The Phoenician

Traffic Impact Study

6000 East Camelback Road
Scottsdale, AZ 85251

November 2016
Project No. 15-1540

Prepared For:

Beus Gilbert PLLC.
701 N. 44th Street
Phoenix, AZ 85008

For Submittal to:
City of Phoenix

Prepared By:

CivTech

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

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EXECUTIVE SUMMARY

The Phoenician is an existing resort hotel located at 6000 East Camelback Road in Phoenix, Arizona. The resort proposes to develop or redevelop certain parcels/areas that are distributed throughout the property. The Phoenician project proposes a total of approximately 127 new single family residences, 235 new townhome/condominium residences, and 20 new resort casitas. The Phoenician already has approval to construct approximately 320 total units of casita, townhomes, condominiums and single family residences. The proposed development increases the approved plan by approximately 62 units to a total of approximately 382 units.

The Phoenician currently provides two (2) accesses to the site; the main, signalized entrance is located at the intersection of Phoenician Boulevard (N-S) at Camelback Road and another entrance at the intersection of Phoenician Boulevard (E-W) at 64th Street located approximately 1,700 feet north of Camelback Road. Access to Parcels C, D and E will be provided directly or indirectly through Phoenician Boulevard (E-W). Access to Parcels G, H (exit only), I, J, K6 and K7 will be provided directly or indirectly through Phoenician Boulevard (N-S). Parcel H will also have access directly to Camelback Road at 59th Place. Parcel F currently has direct access to Camelback Road at Evans Street. Access to Parcel K1 is provided by the adjacent Cholla Lane. Access to Parcel K2 is provided by the adjacent Hilltop Road. Access to Parcels K3, K4 and K5 is provided by the adjacent Alta Hacienda Drive. Lastly, access to Parcels K6, K7, K8 and K9 is provided by the adjacent Elsie Avenue. A site plan is included in **Figure 4**.

The study area included additional intersections than typically required by City guidelines for the size of the proposed development and later added more intersections per the request by the Arcadia Camelback Mountain Neighborhood Association.

The following conclusions and recommendations have been documented in this study:

General

- The redeveloped portions of The Phoenician are expected to generate 2,882 new daily vehicular trips, with 302 trips occurring in the AM peak hour, 283 trips occurring in the PM peak hour and 279 peak hour trips occurring on a Saturday.

- The traffic counts collected indicate that The Phoenician's existing land uses west of 64th Street currently generate 199 trips during the AM peak hour, 259 during the PM peak hour and 658 trips during the 1,100-person Saturday event peak hour. These trips are predominantly through the main access on Camelback Road (191 AM, 219 PM, 633 Event) with relatively few trips through the 64th Street access (8 AM, 40 PM, 25 Event).

- Sight visibility per typical Phoenix design standards should be designated at proposed driveways. All vegetation and trees should be maintained according to City of Phoenix regulations.

Intersection Capacity Analysis - Existing

- The existing conditions analyses evaluated all study intersections to operate at overall level of service ("LOS") D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, currently operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

    - Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, ***61st Street*** and ***62nd Street*** operate at LOS F. The analyses evaluate these movements at LOS F even where few vehicles perform the movement. Increased delay is not unusual for urban, stop controlled left turn movements at arterial roadways. The delay occurs on the minor approaches and through traffic on the arterial road is unimpeded. Mitigation is not recommended.

    - The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to operate at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. Mitigation of future analysis years indicated that if an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

    - The intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate acceptably overall during the peak hours though the southbound approach operates at LOS E during the event peak hour. This is due to the relatively high volume of event egress traffic. It should be noted that the counted traffic volumes were doubled to consider the largest events such as the Heart Ball. The 64th Street driveway only facilitated about 5 percent of the Phoenician's egress trips. It is recommended to route more trips out the 64th Street driveway, alleviating the Camelback Road driveway.

Intersection Capacity Analysis - Future

- In projected future conditions, the LOS is anticipated to be similar to the LOS in existing conditions. All study intersections are anticipated to operate at overall LOS D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, are anticipated to operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

    - Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, ***59th Place***, ***61st Street*** and ***62nd Street*** are anticipated to continue to operate at LOS F during the peak hours. For further discussion, see the existing conditions LOS analyses.

- The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to continue operating at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

- The northbound approach at the intersection of ***56th Street and Camelback Road*** is evaluated to operate at LOS E during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 1 vehicle per cycle could turn during its red phase, the movement/approach would operate at LOS D. Therefore, mitigation is not recommended.

- The eastbound left turn movement at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** is anticipated to operate at LOS E during the PM peak hour in 2018 and 2023 total conditions. Signalization is an option that will mitigate expected LOS and one or more signal warrants per the Manual on Traffic Control Devices are anticipated to be satisfied.

- The southbound approach of the intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate at LOS E during the event peak hour. The Camelback Road approaches operate better that LOS E during an event condition and with typical traffic; the delay occurs on the side street approaches to Camelback Road.

Turn Lane Lengths

- The majority of turn lanes within the study provide sufficient storage in their existing conditions to accommodate the additional traffic anticipated with The Phoenician development. Turn lanes that are anticipated to have a longer queue demand length than striped length are discussed below.

- The southbound left and eastbound left turn lanes at the intersection of ***56th Street and Thomas Road*** are recommended to be extended from 140 feet to 200 feet and 195 feet to 230 feet, respectively. The site does add some vehicles to the movements, but the need is predominantly from traffic volumes not associated with the development. The extensions can be accomplished with restriping only.

- The northbound left and eastbound left turn lanes at the intersection of ***56th Street and Indian School Road*** are expected to have a queue demand during periods of heavy traffic of 220 feet and 210 feet, respectively. Restriping may extend the northbound left turn lane but extension of the eastbound left turn lane would require right of way acquisition and roadway widening. The development is not expected to add to these turn movements. A neighborhood association has asked for a protected phase or the northbound left turn which currently operates with permitted phasing only. While the cross product threshold according to ADOT methodology is not met, the city should consider a protected phase to reduce conflicts with pedestrians.

- The northbound left, westbound left and eastbound right turn lanes at the intersection of ***56th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 345 feet and 175 feet, respectively. Restriping may extend the northbound left turn lane but extension of the westbound left turn lane would remove the two-way left turn lane approaching Alta Hacienda Drive and the eastbound right turn lane would require right of way acquisition. The development is not expected to add to the northbound left or eastbound right turn movements.

- The southbound left, southbound right, eastbound left and westbound right turn lanes at the intersection of ***64th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 430 feet, 300 feet and 185 feet, respectively, which is greater than their existing lengths. The eastbound left turn lane can be extended by restriping, while the other queues are recommended to be mitigated with modifications to the signal phasing. Adding a southbound left turn phase and a corresponding westbound right turn overlap as well as a southbound right turn overlap of the eastbound left turn phase is recommended. These improvements are recommended over restriping as they will be better for the intersection's operational characteristics and shorten the movements queue demand. Note that HCM 2010 assumes no right turns on red in future conditions, resulting in overestimated right turn delay and queue lengths.

- If signalized, the new north and southbound left turn lanes at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** are recommended to be striped with a minimum length of 150 feet.

- The existing two-way left turn lane on Camelback Road is recommended to remain on Camelback Road for ingress left turns approaching eastbound to 59th Place and to 61st Street as shown in **Figure 11**.

INTRODUCTION

CivTech has been retained to prepare a Traffic Impact Study (TIS) for the Phoenician project which will construct or redevelop on portions of its property. The Phoenician is an existing resort hotel located at 6000 East Camelback Road in Phoenix, Arizona. The project includes construction of additional hotel casitas, townhome and condominium residences and single family residences. Existing hotel amenities and restaurants will not be increasing in size. A location map of the study is provided in **Figure 1**.

The specific objectives of the assessment are:

1. To evaluate lane requirements on all existing roadways and at all existing intersections within the study area.
2. To determine future level of service for all existing intersections within the study area and recommend any capacity related improvements.
3. To determine necessary lane configurations at all new driveways within the proposed development to provide acceptable future levels of service.
4. To evaluate the need for future traffic control changes within the proposed study area.
5. To evaluate the need for deceleration lanes into/for the proposed site accesses.

Study Requirements

The traffic impact study will be prepared in accordance with City of Phoenix's Traffic Impact Studies Guidelines included in *City of Phoenix Street Planning and Design Guidelines, December 1, 2009*. Preliminary analysis indicated that the proposed development is expected to generate fewer than 500 trips during a typical peak hour. This amount of trips generated requires the study to analyze all site accesses and signalized and/or potential signalized intersections adjacent to the development during the opening year. This study includes these intersections as well as additional intersections near the site and those requested by a neighborhood association.

Study Area

Additional intersections are included in the study in response to a request by a neighborhood association. The following intersections are included in the study:

- 56th Street & Camelback Road
- Hilltop Road/Arcadia Lane & Camelback Road
- Phoenician Boulevard/Jokake Road & Camelback Road
- 64th Street & Camelback Road
- 64th Street & Cholla Lane
- 56th Street & Indian School Road
- Alta Hacienda Drive/Los Vecinos Drive & Camelback Road
- 59th Place & Camelback Road
- Evans Drive/61st Street & Camelback Road
- 64th Street & Phoenician Boulevard
- 56th Street & Lafayette Boulevard
- 56th Street & Thomas Road

Horizon Years

The study years for this study include the existing year and opening year (2018).

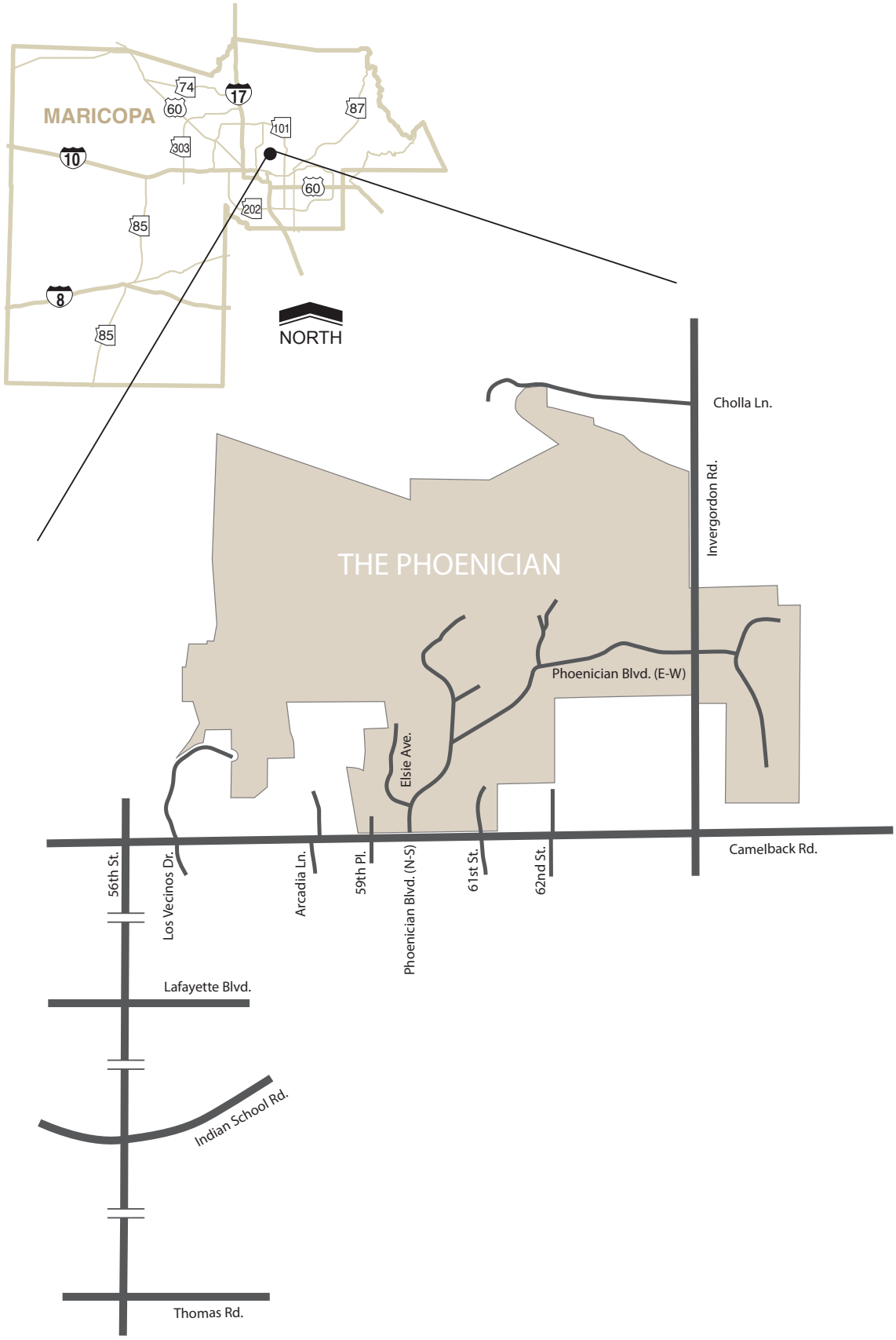


Figure 1: Vicinity Map

Source: CivTech 2016

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The project site envelops The Phoenician resort, amenities and owned but undeveloped land. The specific parcels/areas that are proposed to be developed are not contiguous and are distributed throughout the property. Most areas are undeveloped desert land, landscaped areas or golf and tennis amenities for the resort.

Located directly north of the resort's main facility is Camelback Mountain. Surrounding the site in all other directions are single family houses, mostly zoned as RE-35. A church is located on the northeast corner of Hilltop Road and Camelback Road, adjacent to the site, as well as roughly 400 feet east of the southeast corner of 62nd Street and Camelback Road. A school is located on the southwest corner of 62nd Street and Camelback Road. The City of Scottsdale's jurisdictional limits begin west of 64th Street, excluding the residential subdivision associated on the east side of 64th Street at Phoenician Boulevard (E-W).

EXISTING ROADWAY NETWORK

The existing roadway network within the study area includes Camelback Road, 56th Street, 64th Street and roadways internal to the site Phoenician Boulevard (N-S) and Phoenician Boulevard (E-W).

Camelback Road is an east/west roadway located south of the site. West of 64th Street and within the vicinity of the site, Camelback Road is classified as an arterial by the City of Phoenix, has a posted speed limit of 40 mph and provides two (2) travel lanes separated by a two way left turn lane, with sidewalks on the north side along the site frontage. East of 64th Street and within the vicinity of the site, Camelback Road is classified as a minor arterial - suburban by the City of Scottsdale, has a posted speed limit of 40 mph and provides two (2) travel lanes and sidewalks separated by a raised median.

56th Street is a north/south roadway located to the west of the site. North of Camelback Road, 56th Street is classified by the City of Phoenix as a minor collector, has a posted speed limit of 30 mph and provides one (1) travel lane in each direction without sidewalks. Between Camelback Road and Thomas Road, 56th Street is classified as a collector, has a posted speed limit of 35 mph and predominantly provides one (1) travel lane, a wide shoulder or bike lane and intermittent sidewalks in each direction, separated by a two-way left turn lane. South of Thomas Road, 56th Street is classified as a minor collector, has a posted speed limit of 35 mph and provides one (1) travel lane in each direction.

64th Street is a north/south roadway located to the east of the site. North of Camelback Road, 64th Street is classified as an arterial by the City of Phoenix, has a posted speed limit of 35 mph and provides one (1) travel lane, a bike lane and parallel street parking and sidewalks in both directions, separated by a two-way left turn lane within the vicinity of the site. The Town of Paradise Valley classifies Invergordon Road (64th Street within the jurisdiction of the Town) as a minor arterial north of McDonald Drive. South of Camelback Road, 64th Street is classified as a minor collector by the City of Phoenix, has a posted speed limit of 25 mph and provides one (1) travel lane in each direction and intermittent sidewalks.

Phoenician Boulevard (N-S) is a north-south private street within The Phoenician resort property. It provides two (2) travel lanes in each direction separated by a raised median and delineated with raised pavement markers. A guard booth is located prior to the main facilities of the resort.

Phoenician Boulevard (E-W) is an east-west private street within The Phoenician resort property. It provides one (1) travel lane in each direction. A guard booth accompanies a gate near its intersection of 64th Street.

INTERSECTION CONFIGURATIONS

(1) The intersection of ***56th Street and Thomas Road*** is a signalized, 4-legged intersection. All left turn movements operate under permitted phasing. The north-, south- and westbound approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane. The eastbound approach consists of one (1) left turn lane, two (2) through lanes and a shared through-right turn lane.

(2) The intersection of ***56th Street and Indian School Road*** is a signalized, 4-legged intersection. The north- and eastbound left turn movements operate under exclusive and permitted phasing while the south- and westbound left turn movements operate with permitted phasing only. All approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane.

(3) The intersection of ***56th Street and Lafayette Boulevard*** is a signalized, 4-legged intersection. All left turn movements operate under permitted phasing. The north- and southbound approaches consist of one (1) left turn lane, one (1) through lane and one (1) right turn lane. The eastbound approach consists of a shared left turn-through lane and one (1) right turn lane. The westbound approach consists of a single general use lane and a bike lane.

(4) The intersection of ***56th Street and Camelback Road*** is a signalized, 4-legged intersection. The north-, south- and eastbound left turn movements operate under permitted phasing while the westbound left turn movement operates with exclusive and permitted phasing. The north- and southbound approaches consist of one (1) left turn lane and a shared through-right turn lane. The eastbound approach consists of one (1) left turn lane, two (2) through lanes, and one (1) right turn lane. The westbound approach consists of one (1) left turn lane one, (1) through lane and a shared through-right turn lane.

(5) The intersection of ***Alta Hacienda Drive/Los Vecinos Drive and Camelback Road*** is an unsignalized, 4-legged intersection with stop signs on the north- and southbound approaches. The northbound approach is a gated residential private drive and has sufficient pavement width for two (2) egress lanes. The southbound approach consists of a single general use lane. The east- and westbound approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane.

(6) The intersection of ***Hilltop Road/Arcadia Lane and Camelback Road*** is an unsignalized, 4-legged intersection with the south leg offset approximately 90 feet to the west and stop signs on the north- and southbound approaches. The north- and southbound approaches consist of a single general use lane. The east- and westbound approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane.

(7) The intersection of ***59th Place and Camelback Road*** is an unsignalized, 3-legged intersection with a stop sign on the northbound approach. The northbound approach consists of a single general use lane. The eastbound approach consists of one (1) through lane and a shared through-right turn lane. The westbound approach consists of two (2) through lanes.

(8) The intersection of ***Phoenician Boulevard (N-S)/Jokake Road and Camelback Road*** is a signalized, 4-legged intersection. All left turn movements operate under permitted phasing. The north- and southbound approaches consist of one (1) left turn lane and a shared through-right turn lane. The eastbound approach consists of one (1) left turn lane, one (1) through lane and a shared through-right turn lane. The westbound approach consists of one (1) left turn lane, two (2) through lanes, and one (1) right turn lane.

(9) The intersection of ***Evans Drive/61st Street and Camelback Road*** is an unsignalized, 4-legged intersection with stop signs on the north- and southbound approaches. The northbound approach consists of a single general use lane. The southbound approach is a gated private drive that provides a single general use lane. The east- and westbound approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane.

(10) The intersection of ***62nd Street and Camelback Road*** is an unsignalized, 4-legged intersection with stop signs on the north- and southbound approaches. The north- and southbound approaches consist of a single general use lane. The east- and westbound approaches consist of one (1) left turn lane, one (1) through lane and a shared through-right turn lane.

(11) The intersection of ***64th Street and Camelback Road*** is a signalized, 4-legged intersection. The north- and southbound left turn movements operate under permitted phasing while the east- and westbound approaches operate under exclusive and permitted phasing. The north- and southbound approaches consist of one (1) left turn lane, one (1) through lane and one (1) right turn lane. The eastbound approach consists of one (1) left turn lane, one (1) through lane and a shared through-right turn lane. The westbound approach consists of one (1) left turn lane, two (2) through lanes and one (1) right turn lane.

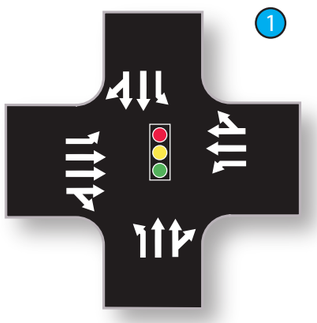
(12) The intersection of ***64th Street and Phoenician Boulevard (E-W)*** is an unsignalized, 4-legged intersection with stop signs on the east- and westbound approaches. The north- and southbound approaches consist of one (1) left turn lane, one (1) through lane, a bike lane and one (1) right turn lane. The east- and westbound approaches are gated private drives that each provide sufficient pavement width to provide one (1) left turn lane and a shared through-right turn lane.

(13) The intersection of ***Cholla Lane and 64th Street*** is an unsignalized 4-legged intersection with a stop sign on the eastbound approach. The east leg is a gated driveway for a single residence with marginal impact on the intersection. This study analyzes this intersection as a 3-legged intersection. The northbound approach consists of one (1) left turn lane, one (1) through lane and a bike lane. The southbound approach consists of a shared through-right turn lane and a bike lane. The westbound approach consists of a general use lane and a bike lane.

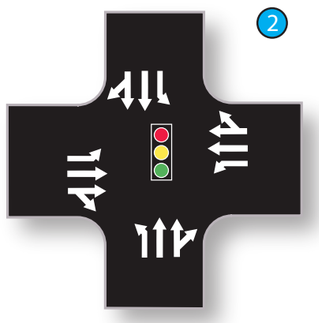
Existing lane configurations and traffic controls at the study intersections are shown in **Figure 2**.

EXISTING TRAFFIC VOLUMES

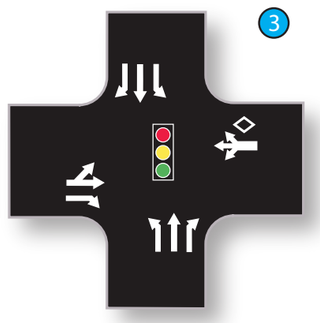
CivTech engaged Field Data Services of Arizona, Inc. to record traffic volumes at all study intersections. At most intersections, turning movement volume counts were performed on Tuesday, April 26, 2016 from 7:00-9:00 AM and 4:00-6:00 PM, and on Saturday, April 23, 2016 from 12:00-2:00 PM, within which time the exit peak of an event occurred. The study intersections that were added upon request of the neighborhood association had weekday peak hour counts on Wednesday, September 14, 2016. The next paragraph discusses volume adjustments to consider peak season traffic volumes.



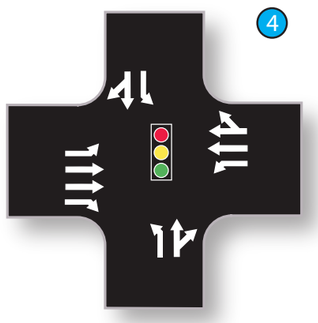
56th St. & Thomas Rd.



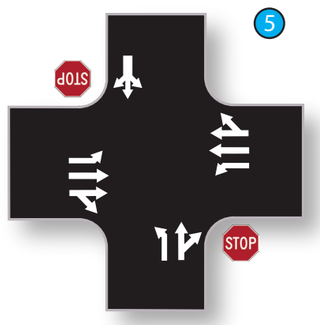
56th St. & Indian School Rd.



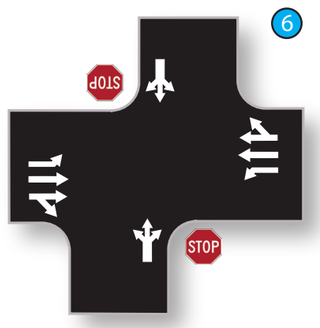
56th St. & Lafayette Blvd.



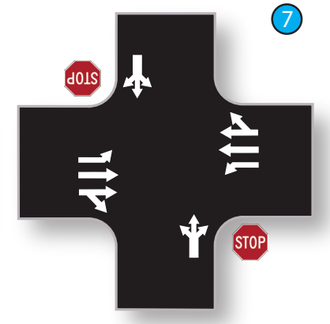
56th St. & Camelback Rd.



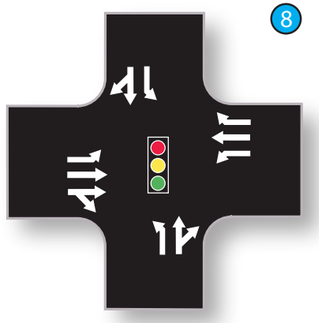
Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



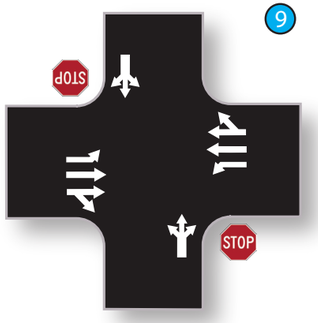
Hilltop Rd./Arcadia Ln. & Camelback Rd.



