the maximum allowable height is reached, with the exception of portions of the third floor resort suites and pedestrian courtyard access as illustrated on Sheet A18 and Sheet A19 of Approved Plans. In event of conflict between the Open Space Criteria and the Approved Plans, the Approved Plans shall control.

"**Original Natural Grade**" is 1,310.5 feet above Mean Sea Level and is set forth on Sheet [XXXX] of the Approved Plans. **[*Note: discussion of natural grade may still be needed*. Sheet A69 and Sheet A87 provide some of this information.]**

"**Owner**" means Gentree, LLC, an Arizona Limited Liability Company, its successors and assigns. An Owner may be an individual, corporation, partnership, limited liability company, trust, land trust, business trust or other organization, or similar entity, which in turn may be owned by individuals, shareholders, partners, members or benefitted parties under trust agreements, all of which may take any legal form, and may allocate interests in profits, loss, control or use.

"**Party**" or "**Parties**" means the Town and Owner, or their successors or assigns.

"**Pavilion**" means program element D on Sheet A8 of the Approved Plans.

"**Property**" means the real property described in Exhibit "A" to Ordinance #2020-__.

"**Resort**" means the entire Property and all facilities and other improvements existing, developed or redeveloped and used or useful on the Property in general conformance with the Approved Plans and/or these Stipulations.

"**Resort Hotel**" means the Resort Hotel designated as such and which includes the Minimum Resort Hotel Improvements and not less than **[Insert square footage]** square feet of Floor Area. The Resort Hotel shall be owned by a single legal Owner. **[*Note: Square footage minimums for the "Hotel" will need to be discussed. See Sheets A30 and A31 of the Approved Plans*.]**

"**Resort Ancillary Facilities and Uses**" means all facilities and uses related or incidental to the operation of a resort or resort hotel and not as an independent business or operational unit, including specifically: restaurants, ground floor bars and lounges; fitness facilities; indoor and outdoor meeting, convention, display, exhibit, wedding and social function facilities; sale of food and alcohol (for on or off site consumption); catering facilities; outdoor cooking facilities; outdoor dining facilities; gourmet food shops (offering any combination of cooked, frozen, fresh, prepared or pre-packaged foods, beer, wines, liquors, gifts, fresh fruits and vegetables, groceries, sundries, cosmetics, over the counter pharmaceuticals, house wares, and related kitchen, indoor and/or outdoor dining items); deli, coffee, tea, ice cream, yogurt and similar shops or sales; snack bars; central plant, maintenance shop, engineering facilities, housekeeping facilities, laundry, storage and support facilities; valet and other parking facilities; gift and sundries shops; flower sales; art and art galleries; jewelry and jewelry shops; fashion eyewear, footwear and apparel sales; sale of hotel items such as furniture, bedding, art, toiletries; other resort retail; tour and other off-site activity offices; administrative, support and other resort offices including temporary offices and facilities for construction, sales, marketing, and design; indoor and outdoor entertainment facilities; ramadas; pools; cabanas; tents; amenities, recreational facilities and fitness facilities. Any such use or facility may be within any Resort Hotel or separate building(s) including individually or grouped in one or more buildings or facilities. **[*Note: Commission discussion needed on each of the uses starting with flower sales; more details may be needed on the plans for some of the uses and some of the uses may need to be restricted to certain locations or buildings shown on the Approved Plans*.]**

"**Resort Guest Amenity**" means that third-story portion of the Resort Hotel on Sheet A21 of the Approved Plans.

"**Resort Hotel Manager**" means the Owner of the Resort Hotel, including any Affiliate thereof or an experienced professional third-party hotel management company. If any Resort Hotel Manager is not the Owner of the Resort Hotel (or an affiliate of such Owner), it shall initially be a hotel management company which has not less than five (5) years' experience managing full service hotels or resorts or which currently manages not fewer than five (5) full service hotels or resorts.

"**Resort Hotel Owner**" means the single legal owner of the Resort Hotel.

"**ROW**" means Right-of-Way

"**Special Use Permit**" or "SUP-18-05" or "SUP" shall mean this special use permit as approved by Town Ordinance #2020-__.

"**Special Use Permit Guidelines**" means special use permit guidelines adopted by the Town and in effect as of the Approval Date.

"**Third Party**" means, with respect to a good faith transaction, any individual or entity other than a Party, an Affiliate of any Party, a principal of a Party or an Affiliate of a principal of any Party, and a spouse, parent, child of a principal of a Party or of an Affiliate of any Party.

"**Town**" means the Town of Paradise Valley and its processes as regulated by its codes and ordinances.

"**Town Manager**" means the Town Manager or their designee.

"**Visually Significant Corridors Master Plan**" means the Master Plan approved by the Town Council dated October 2018.

"**Zoning Ordinance**" means the Town's zoning ordinance in effect as of the Approval Date.

III. STIPULATIONS

A. GENERAL

1. In the event of a conflict between these Stipulations and the Approved Plans, these Stipulations shall govern.

2. This Special Use Permit, as it may be amended or superseded from time to time, shall run with the land (i.e., the Property and each part thereof) and any person having or subsequently acquiring title to the Property shall be subject to this Special Use Permit. Once an Owner no longer owns a portion of the Property, such prior Owner shall no longer be subject to this Special Use Permit with respect to such portion of the Property no longer owned, but the then-current Owner shall be subject to this Special Use Permit.

3. If any portion of the Resort is used in violation of the terms of this Special Use Permit, the Town may, after fair notice, a hearing and a reasonable opportunity to correct, impose a monetary sanction on the then Owner of such portion, in an amount not to exceed the maximum amount allowed for violations of the Town Zoning Ordinance for each day such violation exists, in addition to all other orders or sanctions permitted by applicable laws. No such remedy shall be applied to any other Owner or portion of the Resort that is not in violation of this Special Use Permit.

4. The use of the Property shall at all times conform to all applicable State laws and Town ordinances, except that if there is a conflict between this Special Use Permit and any Town ordinance or other Town requirement, the terms of Stipulations 9 and 10 shall be applied to resolve any such conflict.

5. The redevelopment of, and construction on, the Property shall, subject to these Stipulations, substantially conform to the intent of the Approved Plans. Each of the Approved Plans is hereby incorporated into this Special Use Permit and made an integral part hereof.

6. A mylar and electronic version of the Approved Plans shall be submitted to the Town within sixty (60) days after the Approval Date.

7. Nothing in this Special Use Permit or otherwise shall require the operation of the Resort under the name "Smoke Tree," "Smoke Tree Resort" or any similar or other name. No further consent shall be required to enable the Owner to transfer all or any portion of the Resort, name or rename the Resort, or select or reselect brands or management companies of the Resort; and further provided that the Property shall be subject to this SUP notwithstanding any such transfer.

8. If any section, subsection, sentence, clause or phrase of this Special Use Permit is for any reason held invalid or unenforceable in a final, non-appealable judgment of any court of competent jurisdiction, such decision shall not affect the validity or enforceability of the remaining portions of this Special Use Permit.

9. The Town Manager's approval or determination is provided for in several instances in these Stipulations. The Town Manager shall base his or her approval on standards and criteria set forth in this Special Use Permit, the Town Code, and the Zoning Ordinance, as reasonably applicable, with the intent to implement the viable development of the Resort as provided in this Special Use Permit. Recognizing that the final design and building permit process for which any particular approval of the Town Manager is sought involves multiple stages, including conceptual, schematic, design development and construction documents, an Owner may seek the approval of the Town Manager in writing at one or more stages of such design. Notwithstanding the foregoing, no construction may occur with respect to any particular element or structure until necessary permits for that element or structure are issued.

10. Although the Parties intend that this Special Use Permit, the Development Agreement, Zoning Ordinance, and the Town Code state a consistent relationship between them, the Parties agree that in the event of a conflict between these documents that the order of priority shall be the (1) the Special Use Permit, (2) the Development Agreement, (3) Zoning Ordinance, and (4) Town Code and agree that the higher priority document shall control. Unless otherwise stipulated in this Special Use Permit, amendments to this Special Use Permit shall follow the appropriate process outlined in Article XI, Special Uses and Additional Use Regulations, of the Town Zoning Ordinance, as amended.

B. CONSTRUCTION AND DEVELOPMENT STANDARDS

11. A schedule for demolition of the vertical portions of certain existing improvements shall be provided by the Owner.

12. All permanent public utilities within the Resort shall be underground (excluding certain equipment that is typically installed above ground which shall be appropriately screened, such as transformers, meters, and other equipment) and located within appropriate easements. Screening shall meet utility company requirements and Visually Significant Corridor Master Plan requirements. The Town Manager may, from time to time, require the granting of such easements to utility companies as deemed reasonably appropriate by entities providing utilities benefitting the Resort that are not covered by easements identified in the Approved Plans or in the ROW dedications. Sewage shall be disposed of by connection with an upsized sewer connection to the Town of Paradise Valley's sewage facilities. All new water and sewage facilities shall be constructed in accordance with plans approved by the Town Manager or designee.

13. It is anticipated that construction on, and redevelopment of, the Property will be conducted in phases. No construction permit shall be issued for any phase of construction on the Property until appropriate engineering or architectural plans are submitted to the Town and the issuance of such construction permit for that particular activity is approved by the Town. Submitted plans shall be required to meet the building code most recently adopted by the Town.

14. During any period of demolition and initial new construction of one or more phases within the Resort, temporary curb cuts (driveways) may be allowed on Lincoln Drive and Quail Run Road to allow construction access to the Property; provided that such temporary curb cuts and their location shall first be approved by the Town Manager and coordinated with the Town's Capital Improvement Project known as the Lincoln Drive Roadway Improvements. Temporary construction driveway locations are subject to compliance with Storm Water Pollution

Prevention Plan Best Management Practices and the review and approval by the Town. **[Note: Revise to address curb cut onto Lincoln Drive and timing of first lift of asphalt]**

15. All new construction shall satisfy all fire department requirements for each component of work (which may include temporary fire protection facilities) prior to the issuance of any building permit for such work.

16. Prior to the issuance of a certificate of occupancy for any individual structure, adequate fire, emergency and other vehicle access and adequate fire service shall be provided for such structure and the particular phase of development in which such structure is located, as determined by the Town Manager.

17. Owner(s) shall submit a construction phasing schedule prior to the issuance of any building permit for a particular new structure to ensure compliance with all Town ordinances and in order to minimize construction nuisances. This schedule may encompass the building of multiple new structures within a particular phase and may be modified or amended from time to time. This construction/phasing schedule shall provide information on the following:

    a. Dust and noise control measures

    b. Vehicle/equipment storage/parking

    c. Construction days/hours

    d. The general location of the following elements, which may be relocated from time to time:

        i. Location(s) of a staging area(s) for construction supplies/equipment

        ii. Location of any construction trailer(s) and/or sanitary facility(ies)

        iii. Location of onsite construction materials/debris storage

        iv. Location of fire lanes during the construction period

    e. The approximate beginning and ending for construction of structures within a phase

18. During the period of demolition or construction of new improvements, signs shall be posted on the Property (or at the entrance to a particular phase) in conformance with the Town construction sign regulations.

19. As a pre-requisite to obtaining a building permit for a particular phase of development, the Owner must demonstrate the existence of adequate perimeter screening for such phase prior to construction. For purposes of this requirement, adequate screening shall consist of an existing oleander hedge or a six (6) foot chain link fence with an approved screen material. No project or contractor signage shall be displayed on such fencing.

20. During demolition, site grading, and the initial construction of other onsite or offsite improvements, Owner(s) shall coordinate the sweeping of Lincoln Drive and the paved portion of Quail Run Road adjacent to the Property to remove construction-related dirt and debris, as reasonably required by the Town.

21. The precise location and/or required screening of any backflow preventer or other similar equipment to the extent same would be visible from Lincoln Drive or Quail Run Road shall be approved by the Town.

22. One permanent curb cut on Lincoln Drive east of Quail Run Road is permitted, and requires a deceleration lane, which shall be installed by Owner. The final location of the permanent curb cut shall be as indicated on the Approved Plans, Sheet **[Note: To be provided by the applicant]**.

23. The Owner shall arrange for construction phasing within any particular phase in the following sequence:

    a. Commence native plant salvage, (for those plant materials required to be salvaged pursuant to Town Code §5-8-4 and deemed by a Native Plant Preservation Plan to be certain to survive and worthy of salvage), dust and erosion control measures, job-site mobilization and set-up, and the like.

    b. Upon completion of the salvage, commence horizontal or civil improvements and site work within such phase, including appropriate erosion and dust control.

    c. Upon or prior to substantial completion of the civil improvements and site work as reasonably necessary to commence perimeter walls and landscaping for such phase, including areas immediately adjoining such phase, the perimeter landscape plan(s) shall be submitted, reviewed and approved by the Town Manager. Installation of perimeter landscaping shall not be required to commence until adjacent site or structure improvements are sufficiently complete such that additional work will not harm the proposed landscape elements. Perimeter landscaping is landscaping between adjacent edge of roadway

and any proposed perimeter structure or parking area on the Property.

d. Any required deceleration lanes on Lincoln Drive or curb cuts on Lincoln Drive, may be scheduled independently of the foregoing. **[Note: may need to be done first]**

e. The Owner shall, at all times during construction, provide Quail Run access of at least fourteen (14) feet in width from Lincoln Drive to the southern Property line.

24. Building architecture shall be as shown on the Approved Plans. Changes to the architectural style shall only be made by an approved Special Use Permit (SUP) amendment.

25. The surfaces and colors of all roofs shall have a Light Reflective Value at or less than fifty percent (50%).

26. All mechanical equipment shall be screened so that it is not visible from adjoining properties not a part of this Special Use Permit and from adjoining public rights-of-way. Mechanical equipment and mechanical equipment screens shall be included in the total height of any structure to which they are attached. If applicable, mechanical screening may provide the necessary noise attenuation for any mechanical equipment. All mechanical equipment, along with any screens used for attenuation of noise, shall comply with the allowable noise levels defined in the Town's noise ordinance. Noise measurement shall include any installed screening or other attenuation devices.

27. Screening of backflow preventers, electric transformers, generators, or other similar equipment (all herein further referred to as “Visually Unappealing Improvements”) visible from off the Property shall be located so as to minimize its visual impact and screened from public view, all of which must first be approved by the Town prior to approval of construction of any such Visually Unappealing Improvements.

C. ALLOWED USES

28. The Property may be developed to include the Resort Hotel, and the Resort Ancillary Facilities and Uses. The Property may be developed and redeveloped in one or more phases from time to time in multiple buildings or structures of various height and character, subject to these stipulations. Facilities or structures initially developed for a particular use may be converted or reused from time to time for other allowed uses provided that all other requirements of these stipulations are still met. Not later than one (1) year after the Effective Date, Owner shall submit to the Town a schedule of development stating when vertical construction of the Resort Hotel will commence. The schedule of development in the preceding sentence may be extended if Owner, in its

sole discretion, gives written notice to the Town stating the length of the extension. Any single extension shall not exceed three (3) months. Owner may give multiple notices of extension. **[*Note: a more specific construction schedule should be supplied, if possible. This may be an issue to be specified in the DA, particularly for the deceleration lane and sidewalk on Lincoln Drive construction timing*.]**

29. The Resort Hotel may be constructed in one (1) or more buildings on the Property provided all such buildings must have an integrated theme and share design cohesiveness, including architecture, signage, pedestrian and service vehicle connections to the primary Resort Hotel structure (the structure which includes guest reception and registration). Facilities located on the Property which also provide function or service for the Resort Hotel such as fitness, restaurant, locker rooms, meeting rooms, offices, and storage shall be included in the Floor Area calculation.

30. Walls and fences shall be constructed in accordance with the Approved Plans. In the event of a conflict between the Approved Plans and Article XXIV of the Town Zoning Ordinance, the Approved Pans shall control. If a modification to a wall or fence shown on the Approved Plans is needed, the Town Manager may approve such modification administratively. Said wall shall also meet the thirty-three (33) foot corner vision criteria as approved by the Town Engineer. **[*Note: process to modify walls may need more discussion*.]**

31. The maximum hours of public operation of the following specific uses/facilities shall be as set forth below:

    a. Vendor deliveries (generally): Vender deliveries (generally), trash pickups, or other noise generating outside services involving mechanical equipment, including large commercial trucks, shall be allowed to operate between 7:00 a.m. to 7:00 p.m. US Mail, private courier services such as UPS or FedEx, and emergency deliveries: at any time.

    b. Pools, spas and jacuzzis (except pools, spas and jacuzzis located indoors or in enclosed private yards including yards for the luxury suites, if any, which may be used 24 hours/day): 6:00 a.m. to midnight.

    c. Restaurants and other food service facilities: 6:00 a.m. to 2:00 a.m.

    d. Bars/lounges: 10:00 a.m. to 2:30 a.m.

    e. Banquet facilities, receptions, weddings and socials: 6:00 a.m. to 2:00 a.m.

f. Resort retail: 7:00 a.m. to midnight

g. Room service: 24 hours/day

h. Guest reception and guest services, including up to 100 square feet of retail for guest purchases: 24 hours/day

j. Parking facilities: 24 hours/day

k. Fitness facilities: 24 hours/day and for use only by guests of the Resort. Refer to Stipulation 32 for additional provisions.

l. Trash pickup: 7:00 a.m. to 7:00 p.m.

m. Outdoor venues, events, or functions with music and/or amplified sound shall comply with the allowable noise levels as defined by the Town's noise ordinance, as may be amended.

32. The third floor Resort Guest Amenity shall be limited to the uses outlined on Sheet A21 of the Approved Plans:

a. These uses are:

i. Area A – Communal Amenity

ii. Area B – Enclosed Terrace

iii. Area C – Exterior Terrace

iv. Area D – Restrooms/Storage

v. Area E – Third Floor Lobby

vi. Area F- Kitchenette and Wet Bar **[Note: Further discussion needed on this use since it was understood at the July meeting that no alcohol would be served or consumed on the Third Floor Amenity]**

vii. Area G – Fitness Corner

viii. Area H – Key Card Access Only

b. There shall be no alcohol served or consumed on the Third Floor Amenity. **[*Note: update here or on Sheet A21 with the specific uses and square footage for each use in the Resort Guest Amenity area.*]**

c. No meals shall be produced in this area.

d. Afterhours access shall not be permitted.

e. No speakers or amplified music shall be allowed in accordance with Stipulation 35 below.

[Note: Additional stipulations may be warranted or discussed]

33. Only storage is allowable in the areas identified as "Back of House for the Resort" in buildings shown as "H" and "I" on Sheet A8, being the market and coffee shop.

D. CONTROL OF EXCESSIVE NOISE

34. Outdoor venues, events, or functions with music and/or amplified sound shall comply with the allowable noise levels as defined by the Town's noise ordinance, as may be amended.

35. **[*Note: Stipulation related to acoustical study to follow*.]**

36. No outdoor speakers or amplified music will be permitted on the third floor Resort Guest Amenity. The third floor Resort Guest Amenity shall comply with the allowable noise levels as defined by the Town's noise ordinance, as may be amended. All exterior doors on the third floor Resort Guest Amenity shall be closed not later than 10:00 p.m.

E. HEIGHT AND HEIGHT MESUREMENT

37. The maximum height of the structures shall not exceed thirty-six (36) feet above Original Natural Grade which is 1,310.5 feet above Mean Sea Level. The maximum height of the structures will conform to the Approved Plans. **[*Note: See prior note on ONG in the definition section*.]**

F. RIGHT-OF-WAY, PARKING & CIRCULATION

[Note: The approval will also include a development agreement for review and approval by the Town Council. This development agreement will address financial assurance/bond for the improvements in the right-of-way, other matters pertaining to the right-of-way, among other items].

38. The Owner shall execute one or more fee simple dedication(s) in favor of the Town, which shall serve to provide a total right-of-way width of forty-five and one-half feet (45.5') to the Town, as measured from the centerline of Lincoln Drive ROW adjoining the Property (the "Lincoln Drive Dedication"), for public purposes including, but not limited to: landscaping, travel lanes, sidewalk, utilities, and associated public roadway improvements (the "Public Improvements") on Lincoln Drive. The terms and timing of the fee simple dedications shall be as more fully provided in the Development Agreement.

39. The Owner shall execute one or more dedication(s) in favor of the Town, which shall serve to provide a total right-of-way of twenty-five (25) feet to the Town; as measured from the centerline of Quail Run Road adjoining the Property (the "Quail Run Road Dedication"), for public purposes including, but not limited to, landscaping, travel lanes, sidewalk, utilities, and associated public roadway improvements (the "Public Improvements") on Quail Run Road. The terms and timing of the fee simple dedications shall be as more fully provided in the Development Agreement.

40. The Owner shall grant one or more easements to the Town for the purpose of establishing the Town's ability to construct the traffic signal at the intersection of Quail Run Road and Lincoln Drive (the "Roadway Easement Dedication") and the sidewalk improvements shown on the Approved Plans, Sheet **[Note: Sheet to be provided by the applicant]**. The terms and timing of the easement dedications shall be as more fully provided in the Development Agreement.

41. The dedication(s) and easement(s) shall be recorded with the Maricopa County Recorder, Maricopa County, Arizona, pursuant to the terms specified in the Development Agreement.

42. No above ground structures shall be placed in any Right-of-Way, except for any approved Town monument and/or Town directional sign(s), utilities, and any other approved structures or uses allowed by this Special Use Permit. Structures placed in the ROW may be subject to an encroachment permit or otherwise be maintained and insured by the Owner of the Resort.

43. The minimum parking space size shall be 180 square feet as defined in Article II, Definitions, of the Town Zoning Ordinance. However, the Approved Plans identify 9-foot by 18-foot parking spaces with a two-foot overhang in the adjoining landscape area (which meets the 180 square-foot requirement). Accordingly, this two-foot landscape or walkway area shall, in perpetuity, be kept and maintained clear of structures or plant material that may restrict the parking of a vehicle within this two-foot landscape area or walkway area.

44. Unlicensed support vehicles (that is, golf carts, utility vehicles, etc.) may be used to service the Resort but such support vehicles shall not park on public streets.

45. Any parking provided or required under this Special Use Permit shall comply with the parking studies that have been reviewed and approved by the Town Engineer, as identified on the Approved Plans. This includes the permanent retention of the minimum parking spaces required by such parking studies. Parking spaces allowed as specified on the Approved Plans, Sheet A8, shall be appropriately screened by a wall or landscaping to minimize the amount of vehicle headlight trespass off the property.
[Note: Additional modification is necessary, identify minimum parking count and Add language for parking management plan to address valet operations and large events that exceed valet plan parking]

46. Buses and other vehicles may be used to shuttle guests or employees to or from areas not located on the Resort, and between the Resort and other destinations (e.g., airport, shopping facilities, golf courses, etc.). All parking on any public street by any Resort guest, any Owner or their guests, employees of the Resort, any invitee of any Owner, any occupant of any portion of the Resort or any parking service provider is prohibited. Any agreement which allows any person to use the Resort for any purpose shall contain an acknowledgment that parking on any public street is prohibited.