59th Pl. & Camelback Rd.



Phoenician Blvd./Jokake Rd. & Camelback Rd.



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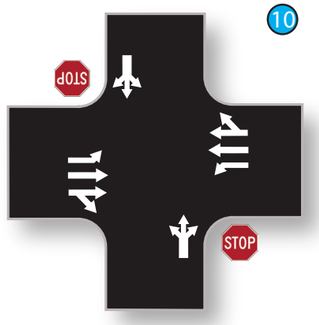

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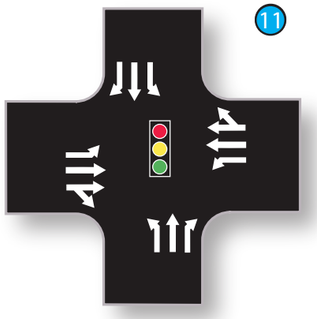
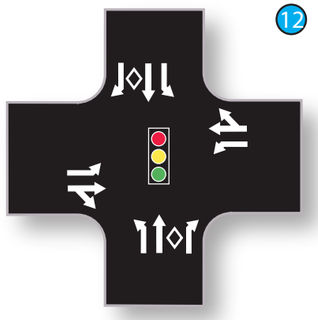
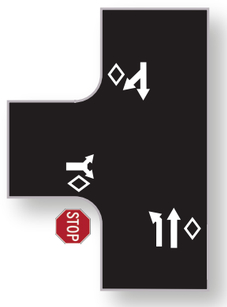


64th St. & Camelback Rd.



64th St. & Phoenician Blvd. (E-W)



Cholla Ln. & 64th St.

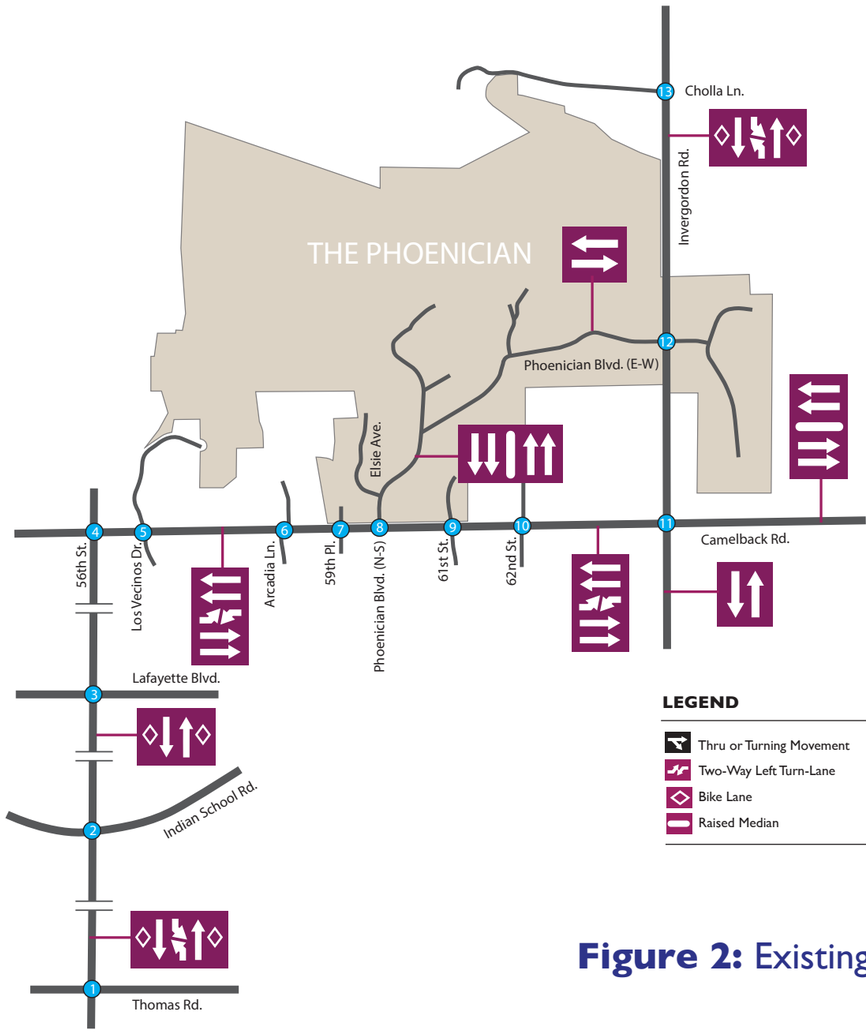


Figure 2: Existing Lane Configurations and Traffic Controls

Source: CivTech 2016

The resort indicated that the hotel occupancy was approximately 47 percent on the weekday that traffic counts were collected. For purposes of this study, all recorded AM and PM peak hour traffic volumes on the site and at site driveways were divided by 0.47 to simulate 100 percent occupancy. This adjustment may be considered conservative as 100 percent occupancy may not be typical on the average weekday. Similarly, the resort indicated that the observed event consisted of approximately 1,100 people, less than the maximum of 2,000 to 2,500 people (the maximum is dependent on the type of event). For study purposes the recorded traffic volumes on the site and at site driveways were multiplied by 2. The multiplication effectively includes non-event associated guests in addition to trips associated with the event and is considered conservative.

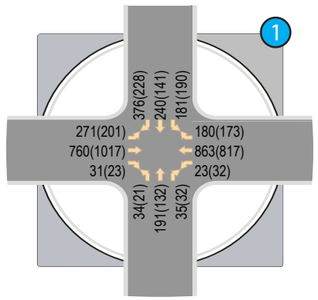
The existing AM and PM peak hour traffic volumes and Saturday event peak hour volumes for this study are presented in **Figure 3**. Traffic volume data obtained for this study have been included in **Appendix B**.

EXISTING CAPACITY ANALYSIS

Peak hour capacity analyses have been conducted for the study intersections based on existing conditions and traffic volumes. All intersections have been analyzed using the methodologies presented in the *Highway Capacity Manual (HCM),* updated 2010 and Synchro, a traffic analysis software which incorporates HCM 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.

Table 1 lists the level of service criteria for signalized and unsignalized intersections.



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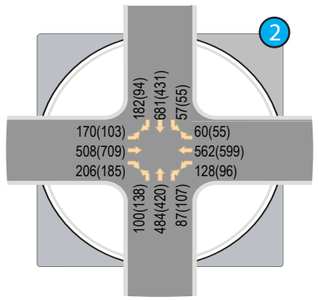
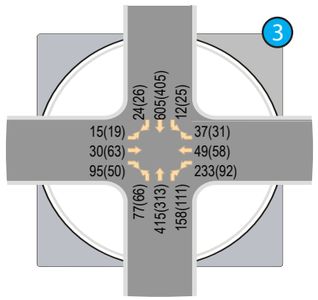


56th St. & Indian School Rd.



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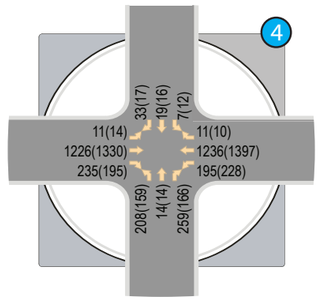

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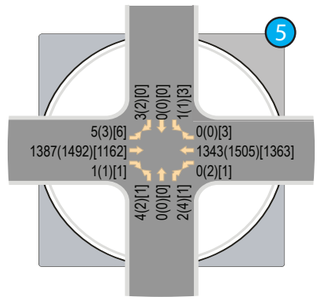
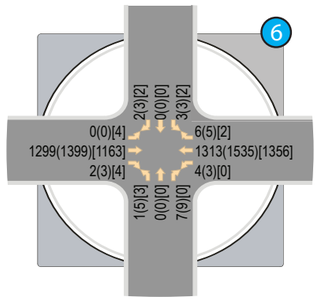
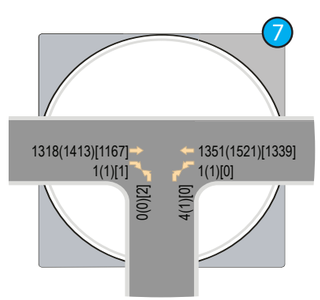


Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



Hilltop Rd./Arcacia Ln. & Camelback Rd.



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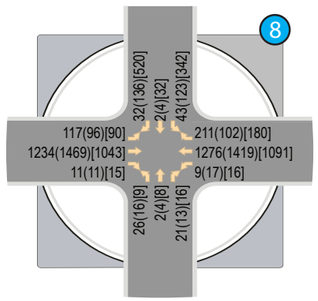
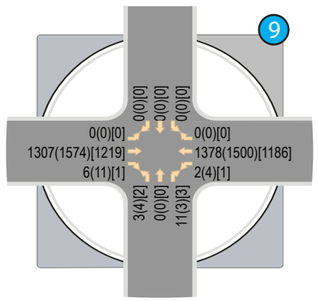


Phoenician Blvd./Jokake Rd. & Camelback Rd.



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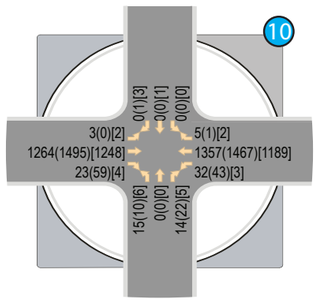
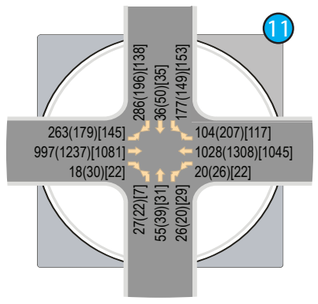


62nd St. & Camelback Rd.



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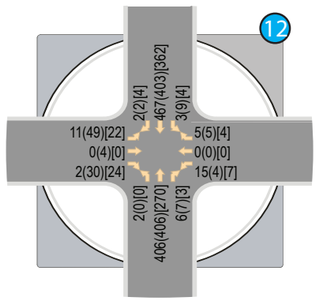
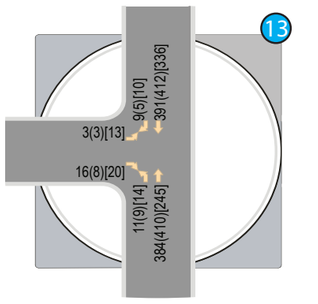


64th St. & Phoenician Blvd. (E-W)



Cholla Ln. & 64th St.

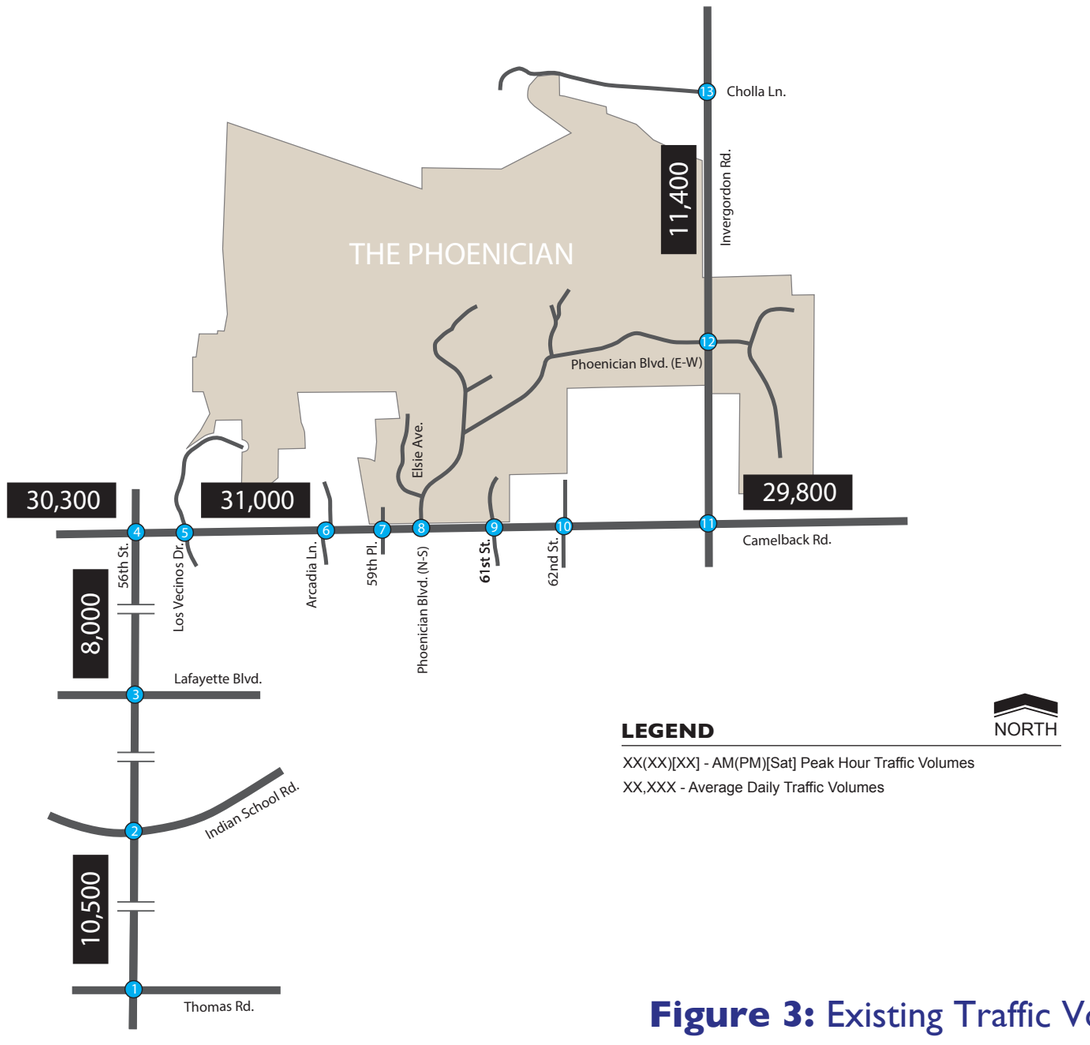


Figure 3: Existing Traffic Volumes

Source: CivTech 2016

Table 1 – Level-of-Service Criteria for Controlled Intersections

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

Source: Exhibit 18-4 and Exhibit 19-1, Highway Capacity Manual 2010

Results of the existing level of service analyses are shown in **Table 2** for both peak hours. The analysis worksheets for the existing conditions have been included in **Appendix C**.

Table 2 – Existing Peak Hour Levels of Service

ID	Intersection	Control	Approach/ Movement	AM(PM)[Event] Peak Hour LOS
				Existing
1	56th Street & Thomas Road	Signal	NB SB EB WB	C(C) E(C) A(A) B(B)
			Overall	**C(B)**
2	56th Street & Indian School Road	Signal	NB SB EB WB	C(D) C(C) C(B) B(A)
			Overall	**C(C)**
3	56th Street & Lafayette Boulevard	Signal	NB SB EB WB	B(A) B(A) C(C) D(D)
			Overall	**B(B)**
4	56th Street & Camelback Road	Signal	NB SB EB WB	D(D) C(C) B(B) A(A)
			Overall	**B(B)**
5	Alta Hacienda Dr./ Los Vecinos Dr. & Camelback Rd.	2-way stop (NB/SB)	NB left NB thru/right SB shared EB left WB left	F(F)[F](1) C(C)[C] F(F)[F](1) B(B)[B] -(B)[B](2)

(1) These side street/driveway LOS's do not have any impact on Camelback Road.
(2) No vehicles were observed performing this movement during one or more peak hour.

Table 2 (Continued) – Existing Peak Hour Levels of Service

ID	Intersection	Control	Approach/ Movement	AM(PM)[Event] Peak Hour LOS
				Existing
6	Hilltop Rd./Arcadia Ln. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	D(F)[F](1) F(F)[F](1) -(-)[B](2) B(B)[-](2)
7	59th Pl. & Camelback Rd.	1-way stop (NB)	NB shared WB left(3)	B(C)[D] B(B)[-](2)
8	Phoenician Blvd./Jokake Rd. & Camelback Rd.	Signal	NB SB EB WB	C(C)[C] C(D)[E] A(A)[B] A(A)[C]
			Overall	**A(A)[C]**
9	61st St. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	E(F)[F](1) -(-)[-](2) -(-)[-](2) B(C)[B]
10	62nd St. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	F(F)[F](1) -(C)[F](1) B(-)[B] B(C)[B]
11	64th St. & Camelback Rd.	Signal	NB SB EB WB	C(C)[C] D(D)[C] A(A)[A] B(B)[B]
			Overall	**B(B)[B]**
12	64th St. & Phoenician Blvd. (E-W) (for mitigated, see next)	2-way stop (EB/WB)	NB left SB left EB left EB thru/right WB left WB thru/right	A(-)[-](1) A(A)[A] C(C)[C] B(B)[B] C(C)[C] B(B)[A]
12	64th St. & Phoenician Blvd. (E-W) (mitigated)	Signal	NB SB EB WB	C(C)[C] D(D)[C] A(A)[A] B(B)[B]
			Overall	**B(B)[B]**
13	Cholla Ln. & 64th St.	1-way stop (EB)	NB left EB shared	A(A)[A] B(B)[B]

(1) These side street/driveway LOS's do not have any impact on Camelback Road.
(2) No vehicles were observed performing this movement during one or more peak hour.
(3) This movement is restricted by the Camelback Road's double yellow striped median at the approach to this intersection.

The existing conditions analyses evaluated all study intersections to operate at overall LOS D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, currently operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, ***61st Street*** and ***62nd Street*** operate at LOS F. The analyses evaluate these movements at LOS F even where few vehicles perform the movement. Increased delay is not unusual for urban, stop controlled left turn movements at arterial roadways. The delay occurs on the minor approaches and through traffic on the arterial road is unimpeded. Mitigation is not recommended.

The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to operate at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. Mitigation of future analysis years indicated that if an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

The intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate acceptably overall during the peak hours though the southbound approach operates at LOS E during the event peak hour. This is due to the relatively high volume of event egress traffic. It should be noted that the counted traffic volumes were doubled to consider the largest events such as the Heart Ball. The 64th Street driveway only facilitated about 5 percent of the Phoenician's egress trips. It is recommended to route more trips out the 64th Street driveway, alleviating the Camelback Road driveway.

PROPOSED DEVELOPMENT

The Phoenician is located at 6000 East Camelback Road in Phoenix, Arizona.

SITE PLAN AND LAND USE

Within its property, the resort proposes to develop or redevelop certain parcels/areas that are distributed throughout the property. The Phoenician project proposes a total of approximately 127 new single family residences, 235 new townhome and condominium residences, and 20 new resort casitas.

The Phoenician already has approval to construct approximately 320 total units of casita, townhomes, condominiums and single family residences. The proposed development increases the approved plan by approximately 62 units to a total of approximately 382 units.

A site plan is illustrated in **Figure 4**. The plan labels the parcels A through K. Parcels A and B are hotel and open space areas, respectively and do not propose new trip inducing improvements. Parcel C is located directly northeast of the main hotel building and is proposed to consist of approximately 84 single family residences in place of the existing golfing area. Parcel D is located directly east of the main hotel buildings and is proposed to consist of approximately 100 condominium residences in place of the existing tennis area. Parcel E is located along the southern frontage of Phoenician Boulevard east of the casitas and is proposed to consist of approximately 32 condominium residences in place of the existing golfing area. Parcel F is located to the south of the main hotel buildings and is proposed to consist of approximately 34 single family residences in place of predominantly vacant land. Parcel G is located northeast of the intersection of Phoenician Boulevard and Camelback Road and west of existing residences and is proposed to consist of approximately 5 condominium residences in place of existing open space. Parcel H is a portion of the existing parking lot west of Phoenician Boulevard (N-S) and Elsie Avenue and is proposed to consist of approximately 30 condominium residences (the remainder of the parking lot comprises Parcel K8 and K9). Parcel I is located west of the intersection of Phoenician Boulevard (N-S) and Phoenician Boulevard (E-W) and is proposed to consist of approximately 68 condominium residences and the relocated tennis center in place of the outdoor dining area north of the Jokake Inn and some golfing area. Parcel J is located southwest of the Canyon Suites and is proposed to consist of approximately 20 resort casitas in place of some golf uses. Parcel K is split over 7 individual parcels, labeled K1 through K9, located along Alta Hacienda Drive, Hilltop Road, Elsie Avenue and Cholla Lane. Single family residences are proposed on Parcels K1 through K9, in place of predominantly vacant land, a maintenance building, a golf green and a parking lot.

ACCESS

The Phoenician currently provides two (2) accesses to the site. The main, signalized entrance is located at the intersection of Phoenician Boulevard (N-S) at Camelback Road. The other entrance is the intersection of Phoenician Boulevard (E-W) at 64th Street located approximately 1,700 feet north of Camelback Road. Access to Parcels C, D and E will be provided directly or indirectly through Phoenician Boulevard (E-W). Access to Parcels G, H (exit only), I, J, K6 and K7 will be provided directly or indirectly through Phoenician Boulevard (N-S). Parcel H will also have access directly to Camelback Road at 59th Place. Parcel F currently has direct access to Camelback Road at Evans Street. Access to Parcel K1 is provided by the adjacent Cholla Lane. Access to Parcel K2 is provided by the adjacent Hilltop Road. Access to Parcels K3, K4 and K5 is provided by the adjacent Alta Hacienda Drive. Lastly, access to Parcels K6, K7, K8 and K9 is provided by the adjacent Elsie Avenue.

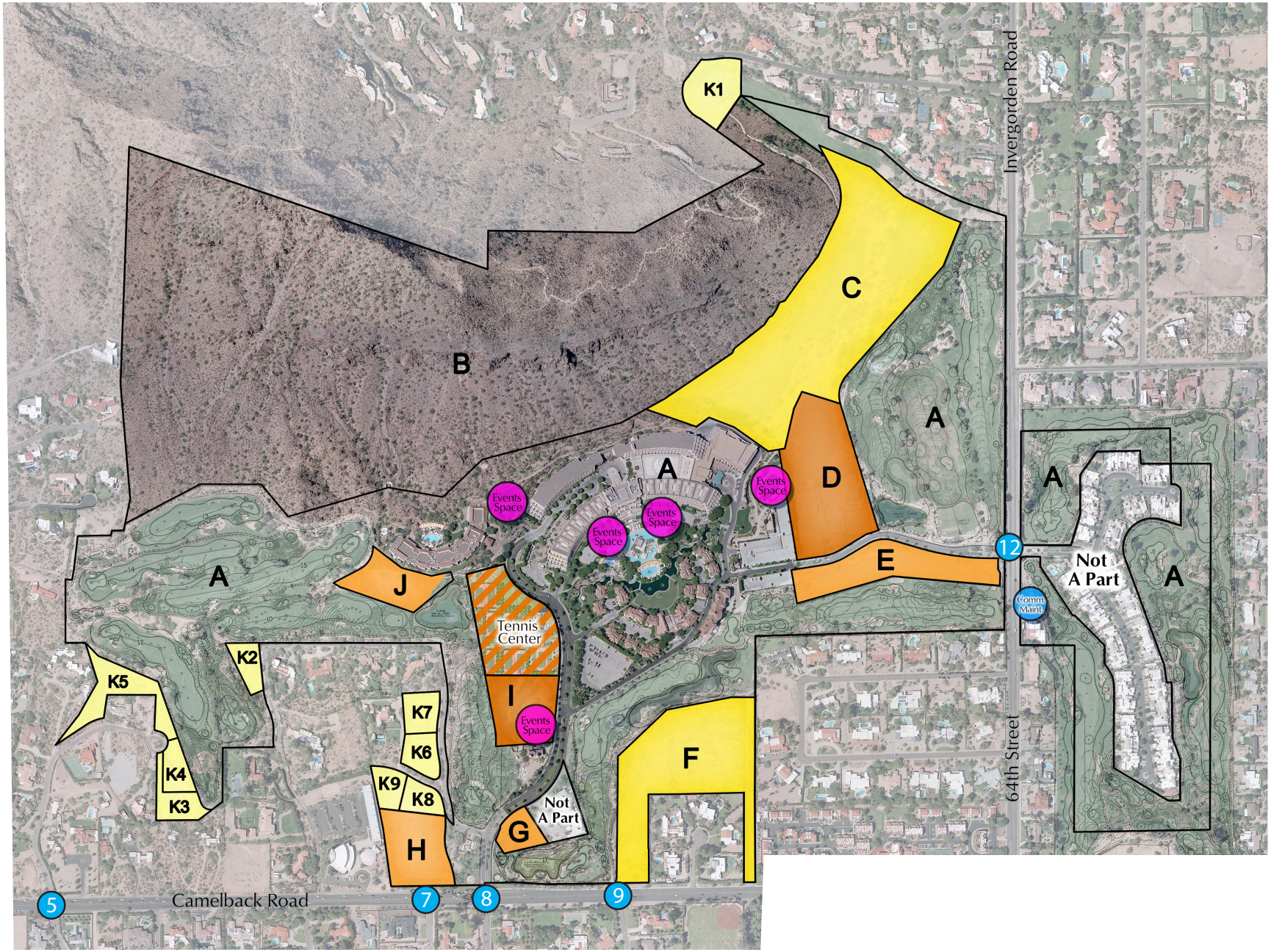


Figure 4: Site Plan and Access

Source: CivTech 2016

PROPOSED TRIP GENERATION

Trips generated for the proposed development were estimated utilizing the data given in ITE's *Trip Generation Manual, 9th Edition* and the methodology discussed in the ITE *Trip Generation Handbook, 3rd Edition*. The ITE *Trip Generation* 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.

Per ITE's *Trip Generation Handbook, 3rd edition*, the rates in the *Trip Generation Manual* represent base trip generation rates for "low-density, single-use, suburban developments with little or no transit service, limited bicycle access, and little or no convenient pedestrian access" and that the "analyst needs to adjust the baseline vehicle trip generation" if the subject development is an infill site, mixed-use development, transit-friendly development, is located within an urban core area or near a school, and/or other conditions.

New residents to the housing proposed on this project will likely frequent the golf courses provided at The Phoenician, accounting for trips that would normally travel external to the site. These trips that begin and end inside of the site are considered internally captured trips. To be conservative, no reductions were applied within this study to account for internal capture. **Table 3** summarizes trip generation for the proposed residential development. This information is also presented in **Appendix D**. For purposes of this analysis, it is assumed that the proposed development will be at full build-out in horizon year 2018.

Table 3 – Trip Generation Summary

Parcel	Land Use	ITE Code	Size Units	Weekday Generated Trips							Saturday Peak Hour Trips		
				Daily	AM Peak Hour			PM Peak Hour					
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
C	Single Family	210	84	896	17	52	69	57	33	90	45	39	84
D	Condominium	233	100	586	13	43	56	35	20	55	25	22	47
E	Condominium	233	32	188	4	14	18	11	7	18	9	7	16
F	Single Family	210	34	390	9	25	34	25	15	40	22	18	40
G	Condominium	233	5	30	1	2	3	2	1	3	2	1	3
H	Condominium	233	30	176	4	13	17	11	6	17	8	7	15
I	Condominium	233	68	400	9	30	39	24	14	38	17	15	32
J	Resort Casita	330	20	100	35	14	49	4	5	9	14	11	25
K	Single Family	210	9	116	4	13	17	8	5	13	9	8	17
			Totals	**2,882**	**96**	**206**	**302**	**177**	**106**	**283**	**151**	**128**	**279**

(1) Trip Generation Manual does not provide data for the Saturday peak hour for LUC 233 Luxury peak Condominium/Townhouse - the Saturday hour rate for LUC 230 Residential Condominium/ Townhouse is used instead.

The redeveloped portions of The Phoenician are expected to generate 2,882 new daily vehicular trips, with 302 trips occurring in the AM peak hour, 283 trips occurring in the PM peak hour and 279 peak hour trips occurring on a Saturday.

The traffic counts collected indicate that The Phoenician's existing land uses west of 64th Street currently generate 199 trips during the AM peak hour, 259 during the PM peak hour and 658 trips during the Saturday event peak hour. These trips are predominantly through the main access on Camelback Road (191 AM, 219 PM, 633 Event) with relatively few trips through the 64th Street access (8 AM, 40 PM, 25 Event).

TRIP DISTRIBUTION

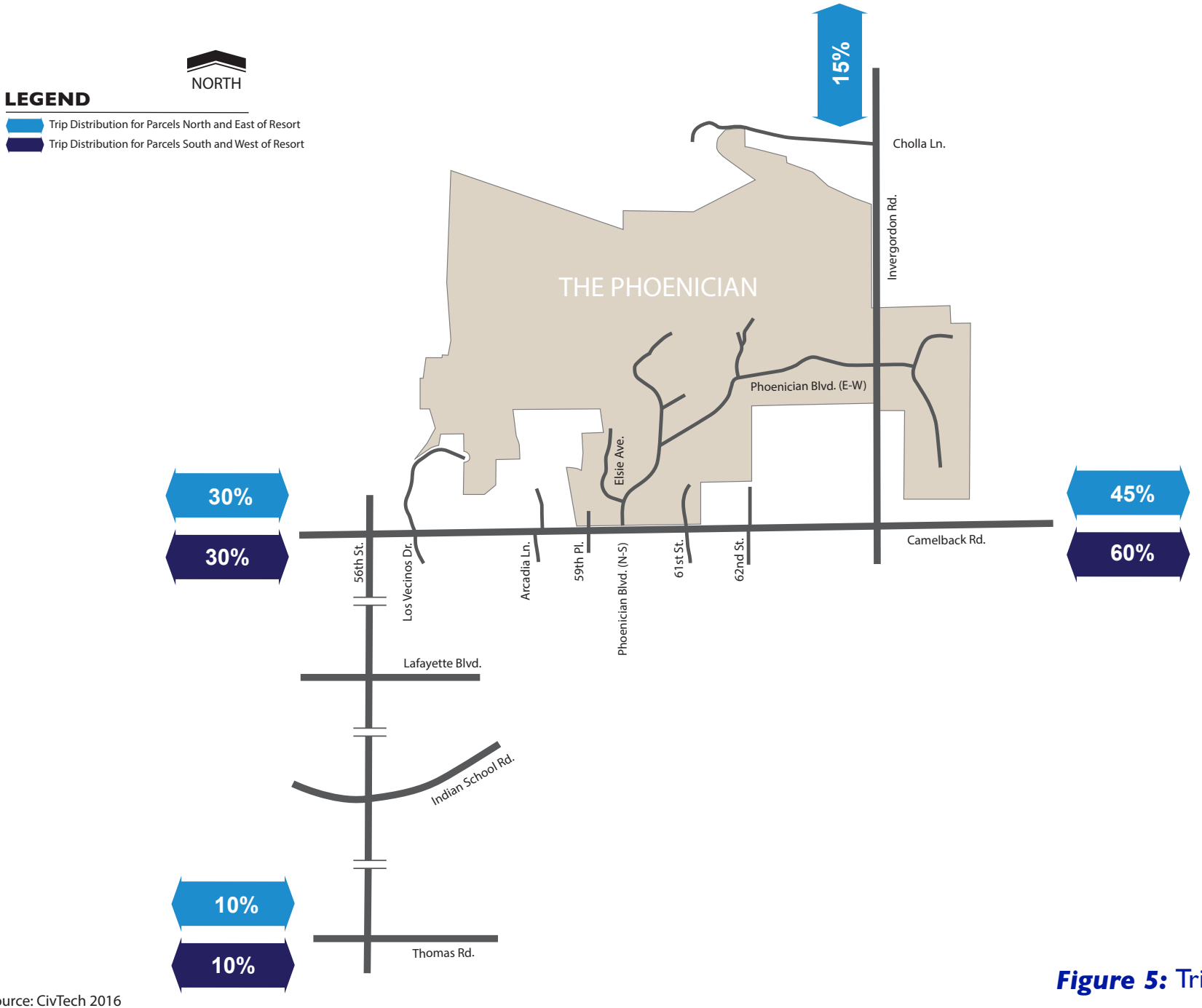
A trip distribution pattern was assumed for the study relative to employment and entertainment centers in the area. The major trip destinations are expected to be primarily to the east toward downtown Scottsdale and to the west towards central Phoenix. It is expected that the distribution within the study area will vary some due to proximity to site accesses and preferable routes at each access. Trips from the western portions of the site, Parcels C, D and E, are anticipated to primarily use the 64th Street access and all other parcels are not anticipated to use the 64th Street access. Parcels K1 through K7 are expected to use adjacent roadways as access points, whether internal or external to the site. The trip distribution applied to site generated trips is shown in **Table 4** and illustrated in **Figure 5**.

Table 4 – Site Trip Distribution Percentages

Route	To/From	Distribution Percentages	
		Parcels C, D, E & K1	Other Parcels
Camelback Road	East	45%	60%
Camelback Road	West	30%	30%
Thomas Road	North	10%	10%
64th Street	West	15%	0%
Total		**100%**	**100%**

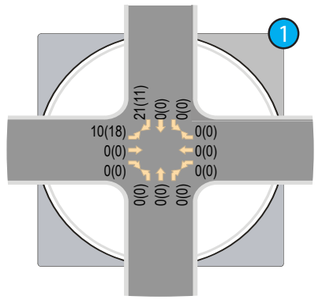
TRIP ASSIGNMENT

The distribution percentages were applied to the generated trips and routed through major travel paths to determine the AM and PM peak hour site traffic at the intersections within the study area. **Figure 6** illustrates the full build-out site generated trips for the proposed development.

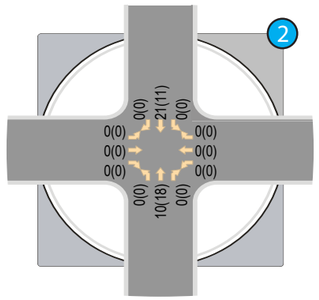


Source: CivTech 2016

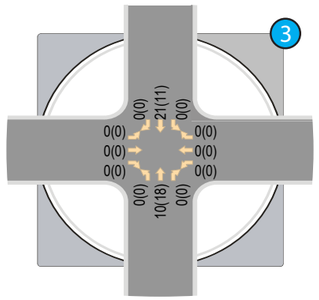
Figure 5: Trip Distribution



56th St. & Thomas Rd.



56th St. & Indian School Rd.



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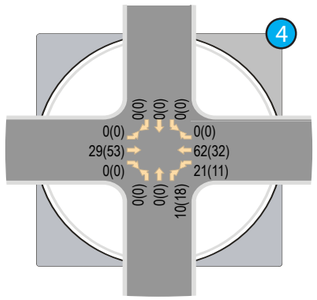

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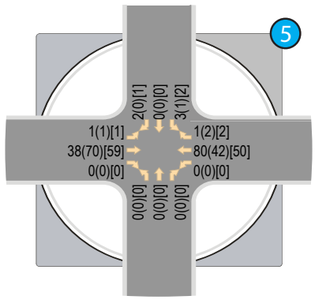

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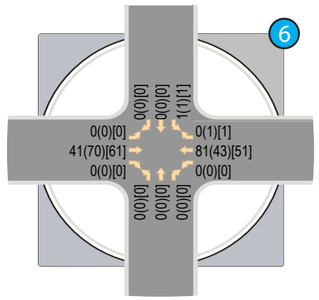
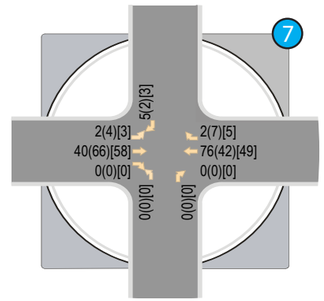
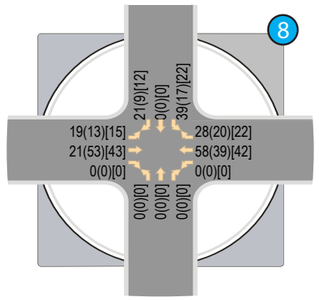


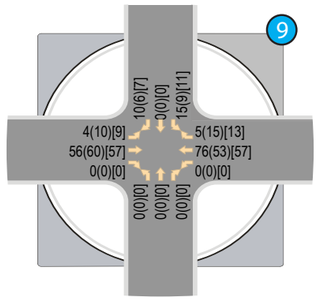
Hilltop Rd./Arcacia Ln. & Camelback Rd.



59th Pl. & Camelback Rd.



Phoenician Blvd./Jokake Rd. & Camelback Rd.



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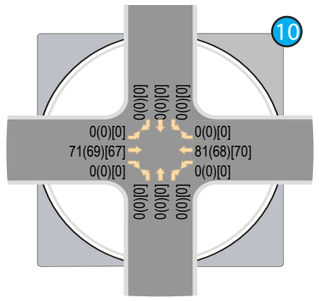

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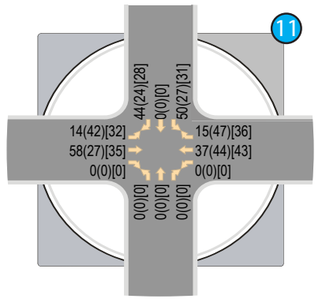
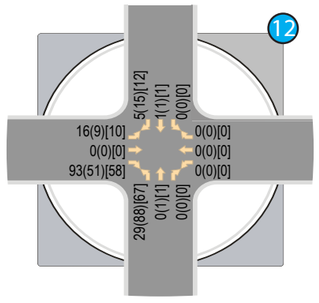
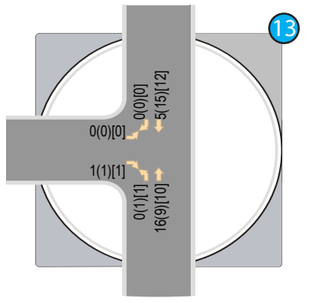


64th St. & Camelback Rd.



64th St. & Phoenician Blvd. (E-W)



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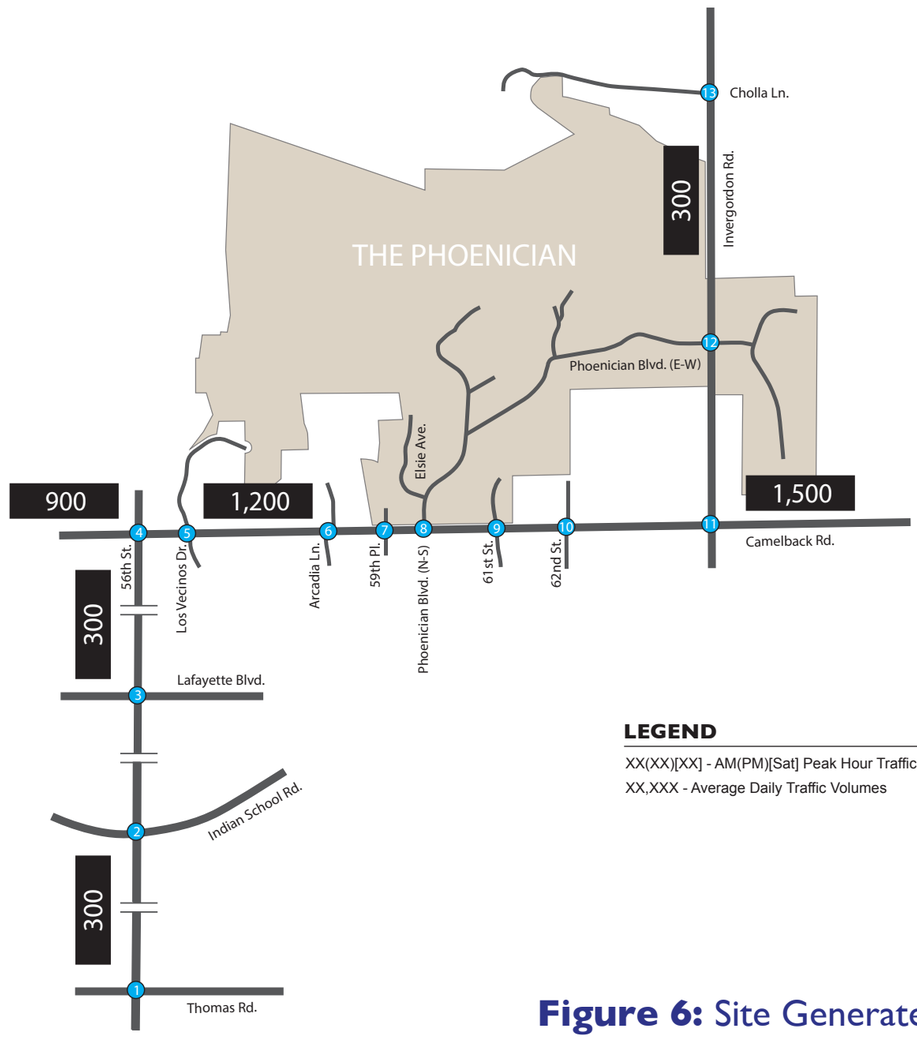


Source: CivTech 2016

Figure 6: Site Generated Traffic Volumes

FUTURE BACKGROUND TRAFFIC

Future background traffic is often projected by increasing existing traffic volumes by a chosen growth rate. To determine an appropriate growth rate, the change in historical roadway average daily traffic (ADT) as published by the City was considered. The nearest successive ADT counts on Camelback Road indicated an average annual growth rate of 0.8 percent from 2011 to 2015. For purposes of this study, an annual growth rate of 0.8 percent is applied to all arterial through movements and all arterial-arterial turn movements to approximate future background traffic volumes. The annual growth rate equates to growth factors of 1.016 and 1.057 from 2016 to 2018 and 2023, respectively. Background traffic calculations are included in **Appendix E**.

The projected peak hour background traffic volumes are determined by multiplying the existing traffic volumes by the applicable growth factor. The 2018 and 2023 background peak hour traffic volumes are shown in **Figure 7** and **Figure 8**, respectively.

TOTAL TRAFFIC

Total traffic was determined by adding the site traffic to the projected background traffic. The 2018 and 2023 total peak hour traffic volumes are shown in **Figure 9** and **Figure 10**, respectively.

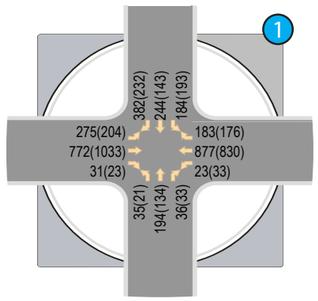
TRAFFIC AND IMPROVEMENT ANALYSIS

TURN LANE ANALYSIS AT SITE ACCESSES

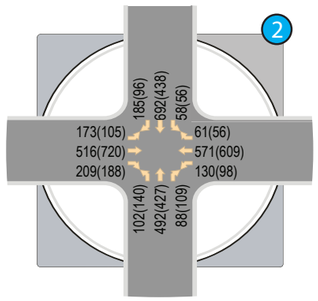
Exclusive left and right turn lanes are provided approaching both existing driveways into the site. The new driveways for Parcel F and Parcel G to Camelback Road will not be signalized and are evaluated for auxiliary turn lanes. Both will allow left turns into the site which may be facilitated by the existing two-way left turn lane. The City of Phoenix does not have specific criteria for warranting a right turn lane within their *Street Planning and Design Guidelines* so the criteria by the Maricopa County Department of Transportation (MCDOT) with their *Roadway Design Manual*, Section 7.15.1. A right turn lane at a driveway is recommended when either of the following is met:

- The outside lane has an expected volume of 250 vph or greater and the right turn volume is greater than 55 vph.
- Any three of the below criteria are met:
  a) At least 5,000 vehicle per day are using or are expected to be using the adjacent street.
  b) The roadway's posted speed limit is greater than 35 mph.
  c) At least 1,000 vehicles per day are using or are expected to use the driveway.
  d) At least 30 vehicles are expected to make right-turns into the driveway within a one-hour period.

Based on these criteria, a right turn lane is not required on Camelback Road approaching the driveways for Parcel F and Parcel G.



56th St. & Thomas Rd.



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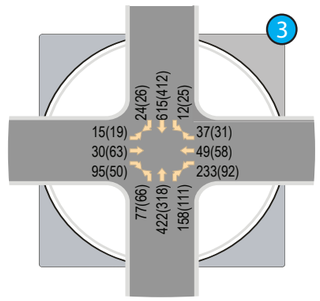

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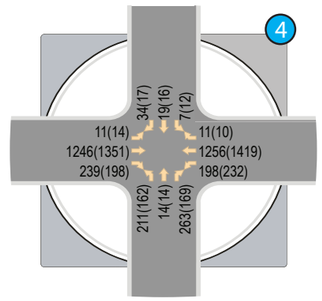

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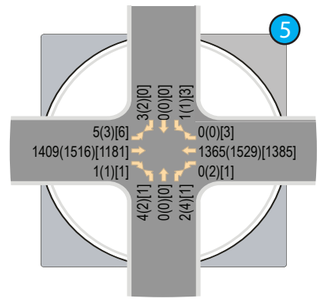
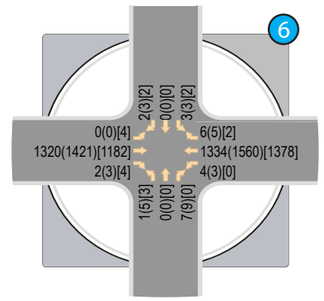
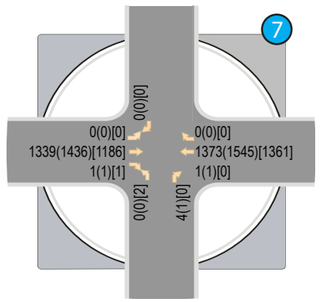


Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



Hilltop Rd./Arcacia Ln. & Camelback Rd.



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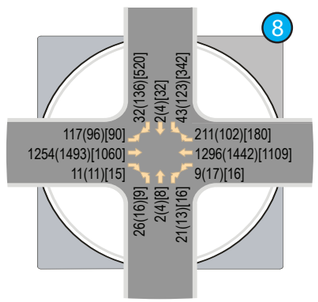
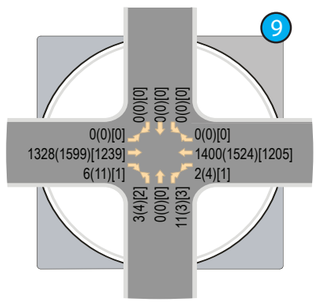


Phoenician Blvd./Jokake Rd. & Camelback Rd.