47. At any time when the parking demand within the Resort is expected to exceed onsite capacity, the Owners of the affected areas shall initiate a parking management plan which may include valet parking or offsite parking arrangements (but not the use of parking on any public street within the Town). The Pavilion and Event Lawn may not be booked for separate events and no events shall be booked that exceed the capacity of each individual venue. **[*Note: need to confirm in this stipulation or in the Approved Plans that Smoke Tree provided the capacity of the Pavilion and Event Lawn and discuss any time periods the Resort must use the valet plan*.]**

48. All designated fire lanes shall maintain a vertical clearance of fourteen (14) feet above actual finished grade and a horizontal clearance of twenty (20) feet to allow passage of emergency vehicles and must meet all Arizona Department of Transportation standards.

G. SIGNAGE

49. All signs shall be in accordance with the Approved Plans, with illumination compliant with Article XXV, Signs, of the Town Zoning Ordinance and the Special Use Permit Guidelines. **[*Note: Need to confirm that coffee shop and market building signage is only internal as discussed at prior Commission Meeting. Sign plan Sheet 62 and Sheet 63 may need to be updated*.]**

50. With the exception of the monument signs on Sheet A25 and Sheet A26, there shall be no outward facing signage which is visible from the street or adjoining properties.

51. New internal directional or wayfinding signs shall comply with the Special Use Permit (SUP) Guidelines and are subject to Town Manager review and approval.

52. Other than as specified in the terms of the roadway easement documents, no above ground structures shall be placed in the roadway easement except approved monument signs and any other approved structures allowed by this Special Use Permit.

53. Market, coffee shop, and other ancillary signage intended for resort guests in order to minimize and manage parking is permissible, provided it is not visible from off the property and is subject to Town Manager review and approval. **[Note: May require revisions]**

54. All other signage which is not shown on the Approved Plan and noted in Section G of the Special Use Permit, shall be governed by the applicable Town Ordinances and is subject to the Special Use Amendment process outlined in Article XI of the Town Zoning Ordinance.

H. LIGHTING

55. All outdoor lighting shall be in compliance with the Approved Plans, including the wattage and color of each lighting fixture. In the event the Approved Plans are not clear, such lighting shall meet the Special Use Permit Guidelines, as such may be amended from time to time.

56. Unless otherwise included in the Approved Plans, lamps, lighting, or illumination devices within an outdoor light fixture shall be screened so as to not be directly visible from outside the Property. If the Town receives a complaint from an offsite owner that a lamp or lighting or illumination device within an outdoor light fixture is visible from outside the Property, the Town Manager or designee may inspect the Property and require the Owner to shield such lighting fixture if the Town Manager or designee determines that the light emitting element is visible from outside the Property.

57. Palm tree ring lighting (fixture type TR) shall be limited to a maximum height of 16 feet tall. The lights shall be directed downward (with no up lighting of the trees).

58. Landscape lighting (fixture type GU) and bollard lighting (fixture type BL) which are located in the right-of-way are the responsibility of the Owner. The Owner assumes all liability associated with the light fixtures located in the right-of-way and must receive an encroachment permit from the Town in a form acceptable to the Town Engineer and Town Attorney.

I. LANDSCAPING

59. Landscaping on the Property shall be in substantial compliance with the Approved Plans.

60. All landscaping that dies shall be replaced in a reasonable amount of time, be in general compliance with the approved landscape plan of the Approved Plans, and use material that are on the Approved Plans.

61. Perimeter landscaping plans (i.e., for those areas between the back of curb and adjacent structures of parking areas) shall be as shown on the Approved Plans, Sheet **[Note: Applicant needs to add sheet number to the landscape plans]**.

J. TEMPORARY USES

62. Temporary event tents may be erected on the Event Lawn Area of the Property in accordance with the Town Code Special Event Permit requirements (Chapter 8). No event tent shall be higher than twenty-four (24) feet above the finished grade of the Event Lawn or closer to any exterior property line than the minimum setbacks shown for a twenty-four (24) foot height building. Placement of event tents shall have no material adverse impact on parking or circulation on site. Temporary event tents or structures shall not be allowed for more than fourteen (14) consecutive days unless located interior to the site, in which case if the Town issues a Tent Permit that runs consecutive to an existing Tent Permit, the event tent or structure will be allowed to remain in place for longer than fourteen (14) consecutive days. Notwithstanding the foregoing, no temporary event tent or structure shall remain in place for more than thirty (30) consecutive days. Temporary event tents are required to receive a Tent Permit from the Town.

K. CELLULAR ANTENNAS

63. Cellular and other wireless transmission antennas are permitted, provided that they comply with this Special Use Permit and all applicable Town ordinances, specifically including the current requirement to obtain a conditional use permit. Any cellular antennas shall be designed as integrated architectural features within the structures on the Property and any screening shall be in the same finish and color as the structure on which it is located. There shall be no unscreened projections of cellular antennas on any building above the roofline. Any lease agreement with a wireless operator will specifically allow entry by the Town and its agent for the purpose of inspection and compliance with Town ordinances and will require compliance with Article XII of the Town Zoning Ordinance.

L. MANAGEMENT - MAINTENANCE

64. There shall be at least one (1) person designated by the Resort at all times who has been thoroughly briefed on the provisions of this Special Use Permit and who has the authority to resolve, or to refer to others for resolution, all problems related to compliance with this Special Use Permit. All calls from Town residents to the Town or Resort regarding noise or disturbances shall be referred to and addressed by such person(s). The name and contact information for the property manager to be provided to the Town's Community Development Department Director, or designee prior to the issuance of a certificate of completion, and to then be updated within ten (10) days after any property manager change is made. Maintenance of the Resort in general and all common areas specifically, shall be coordinated through a single unified management entity, which may be the Resort Hotel Owner.

65. All exterior portions of all structures and all driveways, parking areas, landscaping, walls, and lighting shall be kept and maintained in good condition and repair.

66. Interiors of the building on the Property may be remodeled at any time without an amendment to the Special Use Permit so long as the other aspects of the Property remain in substantial compliance with the Ordinance and the Approved Plans, and all applicable building permits are obtained.

67. Use of outdoor space by employees for activities such as smoking may create unintended nuisances for persons on adjoining properties. This type of activity shall be permitted at the location proposed on the Approved Plans. **[Note: Areas to be defined or clarified]**

68. Except as approved as part of a building permit application and during construction periods, no storage of outdoor materials is permitted on the Property that can be seen off site.

M. CONDITIONAL APPROVAL

69. This SUP shall be effective as of the Effective Date if, but only if, approved by the Town Council. After this SUP is recorded, if this SUP does not become effective within 365 days or if it is no longer effective, then the Town shall promptly record a notice that this SUP did not become or is no longer effective.

IV. APPROVED PLANS

The following plans and documents apply to the Property. In the case of discrepancies between Approved Plans, those with a later date shall take precedence. In the case of discrepancies between Approved Plans and Stipulations, the Stipulations shall take precedence as specified in Section III.A.1.

[Note: Need to update plans before public hearing meeting]

(SUP 18-05)	1. Smoke Tree Resort Major Amendment Application Booklet dated [XXXX]. 2. Existing Topographic Survey and Original Natural Grade Exhibit dated February 22, 2019. 3. Smoke Tree Resort Traffic Impact Analysis, prepared by CivTech, sealed by Dawn Cartier on [XXXX]. 4. Parking Study for Smoke Tree Resort, prepared by CivTech, sealed by Dawn Cartier on [XXXX]. **[*Note: this may need to change to the Walker Consultants shared parking memo which utilizes the ULI parking model*.]** 5. Water Service Impact Study for Smoke Tree Resort by CVL Sealed by Cassandra Alejandro on [XXXX]. 6. Wastewater Capacity Study for Smoke Tree Resort by CVL Sealed by Cassandra Alejandro [XXXX]. 7. Preliminary Drainage Report for Smoke Tree Resort by CVL Sealed by Oscar Garcia on [XXXX].

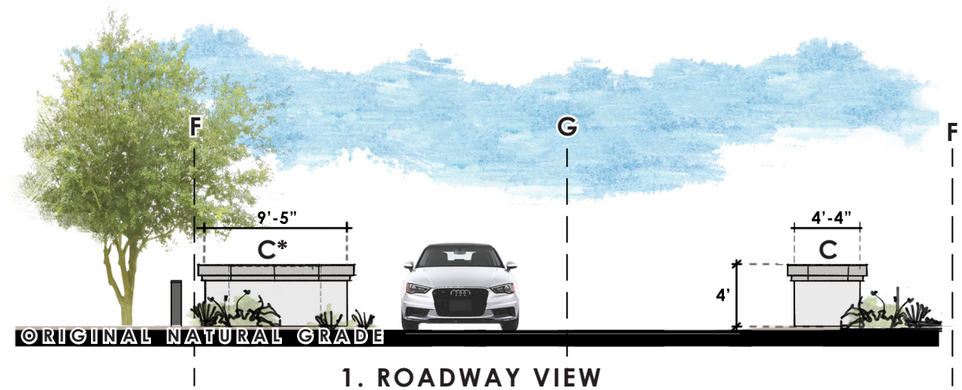
N

KEY MAP - NOT TO SCALE

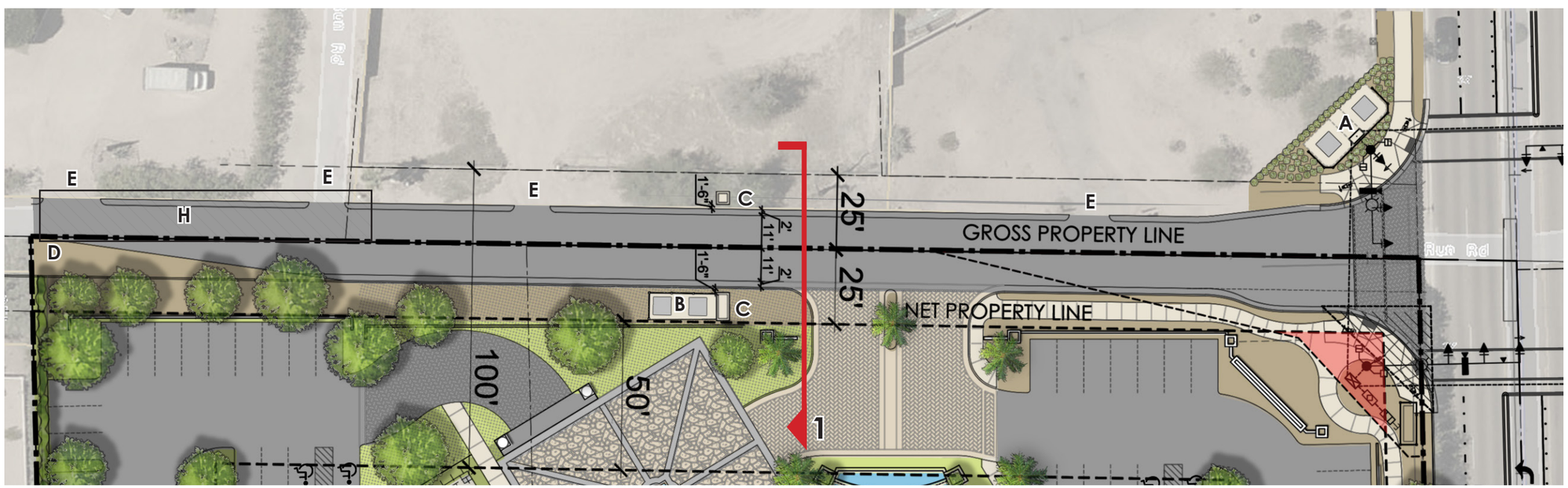
PROGRAM:

A APS cabinets re-location Option 1
B APS cabinets re-location Option 2
C Monument located minimum 1' from curb edge.
D Gravel roadway area
E New concrete curb return into ROW to existing private drive.
F Property Line
G Centerline of Roadway
H Private Roadway, Existing Conditions to remain.

* APS cabinet behind monument shown in dashed line. Exact sizing of APS cabinet to be determined.



1. ROADWAY VIEW
scale: 1" = 10'-0"



N

ENLARGED ROADWAY PLAN (shown rotated)
scale: 1" = 40'-0"

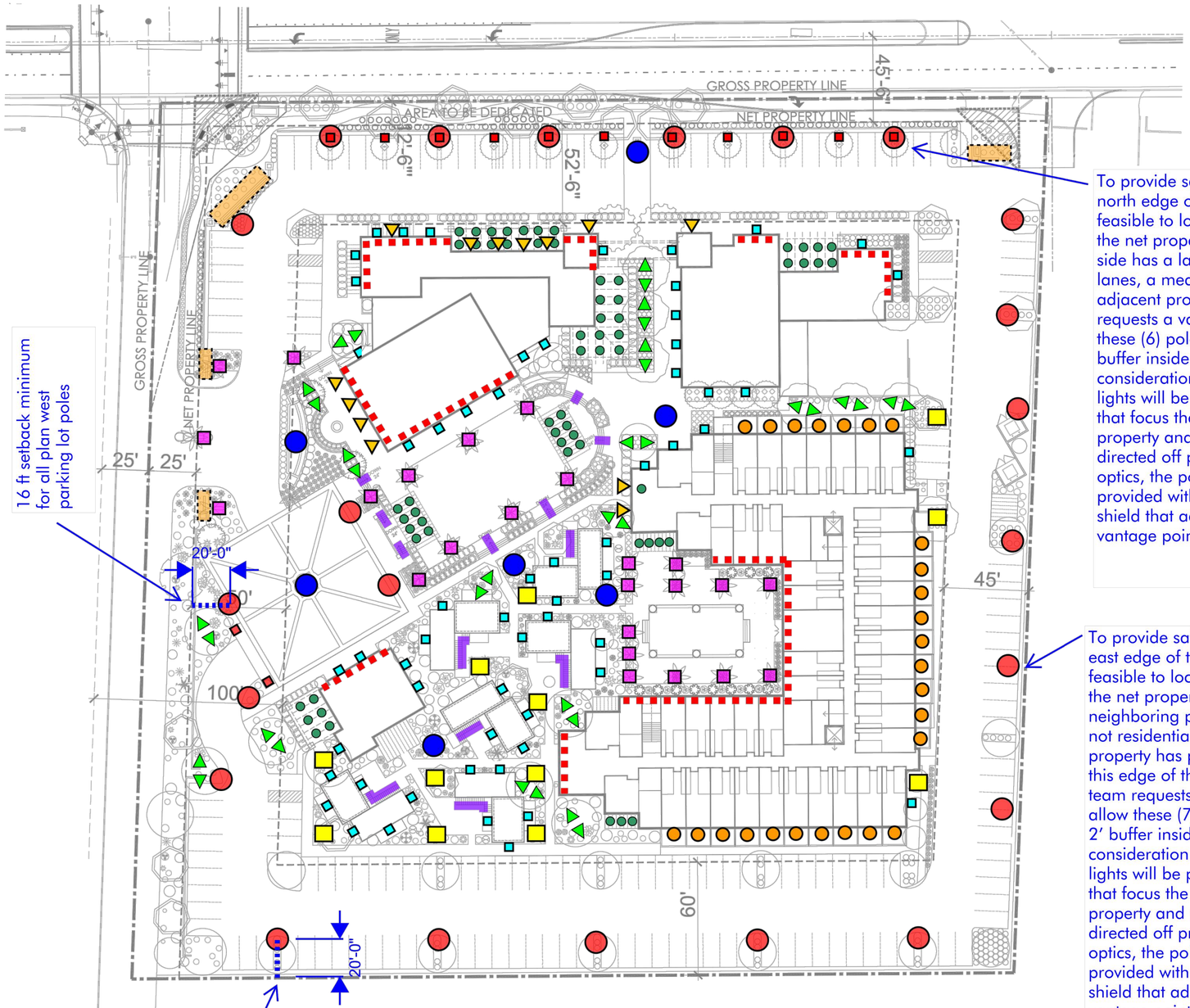
PHX ARCHITECTURE
GREEY|PICKETT
BEUS GILBERT
CREATIVE DESIGNS IN LIGHTING
CVL CONSULTANTS
GH

QUAIL RUN ROAD ROADWAY EXHIBIT

The Smoke Tree Resort
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

SEP 6, 2019
11 x 17 format
ADDED
AUG 24, 2020

GROUND LEVEL LIGHTING



To provide safe levels of lighting on the north edge of the property, it may not be feasible to locate the pole lights 16' from the net property line. Note that the north side has a landscape buffer, 4 traffic lanes, a median, and wall between adjacent property. The design team requests a variance to the code to allow these (6) poles to be placed in the 2' buffer inside the property line. In consideration of this request, all pole lights will be provided with fixture optics that focus the light to aim onto our property and minimize light being directed off property. In addition to the optics, the pole fixtures will also be provided with a physical house-side shield that additionally block glare from vantage points off property.

To provide safe levels of lighting on the east edge of the property, it may not be feasible to locate the pole lights 16' from the net property line. Note that the neighboring property on the east side is not residential and that this commercial property has parking and drive lanes at this edge of their property. The design team requests a variance to the code to allow these (7) poles to be placed in the 2' buffer inside the property line. In consideration of this request, all pole lights will be provided with fixture optics that focus the light to aim onto our property and minimize light being directed off property. In addition to the optics, the pole fixtures will also be provided with a physical house-side shield that additionally block glare from vantage points off property.

TYPE BL
Symmetric bollard fixture for way-finding

TYPE GU
Ground mounted landscape fixture for accenting select trees

TYPE HR
Handrail mounted puck LED lights for safe stair lighting

TYPE LU
Flush-to-grade fixture to uplig landscape, pots, and key architecture, **max 250 lumen**

TYPE LT
Adjustable accent light trellis mounted and concealed from most vantage points

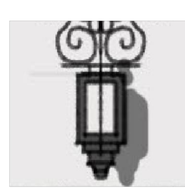
TYPE SA
Post-top thematic pole,
16' max pole height
(dark sky friendly with house-side shield & optics)

TYPE TR
Palm tree ring for grazing down sides of textured tree,
16' max mounting height

TYPE WP
Thematic wall sconce for ambient illumination & way-finding

TYPE WS
Decorative wall sconce for patios (dark sky friendly)

Custom backlit signage, light source completely shielded with no footcandle impact on ground, **2700K**



Custom decorative fixture with semi-opaque glass panels to obscure light source, **max 250 lumens**

Submersible fixtures in water features by water feature consultant

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

CREATIVE DESIGNS IN LIGHTING

15982 N. 78th St. Suite A
Scottsdale, Arizona 85260

602.248.7822
design@cdltg.com
www.cdltg.com

1978 **41** 2019
years of architectural lighting design

SMOKE TREE RESORT
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

This drawing is an instrument of service and the property of Creative Designs In Lighting and shall remain their property. The use of this drawing shall be restricted to the original site for which it was prepared and publication thereof is expressly limited to such use. Reuse, reproduction or publication by any method in whole or in part is prohibited without their written consent.

REVISIONS

DATE
08.24.2020

SCALE
NTS

PROJECT NUMBER
116325-19

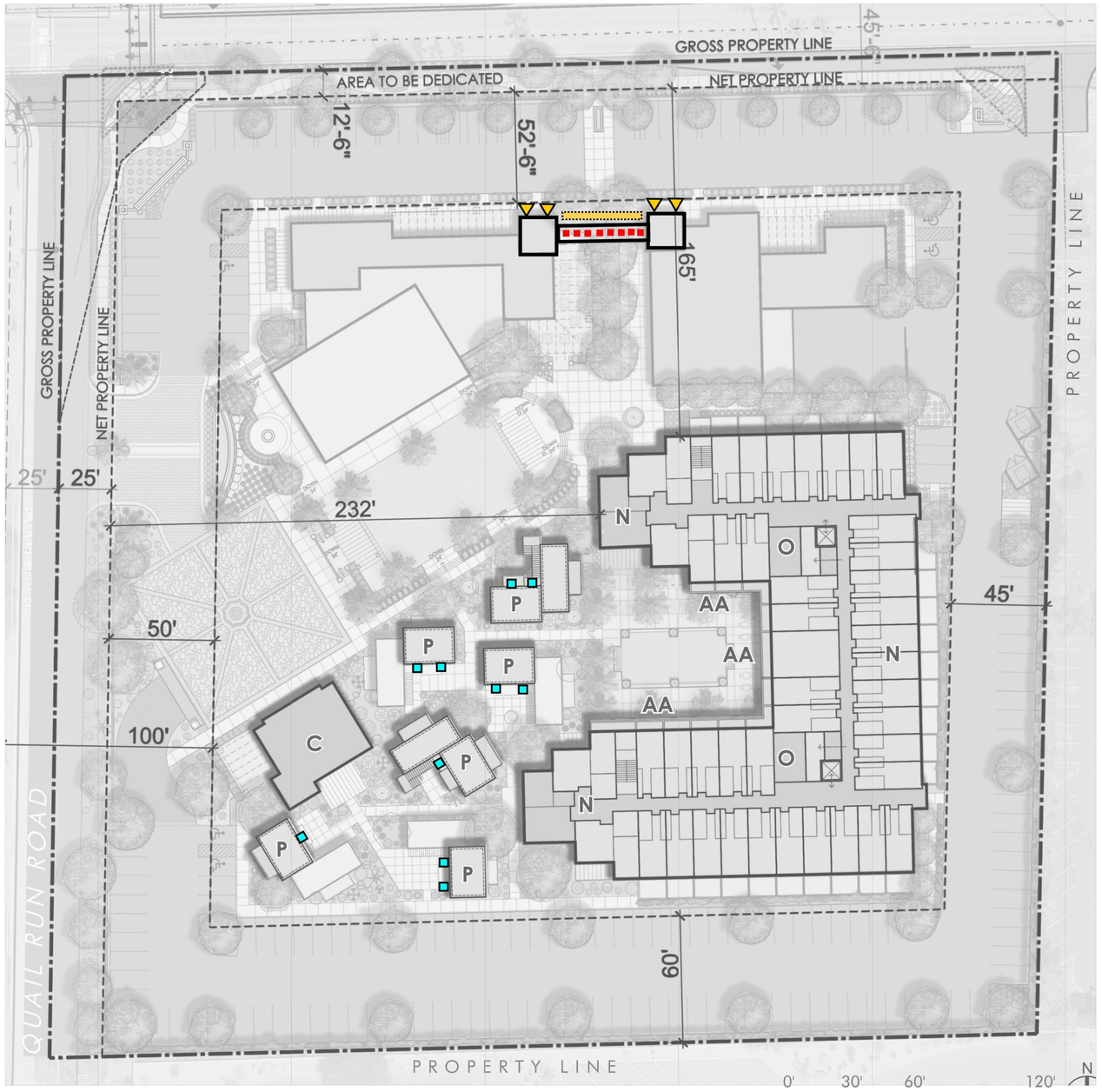
DRAWN BY
JG

CHECKED BY
MG

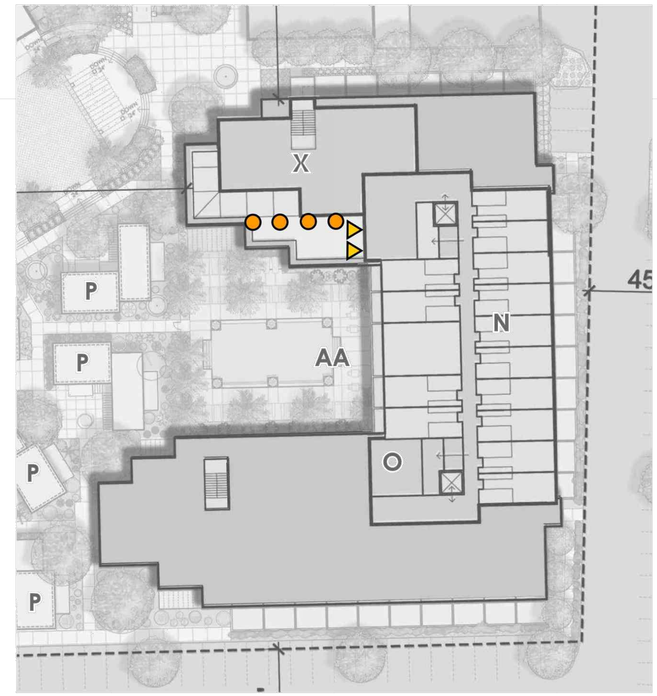
SHEET NAME
GROUND LEVEL LIGHTING PLAN

SHEET NUMBER
AL3

SECOND LEVEL LIGHTING



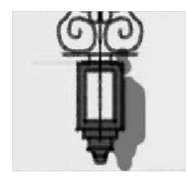
THIRD LEVEL LIGHTING



Custom backlit signage, light source completely shielded with no footcandle impact on ground, **2700K**

TYPE WP
Thematic wall sconce for ambient illumination & way-finding

TYPE LU
Flush-to-grade fixture to uplight pots and key architecture, **max 250 lumens**



Custom decorative fixture with semi-opaque glass panels to obscure the light source, **max 250 lumens**

TYPE WS
Decorative wall sconce for patios (dark sky friendly)

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

CREATIVE DESIGNS IN LIGHTING

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SMOKE TREE RESORT
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

REVISIONS

△		
△		
△		
△		
△		
△		

DATE
08.24.2020

SCALE
NTS

PROJECT NUMBER
116325-19

DRAWN BY
JG

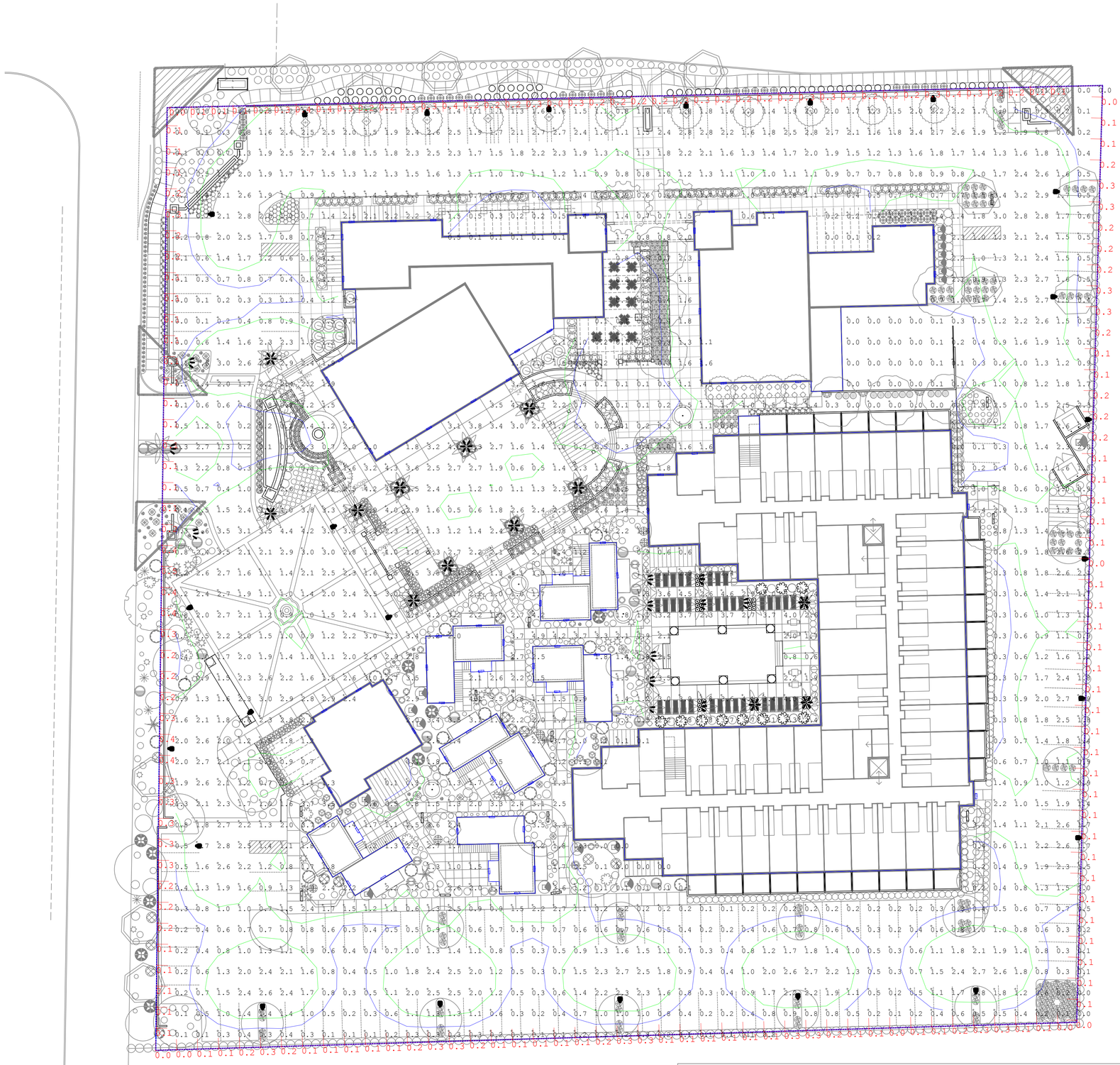
CHECKED BY
MG

SHEET NAME

2ND & 3RD LEVEL LIGHTING PLAN

SHEET NUMBER

AL4



Calculation Summary					
Label	CalcType	Units	Avg	Max	Min
Light Trespass Calc	Illuminance	Fc	0.18	0.5	0.0
Entrance Rd Interior Drives	Illuminance	Fc	1.08	4.4	0.0
Pool Deck Function Areas	Illuminance	Fc	1.62	4.9	0.0

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

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SMOKE TREE RESORT

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

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REVISIONS

DATE
08.24.2020

SCALE
NTS

PROJECT NUMBER
116325-19

DRAWN BY
JG

CHECKED BY
MG

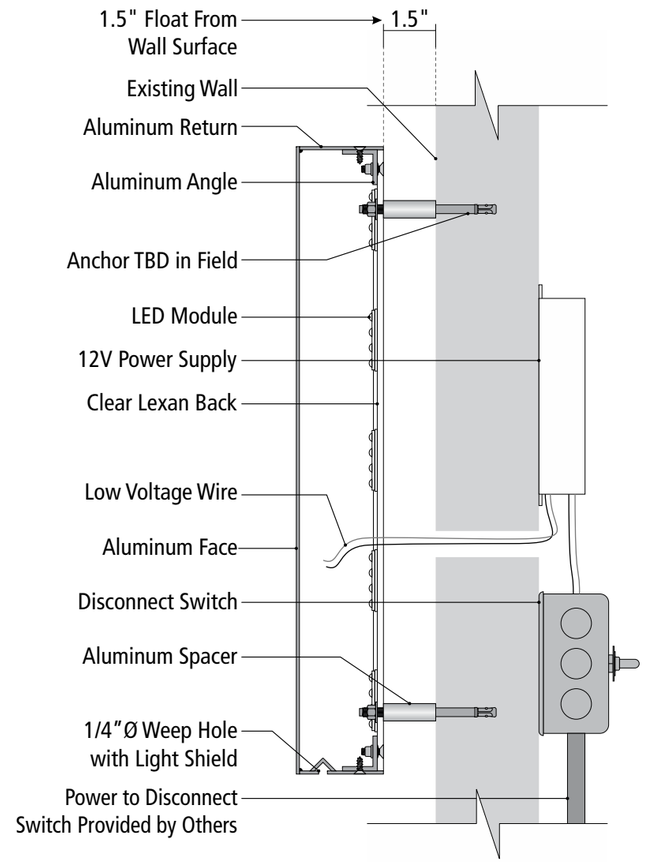
SHEET NAME

GROUND LEVEL PHOTOMETRY PLAN

SHEET NUMBER

AL5

Custom backlit signage, light source completely shielded with no footcandle impact on ground, **2700K**



This sign is intended to be installed in accordance with the requirements of article 600 of the national electrical code and/or other applicable local codes. This includes proper grounding and bonding of the sign. The location of the disconnect switch after installation shall comply with Article 600.6(A)(1) of the National Electrical Code. All signs fabricated as per 2008 N.E.C. Standards.

TYP. HALO ILLUMINATED LETTER SECTION

scale: nts

AIRPARK SIGNS & GRAPHICS
Gretchen Wilde, owner / designer
1205 N. Miller Road
Tempe, AZ 85281
480.966.6565 / 480.966.5668 (f)
signs@airparksigns.com

Address

NOTES:

Approved By: Date:

trc
th

Phoenix Architecture

Letter Section

08.24.20

1
PAGE

All specified details on these drawings are subject to change due to the availability of materials and/or changes in the method of fabrication. Airpark signs & graphics will do their best to maintain the designs intent of these drawings at all times. If the owner or owners' s representative wishes to receive detail drawings on all changes during the fabrication process, airpark signs & graphics must be Advised in writing prior to the start of fabrication. This is an original unpublished drawing created by airpark signs and graphics. It is submitted for your personal use in connection with a proposed project being planned for you by airpark signs and graphics. It is not to be reproduced, copied, photographed, exhibited or used in any fashion without expressed written approval of airpark signs and graphics.

TYPE "BL"

VOLTAIRE CONCRETE BOLLARD – ARCHILINEAR

VCBA

LED

CATALOG #: | TYPE:

PROJECT: | NOTES:

EXAMPLE: **VCBA - L9/830 - NC - AB - OPTIONS - 120**

SERIES | LUMEN PACKAGE | CRI & CCT | FINISH | ANCHOR BOLTS | OPTIONS | VOLTAGE

CROSS SECTIONS

FEATURES

- Concrete housing complements gardens, pathways, and pedestrian-area applications
- Aesthetically designed to blend seamlessly with a variety of architectural styles
- Provides accent and security lighting
- Symmetric distribution
- Available in four concrete colors with light sandblast or glazed protective finish
- Engineered with the highest quality materials to ensure reliability and performance
- Rated >50,000 hours at 70% lumen maintenance [L70]
- ANSI 3000K, 4000K, or 5000K CCT
- Minimum 80 CRI
- Integral heatsink provides optimal passive thermal management
- Rated for -30°C to 40°C ambient operating temperature
- Direct line driven LED module
- This fixture is proudly made in the USA

ORDERING INFORMATION

SERIES

VCBA	Voltaire Concrete Bollard – Archilinear

LED PACKAGE

Nominal lumens based on 120V input. See back for fixture performance data.

EXAMPLE: L9/830			
LUMEN PACKAGE	NOMINAL LUMENS	MINIMUM CRI & CCT	AVERAGE WATTAGE
L9	900	**830** = 80 CRI, 3000K **840** = 80 CRI, 4000K **850** = 80 CRI, 5000K	17

CONCRETE FINISH

SANDBLAST FINISH

NC	Natural
BF	Buff
BN	Brown
CP	Copper

GLAZED SANDBLAST FINISH

NCG	Natural sand glazed protective sealant
BNG	Brown with glazed protective sealant
BFG	Buff with glazed protective sealant
CPG	Copper with glazed protective sealant

ANCHOR BOLTS

AB[1]	Anchor bolts (4 each, shipped with fixture)*
LAB	Less anchor bolts
PAB[1]	Pre-shipped anchor bolts (4 each)*

OPTIONS

SFW	Single fuse, wet location (120V, 277V, or 347V only; must specify voltage)
DFW	Double fuse, wet location (208V, 240V, or 480V only; must specify voltage)

VOLTAGE

120	120V
208	208V
240	240V
277	277V (integral stepdown transformer)
347	347V (integral stepdown transformer)
480	480V (integral stepdown transformer)

[1] Four 3/8" x 12" cast-in galvanized steel anchor J-bolts. Mounting template included.

HK USA Lighting Group

TYPE 'GU'

ZX16-SOi

Area Accent | ZX16 Series

PROJECT

FIXTURE TYPE

Characteristics

Listed

Standard

Soraa compatible

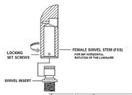
• Wet/Dry location rated. • Swivel Stem | facilitates 355° deg. rotation for aiming precision on any installation plane. • Integral Thermal dissipation for the SORAA MR16 LED in a compact, aesthetic fixture. US patented. • Reduces LED junction temperature by a tested 20-30C(68-86F) • Allows entire catalogue of SORAA LED MR16 lamps to be used in an enclosed fixture without sacrificing the performance of the light bulb. • For lamp selections, please refer to http://www.soraa.com/products /specs-GU5.3-US

Technical Data

Material	Housing/Cap/Stem - Machined silicone magnesium aluminum alloy (6061-T6) resistant to corrosion Stainless steel (SS304) hardware
Lamp	Soraa MR16
Dimmability	ELV, MLV
Hoods	A, B, C
Socket	Bi-pin, GX5.3
Voltage	12V
Color Temp	2.7K, 3K, 4K, 5K
Power Supply	Integral LED Driver

Ordering Guide

Series	ZX16-SOi
Hoods	A B C
Glare Shields (optional)	GSL GSA GSS CGSL CGSA CGSS
Voltage	12V
Lamp	Soraa MR16
Socket	Bi-pin GX5.3
Color Temp	2.7K 3K 4K 5K
Stem (optional)	PSS
Finish	BK (black) NC (anodized natural) WT (white) ABK (anodized black) ACL (anodized clear) NBS (natural brass) CC (custom)



ALPHABET LEDRA brands

Alphabet By Ledra Brands | 15774 Gateway Circle Tustin, CA 92780 | PH: 714.259.9959 FAX: 714.259.9969 | www.alphabetlighting.com

TYPE 'HR'

Job Name: | Contact:

Ordering Code: | Fixture Type:

ZETA750

Description

The ZETA750 Series Puck is the most flexible and vandal resistant LED handrail lighting module on the market, offering unrivaled uniformity and photometric performance. Designed with the specifier in mind, it accommodates a wide range of options of beam distribution for a clean design.

The pucks can be installed in new handrail or retrofitted into existing handrail, flat or oval metallic structures and surfaces. Powerful yet small and unobtrusive, makes the Handrail Puck ideal for incorporation into street sculptures, illuminating artwork or to wash walls with clean, white LED light.

The ZETA750 is engineered of electropolated 316 stainless steel. Other custom materials are available including aluminum, brass, and super-duplex stainless steel (which offers exceptional corrosion resistance), as well as custom painted finishes. Please consult factory for these custom options.

At standard handrail height the pucks provide 11 foot-candles at the surface below. They are offered with wide, narrow, and asymmetric beam patterns. ETL wet rated for outdoor applications. For round handrail, the LED pucks are field installed with use of the ZETA750 series Drill Tool Kit. For flat surfaces, the installer may use their own drill bits and threading taps. Please refer to the installation instructions.

Housing

Extremely durable 316 stainless steel marine grade housing, with 3.5" (90mm) 20AWG wire leads. Choice of Thin Wall (recommended for ease of installation), or Heavy Wall. Curved face or flat face options available in three different beam patters 60°, 90° asymmetric, and 120°.

Mounting

Type of Surface- Install in metallic surface only for proper thermal dissipation. Luminaire is for use in non-insulated recessed surfaces.
Fits Railing size - Ø38.0mm, 1.496in to 100.0mm, 3.937in.
Thin Wall Puck minimum wall thickness - 1.5mm, 0.059in.
Heavy Wall Puck minimum wall thickness - 2.5mm, 0.980in.
Minimum distance between lights - 101.6mm, 4.000inches (center to center). Max 16 lights may be connected in series.

Electrical / Led Driver

- 3VDC, 500mA, 1.5W (Remote Driver Required)

Listings

- ETLus Listed to UL2108 (suitable for wet locations)
- cETL Listed to CSA C22.2 #250.0
- Impact tested to IK10 (EN62262)
- IP66 rated
- ADA Compliant when using handrail diameter 31.75mm (1.25") to 38.1mm (1.5") O.D.

LED Performance

LED: Cree XPG
DUV: .001
CCT: 2700k, 3000k, 4000k, 5000k
CRI: >80
Life: 90% at 51k hrs based on LM-80 testing
Warranty: 5 year limited warranty

Lumens	CCT
104 lm	2700k
111 lm	3000k
119 lm	4000k
127 lm	5000k

*At 5000K CRI >70

Ordering Codes

Follow the steps to specify your fixture, example: **750 - 4 - 2 - 1 - 1**

Part Number	CCT	Beam	Face Type	Wall Thickness
750 Rail Puck	**2** 2700k **3** 3000k **4** 4000k **5** 5000k	**1** Standard 60° **2** Symmetric 120° **3** Assymetric 90°	**1** Curved **2** Flat	**1** Heavy **2** Thin

Heavy Wall Curved Face
- Mounts to pipe size: Ø38mm - Ø100mm
- Wall thickness ≥ 2.5mm
- Mounting thread: M16x1mm
- Requires counterbore Ø16mm x 1.8mm

Thin Wall Curved Face
- Mounts to pipe size: Ø38mm - Ø100mm
- Wall thickness ≥ 1.5mm
- Mounting thread: M16x1mm

Heavy Wall Flat Face
- Mounts to flat surfaces
- Wall thickness ≥ 2.5mm
- Mounting thread: M16x1mm
- Requires counterbore Ø16mm x 1.8mm

Thin Wall Flat Face
- Mounts to flat surfaces
- Wall thickness ≥ 1.5mm
- Mounting thread: M16x1mm

LM-79

TYPE 'L'

Lumière

Catalog #	
Project	
Comments	
Prepared by	
Type	
Date	

DESCRIPTION

Cambria 203 is a small, low voltage dimmable LED and halogen MR16 luminaire. It is available with a fully adjustable side swivel stem (203, 203-FL), an adjustable center rear swivel (203-CRS) or a stationary rear flush mount (203-FM). Side swivel models 203 and 203-FL provide 340° tilt and 360° rotation. Center rear swivel model CRS provides 200° tilt and 360° rotation. Center rear swivel model CRS provides 200° tilt and 360° rotation. Various lenses, louvers and color or dichroic filters can be combined - up to three at once - to create multiple lighting effects. The Lumiere exclusive Siphon Protection System (S.P.S.) prevents water from siphoning into the fixture through its own lead wires.

SPECIFICATION FEATURES

Material
Housing, hood and mounting stem are precision-machined from corrosion-resistant billet stock 6061-T6 aluminum, C360 brass, C932 bronze, C110 copper or 303/304 stainless steel.

Finish
Fixtures constructed from 6061-T6 aluminum are double protected by an ROHS compliant chemical film undercoating and polyester powdercoat paint finish, surpassing the rigorous demands of the outdoor environment. A variety of standard colors are available.

Brass, Bronze, Copper or Stainless Steel
Fixtures constructed from brass, bronze, copper or stainless steel are left unpainted to reveal the natural beauty of the material. Brass, bronze and copper will patina naturally over time.

Hood
Hood is removable for easy relamping and accepts up to three internal accessories at once (lenses, louvers, filters) to achieve multiple lighting effects. Model 203, 203-CRS & 203-FM: Weep holes prevent water and mineral stains from collecting on the lens, even in the straight-up position. Model 203-FL: The flush lens design reduces fixture length, minimizes debris collection and prevents water and mineral stains from collecting on the lens.

Gasket
Housing and hood are sealed with a high temperature silicone o-ring gasket to prevent water intrusion.

Lens
Tempered glass lens, factory sealed with high temperature adhesive to prevent water intrusion and breakage due to thermal shock.

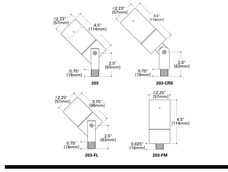
Mounting Stem
Model 203 and 203-FL include fully adjustable side-mounted swivel stem, providing 340° tilt and 360° rotation for easy aiming. Center rear swivel (203-CRS) or stationary rear flush mount (203-FM) models are also available. All models include 1/2" NPS threaded male fitting. Stainless steel aim-locking mechanisms are standard (not available on 203-FM). Lumière's exclusive Siphon Protection System (S.P.S.) prevents water from siphoning into the fixture through its own lead wires.

Hardware
Stainless steel hardware is standard to provide maximum corrosion-resistance.

Socket
Ceramic socket with 250° C Teflon® coated lead wires and GU5.3 bi-pin base.

Electrical
Remote 12V transformer required (not included). NOTE: initial power draw on LED equipped fixtures is 15 watts. When sizing transformer use 15 watts per LED fixture. Nominal power draw after start up is 6 watts or 10 watts accordingly. Also, LEDs are more voltage sensitive than standard halogen MR16 lamps. The LED module is designed to operate between 10 and 13 volts. Any less or more voltage can cause premature failures.

Lamp
Halogen lamp not included. LED modules are included and are available in four color temperatures (2700, 3000, 4000, and 5700) and three distributions (spot, narrow, and flood). Both color temperature and distribution must be specified when ordering. Soraa lamp compatible (10W Max).