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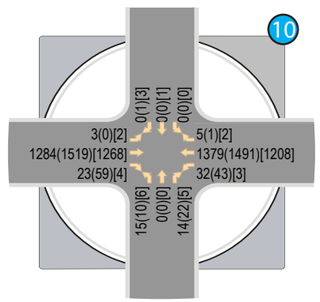

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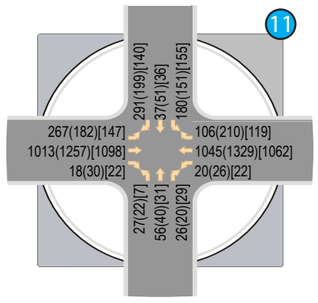

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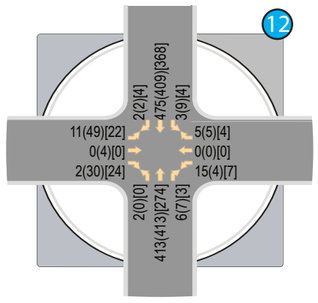

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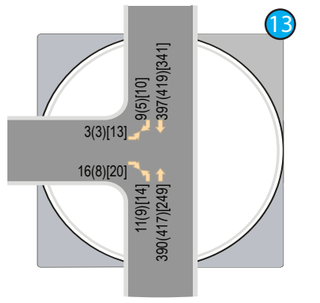

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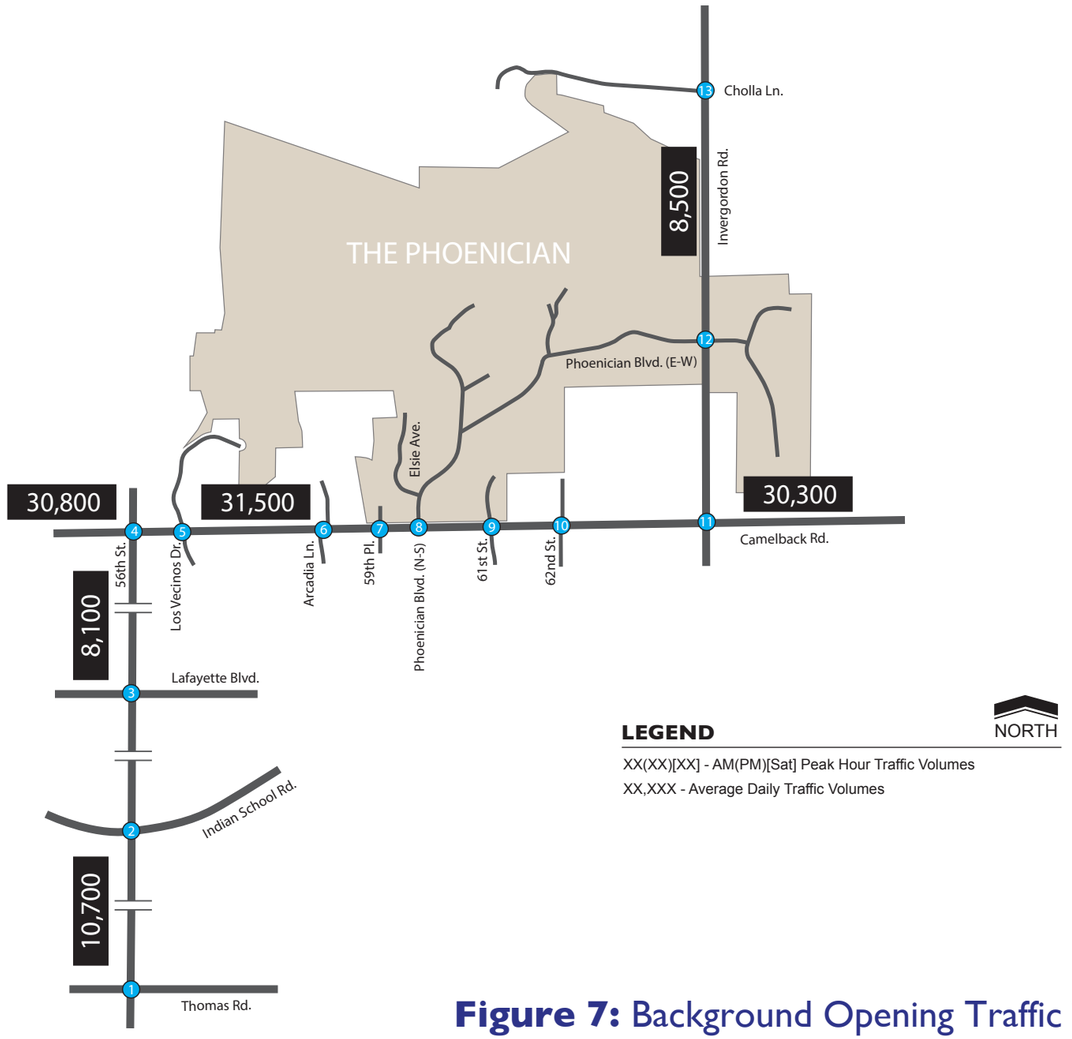
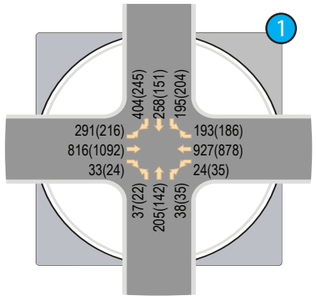


Source: CivTech 2016

Figure 7: Background Opening Traffic Volumes



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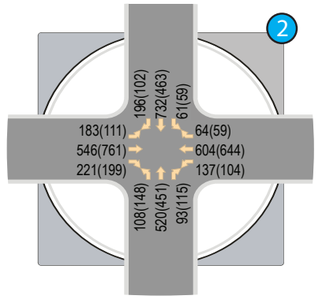

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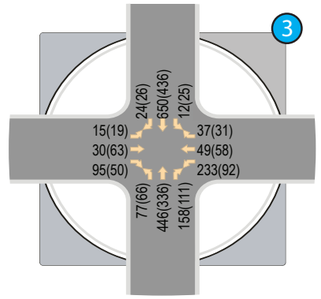

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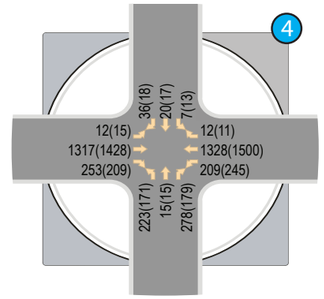

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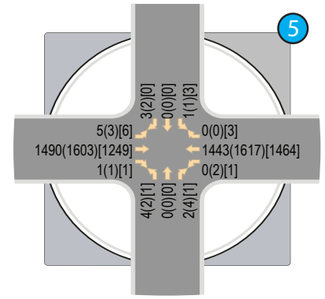
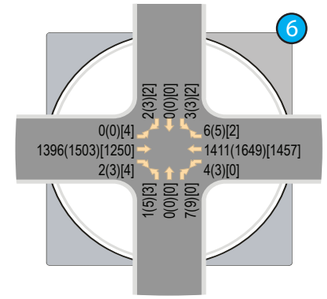
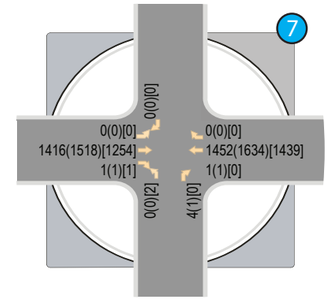


Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



Hilltop Rd./Arcacia Ln. & Camelback Rd.



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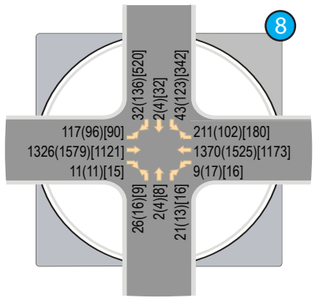

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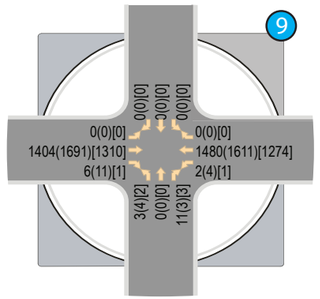

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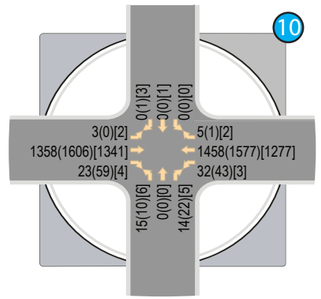

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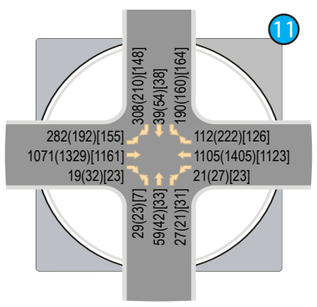

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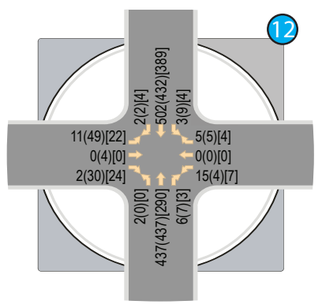

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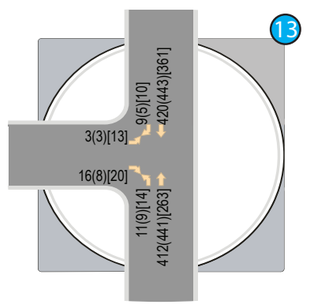
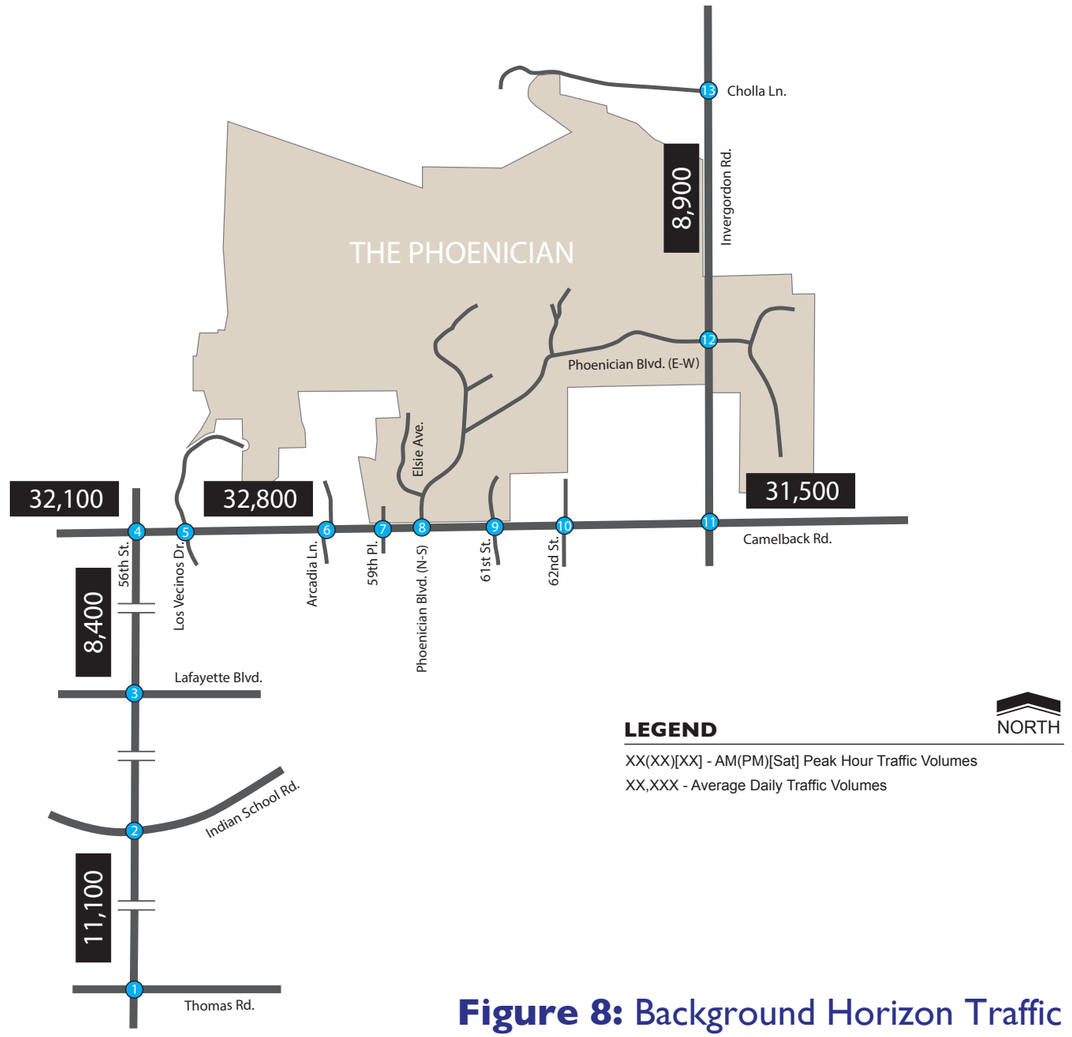
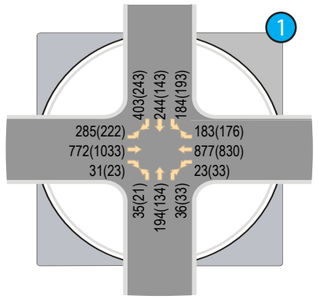


Cholla Ln. & 64th St.



Source: CivTech 2016

Figure 8: Background Horizon Traffic Volumes



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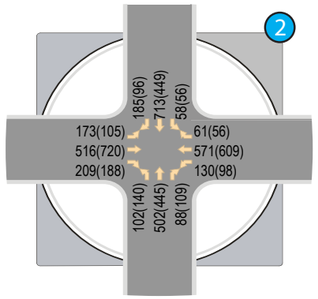

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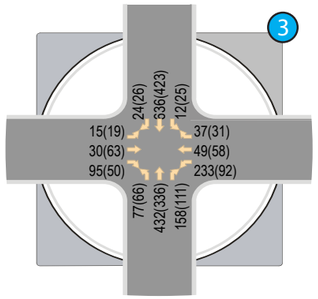

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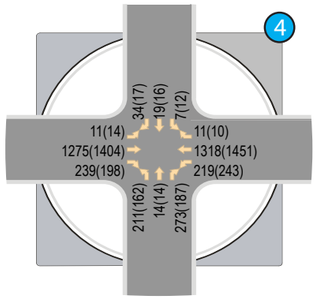

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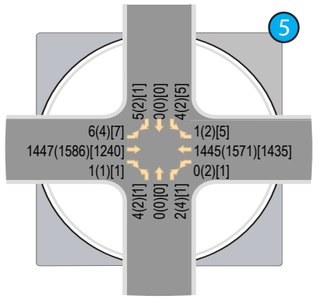
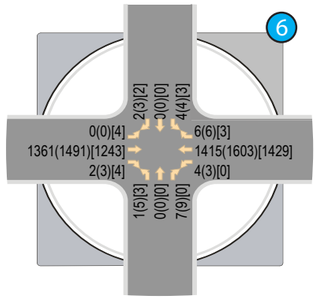
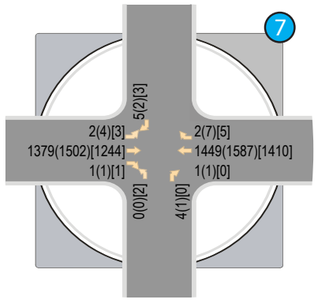


Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



Hilltop Rd./Arcadia Ln. & Camelback Rd.



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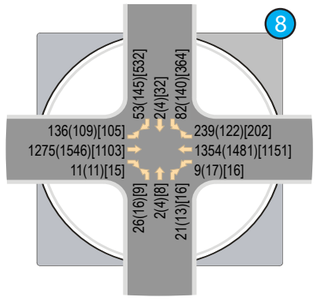

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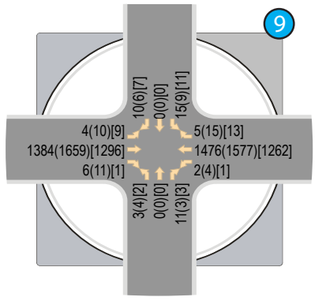

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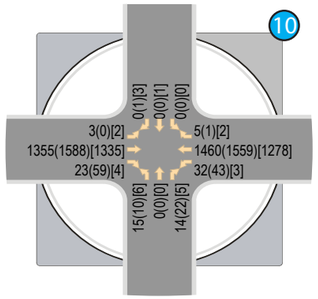

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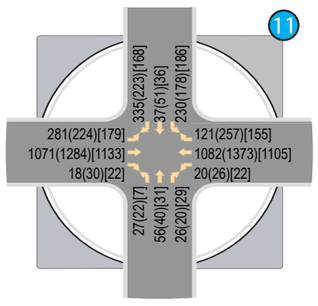

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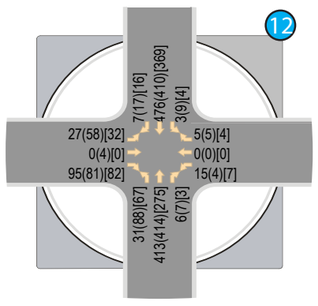

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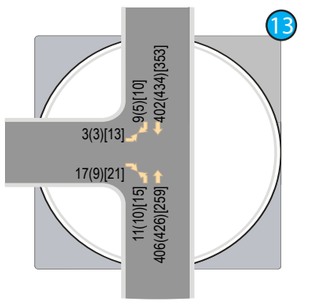

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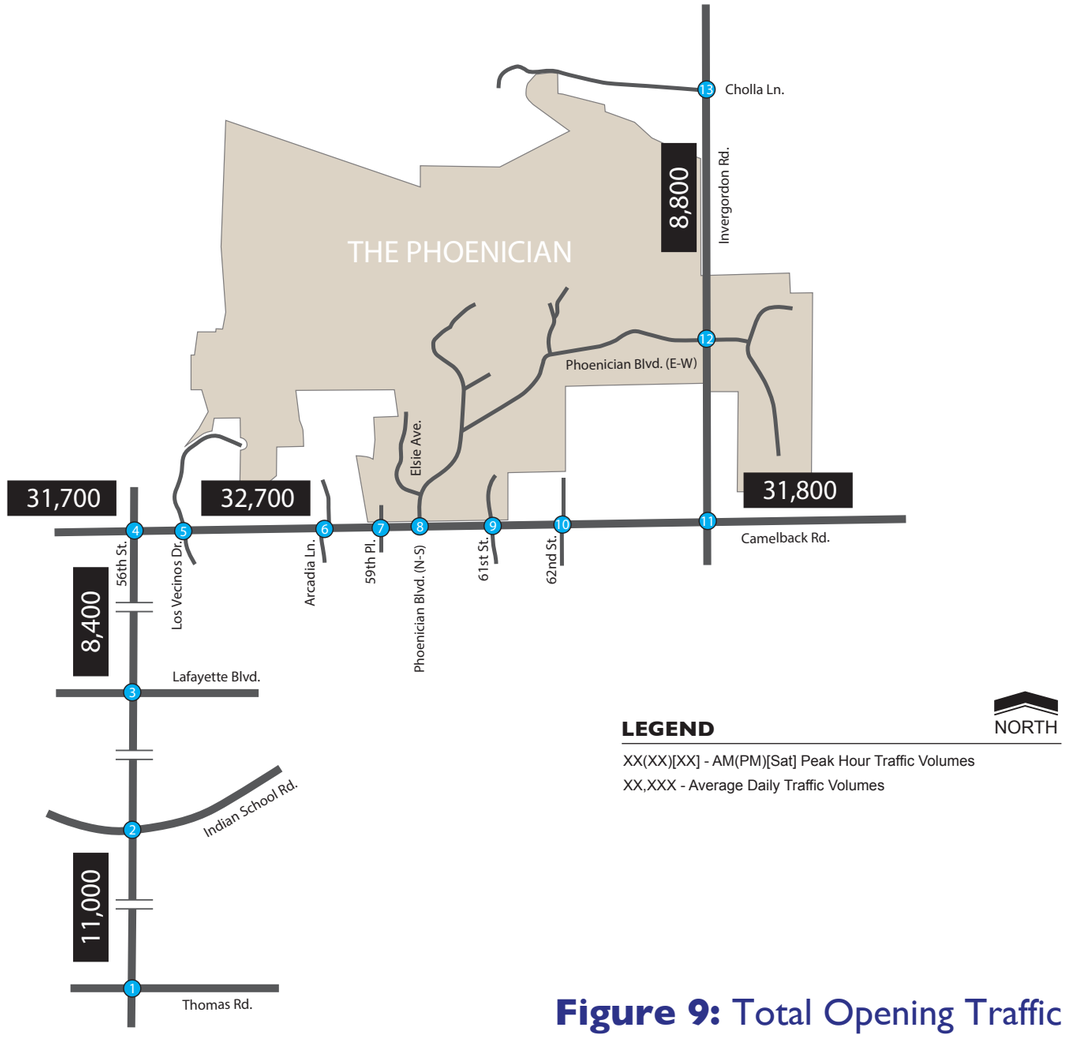


LEGEND

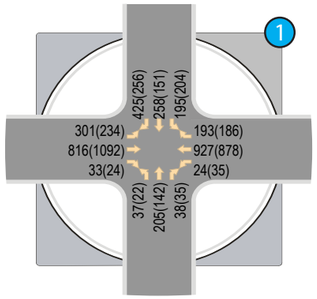
NORTH

XX(XX)[XX] - AM(PM)[Sat] Peak Hour Traffic Volumes

XX,XXX - Average Daily Traffic Volumes

Figure 9: Total Opening Traffic Volumes

Source: CivTech 2016



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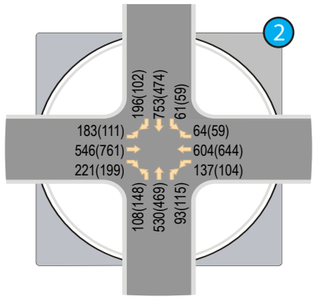

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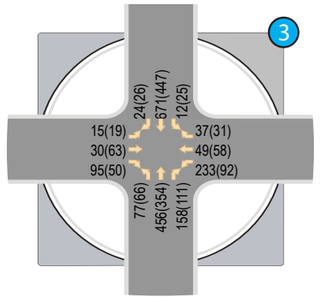

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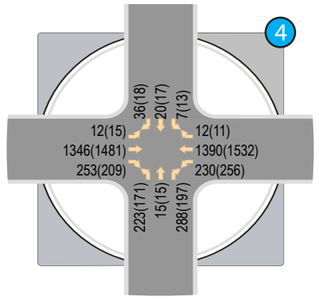

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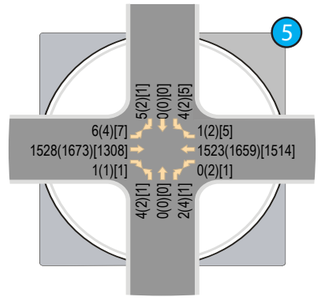
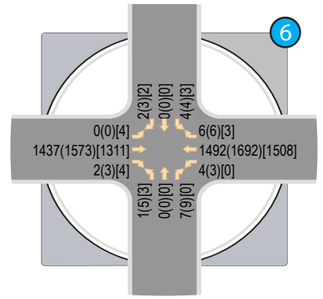
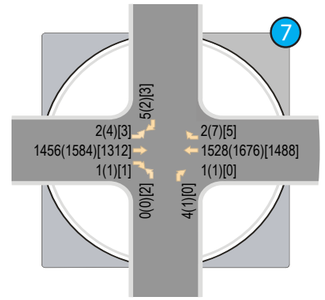


Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



Hilltop Rd./Arcacia Ln. & Camelback Rd.



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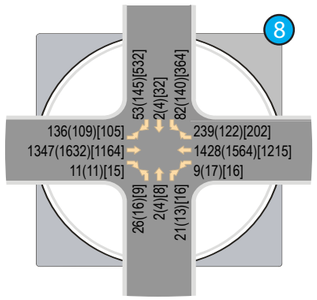
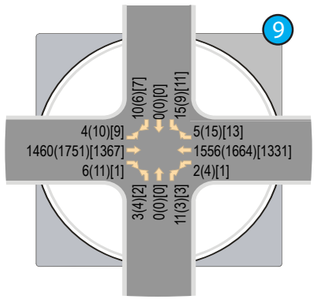


Phoenician Blvd./Jokake Rd. & Camelback Rd.



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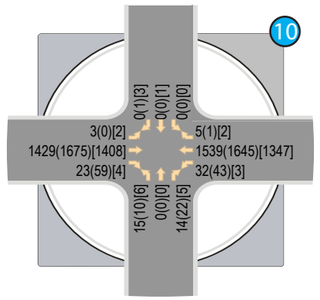

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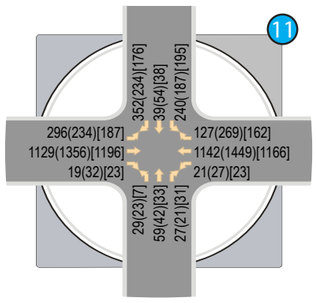
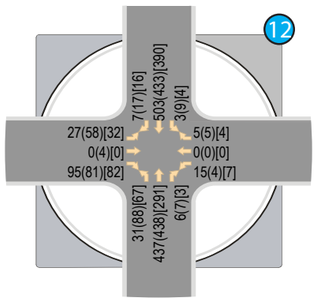
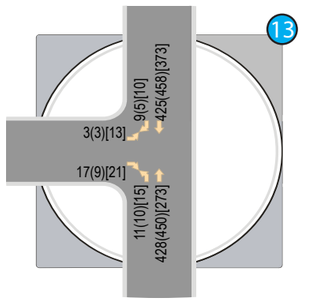


64th St. & Camelback Rd.



64th St. & Phoenician Blvd. (E-W)



Cholla Ln. & 64th St.

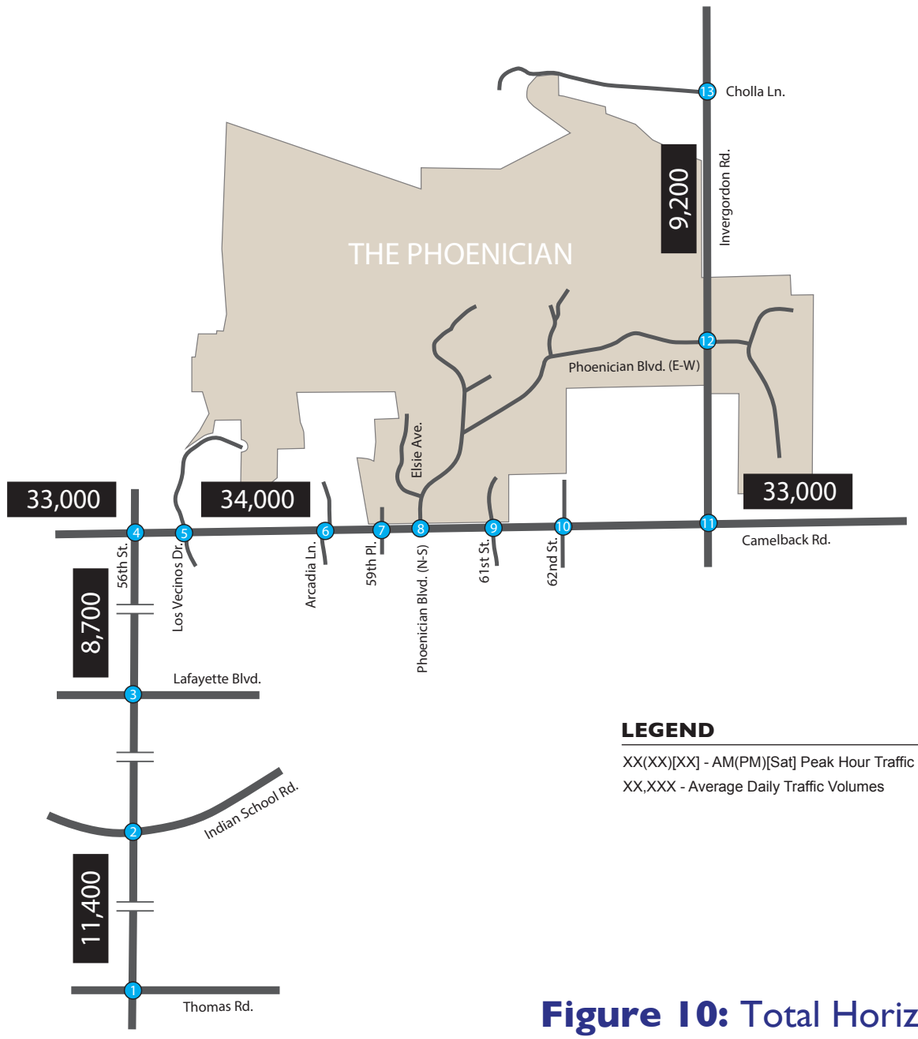


Figure 10: Total Horizon Traffic Volumes

Source: CivTech 2016

FUTURE INTERSECTION CAPACITY ANALYSES

Peak hour capacity analyses were conducted for the study intersections with the same methodologies as the existing conditions and using Synchro traffic analysis software. The resulting levels of service are summarized in **Table 5**. Synchro reports background, total and mitigated conditions in 2018 and 2023 are included within **Appendix F** and **Appendix G**, respectively.

Table 5 – Future Peak Hour Level of Service Summary

ID	Intersection	Control	Approach/ Movement	AM(PM)[Event] Peak Hour LOS			
				Background		Total	
				2018	2023	2018	2023
1	56th Street & Thomas Road (without any right turns during red phase)	Signal	NB	C(C)	C(C)	C(C)	C(C)
			SB	E(C)	E(C)	E(C)	F(D)
			EB	A(A)	B(A)	B(A)	B(B)
			WB	B(B)	C(B)	B(B)	C(C)
			Overall	**C(B)**	**C(B)**	**C(B)**	**C(B)**
	(with some right turns on red – no mitigation)		NB	Not Analyzed	Not Analyzed	C(C)	C(C)
			SB			D(C)	D(D)
			EB			B(A)	B(B)
			WB			B(B)	C(C)
			Overall			**C(B)**	**C(B)**
2	56th Street & Indian School Road	Signal	NB	C(D)	C(D)	C(D)	D(D)
			SB	C(C)	C(C)	C(C)	C(C)
			EB	C(B)	C(B)	C(B)	C(B)
			WB	B(A)	B(B)	B(A)	B(B)
			Overall	**C(C)**	**C(C)**	**C(C)**	**C(C)**
3	56th Street & Lafayette Boulevard	Signal	NB	B(A)	B(A)	B(A)	B(A)
			SB	B(A)	B(A)	B(A)	B(A)
			EB	C(C)	C(C)	C(C)	C(C)
			WB	D(D)	D(D)	D(D)	D(D)
			Overall	**B(B)**	**B(B)**	**B(B)**	**B(B)**
4	56th Street & Camelback Road (without any right turns during red phase)	Signal	NB	D(D)	E(D)	D(D)	E(D)
			SB	C(C)	C(C)	C(C)	C(C)
			EB	B(B)	B(B)	B(B)	B(B)
			WB	A(A)	A(A)	A(A)	A(A)
			Overall	**B(B)**	**B(B)**	**B(B)**	**B(B)**
	(with some right turns on red – no mitigation)		NB	Not Analyzed	Not Analyzed	D(D)	D(D)
			SB			C(C)	C(C)
			EB			B(B)	B(B)
			WB			A(A)	A(A)
			Overall			**B(B)**	**B(B)**
5	Alta Hacienda Dr./ Los Vecinos Dr. & Camelback Rd.	2-way stop (NB/SB)	NB left	F(F)[F](1)	F(F)[F](1)	F(F)[F](1)	F(F)[F](1)
			NB thru/right	C(C)[B]	C(C)[B]	C(C)[B]	C(C)[B]
			SB shared	F(F)[F](1)	F(F)[F](1)	F(F)[F](1)	F(F)[F](1)
			EB left	B(B)[B]	B(C)[B]	B(B)[B]	B(C)[B]
			WB left	-(B)[B](2)	-(C)[B](2)	-(C)[B](2)	-(C)[B](2)

(1) These side street/driveway LOS's do not have any impact on Camelback Road.
(2) No vehicles were observed performing this movement during one or more peak hour.

Table 5 – Future Peak Hour Level of Service Summary

ID	Intersection	Control	Approach/ Movement	AM(PM)[Event] Peak Hour LOS			
				Background		Total	
				2018	2023	2018	2023
6	Hilltop Rd./Arcadia Ln. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	D(F)[F](1) F(F)[F](1) -(-)[B](2) B(B)[-](2)	E(F)[F](1) F(F)[F](1) -(-)[B](2) B(B)[-](2)	E(F)[F](1) F(F)[F](1) -(-)[B](2) B(B)[-](2)	E(F)[F](1) F(F)[F](1) -(-)[B](2) B(B)[-](2)
7	59th Pl. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left(2)	C(C)[D] n/a n/a B(B)[-](2)	C(C)[D] n/a n/a B(B)[-](2)	C(C)[F](1) C(C)[C] B(C)[B] B(B)[-](2)	C(C)[F](1) C(C)[C] B(C)[B] B(B)[-](2)
8	Phoenician Blvd./Jokake Rd. & Camelback Rd.	Signal	NB SB EB WB	C(C)[C] C(D)[E] A(A)[B] A(A)[C]	C(C)[C] C(D)[E] A(A)[B] A(A)[C]	C(D)[C] C(D)[E] A(A)[B] A(A)[C]	C(D)[C] C(D)[E] A(A)[C] A(A)[C]
			Overall	**A(A)[C]**	**A(A)[C]**	**A(A)[D]**	**A(A)[D]**
9	61st St. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	F(F)[F] -(-)[-](1) -(-)[-](1) B(C)[B]	F(F)[F] -(-)[-](1) -(-)[-](1) B(C)[B]	F(F)[F] F(F)[F] B(C)[B] B(C)[B]	F(F)[F] F(F)[F] B(C)[B] B(C)[B]
10	62nd St. & Camelback Rd.	2-way stop (NB/SB)	NB shared SB shared EB left WB left	F(F)[F] -(C)[F](1) B(-)[B](1) B(C)[B]	F(F)[F] -(C)[F](1) B(-)[B](1) B(C)[B]	F(F)[F] -(C)[F](1) B(-)[B](1) B(C)[B]	F(F)[F] -(C)[F](1) B(-)[B](1) B(C)[B]
11	64th St. & Camelback Rd.	Signal	NB SB EB WB	C(C)[C] D(D)[C] A(A)[A] B(B)[B]	C(C)[C] D(D)[C] A(A)[A] C(B)[B]	C(C)[C] D(D)[C] A(A)[A] C(B)[B]	C(C)[C] D(D)[C] B(A)[A] C(B)[B]
			Overall	**B(B)[B]**	**B(B)[B]**	**B(B)[B]**	**C(B)[B]**
12	64th St. & Phoenician Blvd. (E-W) (for mitigated, see next)	2-way stop (EB/WB)	NB left SB left EB left EB thru/right WB left WB thru/right	A(-)[-](1) A(A)[A] C(C)[C] B(B)[B] C(C)[C] B(B)[A]	A(-)[-](1) A(A)[A] C(D)[C] B(B)[B] C(C)[C] B(B)[B]	A(A)[A] A(A)[A] D(E)[C] B(B)[B] D(D)[C] B(B)[A]	A(A)[A] A(A)[A] D(E)[C] B(B)[B] D(D)[C] B(B)[B]
12	64th St. & Phoenician Blvd. (E-W) (mitigated)	Signal	NB SB EB WB	Not Analyzed	Not Analyzed	A(A)[A] A(A)[A] D(D)[D] D(D)[D]	A(A)[A] A(A)[A] D(D)[D] D(D)[D]
			Overall			**A(A)[A]**	**A(A)[A]**
13	Cholla Ln. & 64th St.	1-way stop (EB)	NB left EB shared	A(A)[A] B(B)[B]	A(A)[A] B(B)[B]	A(A)[A] B(B)[B]	A(A)[A] B(B)[B]

(1) These side street/driveway LOS's do not have any impact on Camelback Road.
(2) No vehicles were observed performing this movement during one or more peak hour.
(3) This movement is restricted by Camelback Road's double yellow striped median at the approach to this intersection.

In projected future conditions, LOS is anticipated to be similar to the LOS in existing conditions. All study intersections are anticipated to operate at overall LOS D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, are anticipated to operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, **59th Place**, ***61st Street*** and ***62nd Street*** are anticipated to operate at LOS F during the peak hours though through traffic on the arterial road is unimpeded. For further discussion, see the existing conditions LOS analyses.

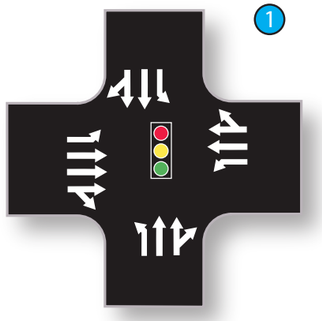
The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to continue operating at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

The northbound approach at the intersection of ***56th Street and Camelback Road*** is evaluated to operate at LOS E during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 1 vehicle per cycle could turn during its red phase, the movement/approach would operate at LOS D. Therefore, mitigation is not recommended.

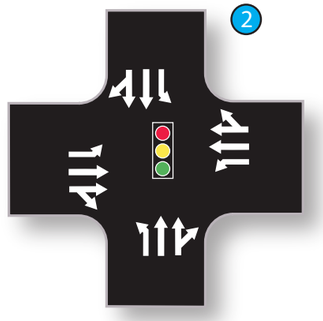
The eastbound left turn movement at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** is anticipated to operate at LOS E during the PM peak hour in 2018 and 2023 total conditions. Signalization is an option that will mitigate expected LOS and one or more signal warrants per the Manual on Traffic Control Devices are anticipated to be satisfied.

The southbound approach of the intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate at LOS E during the event peak hour. The Camelback Road approaches operate better that LOS E during an event condition and with typical traffic; the delay occurs on the side street approaches to Camelback Road.

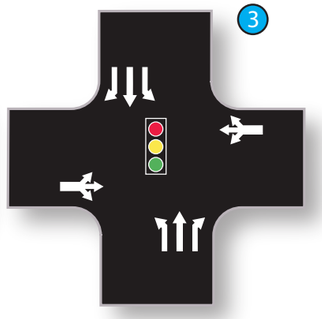
The proposed lane configurations and traffic controls are depicted in **Figure 11**.



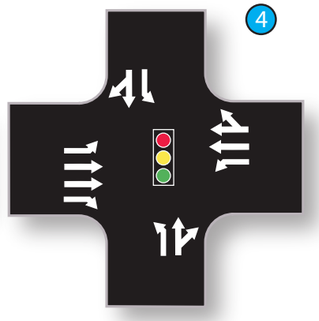
56th St. & Thomas Rd.



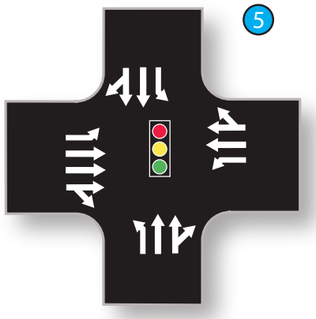
56th St. & Indian School Rd.



56th St. & Lafayette Blvd.



56th St. & Camelback Rd.



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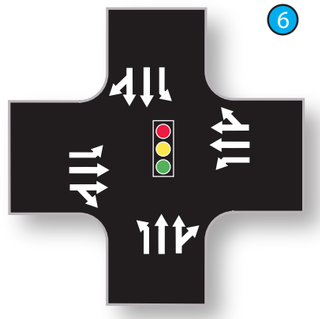
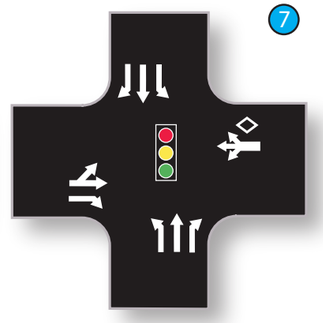
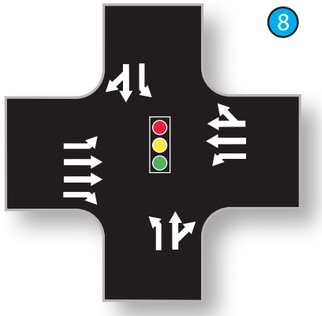


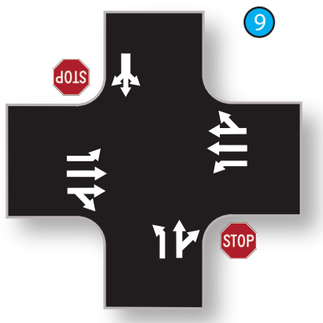
56th St. & Indian School Rd.



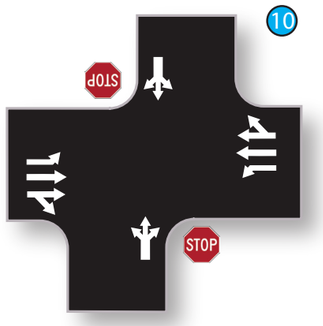
56th St. & Lafayette Blvd.



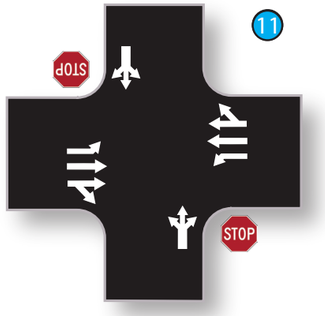
56th St. & Camelback Rd.



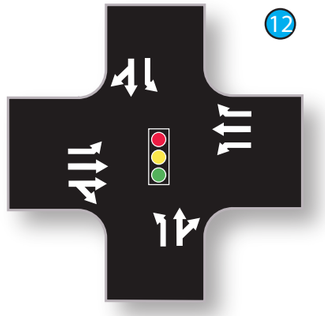
Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.



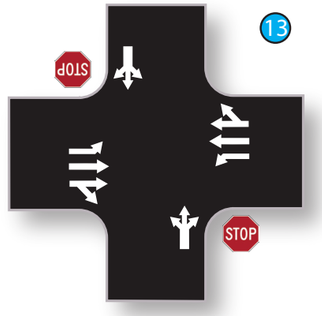
Hilltop Rd./Arcadia Ln. & Camelback Rd.



59th Pl. & Camelback Rd.



Phoenician Blvd./Jokake Rd. & Camelback Rd.



61st St. & Camelback Rd.

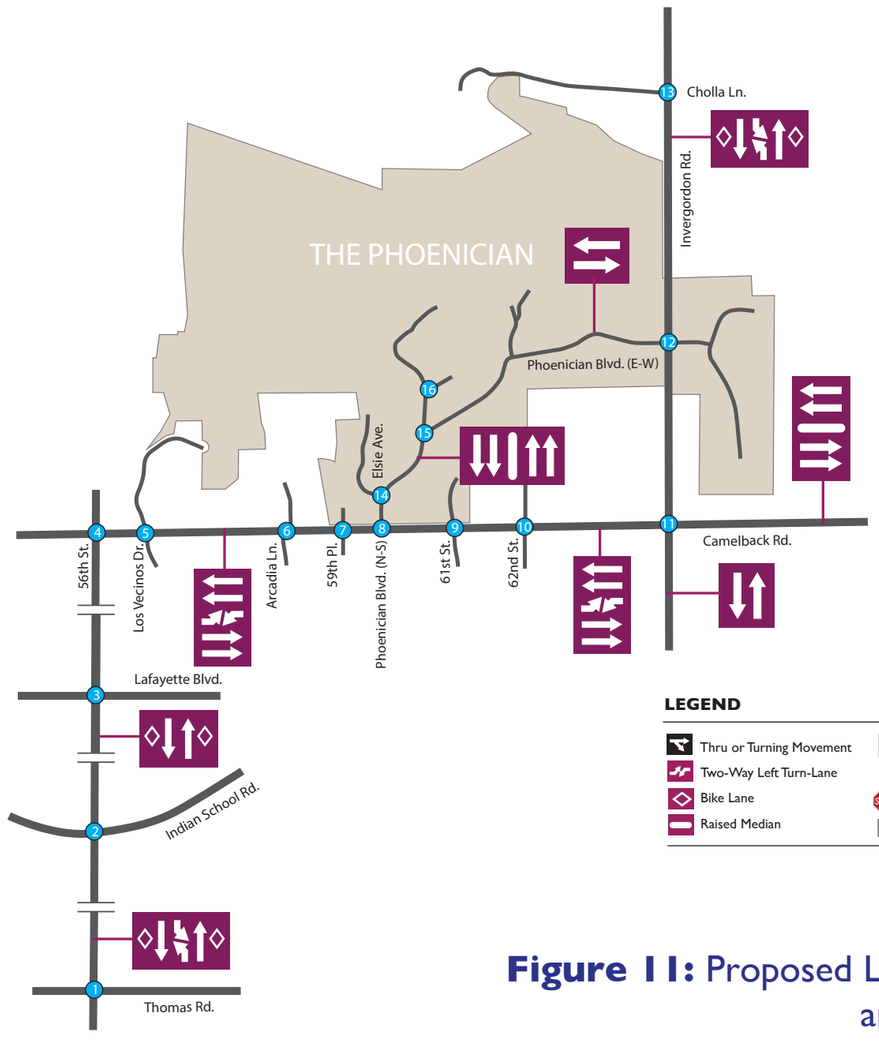


Figure 11: Proposed Lane Configurations and Traffic Controls

Source: CivTech 2016

QUEUE STORAGE ANALYSIS

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis for all turn lanes was performed at the study intersections. Queueing analyses considered the predicted 95th percentile queues predicted by Synchro as well as methodologies documented in *AASHTO's A Policy on Geometric Design of Highways and Streets*. 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 one-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 = [(veh/hr)/(30 periods/hr)] x 25 feet

The queuing analysis results for the horizon year (2023) conditions are summarized in **Table 6**. Projected 95th percentile queues produced by Synchro are included in **Appendix G** and AASHTO turn lane calculations are included in **Appendix H**.

Table 6 – Turn Lane Storage Lengths

ID	Intersection	Control	Turn Lane	Turn lane Lengths			
				Existing(1)	AASHTO	Synchro	Recommended
1	56th Street & Thomas Road	Signal	NB left	170'	50'	65'	170'
			SB left	140'	200'	265'	200'(2)
			EB left	195'	300'	230'	230'(2)
			WB left	155'	50'	30'	155'
2	56th Street & Indian School Road	Signal	NB left	105'	150'	220'	150'(2)
			SB left	120'	75'	55'	120'
			EB left	165'	175'	210'	165'(3)
			WB left	175'	150'	60'	175'
3	56th Street & Lafayette Boulevard	Signal	NB left	130'	75'	80'	130'
			SB left	110'	25'	<25'	110'
			NB right	130'	150'	90'	130'
			SB right	170'	25'	<25'	170'
			EB right	270'	100'	90'	270'

(1) Turn lane stripe measured using aerial photographs, rounded to the nearest 5 feet.
(2) Turn lane may be extended by restriping.
(3) Extension of turn lane not recommended due to lack of sufficient right-of-way or conflicts with a drainage facility, light/utility pole or another left turn lane.

[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. In this analysis, CivTech used two signal cycles.

Table 6 (Continued) – Turn Lane Storage Lengths

ID	Intersection	Control	Turn Lane	Turn lane Lengths			
				Existing[1]	AASHTO	Synchro	Recommended
4	56th Street & Camelback Road	Signal	NB left	185’	225’	285’	225’[2]
			SB left	90’	25’	<25’	90’
			EB left	150’	25’	<25’	150’
			WB left	150’	250’	345’	150’[2]
			EB right	85’	250’	175’	85’[3]
5	Alta Hacienda Dr./ Los Vecinos Dr. & Camelback Rd.	2-way stop (NB/SB)	EB left	TWLTL[4]	25’	<25’	TWLTL[4]
			WB left	TWLTL[4]	25’	<25’	TWLTL[4]
6	Hilltop Rd./Arcadia Ln. & Camelback Rd.	2-way stop (NB/SB)	EB left	TWLTL[4]	0’	<25’	TWLTL[4]
			WB left	TWLTL[4]	25’	<25’	TWLTL[4]
7	59th Pl. & Camelback Rd.	1-way stop (NB)	EB left	TWLTL[4]	25’	<25’	TWLTL[4]
			WB left[5]	[5]	25’	<25’	[5]
8	Phoenician Blvd./Jokake Rd. & Camelback Rd.	Signal	NB left	100’	25’	30’	100’
			SB left[6]	[6]	150’	180’	[6]
			EB left	160’	150’	85’	160’
			WB left	165’	25’	<25’	165’
			WB right	165’	225’	<25’	165’
9	61st St. & Camelback Rd.	2-way stop (NB/SB)	EB left	TWLTL[4]	25’	<25’	TWLTL[4]
			WB left	TWLTL[4]	25’	<25’	TWLTL[4]
10	62nd St. & Camelback Rd.	2-way stop (NB/SB)	EB left	TWLTL[4]	25’	<25’	TWLTL[4]
			WB left	TWLTL[4]	50’	<25’	TWLTL[4]
11	64th St. & Camelback Rd.	Signal	NB left	90’	50’	30’	90’
			SB left	165’	225’	285’	165’[2][7]
			EB left	235’	300’	300’	300’[2]
			WB left	85’	50’	<25’	85’
			NB right	20’	50’	25’	20’
			SB right	300’	350’	430’	300’[2][7]
			WB right	100’	275’	185’	100’[3][7]
12	64th St. & Phoenician Blvd. (E-W)	Signal	NB left	TWLTL[4]	100’	<25’	150’[8]
			SB left	TWLTL[4]	25’	<25’	150’[8]
			NB right	155’	25’	<25’	155’
			SB right	95’	25’	<25’	95’
13	Cholla Ln. & 64th St.	1-way stop (EB)	NB left	TWLTL[4]	25’	<25’	TWLTL[4]

(1) Turn lane stripe measured using aerial photographs, rounded to the nearest 5 feet.
(2) Turn lane may be extended by restriping.
(3) Extension of turn lane not recommended due to lack of sufficient right-of-way or conflicts with a drainage facility, light/utility pole or another left turn lane.
(4) Existing and/or proposed two-way left turn lane.
(5) Turn lane does not exist, the movement is restricted by double yellow striping from the eastbound left turn lane on Camelback Road approaching Phoenician Boulevard/Jokake Road. Analysis is provided for informational purposes.
(6) Turn lane is formed from through lane, available storage is not limited by a striped length.
(7) It is recommended to increase the green time provided for the movement, provide an exclusive phase or provide an overlap, where applicable in combination with or as an alternative to extending the turn lane.
(8) Recommend minimum turn length of 150’ at signalization.

The majority of turn lanes within the study provide sufficient storage in their existing conditions. Turn lanes that are anticipated to have a longer queue demand length than striped length are discussed below.

The southbound left and eastbound left turn lanes at the intersection of ***56th Street and Thomas Road*** are recommended to be extended from 140 feet to 200 feet and 195 feet to 230 feet, respectively. The site does add some vehicles to the movements, but the need is predominantly from traffic volumes not associated with the development. The extensions can be accomplished with restriping only.

The northbound left and eastbound left turn lanes at the intersection of ***56th Street and Indian School Road*** are expected to have a queue demand during periods of heavy traffic of 220 feet and 210 feet, respectively. Restriping may extend the northbound left turn lane but extension of the eastbound left turn lane would require right of way acquisition and roadway widening. The development is not expected to add to these turn movements. A neighborhood association has asked for a protected phase or the northbound left turn which currently operates with permitted phasing only. While the cross product threshold according to ADOT methodology is not met, the city should consider a protected phase to reduce conflicts with pedestrians.

The northbound left, westbound left and eastbound right turn lanes at the intersection of ***56th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 345 feet and 175 feet, respectively. Restriping may extend the northbound left turn lane but extension of the westbound left turn lane would remove the two-way left turn lane approaching Alta Hacienda Drive and the eastbound right turn lane would require right of way acquisition. The development is not expected to add to the northbound left or eastbound right turn movements.

The southbound left, southbound right, eastbound left and westbound right turn lanes at the intersection of ***64th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 430 feet, 300 feet and 185 feet, respectively, which is greater than their existing lengths. The eastbound left turn lane can be extended by restriping, while the other queues are recommended to be mitigated with modifications to the signal phasing. Adding a southbound left turn phase and a corresponding westbound right turn overlap as well as a southbound right turn overlap of the eastbound left turn phase is recommended. These improvements are recommended over restriping as they will be better for the intersection's operational characteristics and shorten the movements queue demand. Note that HCM 2010 assumes no right turns on red in future conditions, resulting in overestimated right turn delay and queue lengths.

If signalized, the new north and southbound left turn lanes at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** are recommended to be striped with a minimum length of 150 feet.

SIGHT DISTANCE

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 City of Phoenix maintains sight distance requirements at public intersections according to City Code *Section 31-13*. Sight triangles are defined by the classification of the intersecting roadways as follows in **Table 7**, which has been replicated from the City's guidelines.