203
CAMBRIA
LED
HALOGEN

APPLICATIONS:
ACCENT / FLOOD

WORKS WITH SORAA

CERTIFICATION DATA
UL and cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
IP66 Ingressed Protection Rated

TECHNICAL DATA
8W LED, L70/60,000 hours at 25°C
10W LED, L70/60,000 hourseat 25°C
Low Voltage: 50W Halogen MR16

ORDERING INFORMATION

Sample Number: 203-FL/50MR16-12-NSS

Series	Construction	Source (for LED, select from each column and combine)			Voltage	Finish
203=LED of MR16 Cambria Accent Fixture	**_**=Standard Side Swivel Stem, 1/2" NPS **CRS**=Center Rear Swivel Stem, 1/2" NPS **FM**=Rear Flush Mount, 1/2" NPS **FL**=Push Lens, Side Swivel Stem, 1/2" NPS	**50MR16**=50W max, Halogen MR16 (lamp not included)			**12**=12V	***Painted*** **BK**=Black **BZ**=Bronze **CS**=City Silver **VB**=Verde **WT**=White ***Premium Finish*** **NBR**=Natural Brass **NCP**=Natural Copper **NBZ**=Natural Bronze **NSS**=Natural Stainless Steel
		6LED=6W LED **10LED**=10W LED	**27**=2700K **30**=3000K **40**=4000K **57**=5700K	**12**=12° Spot **21**=21° Narrow **41**=41° Wide		
		4LED=4W LED **7LED**=7W LED	**AM**=Amber (585-595nm)			

EATON Powering Business Worldwide

ADL032452
July 22, 2016
1 of 3

TYPE "BL"

VCBA VOLTAIRE CONCRETE BOLLARD – ARCHILINEAR

LED

SPECIFICATIONS

Housing – Steel reinforced precast concrete with a light sand blasted finish.
Thermal Management – Integral aluminum heatsink and LED source provide passive thermal management. Rated -30°C to 40°C ambient operating temperature.
LED Housing – High-grade cast aluminum with superior corrosion resistance. Silver polyester powder coat finish bonded to phosphate-free, multi-stage pretreated metal, meets and exceeds AAMA 2604 specifications for outdoor durability.
LED Module – High quality mid-power LED board. L70 >50,000 hours.
Electrical – 10kA/10kV surge protection standard.
Mounting – Minimum 4" recessed in ground with four-point hot dip galvanized 1/4" A36 steel baseplate. For accurate installation a fullscale mounting template is provided with each bollard and anchor bolt order. Fixture weight: 229 lbs.
Handhole Cover – Grounded stainless steel plate with precast concrete secured with vandal resistant hex fastener.
Labels – cCSAus certified as luminaire suitable for wet locations.
Certifications & Qualifications –
- Calculated L70 lumen maintenance will exceed 50,000 hours per IES TM-21.
- IDA Dark-Sky approved
- Tested to IES LM-79-08 standards.
- RoHS compliant.

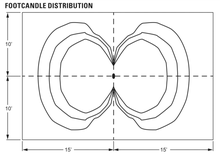
Warranty – 5-year limited warranty, see hew.com/warranty.

PHOTOMETRY INFORMATION

Catalog # **VCBA-L9/840-NC**

TEST REPORT INFORMATION
- Test Report # ATAU30924C-R2
- Date: 05/28/15
- **Rated Lumens: 932**
- **Watts: 16.85**
- **Lumens Per Watt: 55.3**
- **CRI: 81**
- **CCT: 3797K**

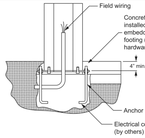
FOOTCANDLE DISTRIBUTION



FIXTURE PERFORMANCE DATA

LED Package	Voltage	Flux (lm)	CRI	Wattage
L9/830	120	868	80	17
L9/840	120	889	81	17
L9/850	120	909	82	17
L9/830	208	818	80	16
L9/840	208	838	81	16
L9/850	208	856	82	16
L9/830	240	922	80	19
L9/840	240	944	81	19
L9/850	240	965	82	19
L9/830	277	920	80	20
L9/840	277	949	81	20
L9/850	277	970	82	20
L9/830	347	864	80	19
L9/840	347	884	81	19
L9/850	347	904	82	19
L9/830	480	922	80	19
L9/840	480	944	81	19
L9/850	480	965	82	19

MOUNTING DETAILS



MOUNTING TEMPLATE

Mounting template is provided with each order. A pdf file (not to scale) of the mounting template is available at www.hew.com.

SORAA

TYPE 'GU'

SORAA LED MR16
7.5W

OUTPUT RANGE: VIVID SERIES	390-455 lumen; CRI-95, R9>90
OUTPUT RANGE: BRILLIANT SERIES	475-525 lumen; CRI-80
BEAM ANGLE RANGE	10°, 25°, 36°
COLOR TEMPERATURE RANGE	2700K, 3000K, 4000K, 5000K
APPLICATION	Halogen replacement for indoor & outdoor applications

12VAC | GU-5.3 | DIM | IR | UV | Hg

POINT SOURCE OPTICS
Exceptional beam control enables unique 10° narrow spot and smooth uniform beams

Single light source, single crisp shadow

VP_a VIVID COLOR AND VP_a NATURAL WHITE
VIVID series provides accurate color rendering across the visible spectrum from 400nm to 700nm, CRI-95, R9>90

Accurate white rendering based on >70% excitation of Optical Brightening Agents with emission between 400nm & 440 nm

ENERGY EFFICIENCY AND LONG LIFE
85% more energy efficient than standard halogen lamps

Typical payback of one year or less

Rated lifetime of 35,000 hours. Three year warranty

CERTIFICATIONS
UL/CUL Class 2 and non-Class 2, FCC Title 47 Part 15B, RoHS, CE

HIGHLY COMPATIBLE
Narrow spot compatible with Soraa SNAP System accessories

Geometrically compatible with standard fixtures and suitable for damp locations

This lamp is suitable for use in fully enclosed fixtures, subject to the maximum heatsink temperature limits stated in this data sheet. A list of qualified enclosed fixtures can be found at www.soraa.com/resources

Works with trailing edge and leading edge phase cut dimmers, 12V AC magnetic and electronic transformers and 12V DC transformers (see www.soraa.com/resources)

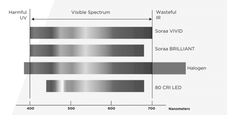
INTENDED USE AND APPLICATIONS
Intended for use in MR16 compatible recessed downlights, track lighting and other indoor and outdoor applications

Soraa lamps are designed to safely turn down in any thermal environment not conducive to minimum airflow or proper ventilation

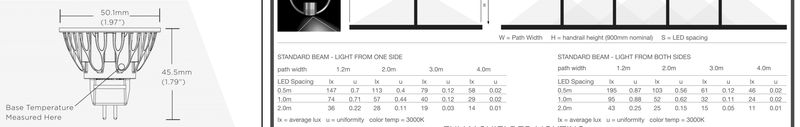
GENERAL SPECIFICATIONS

Form Factor	Operating Temperature	Electrical	
Width: 50.1mm (1.97")	Minimum: -40°C (ambient)	Wattage: 7.5W	Dimmable to < 20%
Height: 45.5mm (1.79")	Typical: 85°C - 95°C (base)	Power factor: 0.92	Frequency: 50/60Hz
Weight: 47g	Maximum: 100°C (base)	Voltage: 12V +/- 1.2V	

COLOR RENDERING



DIMENSIONS



FULLY SHIELDED LIGHTING

RoHS

Soraa Inc. 6500 Kaiser Drive, Suite 110, Fremont, CA 94555
855 GO-SORAA / 855 467-6722 www.soraa.com

ALPHABET LEDRA brands

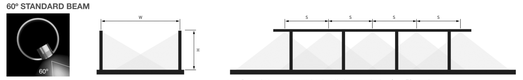
Alphabet By Ledra Brands | 15774 Gateway Circle Tustin, CA 92780 | PH: 714.259.9959 FAX: 714.259.9969 | www.alphabetlighting.com

TYPE 'HR'

Job Name: | Contact:

Ordering Code: | Fixture Type:

60° STANDARD BEAM



W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	107	0.67	82	0.51	61	0.31	47	0.19
1.0m	55	0.76	41	0.58	31	0.34	24	0.21
2.0m	27	0.78	21	0.59	15	0.34	12	0.21

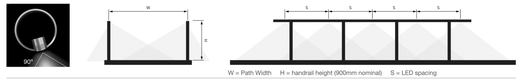
lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	216	0.76	164	0.68	121	0.66	95	0.66
1.0m	109	0.82	83	0.72	61	0.72	48	0.72
2.0m	55	0.84	41	0.72	31	0.71	24	0.72

lx = average lux u = uniformity color temp = 3000K

90° VERTICAL ASYMMETRIC



W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	95	0.8	73	0.45	52	0.21	40	0.15
1.0m	48	0.89	37	0.51	27	0.23	20	0.16
2.0m	23	0.89	18	0.51	13	0.23	10	0.16

lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	193	0.89	148	0.8	105	0.77	81	0.62
1.0m	97	0.9	74	0.8	53	0.86	41	0.66
2.0m	48	0.84	37	0.8	27	0.84	20	0.68

lx = average lux u = uniformity color temp = 3000K

120° VERTICAL SYMMETRIC

W = Path Width H = handrail height (900mm nominal) S = LED spacing

STANDARD BEAM - LIGHT FROM ONE SIDE

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	147	0.7	113	0.4	79	0.12	58	0.02
1.0m	74	0.71	57	0.44	40	0.12	29	0.02
2.0m	36	0.22	28	0.11	19	0.03	14	0.01

lx = average lux u = uniformity color temp = 3000K

STANDARD BEAM - LIGHT FROM BOTH SIDES

path width	1.2m		2.0m		3.0m		4.0m	
LED Spacing	lx	u	lx	u	lx	u	lx	u
0.5m	195	0.87	103	0.56	61	0.12	46	0.02
1.0m	95	0.88	52	0.62	32	0.11	24	0.02
2.0m	43	0.25	25	0.15	15	0.05	11	0.01

lx = average lux u = uniformity color temp = 3000K

FULLY SHIELDED LIGHTING

TYPE 'L'

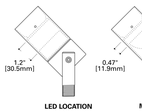
OPTICAL ACCESSORIES - ORDER SEPARATELY

Filters (2.00" Diameter)	Optical Lenses (2.00" Diameter)	Optical Louvers (2.00" Diameter)
F71=Peach Dichroic **F72**=Amber Dichroic **F73**=Green Dichroic **F74**=Medium Blue **F75**=Yellow Dichroic **F76**=Red Dichroic **F77**=Dark Blue Dichroic **F78**=Light Blue Dichroic **F79**=Neutral Density Dichroic **F80**=Magenta Dichroic **F22**=Red Color **F23**=Blue Color **F44**=Green Color **F65**=Yellow Color **F66**=Mercury Vapor	**LSL**=Linear Spread Lens (elongates standard beam spread) **DIF**=Diffused Lens (provides even illumination) **OSL**=Overall Spread Lens (increases standard beam spread)	**LVR**=45° Hex Cell Louver (reduces glare)

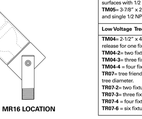
MOUNTING ACCESSORIES - ORDER SEPARATELY

Ground Mounting
GS01=1-1/2" x 6-3/4" (38mm x 171mm) cast zinc ground spike. **GS03**=2-3/8" x 6-5/8" 960mm x 168mm) aluminum ground spike with integral 12V wiring compartment. Specify powder paint finish (BK,BZ,CS,VE,WT) **GS04**=1" x 16-1/2" (25mm x 419mm) aluminum ground spike with integral 12V wiring compartment. Specify powder paint finish (BK,BZ,CS,VE,WT) **GS05**=1" x 16-1/2" (48mm x 438mm) black polycarbonate ground spike with 2"-13" height adjustment – requires fixture with extended stem. **GS06**=2" x 10-1/2" (51mm x 267mm) plate steel/brass spiral ground spike. **GS08**=1-7/8" x 8" (48mm x 203mm) black ABS ground spike. **GS13**=3-3/4" x 4-1/2" (95mm x 114mm) brass/stainless steel 3 prong ground spike.
Surface / Wall Mounting – specify powder paint finish (BK,BZ,CS,VE,WT)
FS1=2-7/8" x 4-5/8" (73mm x 117mm) rectangular wall plate or box cover with single 1/2 NPS mounting hole. **FS2**=2-7/8" x 4-5/8" (73mm x 117mm) rectangular wall plate or box cover with dual 1/2 NPS mounting holes. **RS1**=4-1/2" (114mm) machined aluminum standard round wall plate with single 1/2 NPS mounting hole. **RS2**=4-1/2" (114mm) machined aluminum standard round wall plate with single 1/2 NPS mounting hole. **TM01**=2-3/16" x 1-1/2" (71mm x 38mm) round mount for installation on trees or other wood surfaces with 1/2 NPS mounting hole. **TM05**=3-7/8" x 2" (98mm x 51mm) rectangular tree/surface mount with wiring compartment and single 1/2 NPS mounting hole.
Low Voltage Tree Mounting – specify finish (BK,BZ,CS,VE,WT)
TM06=2-1/2" x 4-1/4" (64mm x 108mm) expanding tree strap with self adjusting tension release for one fixture mount. Designed for a maximum tree diameter of 24" (610mm). **TM04-2**=two fixture mount. **TM04-3**=three fixture mount. **TM04-4**=four fixture mount. **TR07**=tree friendly ring with adjustable stand-offs. Accomodates 18"-24" (457mm - 610mm) tree diameter. **TR07-2**=two fixture mount. **TR07-3**=three fixture mount. **TR07-4**=four fixture mount. **TR07-6**=six fixture mount.

LAMP OR LED MODULE PLACEMENT



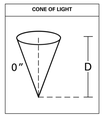
LED LOCATION



MR16 LOCATION

CAMBRIA 203 MR16 HALOGEN PHOTOMETRY DATA

CONE OF LIGHT



Horizontal Illuminance on Surface - Cambria 203 Standard Recessed Hood - 50W MR16

Filename	203-50MR16-12-BK-NSPlas		Filename	203-50MR16-12-BK-NFL.ies	
Lamp	50W MR16 NSP		Lamp	50W MR16 NFL	
CBCP	11,000		CBCP	3,200	
Distance	FC	Beam Diameter	Distance	FC	Beam Diameter
2'	2950	1'6"	2'	795	1'10"
4'	638	1'0"	4'	181	2'8"
6'	283	1'6"	6'	81	4'0"
8'	159	2'0"	8'	45	5'0"
10'	102	2'0"	10'	29	6'0"
15'	45	4'0"	15'	13	10'0"

Filename	203-50MR16-12-BK-FL.ies		Filename	203-50MR16-12-BK-WFL.ies	
Lamp	50W MR16 FL		Lamp	50W MR16 WFL	
CBCP	2,000		CBCP	1,200	
Distance	FC	Beam Diameter	Distance	FC	Beam Diameter
2'	431	1'6"	2'	269	2'0"
4'	106	3'0"	4'	67	4'0"
6'	48	5'0"	6'	30	7'0"
8'	27	6'0"	8'	17	9'0"
10'	17	8'0"	10'	11	11'0"
15'	7	12'0"	15'	5	17'0"

CCT MULTIPLIER TABLE

LAMP WATTAGE	MULTIPLIER
20W	0.52
35W	0.57

NOTES AND FORMULAS

- Beam diameter is to 50% of maximum footcandles, rounded to the nearest half-foot.
- Footcandle values are initial. Apply appropriate light loss factors where necessary.
- Bare lamp data shown. Consult lamp manufacturers to obtain detailed specifications for their lamps.

EATON Powering Business Worldwide

Eaton
18001 East Colfax Avenue
Aurora, CO 80011
P: 303-393-1522
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

ADL032452
July 22, 2016
2 of 3

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

CL

CREATIVE DESIGNS IN LIGHTING

15982 N. 78th St. Suite A
Scottsdale, Arizona 85260

602.248.7822
design@cdltg.com
www.cdltg.com

1978 **41** 2019
years of architectural lighting design

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SMOKE TREE RESORT
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

REVISIONS

△		
△		
△		
△		
△		
△		

DATE
08.24.2020

SCALE
N.T.S.

PROJECT NUMBER
116325-19

DRAWN BY
JG

CHECKED BY
MG

SHEET NAME

LIGHTING CUTSHEETS

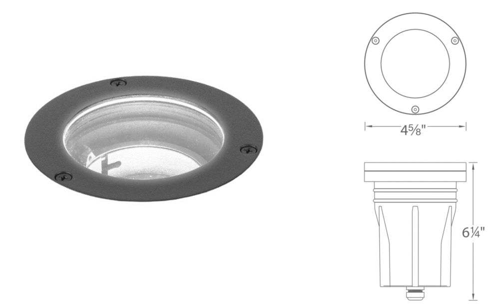
SHEET NUMBER

AL1

TYPE 'LU'

3" INGROUND 120V
5032

WAC
LANDSCAPE LIGHTING



Fixture Type:

Catalog Number:

MAXIMUM LUMEN OUTPUT SET TO 250 LUMENS

PRODUCT DESCRIPTION

Landscape Wall Wash luminaire

SPECIFICATIONS

Input: 110V - 120VAC
Power: 3W to 11.5W
Brightness: 65 lm to 515 lm
Beam Angle: 15° to 60°
CRI: 85
Rated Life: 45,000 hours

FEATURES

- Adjustable beam angle
- Integral dimmer
- IP67 rated, protected from temporary immersion under water
- Drive over up to 4500lbs
- Solid diecast brass or corrosion resistant aluminum
- Available concrete pour kit
- 6' lead wire and wire nuts included
- Maintains constant lumen output against voltage drop
- UL 1598 listed
- Not suitable to use with external dimmers

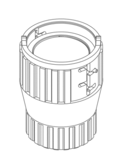
IEC safety Standard	Walk over	Drive over
Resistance to static load test	Yes (1125lbs)	Yes (4496lbs)
Resistance to torque and shear loads test	N/A	Yes

ORDERING NUMBER

	Color Temp	Finish
5032 *3" Inground 120V*	30 *3000K*	BZ *Bronze on Aluminum* BBR *Bronze on Brass*

Module Replacement

3000K	M5032LE-30BZ



5032-30____

Example: **5032-30BBR**

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive
Port Washington, NY 11050

Central Distribution Center
1600 Distribution Ct
Lithia Springs, GA 30122

Western Distribution Center
1750 Archibald Avenue
Ontario, CA 91760

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TYPE 'SA'

ML660 MILLENIA SERIES

LED

EPA 1.3 (ft²) | WEIGHT 35 LBS | 7 YEAR WARRANTY | LUMEN RANGE 2,065 to 7,820 | LIFE SPAN L70 MINIMUM 100,000 HOURS | UL LISTED | CLICK FOR FAQ's

JOB NAME

FIXTURE TYPE

POLE HEIGHT 16' MAXIMUM

BUILD A PART NUMBER

ORDERING EXAMPLE: PT-**ML660-12L40T3-MDL018-SV1-FHD-BLOC/**4SQ12-.125/UGMT

Mounting Config.	Fixture	LED	CCT	Distribution Type	Driver	Lens	Option Fuse	Option House Side Shield	Arm (See Arm Spec Sheets)	Pole (See Pole Spec Sheets)	Finish
PT	ML660	16L	27	T5	MDL018	SV2		BLOC			BKT

Mounting Configuration
(Click here to link to mounting configuration specification page)
• 1W • 2A • 3A90 • 1AM
• PT • 2A90 • 3APT • 2AM
• 1A • 2APT • 4A
• 1APT • 3A • 4APT
W = Wall Mount A = Arm Mount AM = Arm Mid-Mount

Fixture
• ML660

LED
• 24L • 16L • 12L

CCT - Color Temperature (K)
• 27(00) • 30(00) • 40(00) • 50(00)

Distribution Type
• T2 • T3 • T4 • T5

Driver
• **MDL018**[1] (120V-277V, 180mA)
• **MDH018**[1] (347V-480V, 180mA)
• **MDL014**[2] (120V-277V, 140mA)
• **MDH014**[2] (347V-480V, 140mA)
• **MDL008**[3] (120V-277V, 80mA)
• **MDH008**[3] (347V-480V, 80mA)
[1] 16L or 12L system only.
[2] 24L or 12L system only.
[3] 12L system only.

Lens
• **CA** (Clear Acrylic)
• **SV1** (Flat Soft Vue Light Diffused Acrylic)
• **SV2** (Flat Soft Vue Moderate Diffused Acrylic)

Options (Click here to view accessories sheet)
• **FHD**[4] Double Fuse and Holder
• **HSS** External 120° House Side Shield
• **BLOC** Internal optic level House Side Shield
[4] Ships loose for installation in base

Arm (Click here to view arm website page)
See Arms & Wall Brackets specification sheets.
• **480**

Pole (Click here to link to pole specification page)
See Pole specification sheets.

Finish
Standard Urban Finishes (Click here to view paint finish sheet)
• **UGMT** Gun Metal Textured
• **UGM** Gun Metal Matte
• **UBT** Urban Bronze Textured
• **UB** Urban Bronze Matte
• **ULBT** Urban Light Bronze Textured
• **ULB** Urban Light Bronze Matte
• **USLT** Urban Silver Textured
• **USL** Urban Silver Matte
• **UWHT** Urban White Textured
• **UWH** Urban White Matte
• **UCHS** Urban Champagne Satin Smooth
• **BKT** Black Textured
Custom Urban Finishes[5]
• **CM** Custom Match
[5] Smooth finishes are available upon request.

Specifications

Fixture
The medium scale ML660 Millenia® post top luminaire is a breakthrough in modern area lighting technology. Its new world urban design transcends traditional lighting convention by seamlessly interweaving form and function to yet another level. Our convective AAD™ "Advanced Air-flow Dynamics" maximizes heat sink expulsion to deliver unsurpassed thermal management for long-life LED performance and energy efficiency. Available with a myriad of options, the Millenia is perfect for commercial, institutional and municipal markets. The cast aluminum slipfitter slips a 3" OD x 3" tall tenon. The Luminaire shall be UL listed in US and Canada.

LEDs
The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 4000K (2700K, 3000K or 5000K option) color temperature with a minimum CRI of 70. Consult factory for custom color CCT. The luminaire shall have a minimum ______ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics
The luminaire shall be provided with refractor type optics applied to each LED array. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.
BLOC Optic: An optional "Back Light Optical Control" shield can be provided at the factory. This is an internal optic level "House Side Shield" offering significantly reduced backlight and glare while maintaining the original design aesthetics of the luminaire.