Table 7 – Size of Unobstructed Sight Triangle at Corner Lots

Classification of Intersecting Public Streets*	Distance Measured Along Each Street (feet)
Local-Local	33
Local-Collector	33
Collector-Collector	33
Collector-Arterial	33
Arterial-Arterial	33
Arterial-Local	15 along local, 33 along arterial

*As defined by the City of Phoenix Street Classification Map.

The City of Phoenix maintains sight distance requirements at driveways according the City's Zoning Ordinance *702.7*. The ordinance states that all landscaping and walls adjacent to driveway within a triangle "triangle measuring ten feet in depth from the property line tapering to the property line twenty feet on either side of the driveway," should be no higher than three feet. These dimensions are also displayed in **Table 8**.

Table 8 – Size of Unobstructed Sight Triangle at Driveways

Roadway Edge	Measurement on Roadway (feet)
Driveway, Left of Driver	10
Driveway, Right of Driver	10
Cross Street, Left of Driver	20
Cross Street, Right of Driver	20

At intersections or driveways on the inside of a curved roadway, the City indicates that the visibility requirements may be greater for proper sight distance and that sight visibility should be maintained at minimum according to distances calculated using AASHTO methodology. As no driveways are on the inside of a curved roadway, no AASHTO calculations are necessary for this project.

The contractor should ensure that sight visibility is provided at all driveways according to the distances shown in **Table 7**, and **Table 8** according to Section 31-13 of the City Code and Section 702.B.7 of the City's Zoning Ordinance. All vegetation and trees should be maintained according to City of Phoenix regulations.

CONCLUSIONS

The following conclusions and recommendations have been documented in this study:

General

- The redeveloped portions of The Phoenician are expected to generate 2,882 new daily vehicular trips, with 302 trips occurring in the AM peak hour, 283 trips occurring in the PM peak hour and 279 peak hour trips occurring on a Saturday.

- The traffic counts collected indicate that The Phoenician's existing land uses west of 64th Street currently generate 199 trips during the AM peak hour, 259 during the PM peak hour and 658 trips during the 1,100-person Saturday event peak hour. These trips are predominantly through the main access on Camelback Road (191 AM, 219 PM, 633 Event) with relatively few trips through the 64th Street access (8 AM, 40 PM, 25 Event).

- Sight visibility per typical Phoenix design standards should be designated at proposed driveways. All vegetation and trees should be maintained according to City of Phoenix regulations.

Intersection Capacity Analysis - Existing

- The existing conditions analyses evaluated all study intersections to operate at overall level of service ("LOS") D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, currently operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

    - Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, ***61st Street*** and ***62nd Street*** operate at LOS F. The analyses evaluate these movements at LOS F even where few vehicles perform the movement. Increased delay is not unusual for urban, stop controlled left turn movements at arterial roadways. The delay occurs on the minor approaches and through traffic on the arterial road is unimpeded. Mitigation is not recommended.

    - The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to operate at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. Mitigation of future analysis years indicated that if an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

- The intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate acceptably overall during the peak hours though the southbound approach operates at LOS E during the event peak hour. This is due to the relatively high volume of event egress traffic. It should be noted that the counted traffic volumes were doubled to consider the largest events such as the Heart Ball. The 64th Street driveway only facilitated about 5 percent of the Phoenician's egress trips. It is recommended to route more trips out the 64th Street driveway, alleviating the Camelback Road driveway.

Intersection Capacity Analysis - Future

- In projected future conditions, the LOS is anticipated to be similar to the LOS in existing conditions. All study intersections are anticipated to operate at overall LOS D or better during the peak hours. Several stop sign controlled movements, mostly those providing a left turn movement to Camelback Road, are anticipated to operate at LOS F during the peak hours due to delay on the side street, traffic on Camelback Road is unimpeded at these intersections. Further discussion is provided for these movements.

  - Certain stop controlled movements at the ***Camelback Road*** intersections of ***Alta Hacienda/Los Vecinos***, ***Hilltop/Arcadia Lane***, ***59th Place***, ***61st Street*** and ***62nd Street*** are anticipated to continue to operate at LOS F during the peak hours. For further discussion, see the existing conditions LOS analyses.

  - The southbound approach at the intersection of ***56th Street and Thomas Road*** is evaluated to continue operating at LOS E or F during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 2.5 vehicles per cycle could turn during its red phase, the movement and approach would operate at LOS D. Therefore, mitigation is not recommended.

  - The northbound approach at the intersection of ***56th Street and Camelback Road*** is evaluated to operate at LOS E during the AM peak hour. Delay is exaggerated by the HCM 2010 methodology which no longer considers any movements during the red phase. If an average of 1 vehicle per cycle could turn during its red phase, the movement/approach would operate at LOS D. Therefore, mitigation is not recommended.

  - The eastbound left turn movement at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** is anticipated to operate at LOS E during the PM peak hour in 2018 and 2023 total conditions. Signalization is an option that will mitigate expected LOS and one or more signal warrants per the Manual on Traffic Control Devices are anticipated to be satisfied.

- The southbound approach of the intersection of ***Phoenician Boulevard/Jokake Road & Camelback Road*** is evaluated to operate at LOS E during the event peak hour. The Camelback Road approaches operate better that LOS E during an event condition and with typical traffic; the delay occurs on the side street approaches to Camelback Road.

Turn Lane Lengths

- The majority of turn lanes within the study provide sufficient storage in their existing conditions to accommodate the additional traffic anticipated with The Phoenician development. Turn lanes that are anticipated to have a longer queue demand length than striped length are discussed below.

- The southbound left and eastbound left turn lanes at the intersection of ***56th Street and Thomas Road*** are recommended to be extended from 140 feet to 200 feet and 195 feet to 230 feet, respectively. The site does add some vehicles to the movements, but the need is predominantly from traffic volumes not associated with the development. The extensions can be accomplished with restriping only.

- The northbound left and eastbound left turn lanes at the intersection of ***56th Street and Indian School Road*** are expected to have a queue demand during periods of heavy traffic of 220 feet and 210 feet, respectively. Restriping may extend the northbound left turn lane but extension of the eastbound left turn lane would require right of way acquisition and roadway widening. The development is not expected to add to these turn movements. A neighborhood association has asked for a protected phase or the northbound left turn which currently operates with permitted phasing only. While the cross product threshold according to ADOT methodology is not met, the city should consider a protected phase to reduce conflicts with pedestrians.

- The northbound left, westbound left and eastbound right turn lanes at the intersection of ***56th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 345 feet and 175 feet, respectively. Restriping may extend the northbound left turn lane but extension of the westbound left turn lane would remove the two-way left turn lane approaching Alta Hacienda Drive and the eastbound right turn lane would require right of way acquisition. The development is not expected to add to the northbound left or eastbound right turn movements.

- The southbound left, southbound right, eastbound left and westbound right turn lanes at the intersection of ***64th Street and Camelback Road*** are expected to have a queue demand during periods of heavy traffic of 285 feet, 430 feet, 300 feet and 185 feet, respectively, which is greater than their existing lengths. The eastbound left turn lane can be extended by restriping, while the other queues are recommended to be mitigated with modifications to the signal phasing. Adding a southbound left turn phase and a corresponding westbound right turn overlap as well as a southbound right turn overlap of the eastbound left turn phase is recommended. These improvements are recommended over restriping as they will be better for the intersection's operational characteristics and shorten the movements queue demand. Note that HCM 2010 assumes no right turns on red in future conditions, resulting in overestimated right turn delay and queue lengths.

- If signalized, the new north and southbound left turn lanes at the intersection of ***64th Street and Phoenician Boulevard (E-W)*** are recommended to be striped with a minimum length of 150 feet.

- The existing two-way left turn lane on Camelback Road is recommended to remain on Camelback Road for ingress left turns approaching eastbound to 59th Place and to 61st Street as shown in **Figure 11**.

LIST OF REFERENCES

Highway Capacity Manual. Transportation Research Board, National Research Council, Washington, D.C., 2010.

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

MCDOT Roadway Design Manual, Updated February 2016, Maricopa County Department of Transportation, Phoenix, Arizona, 2016.

Trip Generation Handbook, 3rd Edition, Institute of Transportation Engineers, Washington, D.C., 2014.

Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, Washington, D.C., 2012.

Traffic Volume Map, City of Phoenix, Arizona, 2011.

Traffic Volume Map, City of Phoenix, Arizona, 2013.

Traffic Volume Map, City of Phoenix, Arizona, 2015.

TECHNICAL APPENDICES

APPENDIX A: REVIEW COMMENTS (RESERVED)

APPENDIX B: EXISTING TRAFFIC COUNTS

APPENDIX C: EXISTING CAPACITY ANALYSIS

APPENDIX D: TRIP GENERATION CALCULATIONS

APPENDIX E: BACKGROUND TRAFFIC CALCULATIONS

APPENDIX F: 2018 PEAK HOUR TRAFFIC ANALYSIS

APPENDIX G: 2023 PEAK HOUR TRAFFIC ANALYSIS

APPENDIX H: 2023 QUEUE LENGTH ANALYSIS

APPENDIX A

REVIEW COMMENTS (RESERVED)

APPENDIX B

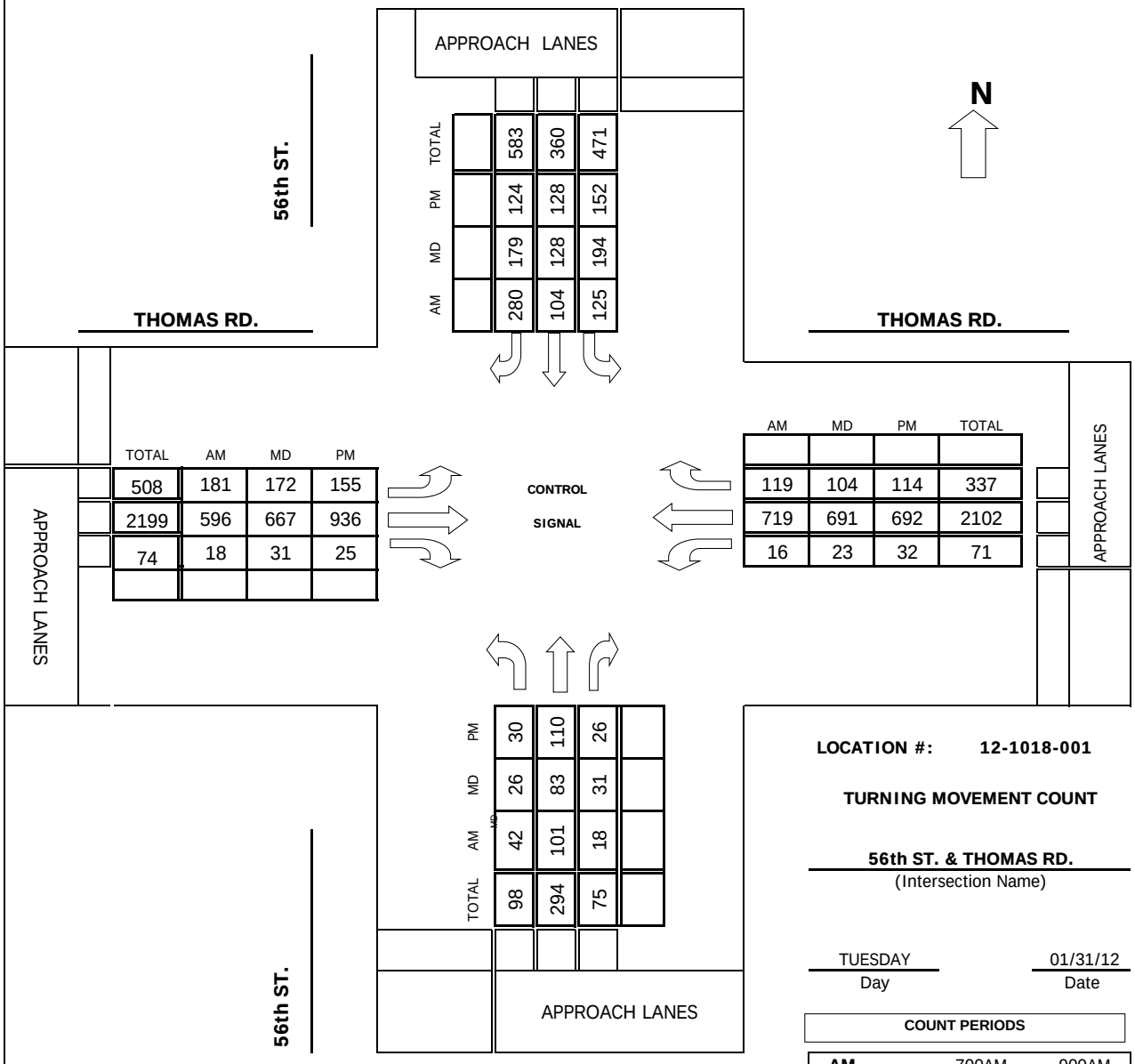
EXISTING TRAFFIC COUNTS

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 12-1018-001

TMC SUMMARY OF 56th ST. & THOMAS RD.



LOCATION #: 12-1018-001

TURNING MOVEMENT COUNT

56th ST. & THOMAS RD.
(Intersection Name)

TUESDAY (Day) 01/31/12 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON	200AM	-	400PM
PM	400PM	-	600PM

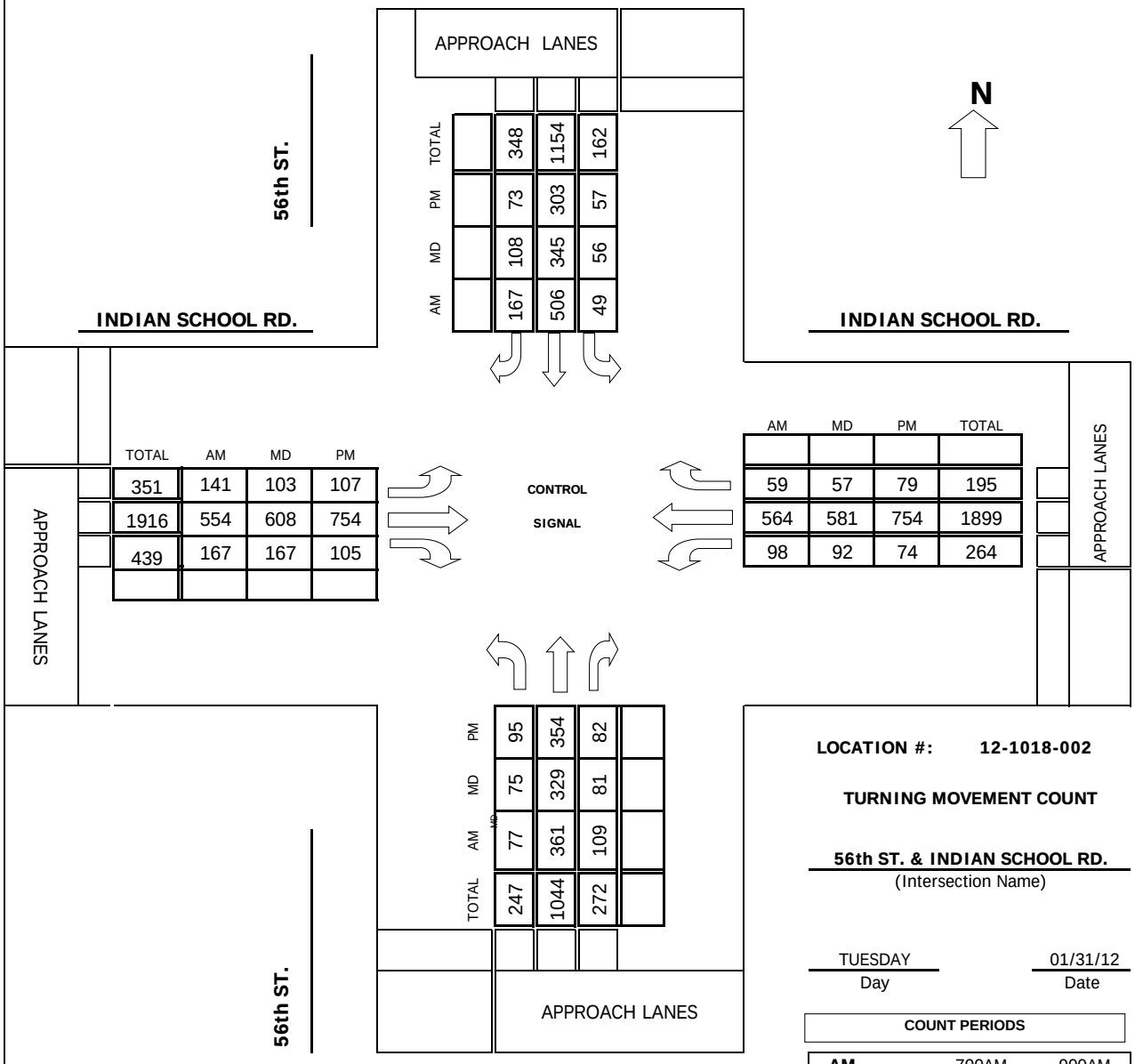
AM PEAK HOUR	730 AM
NOON PEAK HOUR	300 PM
PM PEAK HOUR	445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 12-1018-002

TMC SUMMARY OF 56th ST. & INDIAN SCHOOL RD.



LOCATION #: 12-1018-002

TURNING MOVEMENT COUNT

56th ST. & INDIAN SCHOOL RD.
(Intersection Name)

TUESDAY (Day) 01/31/12 (Date)

COUNT PERIODS

AM	700AM	-	900AM
NOON	200AM	-	400PM
PM	400PM	-	600PM

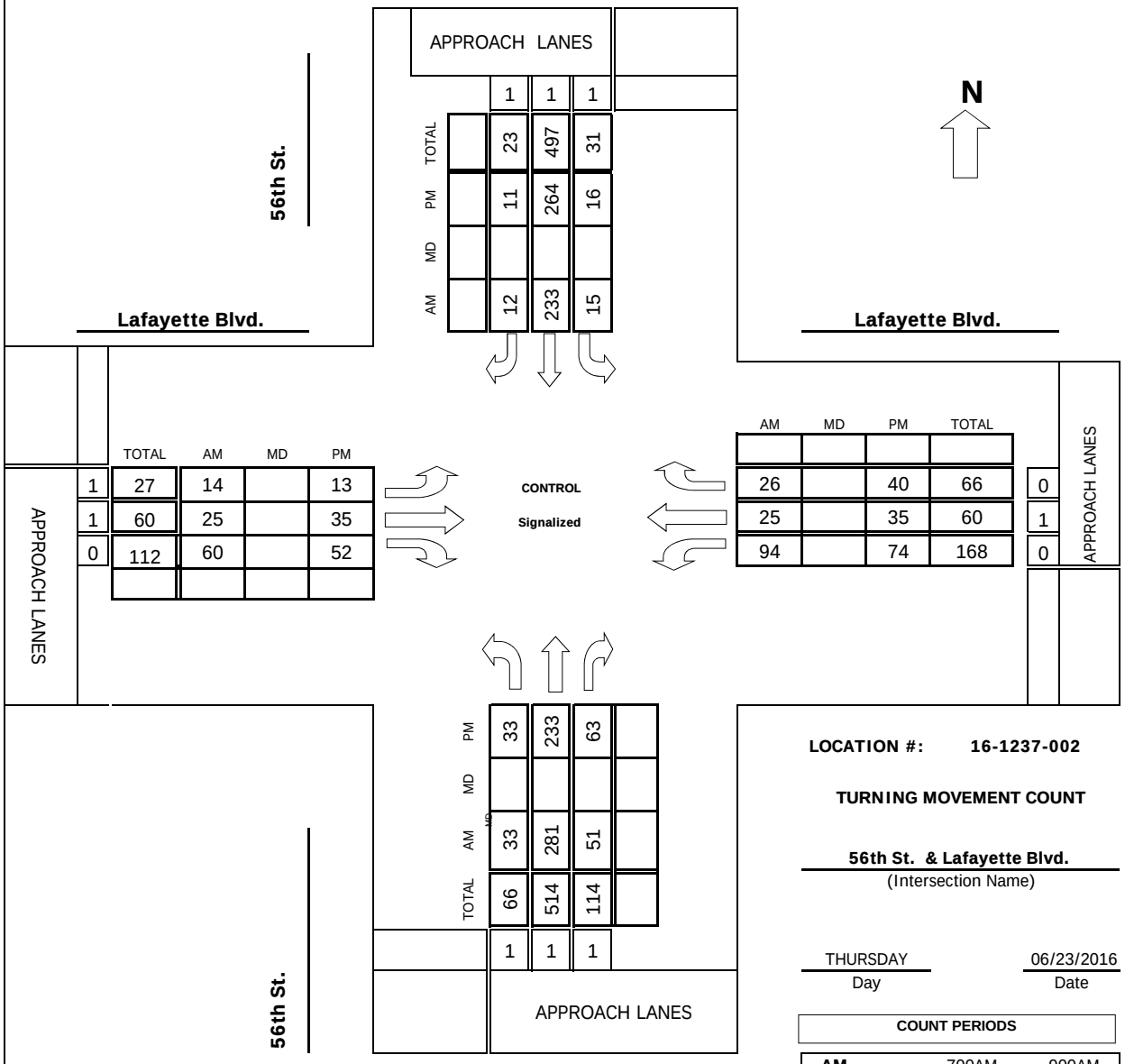
AM PEAK HOUR	715 AM
NOON PEAK HOUR	245 PM
PM PEAK HOUR	430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1237-002

TMC SUMMARY OF 56th St. & Lafayette Blvd.



LOCATION #: 16-1237-002

TURNING MOVEMENT COUNT

56th St. & Lafayette Blvd.
(Intersection Name)

THURSDAY — Day
06/23/2016 — Date

COUNT PERIODS

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

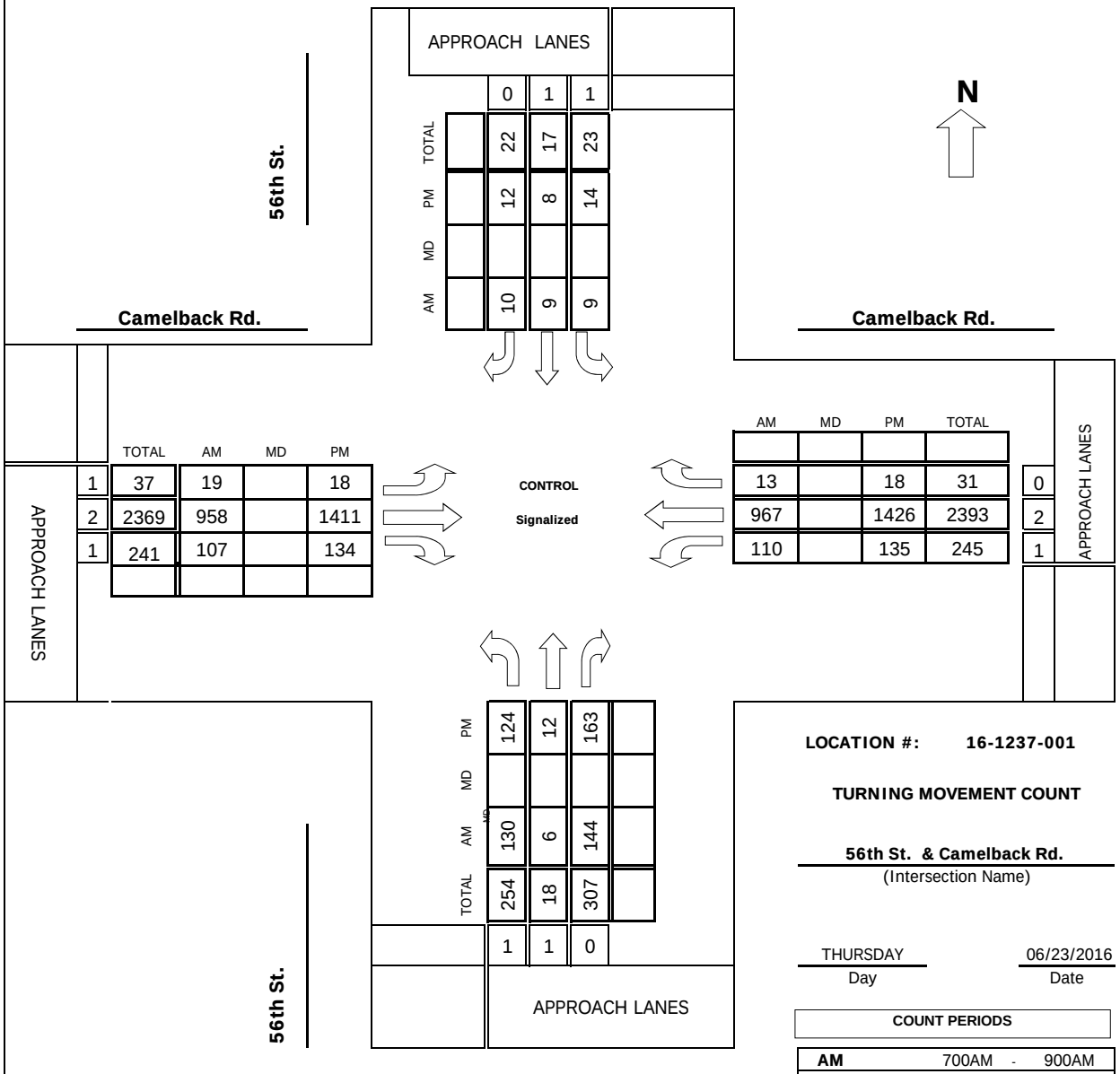
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1237-001

TMC SUMMARY OF 56th St. & Camelback Rd.



LOCATION #: 16-1237-001

TURNING MOVEMENT COUNT

56th St. & Camelback Rd.
(Intersection Name)

THURSDAY — Day
06/23/2016 — Date

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

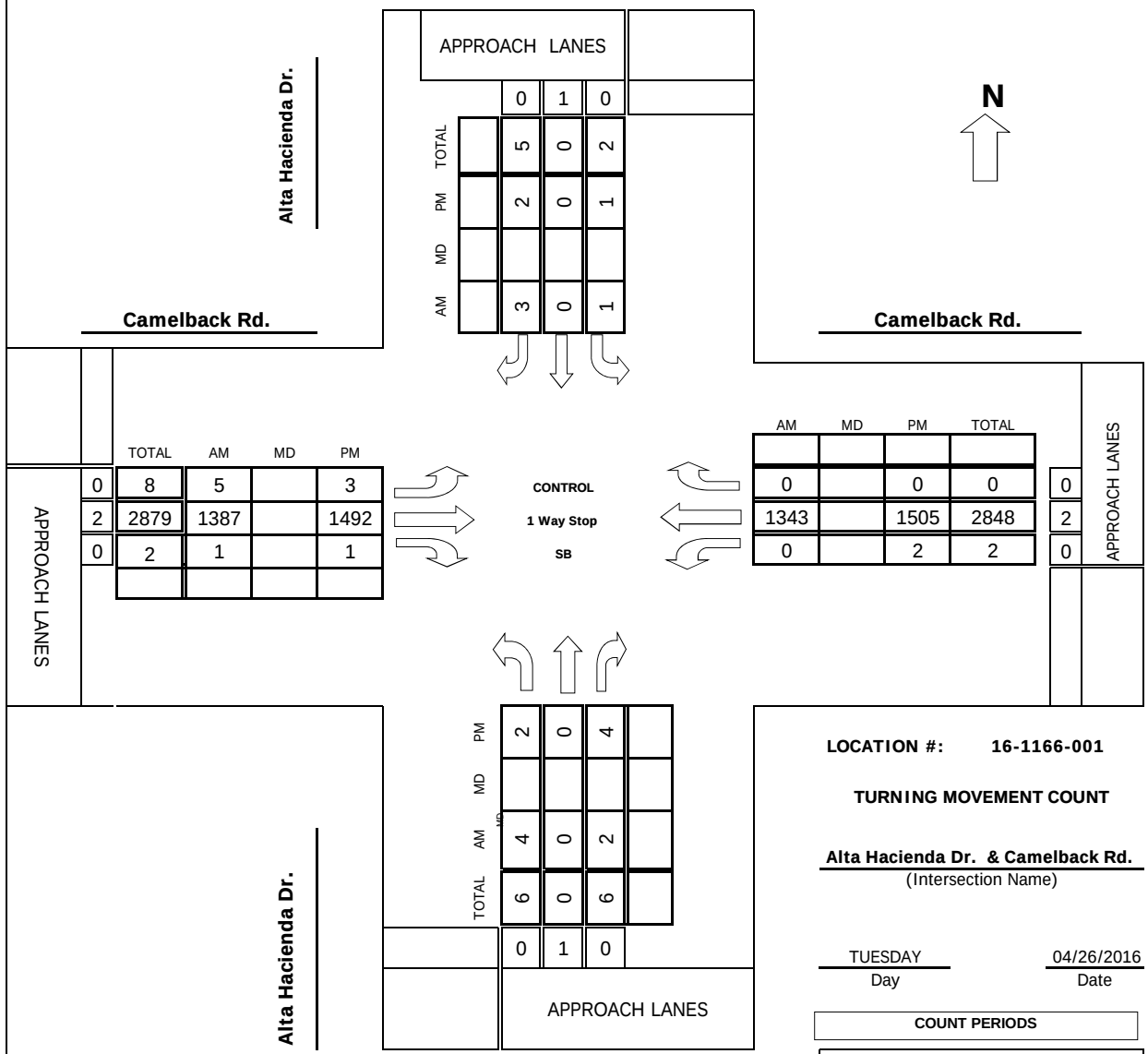
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-001

TMC SUMMARY OF Alta Hacienda Dr. & Camelback Rd.



LOCATION #: 16-1166-001

TURNING MOVEMENT COUNT

Alta Hacienda Dr. & Camelback Rd.
(Intersection Name)

TUESDAY
Day

04/26/2016
Date

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

PM PEAK HOUR 445 PM

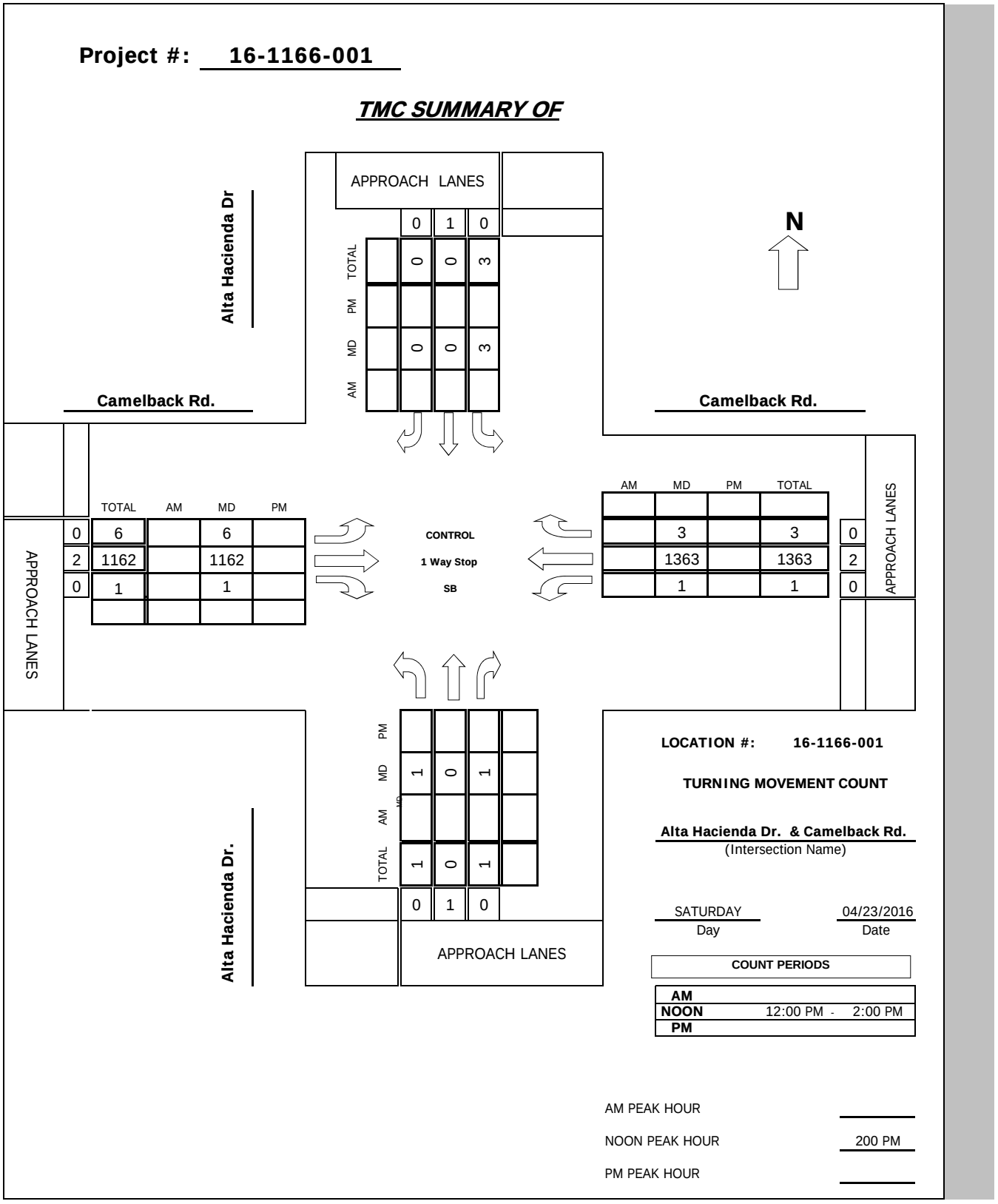
Intersection Turning Movement

Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-001

TMC SUMMARY OF



LOCATION #: 16-1166-001

TURNING MOVEMENT COUNT

Alta Hacienda Dr. & Camelback Rd.
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS		
AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 200 PM

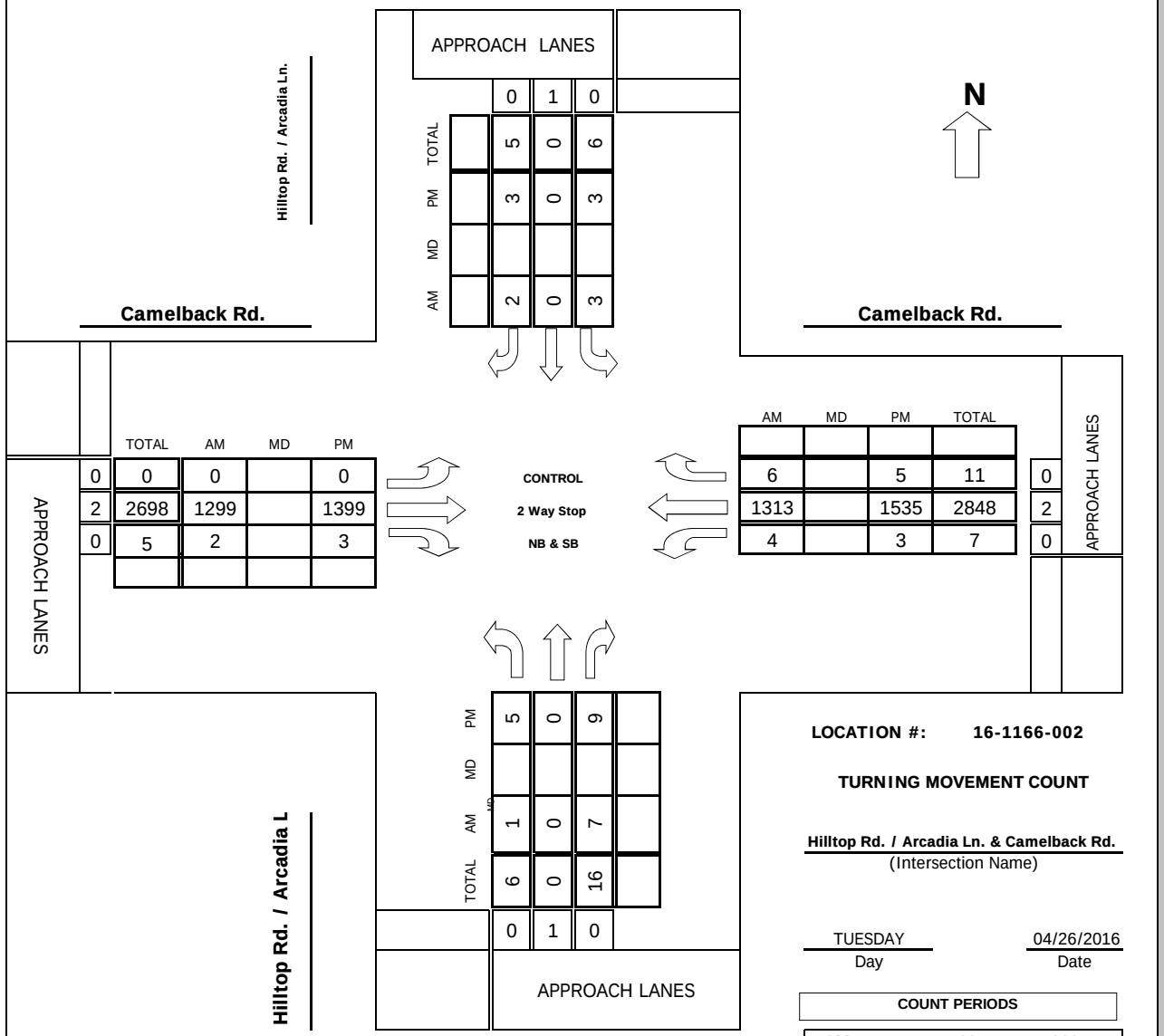
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-002

TMC SUMMARY OF Hilltop Rd. / Arcadia Ln. & Camelback Rd.



LOCATION #: 16-1166-002

TURNING MOVEMENT COUNT

Hilltop Rd. / Arcadia Ln. & Camelback Rd.
(Intersection Name)

TUESDAY (Day) 04/26/2016 (Date)

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

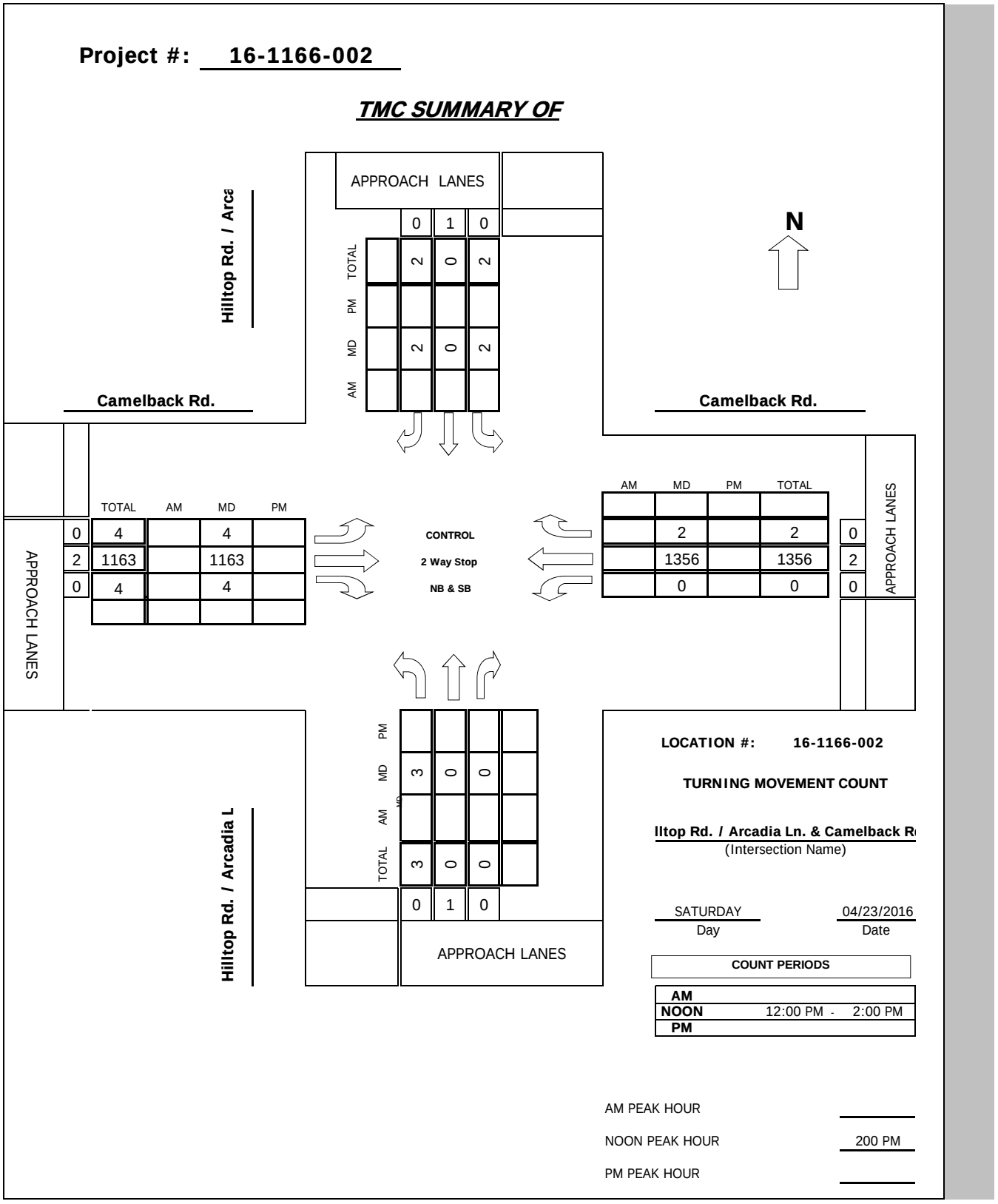
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-002

TMC SUMMARY OF



LOCATION #: 16-1166-002

TURNING MOVEMENT COUNT

lltop Rd. / Arcadia Ln. & Camelback R
(Intersection Name)

SATURDAY — Day
04/23/2016 — Date

COUNT PERIODS

AM		
NOON	12:00 PM -	2:00 PM
PM		

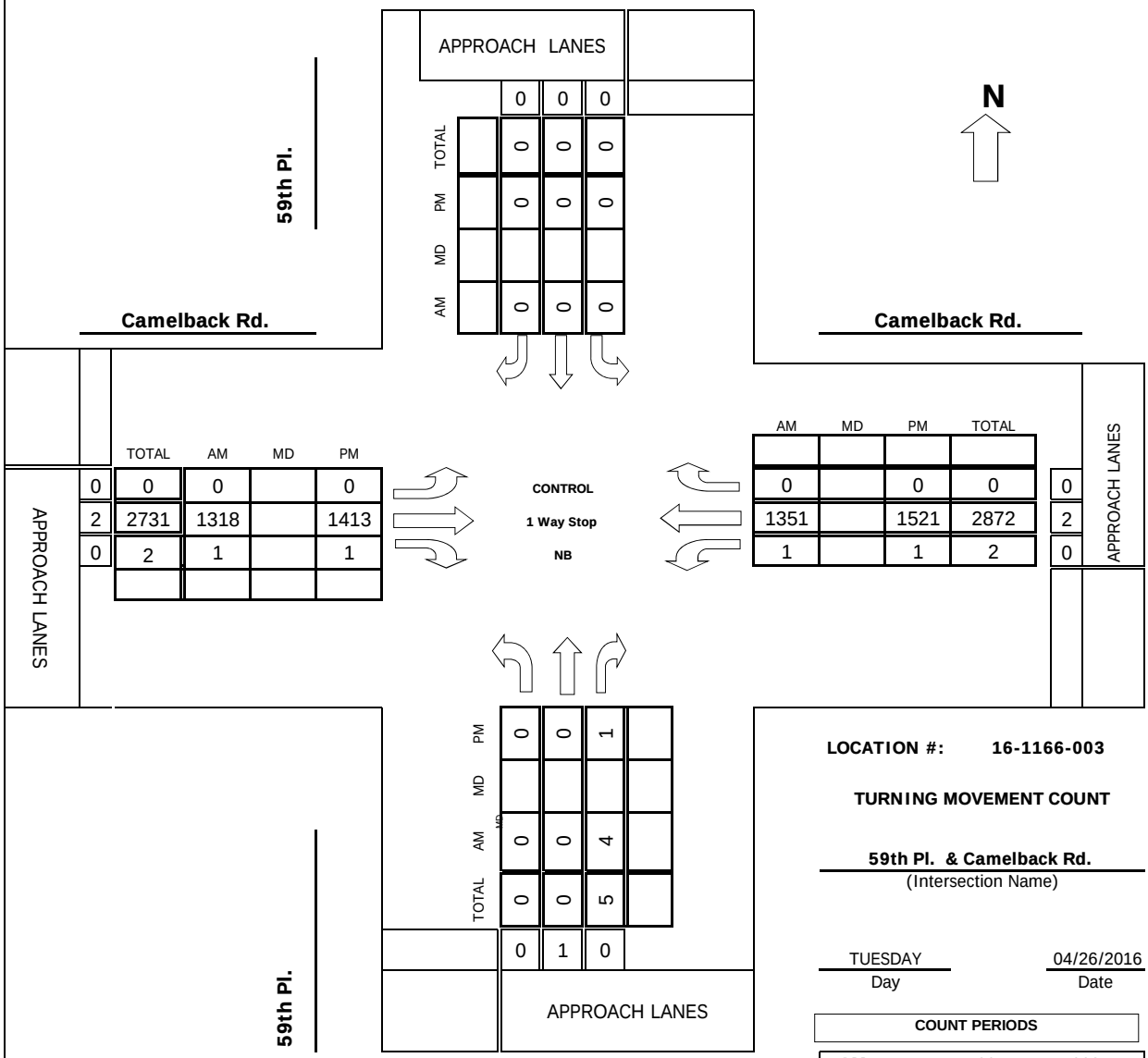
AM PEAK HOUR
NOON PEAK HOUR 200 PM
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-003

TMC SUMMARY OF 59th Pl. & Camelback Rd.



LOCATION #: 16-1166-003

TURNING MOVEMENT COUNT

59th Pl. & Camelback Rd.
(Intersection Name)

TUESDAY (Day) 04/26/2016 (Date)

COUNT PERIODS

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

AM PEAK HOUR 745 AM

NOON PEAK HOUR

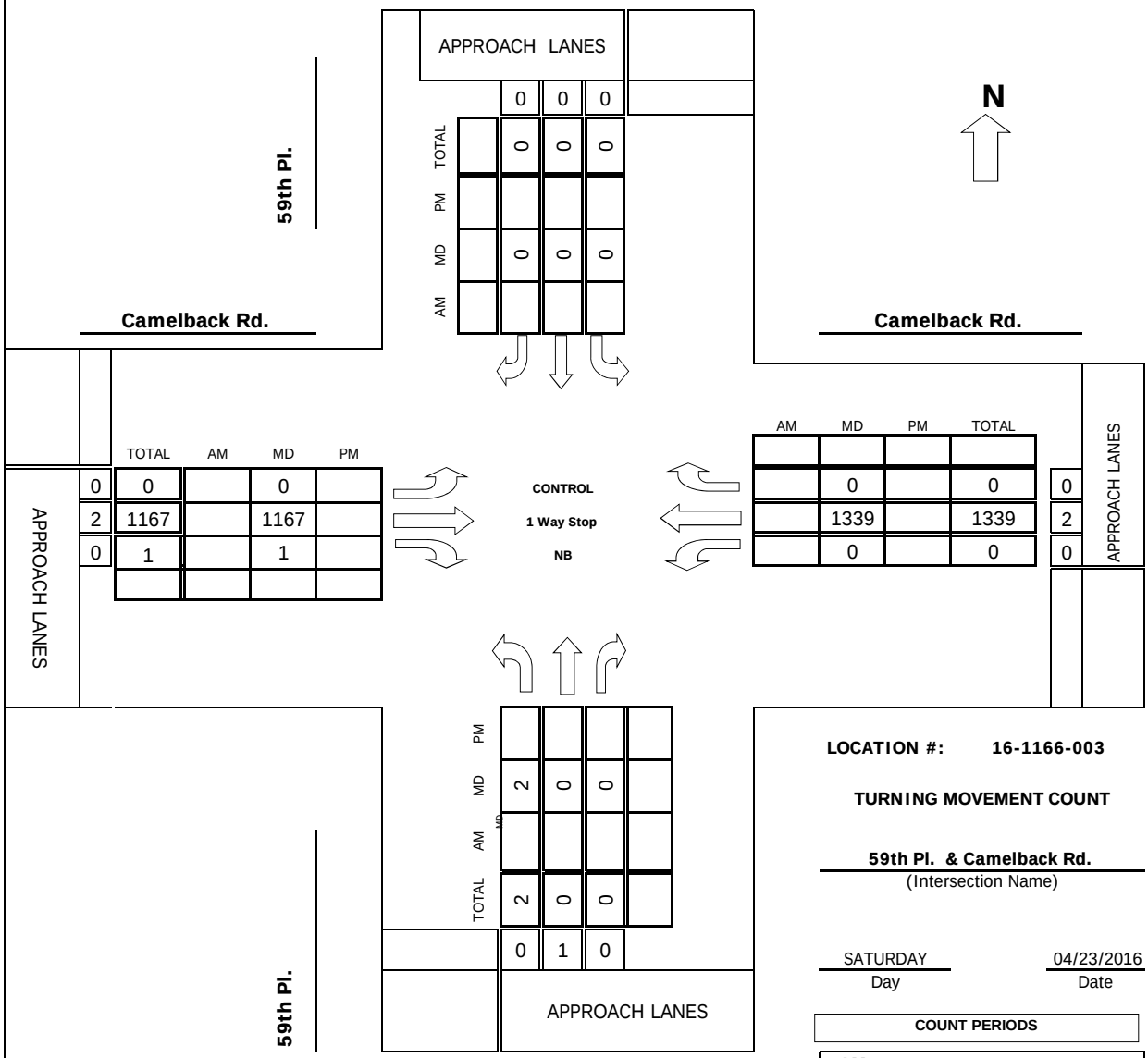
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-003