Electronic Drivers
The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload, overheat and short circuit protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be a high efficiency driver with a THD less than 20% and a high power factor greater than .9. It shall be dimming capable

See next page

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
info@sternberglighting.com
www.sternberglighting.com

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TYPE 'TR'

BKSSL SOLID STATE LIGHTING — the power of adjust-e-lume® TECHNOLOGY

PALM TREE RING INTEGRAL
ARTISTAR™

PROJECT:
TYPE:
CATALOG NUMBER:
SOURCE:
NOTES:

CATALOG NUMBER LOGIC

PTR | | | AR | LED | TR | | | | | | | | TRe20 | MT

Example PTR - 3 - 21 - AR - LED - TR - e65 - SP - A9 - BZP - 12 - 11 - A - TRe20 - MT

Series
PTR - Palm Tree Ring

Fixture Quantity
2 - 2 @ 180
3 - 3 @ 120
4 - 4 @ 90
6 - 6 @ 60

Strap Sizes (based on tree DIAMETER)
16 - 16" min to 22" max
21 - 21" min to 27" max
26 - 26" min to 32" max
31 - 31" min to 38" max
VERIFY

Fixture
AR - ArtiStar™

Source
LED - 'e' Technology with Integral Driver

Housing
TR - Integral Transformer

LED Type
e64 - 7WLED/2.7K e66 - 7WLED/4K
e65 - 7WLED/3K e74 - 7WLED/Amber

Optics
NSP - Narrow Spot (Red Indicator) SP - Spot (Green Indicator)
MFL - Medium Flood (Yellow indicator) WFL - Wide Flood (Blue Indicator)

Adjust-e-lume
A9 - (Standard), **A8, A7, A6, A5, A4, A3, A2, A1**
(Choose Output Intensity. **For use with e64, e65, e66, e74)

Finish

Standard Finish

Powder Coat Color	Satin	Wrinkle
Bronze	BZP	BZW
Black	BLP	BLW
White (Gloss)	WHP	WHW
Aluminum	SAP	—
Verde	—	VER

Premium Finish

ABP	Antique Brass Powder	CMG	Cascade Mountain Granite	RMG	Rocky Mountain Granite
AMG	Aleutian Mountain Granite	CRI	Cracked Ice	SDS	Sonoran Desert Sandstone
AQW	Antique White	CRM	Cream	SMG	Sierra Mountain Granite
BCM	Black Chrome	HUG	Hunter Green	TXF	Textured Forest
BGE	Beige	MDS	Mojave Desert Sandstone	WCP	Weathered Copper
BPP	Brown Patina Powder	NBP	Natural Brass Powder	WIR	Weathered Iron
CAP	Clear Anodized Powder	OCP	Old Copper		Also available in RAL Finishes See submittal SUB-1439-00

Lens Type
12 - Soft Focus Lens 13 - Rectilinear Lens

Shielding
11 - Honeycomb Baffle

Cap Style
A - 45° B - 90° C - Flush F - 90° cutoff with Flush Lens

Power Supply
TRe20 - TRe20 Electronic Transformer* *(105-300 VAC. 50/60 Hz Non-Dimming)*

Input Voltage
MT - 120-277 VAC Input

B-K LIGHTING | 40429 Brickyard Drive • Madera, CA 93636 • USA 559.438.5800 • FAX 559.438.5900 www.bklighting.com • info@bklighting.com | RELEASED 6-30-2019 | DRAWING NUMBER SUB2801-00

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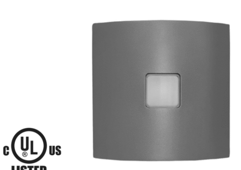
TYPE 'WP'

Cypher™ – CY1 Accent Scale
TYPE

FEATURES

- Integral Battery Backup Option
- 360° Light Distribution
- RGBW or Static White Luminous Front Option
- IES Type I, II, III & IV Distributions
- Wall Graze, Spot and Pencil Distributions
- Multiple Fascia Options and Finishes
- 0-10V dimming
- IP-66 Housing & Optical System
- 120-277V
- 3000K, 4000K & 5000K CCT
- 10kA Surge Protection
- Fascia Forms F, E and T are ADA compliant for use in low mounting height applications (80 inches or less)
- IDA approved, downlight only, 3000K and warmer CCTs

Downlight only, 3000K and warmer CCTs



ORDERING CODE

1	2	3	4	5	6	7	8	9	10	11	12
Series-Output	CCT/CRI	Model	Main Distribution	Secondary Distribution	Voltage	Housing Finish	Fascia Form	Luminous Front	Fascia Panel	Control Options	Options

SERIES-OUTPUT (Base)
CY1-15 15w, 1500 nominal lumens
CY1-25 25w, 2500 nominal lumens

CCT-CRI
27K8 2700K, 80CRI
3K7 3000K, 70CRI
3K8 3000K, 80CRI
4K7 4000K, 70CRI
4K8 4000K, 80CRI
5K7 5000K, 70CRI

MODEL (Light Engine)
1 DownLight Only
2 50/50 Down/Up, **Down/Up distributions must match**
3 90/10 Down/Up
4 25/25/25/25 Split, **Down/Up/Side distributions must match**
5 70/10/10/10 Split, **Top/Side distributions must match**
Contact factory for custom distributions, See Distribution Matrix on page 2 for restrictions.

MAIN DISTRIBUTION (Down)
1 IES Type I
2 IES Type II
3 IES Type III
4 IES Type IV
SP 15° Spot/Column
WG 60° Wall Graze
1D Type 1 Diffused
2D Type 2 Diffused
3D Type 3 Diffused
4D Type 4 Diffused

SECONDARY DISTRIBUTION (Up, Sides)
1 IES Type I
2 IES Type II
3 IES Type III
4 IES Type IV
SP 15° Spot/Column
WG 60° Wall Graze
PB* Pencil Beam
1D Type 1 Diffused
2D Type 2 Diffused
3D Type 3 Diffused
4D Type 4 Diffused
** PB distribution is available for 90/10 and 70/10/10/10 models only. Not all combinations are recommended. See Distribution Matrix on page 2 for restrictions.*

VOLTAGE
UNV 120-277V

BASE HOUSING FINISH
Standard Colors
AGN Antique Green
BL Black
BLT Matte Black
CRT Corten
DB Dark Bronze
DGN Dark Green
GT Graphite
LG Light Grey
MAL Matte Aluminum
MDB Metallic Bronze
MG Medium Grey
TT Titanium
VBU Verde Blue
WDB Weathered Bronze
WH Arctic White

Premium Colors
SFM Seafoam
SHK Shamrock
SPP Salt and Pepper
WCP Weathered Copper
RAL Provide a RAL 4 digit color number
CUSTOM COLOR Please provide color chip for matching

FASCIA FORM
F Flat
R Radius/Curved
T Triangle/Wedge
E Rounded Edge
C Circle/Curved
CB Cylinder Balanced
CT Cylinder Tall
CBM Custom Building Material Mount Ghost Fascia

LUMINOUS FRONT
BLANK Standard None
RGBW RGBW Luminous Front
LFSW Static White Luminous Front
RGBW and LFSW luminous fronts are only available with open, four square and perforated fascia panels

FASCIA PANEL
FPP Full Panel Painted
FPS Full Panel Stainless Steel
FPC Full Panel Copper
OPP Open Panel Painted
OPS Open Panel Stainless Steel
OPC Open Panel Copper
4PP 4-Square Panel Painted
4PS 4-Square Panel Stainless Steel
4PC 4-Square Panel Copper
PPP Perforated Panel Painted
PPS Perforated Panel Stainless Steel
PPC Perforated Panel Copper
Flat and Radius Fascia forms only. Painted panels by default match base housing finish/color. Consult factory for custom panel finishes.

CONTROL OPTIONS
PCU Universal Button Photocell (120-277V)

OPTIONS
EM Battery Backup Unit -20°C
SF Single Fuse (120, 277)
DF Double Fuse (208, 240)
Battery Backup not available with Triangle and Rounded Edge Fascia Forms.

architectural arealighting
ARCHITECTURAL AREA LIGHTING
17760 Rowland Street | City of Industry | CA 91748
P 626.968.5666 | F 626.369.2695 | www.aal.net
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JOB
TYPE
NOTES

TYPE 'LU'

3" INGROUND 120V
5032

WAC
LANDSCAPE LIGHTING

Rock Guard

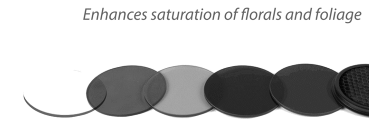
Protects the fixture face

5030-GRD-BZ
Bronze on Aluminum

5030-GRD-BBR
Bronze on Brass

Optics

Enhances saturation of florals and foliage



LENS-25-AMB *Amber*
LENS-25-RED *Red*
LENS-25-FR *Frosted*
LENS-25-GRN *Green*
LENS-25-BLU *Blue*
LENS-25-HCL *Honeycomb Louver Reduces glare*

Concrete Pour Kit

For installation in concrete
Five ½" NPT threaded holes, PC

5030-PIP-PVC
Shown with temporary dense foam cap

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive
Port Washington, NY 11050

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1600 Distribution Ct
Lithia Springs, GA 30122

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Ontario, CA 91760

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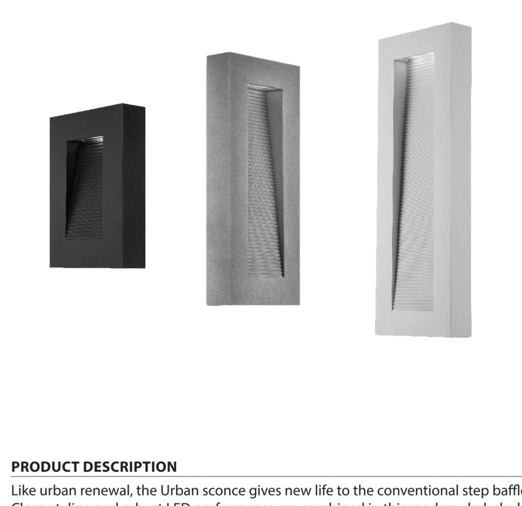
TYPE 'WS'

URBAN – model: WS-W11
LED Outdoor Sconce Luminiare

MODERN FORMS

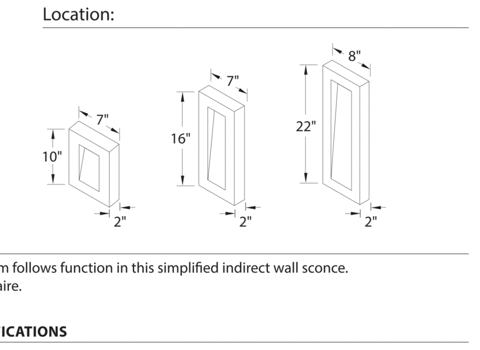


Fixture Type:

Catalog Number:

Project:

Location:



PRODUCT DESCRIPTION

Like urban renewal, the Urban sconce gives new life to the conventional step baffle. Form follows function in this simplified indirect wall sconce. Clean styling and robust LED performance are combined in this modern dark sky luminaire.

FEATURES

- ETL & cETL listed for wet locations. IP65
- Interior light and down light
- Low profile design
- Replaceable LED module
- 277V option available special order
- 50,000 hour potential life
- **Color Temp: 3000K**
- **CRI: 85**

SPECIFICATIONS

Construction: Aluminum.

Power: No driver or transformer required.

Light Source: High output LED.

Dimming: Dims to 10% with an electronic low voltage (ELV) dimmer.

Mounting: Mounts directly to junction box.

Finish: Black (BK), Bronze (BZ), Graphite (GH), White (WT).

Standards: ETL & cETL listed. ADA compliant. Dark Sky friendly. IP65. Wet location.

ORDER NUMBER

Model	Height	Watt	# of LEDs	LED Lumens	Photometric Lumens	Finish
WS-W11	10 *10"*	*12W*	*3*	*720*	*370*	BK *Black*
	16 *16"*	*16W*	*4*	*960*	*490*	BZ *Bronze*
	22 *22"*	*20W*	*5*	*1200*	*610*	GH *Graphite*
						WT *White*

WS-W11 ☐ – ☐

Example: **WS-W1116-GH**
For 277V special order, add an "F" before the finish: **WS-W1116F-GH**

REPLACEMENT GLASS

Part#	Fixture
RPL-GLA-1122-02 RPL-GLA-1122-01	*WS-W1122*
RPL-GLA-1116-02 RPL-GLA-1116-01	*WS-W1116*
RPL-GLA-1110-02 RPL-GLA-1110-01	*WS-W1110*

modernforms.com
Phone (800) 526.2588
Fax (800) 526.2585

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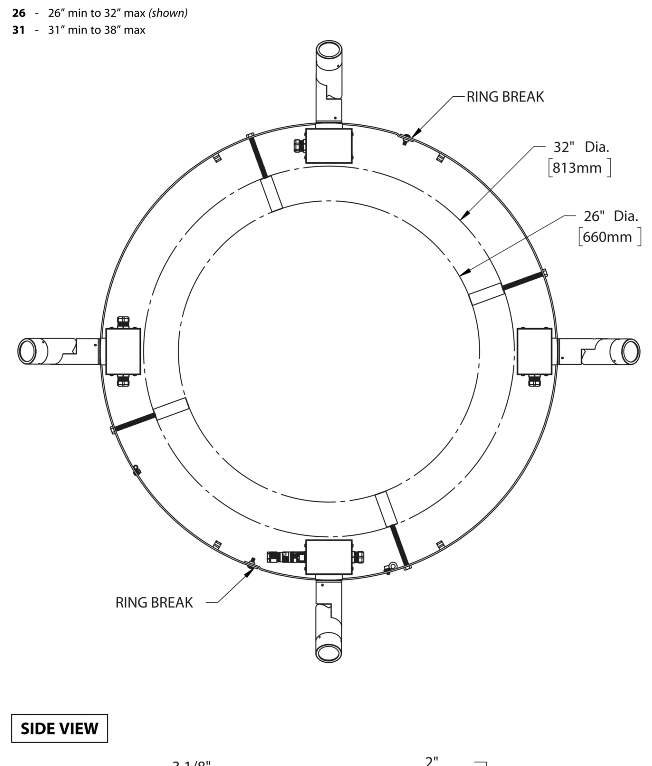
BKSSL SOLID STATE LIGHTING — the power of adjust-e-lume® TECHNOLOGY

PALM TREE RING INTEGRAL
ARTISTAR™

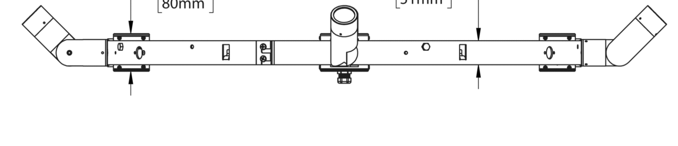
PROJECT:
TYPE:

TOP VIEW

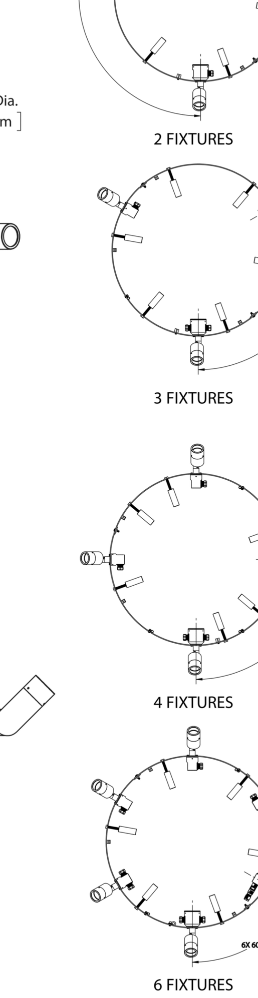
16 - 16" min to 22" max
21 - 21" min to 27" max
26 - 26" min to 32" max *(shown)*
31 - 31" min to 38" max



SIDE VIEW



FIXTURE QUANTITY



All dimensions indicated on this submittal are nominal. Contact Technical Sales if you require more stringent specifications.

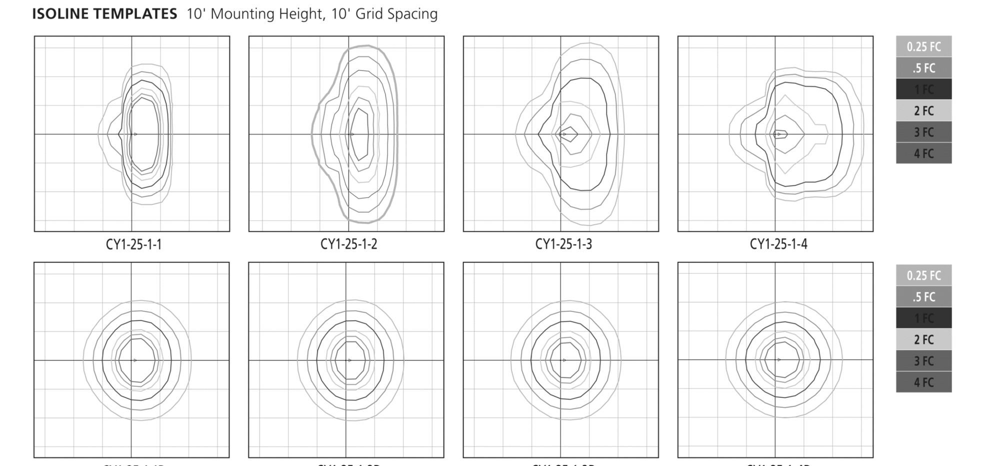
B-K LIGHTING | 40429 Brickyard Drive • Madera, CA 93636 • USA 559.438.5800 • FAX 559.438.5900 www.bklighting.com • info@bklighting.com | RELEASED 6-30-2019 | DRAWING NUMBER SUB2801-00

Cypher™ – CY1 Accent Scale
TYPE

LUMINAIRE PERFORMANCE

Nominal Output (Lm)	Average System Wattage	Distribution	5000K Delivered Lumens	5000K Efficacy (Lm/W)	5000K B	5000K U	5000K G	4000K Delivered Lumens	4000K Efficacy (Lm/W)	4000K B	4000K U	4000K G	3000K Delivered Lumens	3000K Efficacy (Lm/W)	3000K B	3000K U	3000K G
Downlight only			Configuration: Bright White (5000K), 5000K 70 CRI					Neutral White (4000K), 4000K 70 CRI					Warm White (3000K), 3000K 70 CRI				
1,500	17	Type 1	1923	113	0	0	0	1928	113	0	0	0	1825	107	0	0	0
		Type 2	1726	102	0	0	0	1730	102	0	0	0	1638	96	0	0	0
		Type 3	1750	100	0	0	1	1755	103	0	0	1	1661	98	0	0	1
		Type 4	1757	103	0	0	0	1762	104	0	0	0	1668	98	0	0	0
		Wall Graze	1971	114	1	0	0	1976	116	1	0	0	1871	110	1	0	0
		Spot/Column	1792	103	2	0	0	1797	106	2	0	0	1701	100	2	0	0
		Type 1 Diffused	1629	96	1	0	0	1634	96	1	0	0	1547	91	1	0	0
		Type 2 Diffused	1573	93	1	0	1	1577	93	1	0	0	1493	88	1	0	0
		Type 3 Diffused	1425	84	1	0	0	1429	84	1	0	0	1353	80	1	0	0
		Type 4 Diffused	1602	94	1	0	1	1607	95	1	0	0	1521	89	1	0	0
2,500	26	Type 1	2517	96	0	0	0	2524	97	0	0	0	2390	92	0	0	0
		Type 2	2233	85	1	0	1	2239	86	1	0	1	2120	82	1	0	1
		Type 3	2229	85	1	0	1	2236	85	1	0	1	2117	80	1	0	1
		Type 4	2319	88	1	0	1	2325	89	1	0	1	2201	85	1	0	1
		Wall Graze	2744	104	2	0	0	2752	106	2	0	0	2605	100	2	0	0
		Spot/Column	2471	94	2	0	0	2478	95	2	0	0	2346	90	2	0	0
		Type 1 Diffused	2344	89	1	0	1	2350	90	1	0	1	2225	86	1	0	1
		Type 2 Diffused	2062	79	1	0	1	2068	80	1	0	1	1958	75	1	0	1
		Type 3 Diffused	2050	78	1	0	1	2056	79	1	0	1	1946	75	1	0	1
		Type 4 Diffused	2123	80	1	0	1	2129	82	1	0	1	2016	78	1	0	1

ISOLINE TEMPLATES 10' Mounting Height, 10' Grid Spacing



architectural arealighting
ARCHITECTURAL AREA LIGHTING
17760 Rowland Street | City of Industry | CA 91748
P 626.968.5666 | F 626.369.2695 | www.aal.net
Copyright © 2017 | September 7, 2018 11:56 AM

JOB
TYPE
NOTES

DESIGN DEVELOPMENT SET - NOT FOR CONSTRUCTION

CREATIVE DESIGNS IN LIGHTING

15982 N. 78th St. Suite A
Scottsdale, Arizona 85260

602.248.7822
design@cdltg.com
www.cdltg.com

1978 **41** 2019
years of architectural lighting design

This drawing is an instrument of service and the property of Creative Design In Lighting and shall remain their property. The use of this drawing shall be restricted to the original site for which it was prepared and publication thereof is expressly limited to such use. Reuse, reproduction or publication by any method in whole or in part is prohibited without their written consent.

SMOKE TREE RESORT
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253

REVISIONS

△		
△		
△		
△		
△		
△		

DATE
08.24.2020

SCALE
N.T.S.

PROJECT NUMBER
116325-19

DRAWN BY
JG

CHECKED BY
MG

SHEET NAME

LIGHTING CUTSHEETS

SHEET NUMBER

AL2

Action Report

File #: 20-328

TO: **Chair and Planning Commission Members**

FROM: **Paul Michaud, Planning Manager**

DATE: **September 1, 2020**

DEPARTMENT: Community Development

AGENDA TITLE:
Recommendation of a Statement of Direction (SOD) Extension for a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

RECOMMENDATION:
Recommend that the Town Council modify the Statement of Direction (SOD) to extend the Planning Commission hearing date for the Smoke Tree Resort application (SUP-18-05) from September 30, 2020 to *[state a specific date].*

SUMMARY STATEMENT:
REQUEST:
Gentree LLC, the property owner of the Smoke Tree Resort, is seeking redevelopment of the property located at 7101 East Lincoln Drive (APN 174-64-003A) via a major amendment to the site's existing Special Use Permit - Resort zoning. The application is attached as Attachment A. The proposed redevelopment of this property will be a complete demolition of all existing structures and construction of a resort.

MEETING PURPOSE:
The Planning Commission discussed seeking a possible SOD time extension for their recommendation to Council from September 30, 2020 to a future date in the fall 2020 (Town staff suggests possibly November 18, 2020 or an alternate date, with a goal to complete their review sooner if possible). The applicant seemed agreeable to an extension at the August 18th work session, which Town staff would request written verification from the applicant after Planning Commission action on this matter to include in the Council packet for action on the extension.

This extension will allow for additional time for Planning Commission review. This consideration is in part due to the additional time to review draft stipulations, review other aspects of the application, and consideration on the proposed density/height. The latest the Planning Commission may vote on a request for an extension is at the scheduled September 15, 2020 Planning Commission hearing on this item. However, this action item is agendized on the September 1, 2020 meeting should the

Planning Commission find it necessary to take such action. In addition to any action on an extension, the Planning Commission must take action (e.g., continue, deny, or approve) on the September 15th hearing on the application itself (which will also depend on whether the Planning Commission acts to request an extension beyond September 30th and the timing of Council approval).

ATTACHMENT(S):

A Application
B Statement of Direction (June 2020)
C Revised Statement of Direction

APPLICATION FOR SPECIAL USE PERMIT AND MAJOR AMENDMENT TO THE SPECIAL USE PERMIT

PARCEL NO.: 174-64-003A **DATE:** 5/4/18
(County Tax Assessor Number)

NAME OF SUBDIVISION OR PARCEL: _____

ADDRESS OR LOCATION OF PROPERTY: _____

7101 E. Lincoln Dr. Paradise Valley, AZ 85253

OWNER: Gentree, LLC
NAME

3620 E. Campbell Ave., Suite B (602)952-8811
ADDRESS PHONE #

_____
SIGNATURE OF OWNER

AUTHORIZED AGENT: Taylor Robinson
NAME

3620 E. Campbell Ave., Suite B
ADDRESS

(602)952-8811 ( )
PHONE # FAX #

_____
SIGNATURE OF AUTHORIZED AGENT

APPLICATION FOR SPECIAL USE PERMIT AND MAJOR AMENDMENT TO SUP

(REQUIRED) PLEASE PROVIDE A NARRATIVE/DESCRIPTION OF THE PROPOSAL

(Please Attach Additional Sheets as Necessary):

SEE BOOKLET

ADDITIONAL APPLICATIONS:

	YES	NO
GUARD GATES		X
ROADWAY ABANDONMENT		X
REZONING		X
HILLSIDE		X

IF YES, SEE ADDITIONAL APPLICATIONS

MARICOPA COUNTY RECORDER
ADRIAN FONTES
20180248085 04/03/2018 10:15
ELECTRONIC RECORDING

88012753-3-6-4--
morenoa

When recorded, return to:

GENTREE, LLC
c/o Chester & Shein, P.C.
6720 North Scottsdale Road, Suite 261
Scottsdale, Arizona 85253
Attention: David E. Shein, Esq.

SPECIAL WARRANTY DEED

FOR THE CONSIDERATION of the sum of Ten Dollars ($10.00) and other valuable consideration, the receipt and sufficiency of which are acknowledged, SMOKE TREE RESORT, LLC, an Arizona limited liability company (formerly known as Smoke Tree Resort Merger, LLC, an Arizona limited liability company, as successor by merger to Smoke Tree Resort, LLLP, an Arizona limited liability partnership and Smoke Tree Resort, an Arizona limited partnership) ("Grantor"), hereby grants, sells, and conveys to GENTREE, LLC, an Arizona limited liability company, the real property situated in Maricopa County, Arizona and described on **Exhibit A** (the "Property");

TOGETHER WITH all buildings, improvements and fixtures located thereon as of the date hereof and all right, title and interest, if any, that Grantor may have in and to all rights, privileges and all easements benefitting the Property, appurtenances pertaining thereto including all of Grantor's right, title and interest, if any, in and to all rights-of-way, open or proposed streets, alleys, easements, strips or gores of land adjacent thereto;

SUBJECT TO current taxes and assessments not yet due and payable, easements and restrictions of public record, and encroachments visible upon the Property;

And Grantor hereby binds itself and its successors and assigns to warrant and forever defend the title to the Property, as against all acts of Grantor herein and none other, subject to the matters above set forth.

[Signatures appear on the following page]

Dated as of April 2nd, 2018.

GRANTOR:

SMOKE TREE RESORT, LLC,
an Arizona limited liability company

By: _____
Name: Eric Williams
Title: Authorized Signer

STATE OF ARIZONA)
) ss.
County of MARICOPA)

The foregoing instrument was acknowledged before me on April 2nd, 2018, by Eric Williams, the Authorized Signer of SMOKE TREE RESORT, LLC, an Arizona limited liability company, on behalf of the company.

_____
Notary Public

My commission expires: 8/3/21

Drue Coats
Commission # 532170
Notary Public - Arizona
Maricopa County
My Commission Expires
August 3, 2021

Exhibit A

(Legal Description of the Property)

PARCEL NO. 1:

The North half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

EXCEPT the East 200 feet, thereof.

PARCEL NO. 2:

The North half of the South half of the Northwest quarter of the Northeast quarter of the Southeast quarter of Section 10, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

EXCEPT the East 200 feet, thereof.

SUP-18-05 Smoke Tree Resort
-Revised Statement of Direction-
June 25, 2020

Gentree LLC submitted a Major Special Use Permit amendment application for redevelopment of the Smoke Tree Resort located at 7101 E Lincoln Drive. The current proposal is for a complete redevelopment of the 4.6 net acre site with 122 hotel guest rooms, a restaurant, bar, rooftop lounge, associated resort retail, group meeting function space, event gardens, and resort pool areas.

In March of 2019, the Planning Commission voted 4-3 to deny the previous application based on a site plan and proposal that included 150 hotel rooms, 30 for sale resort residences, limited right-of-way dedication along the adjoining public streets, and a different site layout from the current application since the Planning Commission recommendation. Based on the revisions of the modified proposal the applicant and the Town Council agree that the Planning Commission should further consider the amended application.

The Statement of Direction is not a final decision of the Town Council and does not create any vested rights to the approval of a Special Use Permit. Any applicant for a Special Use Permit shall not rely upon the matters addressed in the Statement of Direction being the same as those that may be part of an approved Special Use Permit.

Therefore, the Town Council issues the following Statement of Direction for the Smoke Tree Resort:

- The General Plan encourages the continued revitalization and improvement of the Town's Special Use Permit properties while protecting the adjacent residential neighborhoods (General Plan Land Use Policy 2.1.2).

- The site is in a designated Development Area pursuant to the General Plan. As such, in addition to other applicable policies, the following policies may be considered:

    a. Consideration of Development Area Special Use Permit applications should balance a need for the Town's fiscal health against a steadfast commitment to protecting adjacent low-density residential character and quality of life (General Plan Land Use Policy 2.2.1.2).

    b. The Town shall require development or redevelopment within Development Areas to provide reasonable separation of incompatible land uses from adjacent residential areas through context and scale appropriate land planning and architectural design, greater setback distances, noise mitigation, resort property programming, and landscape buffering (General Plan Land Use Policy 2.2.1.3).

    c. The Town should encourage moderate intensity, mixed-use, and context appropriate resort development within the East Lincoln Drive Development Areas that includes reasonable separation between incompatible uses and adjacent residential areas and effective buffering of unwanted noise, light, traffic and other adverse impacts (General Plan Land Use Policy 2.2.3.3).

The Planning Commission shall focus their review on the visible, audible, and operational effects the major amendment may have on the neighbors. Additionally, the Planning Commission shall receive public feedback on the current proposal including, but not limited to, a Citizen Review Session to allow for public comment and a Public Hearing for recommendation of the amended application to the Town Council. The Citizen Review Session may include a separate neighborhood meeting(s) by the applicant and at least one Planning Commission Work Session meeting open for public comment. The applicant shall provide at least a 10-day advance notice of the Citizen Review Session and at least a 15-day advance notice of the Public Hearing to property owners within 1,500 feet of the site. Due to the circumstances surrounding the current Covid-19 Pandemic, the Town Staff and Planning Commission shall be cognizant that some members of the public may not be comfortable with providing comments through technology and should look for other ways to maximize

public input. Notice for both meetings can be combined into one notice. In particular, the Planning Commission shall focus their review on:

1. Use.
   While the primary resort use will not change, more information is needed regarding the hotel quality standards and the new accessory uses. The applicant has proposed fourteen accessory uses for the forward-facing portions of the site that should be considered and defined or narrowed as appropriate as well as the specific operational factors (hours of operation, outdoor seating, etc.) shall be studied.

2. Density.
   The proposed 122 units creates a density of approximately 26 units per acre. The Planning Commission shall take into consideration the 4.6 net acre site area and reduced density on the west and south sides of the site, particularly how the density impacts safety and quality of life of town residents.

3. Lot Coverage/Floor Area Ratio.
   The Planning Commission shall consider lot coverage and floor area ratio while acknowledging the unique characteristics considered in the Development Area and the amendments made to the proposed site development since the Planning Commission last heard this request on March 5, 2019. The review shall address reasonable separation between incompatible uses and effective buffering of unwanted noise, light, traffic, views of the buildings offsite, and other adverse impacts. The lot coverage and floor area ratio shall both be calculated based on net lot area, excluding all dedicated area. There may be consideration of lowering the proposed lot coverage and floor area ratio and/or requiring specific mitigation measures.

4. Height.
   The Planning Commission shall evaluate the proposed height and its impact on adjacent properties. The minimum height is encouraged on the west side of the site closest to existing residential properties, transitioning to higher heights on the east side of the site adjacent to Lincoln Medical Plaza. A compelling reason must be given for heights proposed over 36', with such height to be limited in area and considered when necessary for mechanical screening and architectural elements. It is recommended that all heights be taken from original natural grade. If any portion of the rooftop is visible off-site, care should be taken to minimize the impact and screen mechanical equipment. White roofing material is discouraged if visible off-site.

5. Viewsheds.
   The Planning Commission shall consider the impact to adjoining properties of any encroachment outside of the imaginary plane suggested by the Open Space Criteria. Due to the size of this property being one quarter the suggested 20-acre size per the Special Use Permit Guidelines and the location adjoining other commercial uses, a limited amount of encroachment is proposed and may be permissible. Structures are suggested to generally stair-step from one-story/lowest height closer to the subject site property lines to not more than three-story/36 feet in height from Lincoln Drive, Quail Run Road, and the adjoining Andaz resort. Planning Commission focus shall be that the overall mass of the structures are of an appropriate scale, with special consideration given to the views from the south side bordering the Andaz resort and the west side bordering Quail Run Road.

6. Setbacks.
   The amended proposal increased building setbacks along much of the perimeter of the site. The Planning Commission shall explore appropriate setbacks, with particular attention to the privacy and noise levels for residents west of the site and resort guests south of the site. Consideration should be given to a 100-foot SUP guideline setback to the adjacent residential property lines. The Commission shall also identify any mitigating circumstances that may buffer the development (e.g. the use of vegetation, modified setbacks or heights, reorientation of the structures, etc.).

7. Impact to Adjacent Uses.
   The proposal has the resort restaurant and market (with outside tables) along the north side of the property near Lincoln Drive. Additionally, a third story bar/lounge with indoor/outdoor space is proposed, which should be evaluated for square footage (bar/rooftop deck), types of uses, impacts of light and noise trespass off-site; a sound study shall be required and certified by an acoustical engineer. The Planning Commission shall consider impacts including noise, light, traffic and any other adverse impacts, particularly for those existing residential properties west of the site along Quail Run Road. In particular, outdoor employee areas and service uses such as maintenance, maid service/laundry, trash collection/storage, mechanical equipment (roof/ground), and all other noise generating elements shall be studied and buffering of uses shall be considered.

8. Landscaping, Utilities and Exterior Lighting.
   Planning Commission focus on landscaping and exterior lighting shall be along the perimeter of the site, including review of appropriate screening or relocation of the utility cabinets along Lincoln Drive. Consideration for possible relocation of utility cabinets shall consider aesthetics, long-term maintenance and operation, safety and cost. Elements of the Visually Significant Corridors Plan shall be considered for landscaping along Lincoln Drive. A stipulation shall be considered to ensure replacement of any landscaping should it die.

9. Traffic, Parking, Access, and Circulation. The proposed density and location within a heavily-traveled and mixed-use density area near the City of Scottsdale creates a heightened need for ensuring the proposed redevelopment does not have a negative impact on traffic safety, parking, and circulation. The Town Council has worked with the owner of Smoke Tree Resort and Lincoln Plaza Medical Center on access with a solution for a shared driveway, along with right-of-way improvements. The Planning Commission shall focus their review on the following:

   - Location and screening of loading zones and dumpsters
   - Deceleration turn lane for eastbound traffic entering the site
   - Cross-access easement(s) with Lincoln Medical Plaza
   - Sidewalk and other pedestrian circulation
   - Necessary roadway dedication for Lincoln Drive and Quail Run Road
   - Adequacy of the required and provided parking spaces based on the proposed use(s) which shall allow for adequate parking throughout the life of the project that shall be identified in a Parking Management Plan.
   - Full build-out of The Ritz-Carlton Resort Special Use Permit
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10. Signage.
    Planning Commission review shall focus on the impact of project sign location, dimensions, and illumination on the resulting impact to the streetscape. The Commission shall look at the broader signage plan for Lincoln Drive including proposed gateway signs, identification signs, and Ritz-Carlton and Lincoln Medical Plaza signage.

As per Section 1102.3.C.3.c of the Zoning Ordinance, at any time during the review process, the Planning Commission may request clarification and/or expansion of this Statement of Direction based on additional information that has evolved. However, the Planning Commission shall complete their review of this application and make a recommendation to Town Council, including a draft Ordinance, no later than September 30, 2020.

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-Revised Statement of Direction-
~~June 25, 2020~~ September 2020

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Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Action Report

File #: 20-321

Approval of August 4, 2020 Planning Commission Minutes

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Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Minutes - Draft

Planning Commission

Tuesday, August 4, 2020 | **6:00 PM** | **Council Chambers**

IN-PERSON ATTENDANCE AT PUBLIC MEETINGS HAS BEEN SUSPENDED UNTIL FURTHER NOTICE. WATCH LIVE STREAMED MEETINGS AT: https://paradisevalleyaz.legistar.com/Calendar.aspx

1. CALL TO ORDER

Chairman Wainwright called the meeting to order at 6:00 p.m.

STAFF MEMBERS PRESENT
Town Attorney Andrew M. Miller (attended remotely)
Senior Planner George Burton
Town Engineer Paul Mood (attended remotely)
Planning Manager Paul Michaud

2. ROLL CALL

Present 6 - Commissioner Jonathan Wainwright
Commissioner Charles Covington
Commissioner Pamela Georgelos
Commissioner Daran Wastchak
Commissioner Thomas G. Campbell
Commissioner James Rose

Absent 1 - Commissioner Orme Lewis

3. EXECUTIVE SESSION

None

4. STUDY SESSION ITEMS

A. 20-314 Continued Discussion of a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

Mr. Gilbert, legal representative for the applicant, noted that his partner Cassie Ayres, Owner of property Taylor Robinson, and Traffic Engineers Dawn Cartier and Sue Thompson were present. He wanted to update the

Commission on all revisions and focus on topics of the Statement of Direction (SOD) that had been preselected for discussion. The changes were detailed in a packet given to the Commission.

- Updated details for the market and coffee shop showing the square footage.
- Provided exhibit showing existing topography and finished floor elevations.
- Added a view of the North elevation as viewed from Lincoln Drive.

He then discussed the specific SOD sections, including parking, landscaping, utilities, lighting, and signage.

Parking:

- The Town and the Smoke Tree's consultants had both mutually concluded that the site plan provided adequate parking on the site.
- Kimley Horn concluded that the peak weekday demand was 187 spaces at 6:00 p.m. in March, and the peak weekend demand was 178 spaces for 8:00 p.m. in March. They believed the demand was addressed with the valet plan.
- He would provide a draft parking management plan. It was currently being updated to include suggestions from parking consultants.
- The parking agreement with adjacent Lincoln Plaza Medical Center was not needed due to the parking being adequate.
- The off-site parking agreement was not necessary, but they did have one.
- They had demonstrated the project would not have a negative impact on traffic safety, parking, and circulation.
- Traffic analysis resulted in one recommendation to change the traffic light timing at Scottsdale Road and Lincoln Drive. The change was recommended regardless of the Smoke Tree Resort being constructed.
- The multiple driveways on Lincoln Drive had been condensed to one main entrance that serviced both the Smoke Tree Resort and Lincoln Medical Center.
- The site provided circulation by cross access with Lincoln Medical Center.
- The main entrance to the Smoke Tree Resort would be through the traffic light on Quail Run Road. The Lincoln Drive access would be primarily a service entrance.

A Commissioner asked if they have a total of 224 spaces available with the medical center agreement.

Mr. Gilbert responded there were 199 spaces with the valet plan.

Ms. Dawn Cartier clarified there would be 224 spaces with the agreement with the medical center for 25 spaces.

Commissioner Rose asked how the hotel meeting banquet visitors in a 4,000 square foot ballroom would result in an estimated parking demand of 48 spaces on Table Six of the Kimley Horn study.

Ms. Cartier noted that parking was not designed for a rush. When they designed parking for a resort, they calculated for the guests already staying at the resort that may be a part of an event.

Commissioner Rose commented that if the resort were at maximum occupancy and there was a 200 guest event, they would need 195 spaces. He noted that the number of employees was understated.

Ms. Cartier noted that the Parking Management Plan used the idea of vouchers for employees to receive rides to the site. It freed approximately 35 spaces.
Commissioner Rose noted that it was a good practice, but he felt that financially that would not be sustainable for the resort owners. He mentioned the valet parking during events could be a challenge based on the configuration.

Ms. Cartier noted that resorts understood the peak of events in advance. In that situation, there would be a need for maximum use of 199 spaces; they would look to park valet off-site first and reserve the spots closer for when the heavier traffic arrived. There would likely be two valet stands during peak hours. She believed the resorts could plan well in advance and be able to manage the guest and employee parking.

Owner Taylor Robinson commented that the distance from the main valet entrance on Quail Run was roughly 500 feet. It would take no longer than a minute for a valet to park a car at the Lincoln Plaza Medical Center and get back to the station. They would leave the entrance and go south through the south end of the resort and then go north to use the shared access driveway to enter the Lincoln Plaza Medical Center parking.

Commissioner Rose felt the plan was ambitious.

Mr. Robinson asked if there was a different plan that Commissioner Rose proposed.

Commissioner Rose noted that the parking needed additional spaces. He disagreed with the consultants' opinion.

Mr. Robinson stated if there were any questions regarding the parking analysis calculations Jeff Weckstein and Sue Thompson were on the line to answer.

Mr. Gilbert noted that as they finalized the parking plan, they could provide more detail and answer any questions. He wanted the Commission to be comfortable with the idea.

Commissioner Covington asked if the parking agreement with Lincoln Plaza Medical Center was in place and if they anticipated any parking on Quail Run Drive.

Mr. Gilbert stated the agreement was enforced. Lincoln Plaza Medical Center had the right to cancel the agreement with 30 days' notice.

Ms. Cartier answered that she did not foresee any parking needed on Quail Run Road. She could not guarantee that people would not park on Quail Run Road.
Commissioner Campbell wondered what the peak use times were for Lincoln Plaza Medical Center.

Ms. Cartier did not anticipate that the peak use times would overlap with the Smoke Tree Resort.

Commissioner Campbell was confused about the Lincoln Drive right-of-way. He wanted clarification from the staff if a third eastbound lane would be necessary, excluding the deceleration lane. He noted a dedication was needed. He asked if that would have an impact on parking and if there was a plan to make Lincoln Drive six lanes wide.

Mr. Mood indicated there were no plans for that at this time. If would be difficult because there was an existing development agreement with Lincoln Plaza Medical Center to the east. They would need to go through an additional acquisition process to get the right-of-way as well.

Mr. Gilbert noted in order for the Town to add a right-of-way, they would need to condemn part of the right-of-way for AJ's Market and other businesses, additional property at Lincoln Plaza Medical Center, property to the west, and then private lots. He noted it was not likely to have three lanes.

Commissioner Campbell stated that three lanes would not be ideal on

Lincoln Drive. The traffic was heavy. His questions was satisfied.

Andrew Miller confirmed that some Council Members did not want to see three lanes in the area.

Chairman Wainwright asked the Commissioners point of view on the dedication of right-of-way.

Commissioner Campbell knew that the engineers on the project would be leaving the meeting soon, and that was why he brought the issue forward.

Commissioner Georgelos referred to the project comparison chart regarding parking. The spaces per key at the resort were on a spectrum from one to over three spaces per key. She asked how the number 1.39 spaces per key was arrived at for the Smoke Tree Resort. The concept of a voucher program did not seem cost-effective. She wanted to know information about those items.

Ms. Cartier noted that when her firm analyze resorts, they evaluate not only the rooms but also the ancillary and outside uses. They began by comparing other resorts parking spaces to key ratios. The Smoke Tree Resort had fewer amenities than other resorts, and it would be penalizing them by disproportionately charging them with parking for ancillary uses. They found that there was more parking per square foot of amenities than any other resort in the Town.

Commissioner Georgelos asked Ms. Cartier to compare and contrast the Smoke Tree Resort to the Hermosa Inn.

Ms. Cartier commented that Hermosa Inn has a small number of rooms. A large portion of visitors came from off-site. The 35 rooms provide 7,000 square feet of ancillary or amenities use. The Smoke Tree had 122 rooms, roughly four times the number of Hermosa Inn, not quite two times the amenity space, creating the difference.

Mr. Gilbert stated the Hermosa Inn was a restaurant that operated as a resort. The Smoke Tree was a resort primarily. He represented the Phoenician Resort with similar issues regarding the parking plan. They were entitled to provide parking for employees off-site and bus their employees to the resort, which the City of Phoenix approved. Commissioner Georgelos asked if that idea had been considered and where the employees would be parked in this instance.

Mr. Gilbert responded that as part of the parking management plan, but he did not know where the parking would be for employees. It could differ

depending on parking availability based on time of year.

Commissioner Georgelos compared the two resorts that the Smoke Tree Resort had more units than the Hermosa Inn. Hermosa Inn had a restaurant approximately 2,600 square feet, and the Smoke Tree Resort had a restaurant about 2,100 square feet. She did not believe the restaurant would be only serve resort guests. Hermosa Inn had 2,000 square feet of retail, and Smoke Tree had 2,500 square feet. She understood that the retail would be for primarily resort guests but figured that others would use these resources. She noted there were three parking spaces per room key at the Hermosa Inn. She preferred to see additional parking at the Smoke Tree Resort regardless of the consultant findings.

Mr. Robinson commented regarding the sentiment to have additional parking, including the 199 spaces plus the 35 spaces by bringing employees in by voucher or other off-site means, and with the Lincoln Plaza Medical Center agreement, that provided a 30 % increase over the available on-site parking should it be needed. The parking consultants and himself could review any assumptions of uses for the retail and fitness portions of the resort. Any contracts for amenities brought to the resort would be made to fit the Smoke Tree requirements.

Commissioner Georgelos noted that the point of the amenities was to encourage business. She felt it would be helpful to review the different parking assumptions and allow the Commission to understand the numbers provided in the parking study.

Ms. Cartier noted the table for Project Comparison of Parking Rates and Amenity Inventory used a number of 170 spaces provided for Smoke Tree with non-valet. With 199 spaces at the Smoke Tree, they are at 1.63 parking spaces ratio. It was just below Mountain Shadows and Doubletree Resorts parking ratio. With the additional 25 parking spaces at Lincoln Plaza Medical Center, the ratio increased to 1.83 spaces that would put the Smoke Tree between Mountain Shadows and Motelucia Resorts parking ratio. When adding a voucher or off-site bussing system for employees, the ratio increased to 2.12, which was in line with the Ritz Carlton parking ratio.

Consultant Sue Thompson stated that they had worked with Ms. Cartier and their team to understand the uses within the facilities.

Commissioner Campbell asked if there was an anticipation of issuing memberships to the fitness center on-site.

Mr. Gilbert stated the fitness area will be limited to only guests of the hotel, and no memberships sold.

Chairman Wainwright noted that when they were comparing the Smoke Tree to other resorts, the Smoke Tree Resort was the only one with the ability for overflow parking on an adjacent property. The peak use times of the Lincoln Plaza Medical Center and the Smoke Tree Resort did not overlap. The Lincoln Plaza Medical Center would probably sell parking to the resort during peak times for employee parking.

Mr. Gilbert believed that was correct. He felt that the assumption of employees parking during peak times in the Lincoln Plaza Medical Center was accurate.

The parking consultant detailed the steps for a shared parking analysis. He referred to Figure 1: Shared Parking Analysis, in the parking study, provided to the Commission. He began with the land use program, which was the primary use of rooms and ancillary uses. He then adjusted the base ratio. Those adjustments included:

- A driving ratio adjustment for visitors using rideshare, taxi, or other means to visit the resort.
- An adjustment to the non-captive ratio. The percent of guests that are on site for a particular use, that are not on-site for additional use. He explained that being an event where a percentage of visitors stayed at the hotel and attended the event.

That would equal the project rate for each land use. The next step would be to evaluate the presence factors. Those factors would be adjusted based on different land uses peak at different times of the year, and also have different variations of activity over the day. This resulted in the recommended supply, which was the output of the shared parking model.

Additionally, he reviewed Table 2: Base Parking Ratios. The ratios were the industry standards found in the Urban Land Institute Model Publication and the Drive Ratio Adjustment for employees used U.S. Census data. Eighty-five percent of employees drove to work alone. They took a ten percent reduction in drive ratio to reflect carpooling activities to be conservative. Hotel guest shared parking had significant research. In shared parking, there was a fifty percent drive ratio. Half arrived via automobile. The Shared Parking guideline was to provide parking for a fifty-nine percent drive ratio on weekday and sixty-nine percent on weekends. It further suggested adding for the adoption of ride-hailing. The data was collected before the advent of Uber or Lyft type services. Paradise Valley did not have many transit options. They decided to classify the use as a business hotel in a suburban environment and used a seventy percent drive rate for the analysis.

Next, he discussed the Hotel Even Space Patrons. The baseline guidance

for resort hotel events was a half driving ratio. With Businesses as hotels, the percentage was higher at a 68 percent drive ratio. In their analysis for the Smoke Tree Resort, they used a 75 percent driving ratio. Retail and Dining customers were all assumed to drive to the location. When non-captive ratios could vary from one property to another, typically a ratio of 20-70 percent had been used to fine-tune parking requirements for mixed-use projects. He referred to Table 4: Non-Captive Ratio Assumptions. He detailed the ratios that varied for the amenities and based on time of day. Presence Factors were adjustments made to account for the parking demand by the hour, day, and month of the year.

He concluded that was the basic model. He referred to Table 5 in the parking study for the calculations. The shared parking model would satisfy the recommended parking supply to fulfill an 85-percentile day. The parking management plan would be to accommodate scenarios of being at max capacity.

Ms. Thompson provided the context regarding the ULI parking model. Walker Consultants and Kimley Horn contributed to the model, but the information came from consultants from across different parts of the industry. A developer looking to see what parking was needed could use this model. It was not only for resorts. Walker Consulting's background was thousands of studies to be sure there wasn't excess parking but still provide adequate parking for visitors.

Commissioner Wastchak commented that the models were fine-tuned. He asked how often they go back and review models to verify them.

Mr. Weckstein replied they do go back and visit properties to see what was happening. He gave examples of going back to resorts and evaluating the parking. Repeat clients state that the studies did work.

Ms. Thompson commented that her background was in operations. Once Mr. Weckstein provided a parking model, she would then base operations of the parking on that. She usually was the one to work with the owner to help them manage the results of the parking study. She did go back and check with the owners once a project was complete.

Commissioner Rose asked Ms. Thompson and Mr. Weckstein what Estimated Parking demand meant referring to Table 5 of the parking study. The study identified that fifty-nine percent of visitors to the resort would drive a car.
Mr. Weckstein commented that it estimated parking need for each individual land use, and then totaled. That was equivalent to an eighty-fifth performing percentile. The ULI publication showed fifty percent, but in their

analysis, they assumed seventy-five percent would drive.

Commissioner Rose noted a leisure guest staying at the resort did not have amenities to keep them on-site. They would probably make adjustments knowing they were going to need to leave the site. He asked if they had underestimated the parking spaces for hotel leisure.

Mr. Weckstein commented there could be a situation of a sell-out of the resort, and it could be all local people not flying into the Town. That could require more parking spaces. The table showed the projected need for hotel guests at the peak of the resort. There was a higher demand later in the evening, but the restaurant and banquet space would be winding down. They did not take the drive ratio for leisure resorts but used the business as a resort model to increase the ratio to a seventy-five percent drive rate.

Mr. Gilbert addressed the topics in the SOD. He stated that the trees had been staggered, changed to live oaks, and showed what was approved for the Lincoln Plaza Medical Center side. He stated this complied with the SOD landscaping guidelines.
Mr. Taylor described the proposed screening of the utility cabinet along Lincoln Drive. He stated that this cabinet did not service the Smoke Tree Resort. It was for regional infrastructure. He did not feel they should be required to move them and it would be costly. He asked for the consideration for the cabinets to stay.

Mr. Gilbert reviewed exterior lighting and signage.

Planning Manager Paul Michaud reviewed items from the staff report and read into the record a new comment from a resident named Mr. Shoen.

Mr. Michaud reviewed the parking lot setbacks, noting the proposed setbacks are not compliant with the Special Use Permit Guideline of 40 feet. He continued that the parking lot screening will include 3’ tall walls along the street frontage, with such walls not at the typical 10’ setback. Screening along the south and east side includes proposed sour orange hedges and the existing oleanders.

Mr. Michaud continued to discuss the proposed utilities. There was discussion regarding the screening of the existing electric utility cabinet along Lincoln Drive, including the need to provide electric loads to APS to determine relocation.

Mr. Michaud reviewed the landscaping as it related to the Visually Significant Corridors Plan, Special Use Permit Guidelines, and the Town Code. He noted that the landscape setbacks per the guidelines were not

met along the street frontages, that there are two less tress than the guideline along Quail Run Road, and there are no proposed Ironwood trees along the street frontage (only internal to the site).

Mr. Michaud reviewed the proposed exterior lighting. He stated that many 16-foot tall pole lights are not setback the height of the pole, noted that bollard and landscape lighting is shown within the right-of-way not supported by Town staff, raised questions regarding the proposed palm tree lights based on prior Special Use Permit applications, and stated the applicant needed to provide additional summary information on the photometric plan.
The Commissioners discussed the lighting in the rights-of-way and the palm tree ring lights.

Mr. Robinson answered the bollards were proposed outside of the screening wall. The poles were easily removed but felt the combination of well-placed light would benefit the sidewalk.

Chairman Wainwright and Commissioner Campbell were supportive of the lights within the rights-of-way.

Commissioner Campbell stated the palm tree lights are directed downward and located in areas mostly internal to the site. He expressed support for these lights with a stipulation they are not mounted over 16 feet.

Mr. Michaud reviewed the proposed signs. He explained the Zoning Ordinance requirements and Special Use Permit Guidelines. He explained that the resort identification signs exceed the guideline on number of signs and thereby total aggregate sign area. He also stated that the applicant needs to provide details that the sign light source is shielded, its color temperature, and its foot-candle output.

The Planning Commission discussed the resort signs, noting that since the applicant reduced the number of driveways and worked out a shared access driveway with the medical center that the proposed number of signs looks reasonable.

Mr. Michaud reviewed the resort retail signage for accessory use. He stated that Sheets A62 and A63 illustrated signs related to accessory uses and the hotel. If allowed, he suggested that the Planning Commission define the maximum number of signs, maximum mounting height, maximum sign area, and whether illumination is allowable. He added that there are no Town Guidelines for this type of signage.

Commissioner Wastchak wanted to know the locations of the signs for

accessory use. The details were important for staff and the Commission to provide feedback to the applicants. He asked what the staff would need in order not to bring this item back to the Commission.

Mr. Michaud answered that this could be defined by general stipulations, generally located on the building, height to top of the sign, stipulate the maximum number of signs, sign areas if they could be illuminated. For signs visible off the property, there should be stipulations of where they could be located, their size, and if they could be illuminated.

Commissioner Wastchak wanted to be sure that on completion of the resort that there were no surprises. He wanted clear guidelines and clear information on where the signs for accessory uses would be located.

Commissioner Covington wanted clarification that there would be no outward-facing signage for the market or the coffee shop.

Mr. Michaud understood that in a meeting that was stated. He had not heard it personally.

Mr. Robinson commented the signage proposed was comprehensive. They had removed any signage for accessory uses to make them internally facing. They would like outward facing signs but willingly forwent that to make the plan compliant and pleasing.

Commissioner Wastchak asked Mr. Michaud what the Commission needed to provide him with if the ancillary use signs were internally facing.

Mr. Michaud stated that as long as the signs were internal facing and it couldn't be seen from the street, the Town could allow these signs if part of the approval of this application request. He added that these type of signs would still need a building permit.

Commissioner Rose asked if there would be no signs on Buildings G and I.

Mr. Robinson confirmed there would be no outward-facing signs on those buildings. If there was signage on the buildings, it would be restricted so it could not be seen from off-site.

Mr. Michaud stated the next meeting would be on August 18. He detailed the items to be discussed.

Commissioner Campbell wanted to give the applicant credit for the joint entry. He was comfortable that they use signage at that entry also.

Chairman Wainwright agreed with that.

Commissioner Covington asked if the entrance from Lincoln Drive was mainly intended for service.

Mr. Gilbert confirmed, yes.

Commissioner Wastchak referred to the electric cabinet on Lincoln Drive PowerPoint slide. In the legislative update document prepared for the meeting, Mr. Michaud indicated there was sidewalk outside of the dedicated right-of-way that needed an easement. The red area on the picture displayed was a view triangle easement. He asked if that piece of the sidewalk was what he referred to in the legislative update. He asked if staff was recommending there be an easement for that piece of pavement.

Mr. Michaud stated that it was the piece referred to in the document.

Town Engineer Paul Mood commented that any public sidewalk that fell out of the right-of-way would need a sidewalk easement.

Mr. Gilbert was cooperative in providing the easement.

Commissioner Wastchak wanted to know the Town's position on the electrical cabinet located in that area.

Mr. Mood commented that APS representatives indicated there was not sufficient information from the resort if the cabinet could remain. It was old infrastructure, and they were not sure if it could remain or not. The screening requirements were three-foot clear of the cabinet in all directions.

Commissioner Wastchak stated there was not enough room to screen the electrical cabinet.

Mr. Gilbert did not think it needed work but was willing to work with APS and would follow through. He could continue this item to the next meeting.

Mr. Robinson clarified that the red diagram on the photo shown was a roadway easement that the Town had received through a condemnation proceeding. The black triangle was the view triangle. The three-foot clearance for APS was for permanent structures, and one foot for removable panels.

Commissioner Wastchak felt it was important that this item was settled before the Smoke Tree Resort review was complete.

Mr. Robinson noted that part of the information needed by APS was that the lines run for this cabinet were regional and did not serve the resort. The Smoke Tree Resort load data would not apply.

Commissioner Wastchak asked Mr. Mood why APS was telling them that this would impact the project if the load was not coming through that cabinet.

Mr. Mood responded that was the information received from a representative at APS who was familiar with the area.

Commissioner Campbell felt it still needed discussion regardless of if it were a regional or local cabinet as it would affect the design of that corner.

Mr. Mood commented that APS told him if it needed to be replaced by Smoke Tree or APS, it would be replaced with up to two to three cabinets.

Chairman Wainwright wanted to table the discussion for the moment, but felt it needed more information and study in the future. He was sympathetic to the fact that that line was not servicing the Smoke Tree.

Mr. Robinson proposed a solution that they would be happy to stipulate that the cabinet design and screening would need to meet the Visually Significant Corridor plan and Town Ordinance. APS review time was not quick, and to have a settled reviewed drawing would take time. He felt that could be bridged through stipulations. If all concerns of the Commission were met, then the box could remain. If not, then the cabinet would have to be relocated to an appropriate location.

Commissioner Campbell asked if they could use the 56th Street model with the three cabinets and ask the applicant how they would accommodate those three cabinets.

Mr. Robinson was willing to show a drawing to that effect. The cabinet was fed from directly north through Lincoln Drive. The lines exited to the west and went down Lincoln Drive. When a cabinet like that was replaced, the conductors could not be reused and would need to be replaced. There were multiple ways the conductor could be run to affect the cost of replacement drastically.

Commissioner Wainwright did not want to hold up the project hostage to APS's schedule.

Mr. Gilbert stated he might not have the information in the next meeting, but

they would provide it.

Commissioner Georgelos wanted confirmation on what would happen regarding the utility boxes, so there was no miscommunication. She agreed with Commissioner Campbell's suggestion.

Commissioner Covington did not want to hold the applicant up regarding the cabinet, but wanted it to be addressed.

Commissioner Georgelos asked what had historically been done in the rights-of-way regarding the bollards along the sidewalk and lighting on the trees.

Mr. Michaud commented they typically did not see bollards in the right of way or walkways. Occasionally there was landscape lighting in the rights-of-way residentially. Mountain Shadows and the Andaz resort had ring lights for the palm trees. They had been approved, but at those times, there was a desire to limit them and require a maximum height.

Commissioner Georgelos did not feel that the bollards were appropriate in the front areas. It was not generally done in rights-of-way and sidewalks. Instead of lighting the entire area, she asked if they could consider landscape or sidewalk lighting. She did not want the area to be unsafe. She felt that tree lighting should be limited.

Commissioner Georgelos asked the other Commissioners to consider the amount of illumination.

Mr. Michaud commented the applicant submitted photometrics, but they need to provide a summary table for minimum, maximum, and average light levels. That would help the staff determine if it met the guidelines. In his overview, it looked like most of the lighting was compliant.

Chairman Wainwright asked Commissioner Georgelos to articulate her concerns, and then the Commissioners would take a pole of what the Commissioners thought.

Commissioner Georgelos asked if there was concern about the bollards outside of the resorts along the sidewalks, the number of lights and illumination considered, and other aspects as well.

Commissioner Campbell asked the Town Engineer if he had concerns with the lighting regarding the vehicles. He wanted the pathway to be as safe as possible for pedestrians, and that would require lighting. He liked it when desert trees were up-lit. He supported the design.

Mr. Mood responded that there were no safety concerns, but a maintenance issue. Lighting would not impact a driver.

Commissioner Wastchak liked the design. The height of the light-poles could be a concern, but the trees around them would be much taller. He is fine with the bollards facing the property. He wanted the lighting there to be consistent with lighting along Lincoln Drive. Safety was paramount. He was flexible if they could keep consistency.

Chairman Wainwright agreed.

Commissioner Rose wanted the pathway to ere on the safe side.

Commissioner Covington asked if this was the only property with lights along the sidewalk on Lincoln Drive.

Mr. Michaud stated there was similar lighting at the Montelucia via an easement on their property. The Visually Significant Corridors plan includes lighting. He stated that the development across the street does not require similar bollard lighting within the rights-of-way.

Commissioner Wastchak asked if the long meandering sidewalk on the north side of Lincoln Drive would have no lighting. He felt that it was interesting that there was no lighting on that path.

Mr. Michaud stated there would only be street lighting at major intersections. Landscaping lighting was not required with that Special Use Permit.

Commissioner Covington stated that the majority of the palm tree lighting would be internal and was open to the lighting. It was a well-documented plan.

Chairman Wainwright was impressed by the lighting, and that was a heavily used sidewalk. He wanted to be sure it was safe.

Mr. Michaud summarized that the next meeting, they would review lot coverage/floor area ratio, the draft ordinance, and revisit items.

Chairman Wainwright was grateful for the presentations. He asked if Commissioners had any thoughts on the right-of-way relating to Lincoln Drive.

Commissioner Wastchak noted his only issue with the dedication of

right-of-way versus easement was already discussed. Once that issue was addressed, he was satisfied with what the Commission had done based on staff's presentation and their thoughtful approach.

Commissioner Georgelos commented that, in general, her concerns with right-of-way dedications were for the Town to acquire the dedications during the Special Use Permit process. She understood that the dedication is based on the staff information provided. If there wasn't a use for another travel lane, that was fine, but didn't want there to be a misstep. If there was never a time that another lane would be added, then the current plan was fine.

Commissioner Campbell stated his concerns were addressed earlier in the meeting, and he was satisfied.

Commissioner Covington deferred to the Town staff and Town Attorney. He felt if they were satisfied, he was also.

Chairman Wainwright commented the third story element was essential to the applicant. The Commissioners were comfortable with what was provided.

5. PUBLIC HEARINGS

None

6. ACTION ITEMS

None

7. CONSENT AGENDA

A. 20-315 Approval of July 7, 2020 Planning Commission Minutes

A motion was made by Commissioner Campbell, seconded by Commissioner Wastchak, to approve the minutes. The motion carried by the following vote:

Aye: 6 - Commissioner Wainwright, Commissioner Covington, Commissioner Georgelos, Commissioner Wastchak, Commissioner Campbell and Commissioner Rose

Absent: 1 - Commissioner Lewis

B. 20-316 Approval of July 21, 2020 Planning Commission Minutes

A motion was made by Commissioner Campbell, seconded by Commissioner Wastchak, to approve the minutes. The motion carried by the following vote:

Aye: 6 - Commissioner Wainwright, Commissioner Covington, Commissioner Georgelos, Commissioner Wastchak, Commissioner Campbell and Commissioner Rose

Absent: 1 - Commissioner Lewis

8. STAFF REPORTS

None

9. PUBLIC BODY REPORTS

Commissioner Campbell commented that in the last two weeks, there had been mass parties on Los Dutchman Street. He noted that State Law regulated that, but as a Planning Commissioner, they should have a stance on the issue. He felt that this was damaging the community.

Commissioner Covington noted that the event was shut down by the Police Department.
Chairman Wastchak noted some residents were gathering as a community to try and impress upon the legislature to make changes. He could put him in touch with them.

Town Attorney Miller stated that the Mayor and Town Council had been active on the issue, but the item was not on the agenda of this meeting.

10. FUTURE AGENDA ITEMS

Mr. Michaud noted that the next meeting was on August 18th, and the only discussion item was the Smoke Tree Resort.

Chairman Wainwright noted that there was mention of discussion for pad heights.

Mr. Mood would work on a presentation to the Commission in September.

Mr. Michaud asked who would be present.

All the Commission would be present.

Commissioner Wastchak asked about the General Plan.

Mr. Michaud stated there was a new project manager working on the project. They would be issuing an RFP for their consultants to begin working on that documentation. The Council would vote on the contract in October.

11. ADJOURNMENT

A motion was made by Commissioner Georgelos at 8:47 p.m., seconded by Commissioner Wastchak, to adjourn the meeting. The motion carried by the following vote:

Aye: 6 - Commissioner Wainwright, Commissioner Covington, Commissioner Georgelos, Commissioner Wastchak, Commissioner Campbell and Commissioner Rose

Absent: 1 - Commissioner Lewis

Paradise Valley Planning Commission

By: _____
Paul Michaud, Secretary

Town of Paradise Valley

6401 E Lincoln Dr
Paradise Valley, AZ 85253

Action Report

File #: 20-326

Approval of August 18, 2020 Planning Commission Minutes

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Minutes - Draft

Planning Commission

Tuesday, August 18, 2020 | **6:00 PM** | **Council Chambers**

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1. CALL TO ORDER

Chairman Wainwright called the meeting to order at 6:04 p.m.

STAFF MEMBERS PRESENT
Town Attorney Andrew M. Miller (attended remotely)
Senior Planner George Burton
Planning Manager Paul Michaud

2. ROLL CALL

Present 7 - Commissioner Jonathan Wainwright
Commissioner Charles Covington
Commissioner Pamela Georgelos
Commissioner Daran Wastchak
Commissioner Orme Lewis
Commissioner Thomas G. Campbell
Commissioner James Rose

3. EXECUTIVE SESSION

None

4. STUDY SESSION ITEMS

A. 20-319 Continued Discussion of a Major Special Use Permit Amendment (SUP-18-05) - 7101 E Lincoln Drive - Smoke Tree Resort

Mr. Gilbert, representing the applicant, presented and expressed thanks to the Commission. There had been contradicting information found from the last meeting regarding the APS cabinet.

Owner Taylor Robinson clarified that they were able to confirm the electrical source to the Smoke Tree Resort was indeed the cabinet in the discussion,

previously thought not to service the Resort. For APS to determine the plan for that cabinet, they required a full load calculation. The design and engineering of that cabinet would have to be decided at a future date. The number of cabinets would be between 0-2 cabinets.

Mr. Gilbert updated the revisions made and additional materials submitted since the last meeting. There were no revisions to the application but did submit new materials. They submitted the Parking Management Plan that was under review by Town Staff. They provided an acoustical study that was under review by Town Staff and a third-party consultant. The right-of-way cabinet could either go in the right-of-way or the Southwest corner of the Resort property. He stated the applicant was willing to stipulate that once the SUP was approved and the Engineered drawings were submitted to APS, they would comply with the Town's Visually Significant Corridor and APS requirements.

Additionally, he was in the process of having the photometric plan updated as requested by the Commission to show a minimum, maximum, and average foot candles and that the light source on the signs were shielded.

They would be holding their Neighborhood meeting on August 20, 2020. It would be a mix of in-person and virtual meetings. The in-person portion would be conducted on-site by Mr. Robinson, and the virtual portion would be controlled by Mr. Gilbert via a Zoom conferencing call.

Chairman Wainwright asked how many Commissioners could attend that meeting.

Planning Manager Paul Michaud noted that the Town Clerk posted there may be a quorum of the Commissioners present, and therefore all could attend.

A Commissioner commented that the Commissioners should avoid having extended discussions at the meeting. They should just hear comments from the public. If they discuss items, there would need to be someone present taking minutes. Additionally, the applicant should record the meeting for future purposes.

Mr. Gilbert continued by addressing items on the agenda.

Lot Coverage and Floor Area Ratio

The SOD required that this item be discussed, and the unique

characteristics of the development area and amendments made to the site since it was last evaluated should be considered. The site was at the border of Scottsdale and surrounded by three commercial or resort properties; the fourth side was residential. The residential properties were included in the redevelopment area designation in the General Plan. However, they continued to consider the area as a residential zone and tried to provide protections for that side. They had reduced the number of rooms from the original proposal.

Reasonable Separation and The Buffering of Noise, Lights, Traffic and Views

They had protected the residential property area bordering the Resort. On the west side, balconies had been removed, a 100-foot set back was in place, the higher density uses were located on the center and East portions of the property and lush landscaping was proposed along the west side. Other areas were buffered from traffic and offsite noise. They eliminated the tiered heights along the South and proposed a sixty-foot set back from the Andaz property and limited the building height to two stories. The only balconies would face the pool area. The three-story element was on the East side of the property. The noise generating elements were focused at the center and East of the property. The entrance to the market and coffee shop were internally facing. There were a few spots that exceeded the open space criteria, which were reviewed with the Commission. They screened the buildings from offsite views using setbacks and landscaping.

Mr. Gilbert stated that a neighbor had expressed concern that guests of the hotel might come onto her property. They worked with her and the Town and presented multiple proposals that were acceptable to her.

All the Resort aspects had been carefully considered to support the operations of the Resort but also achieve stabilization. They would enter referral relationships. For example, they would refer most of the spa guests to the Andaz Resort. The Mountain Shadows Resort did not have a spa, and they provide referrals as well. They did not want to compete but enhance their surroundings. The proximity to the Scottsdale/Lincoln Corridor resulted in a walkability score of 57. That score was given by an independent firm called walkscore.com. It evaluated walking distances to retail and dining. Their score was high.

The SOD suggested 25% lot coverage, and the Smoke Tree was 29.3%. This compared favorably to other resorts located in Town. There was not an existing Code or SUP guideline concerning floor area ratio.

Density and the SUP Guidelines

Mr. Gilbert suggested they merited a less restrictive guideline due to the following factors. They were next to Scottsdale; the property was under five acres and surrounded by commercial uses on three sides. During the SOD process, the Council acknowledged that some leeway regarding density should be granted considering the size of the property. He referred to the current SOD. Density had been reduced on the West and South sides of the property. They considered it to impact the residents and felt most of the residents were supportive of the project. Each component had been well thought out.

He had received a copy of the proposed ordinance, which had been reviewed but had not received it in time to submit written comments. They were prepared to discuss the proposed Ordinance with the Planning Commission.

Commissioner Campbell asked if they could be provided the information to join the neighborhood meeting virtually.

Mr. Gilbert had already sent the information.

Mr. Michaud stated he would send the information again after the meeting.

Chairman Wainwright asked the Staff to move forward with their presentation.

Mr. Michaud presented. The project summary included 122 guest rooms, 20 were detached suites. The Resort included a restaurant and bar/lounge, third story amenity, accessory uses, and indoor/outdoor event space.

Parking had been discussed in previous meetings. The Commission had heard from the parking/traffic consultants with the agreement that the Resort could be fully parked on site. The applicant stated they would provide extra parking capacity during large events, retain a contract for 25 spaces at Lincoln Medical Center, employ alternative offsite parking for employees, and review stipulation 45 and/or 47 for edits or clarify in the Parking Management Plan. A few Commissioners were still concerned the site was under parked.

The existing APS cabinet along Lincoln Drive was discussed with a clarification that the cabinet serviced the site, stipulation 12 addressed

utilities and screening, they provided two possible locations for the cabinet relocation.

Landscaping was reviewed, resulting in the South and East perimeter hedges and staggering of trees, buffers along the street were less than the SUP guidelines, there were less trees on Quail Run Road, less Ironwood trees per the guidelines, and no specific concerns were noted.

The lighting was discussed in the previous meeting. Lighting fixtures and photometric discussion resulted in an agreement that the 16' pole lights along Lincoln Drive would be screened by the proposed trees. An issue arose in case a pole light fell, and that needed to be addressed in the development agreement, or an added stipulation. There was general support for the landscape, right-of-way bollard, and palm tree lighting. The applicant was to provide a light output summary table on the photometric plan/report.

The right-of-way discussion clarified the Lincoln Drive 45'6" dedication. The general agreement was based on no future widening of Lincoln Drive to three lanes. The challenges of acquiring land from other properties along the corridor were noted.

The Resort identification signs complied with the SUP Guidelines, except the number of signs. Many Commissioners found the number of signs acceptable because the applicant reduced the number of existing driveways and worked out a shared driveway. The accessory use signage would not be outward-facing and was added as Stipulation 50. The applicant was to provide information regarding light source shielding, color temperature, and output levels.

The acoustical study and Parking Management Plan were being reviewed by a third party and Town Staff. That information could be expected at the next Planning Commission meeting.

There were three new public comments since the last Commission meeting. All three comments were concerning density. One comment was concerned with vehicle stacking and turned around on Quail Road. The owner of the Andaz Resort was concerned with density, setbacks, and landscaping along the South property line. The Oleanders along the South would remain and were located on the Andaz property, the hedges proposed would go in front of the Oleanders. Staff highlighted the turn around on Quail Run Road.

The Smoke Tree Resort proposed a 29.3% net and 27% gross lot coverage, an 85% net and 78% gross of impervious surface, a 15% net, and 12% gross of open space, a proposed 64% net and 59% gross for floor area ratio (FAR).

Additionally, staff presented the draft stipulations. The Commission would review Attachment Q and he expected further edits based on the following discussions. The ordinance format generally followed other resort SUPs. The stipulations exhibited had fifteen categories, and the text in bold brackets were known areas for further edit/input. Some items would be in the development agreement that the Council would approve along with other specific items like right-of-way, financial, or other related matters.

The next meeting would be held on September 1, 2020, and include a Citizen Review, redlines of the Draft Ordinance, and revisit any items from prior meetings. The meeting on September 15, 2020, would be a Public Hearing or a request to extend the September 30 finish date.

The presentation was concluded.

Chairman Wainwright opened the public hearing.

There were no public comments and the public hearing portion was closed.

Chairman Wainwright wanted the Commission members to be clear with the applicant regarding any items that Commissioner could not support.

He addressed the right-of-way dedication issue. He asked if any Commissioners had an issue with the proposed 45'6" dedication. No Commissioners commented.

He asked if any Commissioners were opposed to the third story element. Commissioner Campbell asked what the height of the Lincoln Medical Center was. He had issues with the third story elements after reading the Andaz Resort comments.

Commissioner Wastchak also read the letter from Gary Stuttgart at the Andaz resort. He visited the Andaz property and looked North at the Smoke Tree Property. There were concerns with noise, height, and density. He felt that the letter indicated if the Oleanders stayed in place, then many concerns would be mitigated.

Commissioner Covington had the same impression of the letter.

Commissioner Rose also agreed.

Commissioner Georgelos felt that the letter listed important factors and that if the oleanders stayed, it would help but would not make all of the issues okay.

Commissioner Wastchak clarified that he knew the oleanders staying would not make all the issues go away.

Commissioner Campbell was concerned that the Commission considered that eight feet of building would show over the oleander bushes. He encouraged the Commission to go to the Andaz site and visualize the Smoke Tree Resort buildings. There was not much of a landscape buffer on the West side of the property.

Commissioner Georgelos agreed with Commissioner Campbell. She asked what the precedent for third story structures was in the Town.

Mr. Michaud commented that there was a third story element at the Mountain Shadows, Five Star, and Montelucia Resorts.

Commissioner Georgelos felt those properties were further away. The Andaz property next door did not have third story elements and she felt that a third story at the Smoke Tree would loom over the Andaz. Generally, the Resort was building and parking heavy, which did not allow for landscaping and buffering.

Andrew Miller pointed out that the Andaz property went through a rezoning process. There was a third story element proposed on the East side against residential areas. The third story element was not viewed as favorable and removed.

Commissioner Lewis thought there was a tentative solution for the third story as it was not to be used for residents but a guest amenity. On the north side of the property may be a better place for a coffee shop eliminating the need for a third story. He felt the issue could be reviewed and determine the best solution for all parties.

Chairman Wainwright was comfortable with the right-of-way if the Town was and wouldn't ask for more. He felt the third story element had been addressed thoroughly, and he felt that Mr. Gilbert needed to get support from the Andaz for the third story element. He was supportive of the third

story element as long as the neighbors of the property were as well.

Mr. Gilbert commented that in previous meetings, there was a consensus that the third-floor amenity was acceptable. He suggested they conduct site-line studies to demonstrate there would be no adverse effect.

Owner Taylor Robinson stated they would discuss this issue with the neighboring properties in detail. The Town had a standard for evaluating if a structure would loom over another. The standard of open space criteria was used in designing the buildings and also the maximum height on the Southern boundary. He would report back to the Commission on the findings.

Chairman Wainwright clarified that adjacent properties did not have the right to veto the design. He felt the feedback to the applicant was that the issue was thoroughly discussed, but the change in the Commissioner's opinion came once the letter from the Andaz Resort was brought to attention. He advised the applicant to get support from adjacent property owners.

Commissioner Campbell wanted clarification that the oleanders were an existing mitigation element and that they were not on the Smoke Tree Resort property. He noticed the roots were on the north side of the fence wall.

Mr. Michaud stated that looking at the aerial view of the site the applicant felt the oleanders were not on their property but could be a mixture of both properties. The roots did not appear to be on the north side based on the aerial view. The applicant would need to verify the roots conclusively were not on their property.

Commissioner Wastchak stated if the oleanders exist on the Andaz property, he did not believe that Smoke Tree wanted to take them down. They could be left up. He asked if Mr. Robinson could give any information or insight about that boundary.

Mr. Robinson commented that the image shown was from the County Assessors Office, and they had confirmed that it was correct. The wall on the north side of the Andaz property was 4-6 feet South of their property line. His intent was that the oleander hedge remained and was supplemented with the sour orange hedge and staggered trees.

Commissioner Wastchak suggested that their landscaping plan showed

the oleanders. He hoped that Mr. Robinson would have a conversation with the Andaz to clarify those would stay.

Mr. Robinson stated he would do that.

Commissioner Campbell asked that those drawings be shared with the Commission as well.

Commissioner Covington noted that the Lincoln Medical Center was heavily reviewed about the screening of their mechanical equipment on the roof. He asked what the requirement of that height was.

Chairman Wainwright remembered it was higher than what it ended up being.

Mr. Burton remembered that the proposed new building roof height was 30', but the mechanical screen would extend 2' above that. He recalled that they recessed the mechanical screen, and it was invisible from off the property.

Chairman Wainwright noted the letter from Andaz made an impact and he wanted the applicant to work with the neighbors. The parking was an issue in the previous meeting. According to the parking analysis, the consultants agreed that the parking was fine.

Commissioner Wastchak commented that they were waiting to see an additional document regarding the parking. He wanted to hold off on the parking decision until they had the Staff review on the information.

Chairman Wainwright noted that was fine, but if there were significant concerns, they could make the applicant aware now.

Commissioner Rose understood the parking analysis but felt there would still be a parking issue for weddings, events, and the restaurant while at 100% occupancy.

Chairman Wainwright addressed that the APS cabinets did not delay the projects. He asked if the Staff could handle the stipulations of the cabinets.

Commissioner Campbell asked the applicant at the last meeting to show potential accommodation for the cabinets and wanted to see the potential renderings.

Chairman Wainwright asked if he could draft a stipulation to help the Commissioners be comfortable with the potential options.

Commissioner Campbell would have rather seen a prospective site plan showing a second cabinet accommodated.

Mr. Michaud commented that there was a site plan not included in the Commissioners packets, showing two cabinets on the Southwest corner and the other in the Quail Run right-of-way at the South end.

Commissioner Campbell asked if that accommodated a second cabinet.

Mr. Michaud stated his understanding from Town Engineer Paul Mood that it would connect from the West so that the connection would be to the West or in the right-of-way.

Commissioner Campbell asked if they were positive that there would not be a second cabinet accommodated East of the existing cabinet on the Southeast corner.

Mr. Michaud noted he was not in the meeting with APS, and Mr. Mood may need to answer if he was present at the next meeting.

Mr. Robinson shared his perspective from the meeting with APS. The lines were fed from the North. The cabinet existing was a special cabinet installed when the Town did not have sufficient right-of-way for a standard size cabinet. If that cabinet were to change, APS would update it to a more modern cabinet design.

Chairman Wainwright wanted to clarify Mr. Robinson's comments that the cabinet would remain as it was, or APS would update the cabinet equipment. He asked if they update the cabinet would it be moved to either across the street on the corner of Quail Run Road or down to the Southwest corner of the property. The new equipment would mean a new location, or it was left where it was.

Mr. Robinson commented that what Chairman Wainwright stated was correct. During the design review with APS, new locations would be proposed if needed. They could not identify the location yet if it was required to be moved.

Chairman Wainwright felt that the applicant had tried to accommodate the Commission well. The motivation of his question was the timing of giving

approval. He understood it was expensive to move the cabinet.

Mr. Robinson was willing to accept a stipulation to the effect of cabinet placement and screening. When APS finished their final design, they would comply with the Town and APS requirements.

Mr. Miller noted that when the stipulation was drafted, he wanted to have the flexibility and input from Town Engineer Paul Mood. There were other opportunities to allow the Staff flexibility for placement. He preferred high accessibility and beautification of the cabinet boxes on Quail Run.

Chairman Wainwright asked if there was a way to allow approval of that later or allow for the Staff to approve the cabinets.

Mr. Miller said yes, there was a way to incorporate a stipulation regarding that approval. He wanted objective criteria established before the Staff approval of the cabinet.

Chairman Wainwright stated that Commissioner Campbell could create stipulations for the cabinet.

Commissioner Rose commented that by fitting 122 units on the property that had taken away the resort feeling of the project. The views from the rooms were not favorable. The density had made it apparent to the architect that they had to design the Resort in the way it was currently. In a conversation with Jason Walton, Montana Hotels, indicated it was not a resort but imbedded and interactive with the local environment. He felt it was important to know what was built on the 4.6 acres.

Commissioner Lewis agreed with Commissioner Rose's comment. He was concerned about the coffee shop near a busy road, and perhaps, there were ways to reconfigure amenities.

Commissioner Georgelos agreed with Commissioner Rose. She reviewed the density of various resorts in Town. The density exceeded any resort they had seen. The 4.6 acres and 26.5 units per acre seemed high density. There were large structures and parking surrounding it with a small pool. It did not seem like a resort. She detailed the retail, gym and guest room amenities. There should be reduced density to feel like a resort, larger pool area, and lush landscape. The Southeast side had a large building and drove more parking.

Mr. Gilbert wanted an opportunity to evaluate and address the comments in

a future meeting.

Chairman Wainwright stated the Commission would try to be as transparent as they could with the applicant.

Commissioner Wastchak wanted to know the other Commissioner's opinions on the issue and if it was in alignment with Commissioners Georgelos, Lewis and Rose.

Commissioner Covington was sympathetic to the comments made by the Commissioners. He was concerned about the Resort being at the entrance of the Town. He was uncomfortable with the third story due to the architectural rhythm of the Town. The density issue would be a continued discussion and wanted to know how that could be addressed. He wanted the Resort to be profitable. He asked if the lighting outside the property wall along Lincoln Drive discussed in the last meeting was still in the plan. He was not in favor of the lights.

Mr. Michaud stated his impression was they were still in the plan. Most of the Commissioners were in favor of the bollards and lights in the right-of-way.

Chairman Wainwright wanted clarification on what lights he had referenced.

Commissioner Covington clarified it was the lights along the street and illuminating the sidewalk. He felt it was contrary to the rest of the Town and that they were a dark sky Town.

Chairman Wainwright asked what the resolution was regarding the safety of the sidewalk or dark sky environment.

Mr. Michaud commented that the Staff stated there would be no light fixtures in the right-of-way. Usually, there were landscape lighting in residential subdivisions. Not all the Commissioners at the last meeting voiced their opinion, but a few were in favor of the bollard lighting and landscape lighting. The applicant was fine to keep or remove the bollard lighting.

Mr. Robinson noted that in the last meeting, there was a discussion regarding the bollard lighting. They received a redlined draft of the SUP inserting language that the bollards and lighting would be removed from the right-of-way. The liability was not wanted by the Town in the event of a

dedication. He wanted the Commission to quantify what was expected of them to do the best they can to address the concerns.

Commissioner Rose believed that some effort on the architects and applicants' part with the unit count. If 122 units were not needed, could it be reconfigured to have more pod units like on the Southwest side. He asked if there were any alternatives to the architect's drawing currently.

Chairman Wainwright asked if it was a true resort given the size.

Commissioner Rose stated the architect would need to look at the property and the applicant would need to give the Commission the least amount of rooms that the Resort needed to be profitable. The market and coffee shop used resort space. He was led to believe that the third-floor element was going to be where guests would visit for snacks and coffee.

Commissioner Lewis agreed.

Commissioner Georgelos commented that the density was 2.5 times greater than the Town guideline of 11 units per acre. She wanted to get as close to that as possible. She felt that it could feel like a resort with changes made. She noted the Hermosa Inn was the most similar property to this and it had a resort feeling.

Mr. Gilbert commented that the Hermosa Inn was a restaurant primarily. It was not designed as a hotel and felt it was not a fair comparison. The five-acre property had to be reworked entirely. The guidelines were set were for twenty-acre properties. The properties could go higher or lower than the guidelines set. He felt the SOD and Guidelines instructed them to take into consideration the small property size. The Commission had asked the applicant to make difficult changes. They had hearings with the Town Council, but there were no major concerns over density. Part of the Resorts flexibility was to have for-sale units. They were not prohibited, and they had been allowed elsewhere. The Commission did not want those units, and so the applicant removed them. Those units were a way to finance the project. He did not suggest they be brought back.

Chairman Wainwright noted that significant changes had been made and that they wanted to consider all of the elements of the property that made the Resort a challenge.

Commissioner Rose asked what the fewest number of rooms that could make the project successful.

Mr. Robinson stated that Jason Walton, Montana Hotels, and the architect was also on the call. If additional materials were needed, that would take time, but they were all willing to answer questions at tonight's meeting. He wanted to reach a consensus. The pro forma was the historical analysis of similar properties' performance. The average resort occupancy was 68%; the average daily rate of a resort room was $250. The operating costs were deducted and that arrived at the sustainability on an ongoing basis. To answer Commissioner Rose, if the daily rate could be increased, that could be done but would drive the occupancy down. The alternative was to reduce the number of rooms and drive the rate high enough to sustain the maintenance of the rooms. It was not feasible in the current market. They conducted a sensitivity analysis on where the room count could be pushed, including techniques to drive occupancy. The 122 rooms were the result. For sale units would drastically change the numbers. With the Town Council against dwelling units, that was the best they could configure.

Commissioner Wastchak referred to Mr. Robinson's comment that when a price point was elevated, the price point per room put them in direct competition with other resorts. He asked what the issues would be if he moved their Resort into a more competitive price point with other resorts nearby.

Mr. Robinson noted that from a number’s perspective, the resorts in the Town have distinct market segmentation where they had been established in their niche for different appeals of resort guests. The Town of Paradise Valley did not currently have a property for the niche that the Smoke Tree Resort would fill.

Jason Walton, Montana Hotels, commented that there had been struggles with the Andaz performance. He felt the owner pushed against the competition. He believed the Resort was the right size for that location. Paradise Valley was not a strong luxury resort market. The Courtyard Marriott was doing better at ADR and occupancy than some resorts. In the broad scope of a luxury resort, Paradise Valley had a casual inventory of properties with a unique following. They wanted to compliment what was currently available in the Town. They did not want to offer more of the same product. They viewed the Smoke Tree Resort as a modern-day reinterpretation of a resort experience. He leveraged the surroundings and whatever was done would be done exceptionally. A self-contained resort was not possible on the property. If they wanted them to lower density and create more luxury, this was not a good site for that.

Chairman Wainwright asked Mr. Walton to explain why it was not a good site for a luxury resort.

Mr. Walton answered there was an easing of open area criteria and setbacks on their plan. On a five-acre property, one hundred and twenty-two rooms were considered low density. Usually, they would hold six hundred rooms. The room count at the Smoke Tree was a balancing act because of scalability. The property offered the least views and had high traffic on Lincoln Drive. The percentage of the property exposed to Lincoln Drive was high. He felt that they filled a niche to complement other resorts. The redevelopment area calls for high intensity. He felt this property was an ideal density for the area. Their guests would be drawn to the Resort for its location and proximity to amenities instead of a secluded resort.

Chairman Wainwright reiterated what Mr. Walton said that the Resort could not be like others in the Town. He asked how their target guest differed from others.

Mr. Walton noted that one signature feature was for small groups to come and stay booking six-to twelve rooms and find small areas to congregate. That was the largest competition for Airbnb type rentals. The pods would allow small groups to have communal areas linked to their rooms.

Mr. Robinson commented that the third-floor amenity was different than what was previously discussed.

Mr. Walton stated that the Resort would not be a large corporate group resort. They were not a branded resort. Their guests would be a family with older children. There was an opportunity for overflow at the Ritz-Carlton. Their guest would also be attending weddings and reunions.

Chairman Wainwright noted that the third story amenity could be blocked off to accommodate different groups. The guests would have a group area in the hotel. He asked if the plan on the screen was one of the areas he was describing.

Mr. Walton replied, yes. A group or family could reserve a space and have keyed access. He explained the guest and corridor rooms that could be reserved with different services. It was their modern-day interpretation of a resort.

Chairman Wainwright recognized that the size and location of the Resort were unfair to compare to other resorts in the area. He wanted the flexibility

to be given to the applicant.

Commissioner Rose referred to Table 3, page 21, of the Traffic Study done by Simtech. The trip generation summary included weekday trips. He asked if there was a study done for weekend trips. He read on page 20 that event space was not anticipated to generate offsite trips. The event space and meeting area were not expected to impact trips during the peak hour and including that number in the study would double count anticipated trips. He gave a scenario stating that over 140 cars could be at the Resort. He wanted to see where that was in the Traffic Study.

Mr. Robinson clarified that Commissioner Rose's questions had two parts being how the number was dependent on if the traffic had been modeled to include the weekends and how the event space was accounted for in the traffic. The methodology used for the event space was the ITE. That traffic generation calculation had base rates. The traffic engineer used a base rate for the rooms that included event space. That led to the comment of it being double counted. On receiving directions from the Town Engineer and Kimley Horn, they required the use of the base rate that included the event space. The ITE model was modified to reflect that.

Commissioner Rose stated that he helped answer his questions. He again gave a scenario that could impact traffic when the Resort was at peak use. There was currently traffic in the area, and this would increase that.

Mr. Robinson commented that the Parking Management Plan accounts and plans for the scenario that Commissioner Rose was concerned with. It had been reviewed by Town Staff, Engineers and Consultants.

Commissioner Rose was concerned about the traffic that scenario would bring on Quail Run Road and Lin

No Reportable Action

5. PUBLIC HEARINGS

None

6. ACTION ITEMS

None

7. CONSENT AGENDA

None

8. STAFF REPORTS

None

9. PUBLIC BODY REPORTS

Commissioner Campbell thanked Chairman Wainwright for running for Council and continuing as Chairman.

Chairman Wainwright thanked him.

10. FUTURE AGENDA ITEMS

Mr. Michaud stated there will be continued discussion regarding the Smoke Tree Resort Major SUP amendment for September 1st.

Mr. Michaud noted there may be another item on September 15th, but would not know until a future date.

Commissioner Wastchak noted that holding the public hearing and getting solicited input would be good.

Chairman Wainwright agreed.

11. ADJOURNMENT

A motion was made by Commissioner Lewis at 8:30 p.m., seconded by Commissioner Covington, to adjourn the meeting. The motion carried by the following vote:

Aye: 7 - Commissioner Wainwright, Commissioner Covington, Commissioner Georgelos, Commissioner Wastchak, Commissioner Lewis, Commissioner Campbell and Commissioner Rose

Paradise Valley Planning Commission

By: _____
Paul Michaud, Secretary