TMC SUMMARY OF



LOCATION #: 16-1166-003

TURNING MOVEMENT COUNT

59th Pl. & Camelback Rd.
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS

AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 200 PM

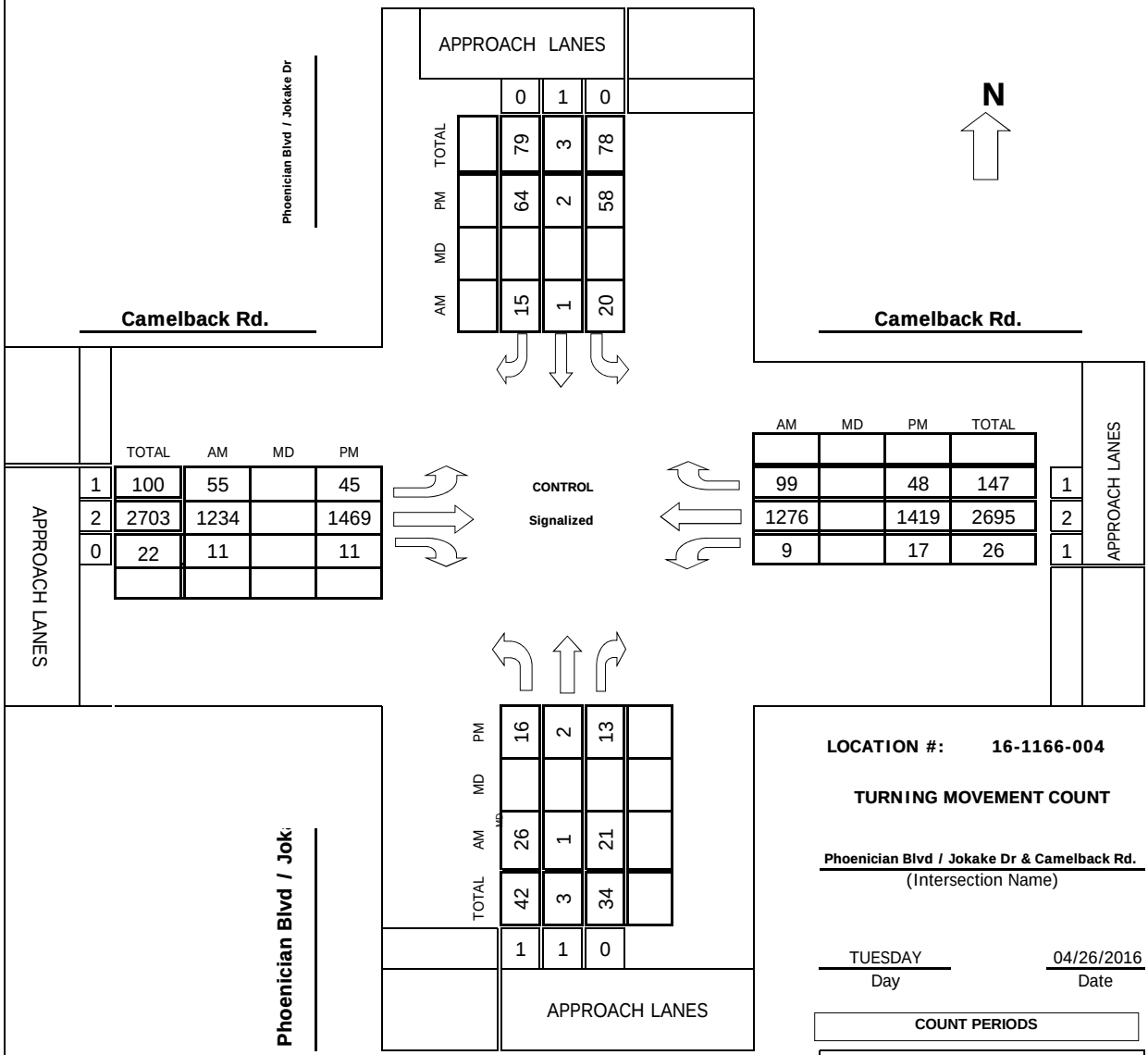
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-004

TMC SUMMARY OF Phoenician Blvd / Jokake Dr & Camelback Rd.



LOCATION #: 16-1166-004

TURNING MOVEMENT COUNT

Phoenician Blvd / Jokake Dr & Camelback Rd.
(Intersection Name)

TUESDAY — Day
04/26/2016 — Date

COUNT PERIODS

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

AM PEAK HOUR 715 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

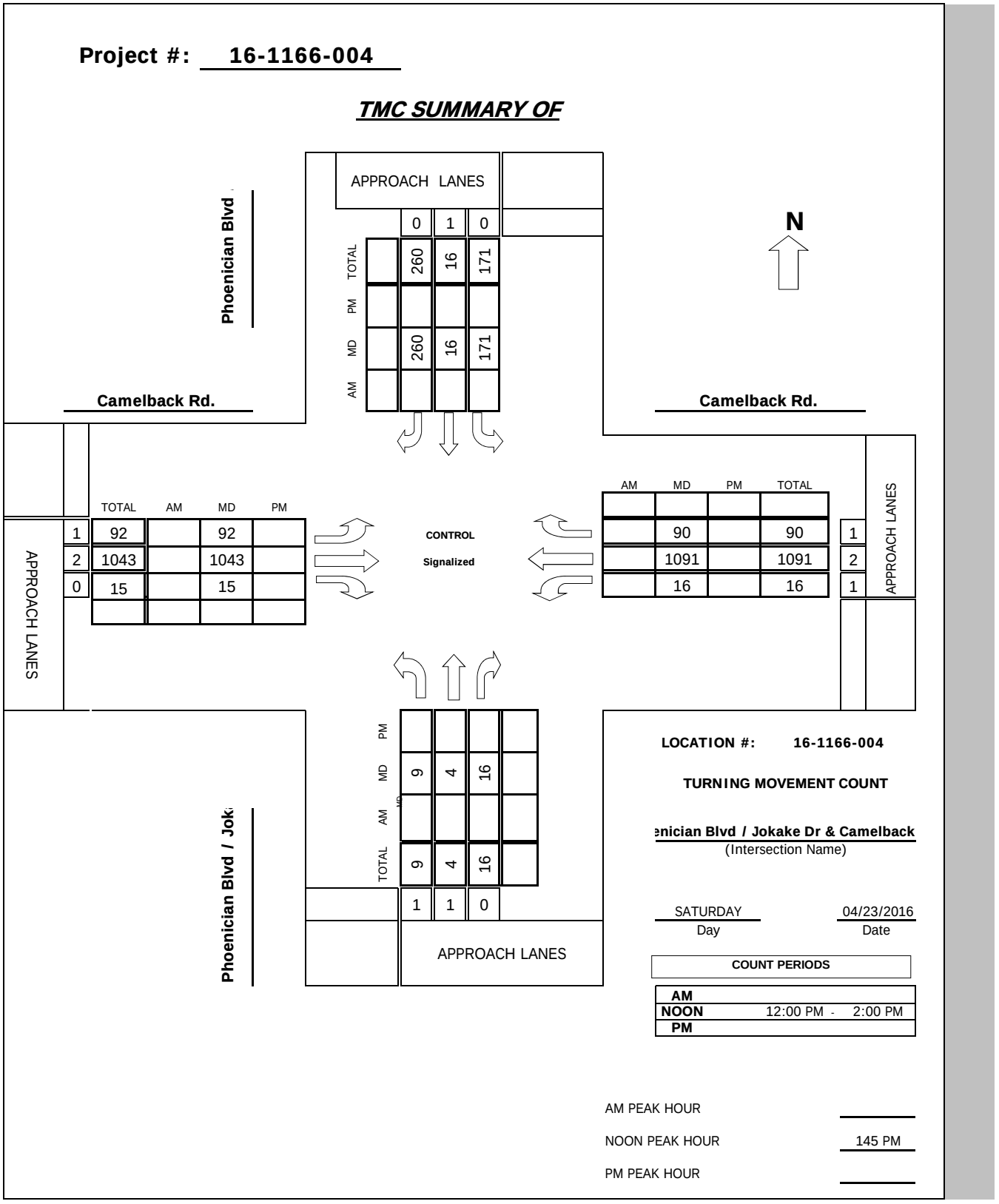
Intersection Turning Movement

Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-004

TMC SUMMARY OF



LOCATION #: 16-1166-004

TURNING MOVEMENT COUNT

enician Blvd / Jokake Dr & Camelback
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS

AM	
NOON	12:00 PM - 2:00 PM
PM	

AM PEAK HOUR

NOON PEAK HOUR 145 PM

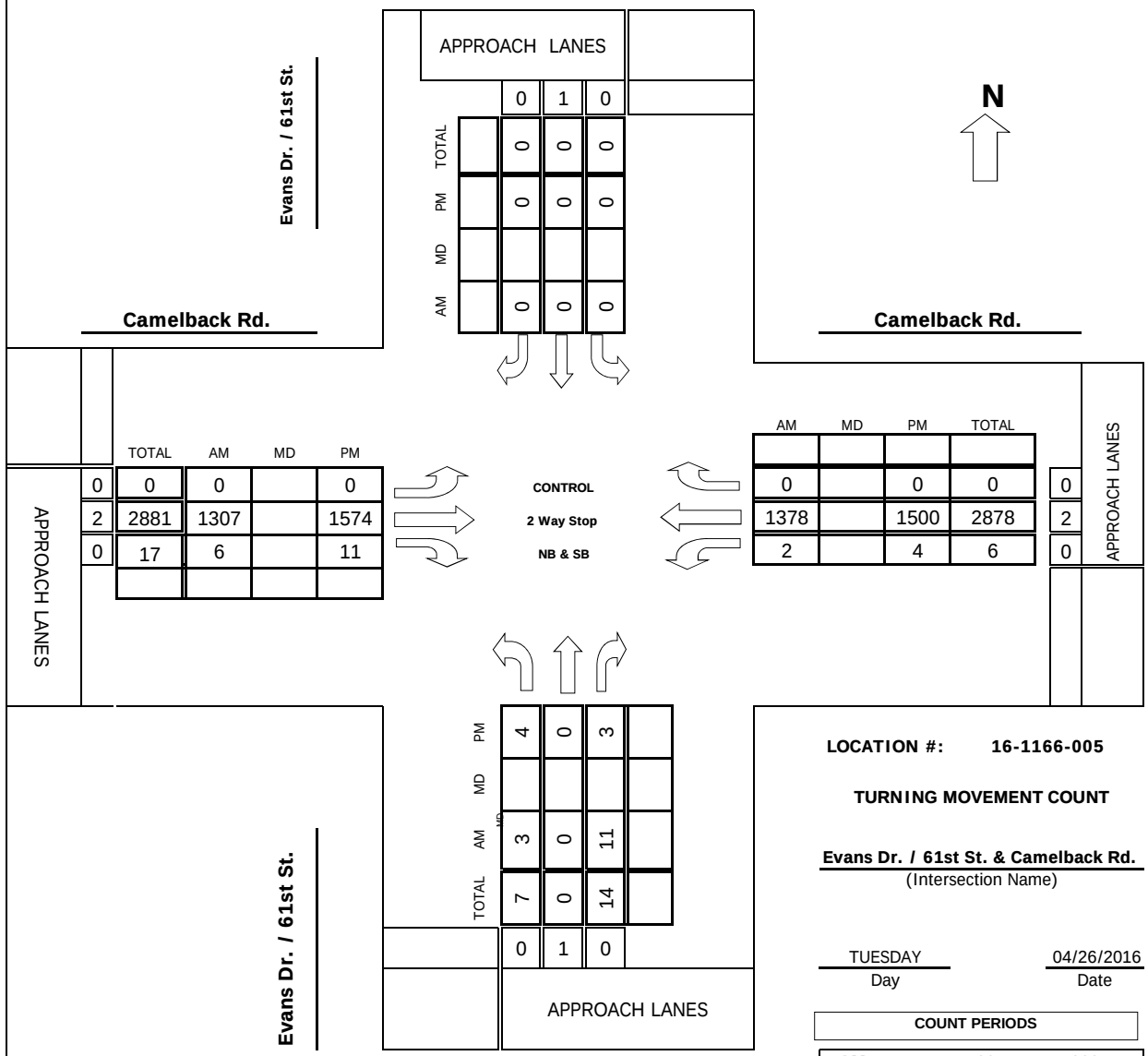
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-005

TMC SUMMARY OF Evans Dr. / 61st St. & Camelback Rd.



LOCATION #: 16-1166-005

TURNING MOVEMENT COUNT

Evans Dr. / 61st St. & Camelback Rd.
(Intersection Name)

TUESDAY (Day) 04/26/2016 (Date)

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

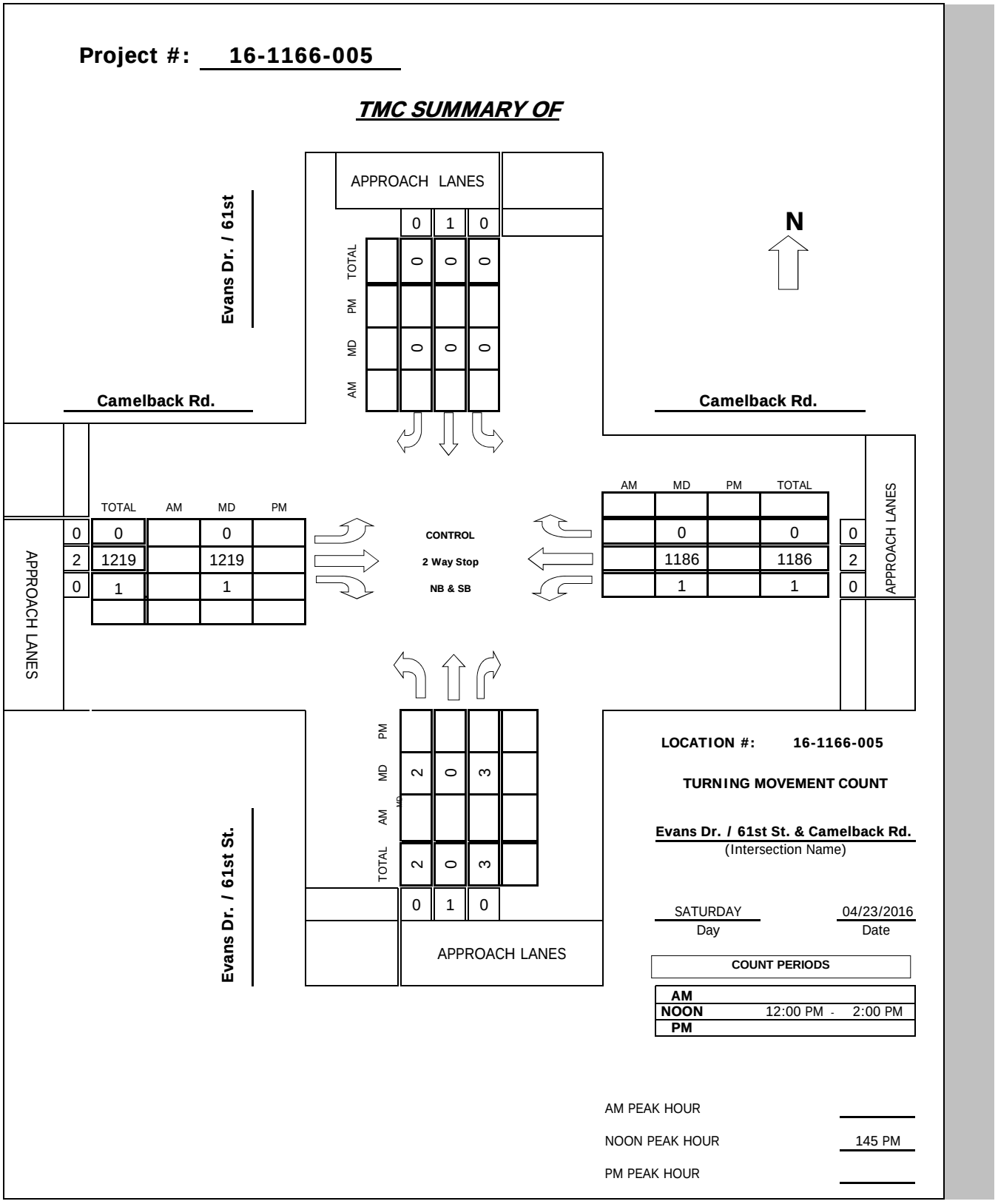
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-005

TMC SUMMARY OF



LOCATION #: 16-1166-005

TURNING MOVEMENT COUNT

Evans Dr. / 61st St. & Camelback Rd.
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS

AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 145 PM

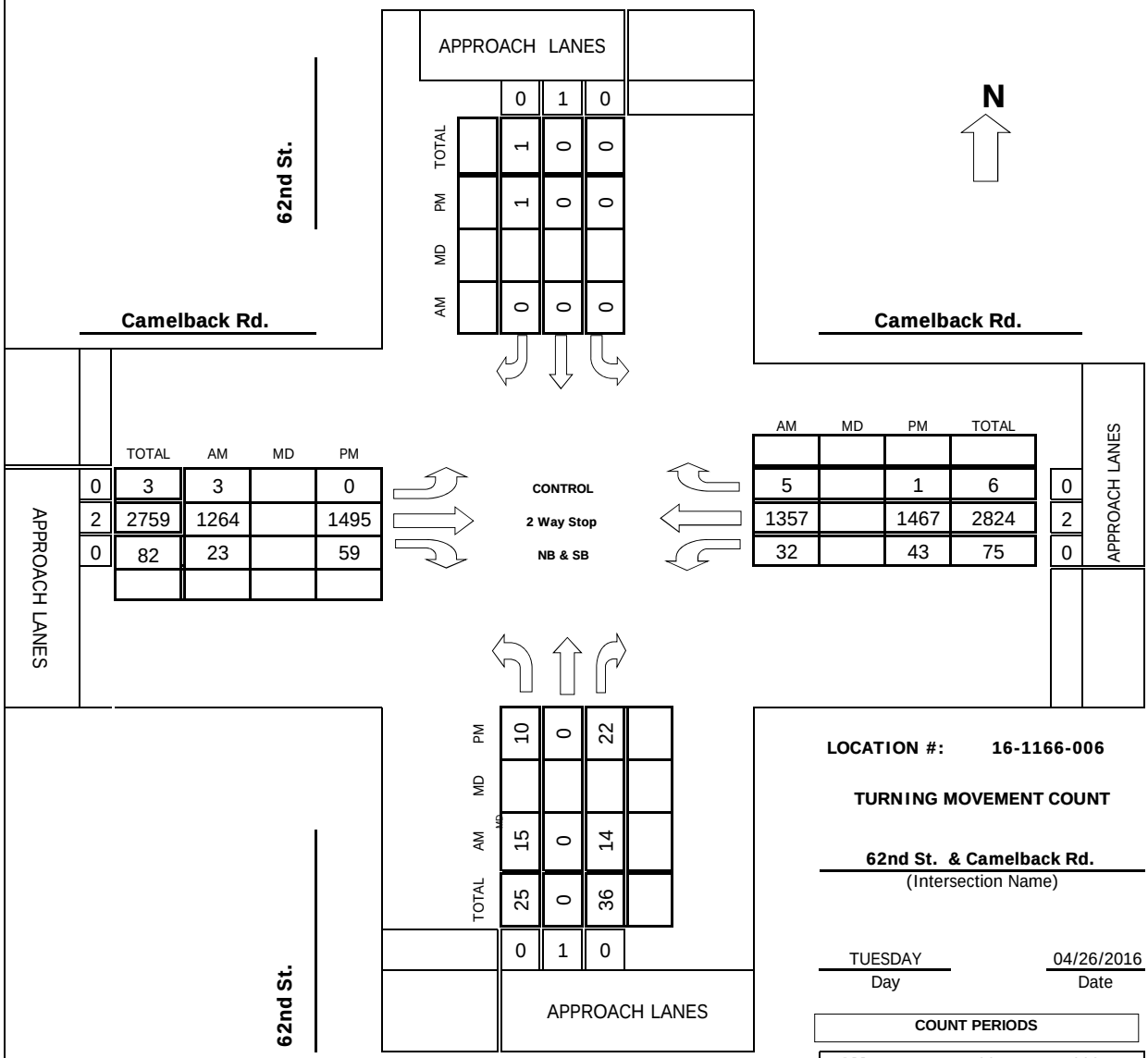
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-006

TMC SUMMARY OF 62nd St. & Camelback Rd.



LOCATION #: 16-1166-006

TURNING MOVEMENT COUNT

62nd St. & Camelback Rd.
(Intersection Name)

TUESDAY
Day

04/26/2016
Date

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

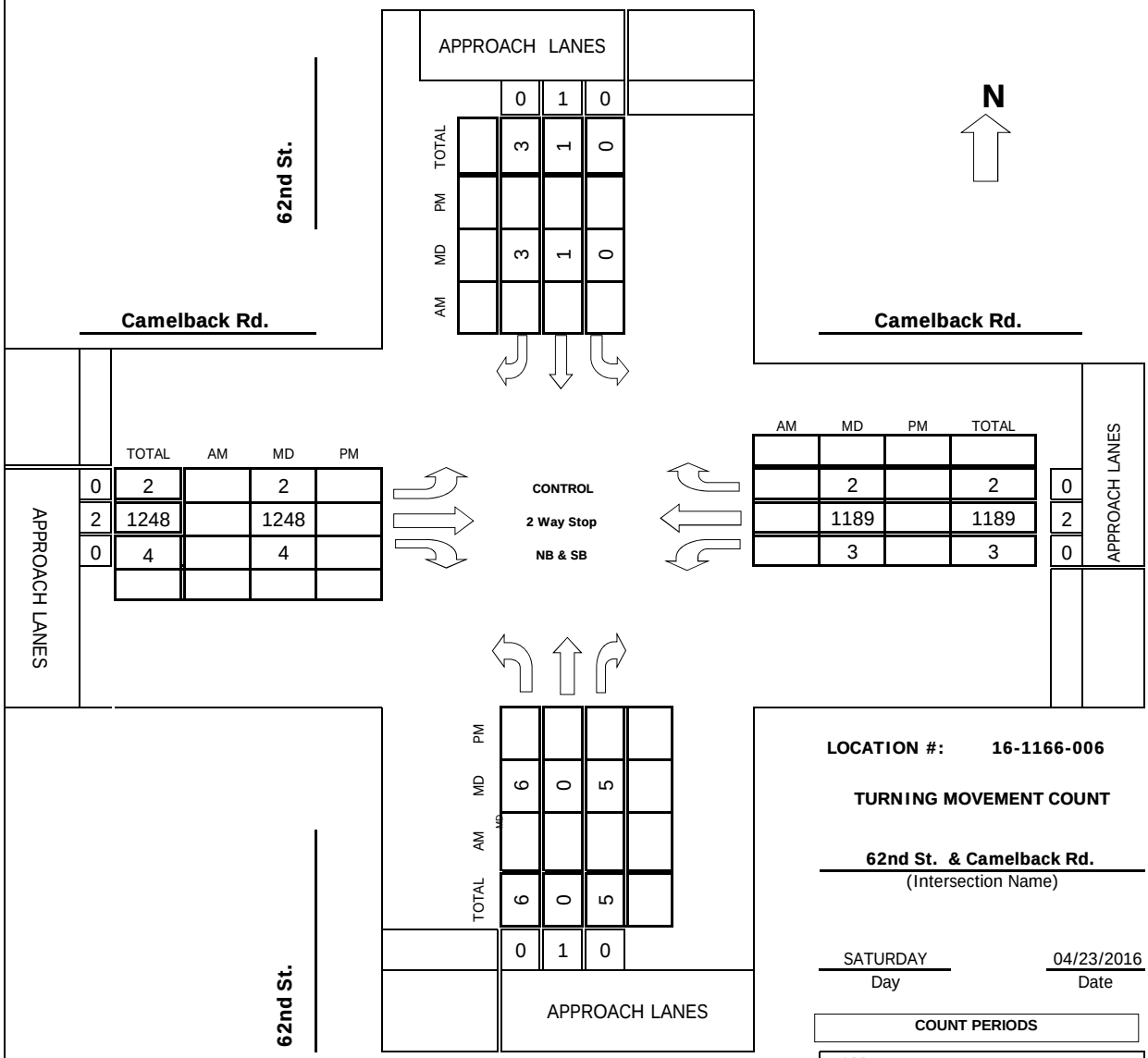
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-006

TMC SUMMARY OF



LOCATION #: 16-1166-006

TURNING MOVEMENT COUNT

62nd St. & Camelback Rd.
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS

AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 145 PM

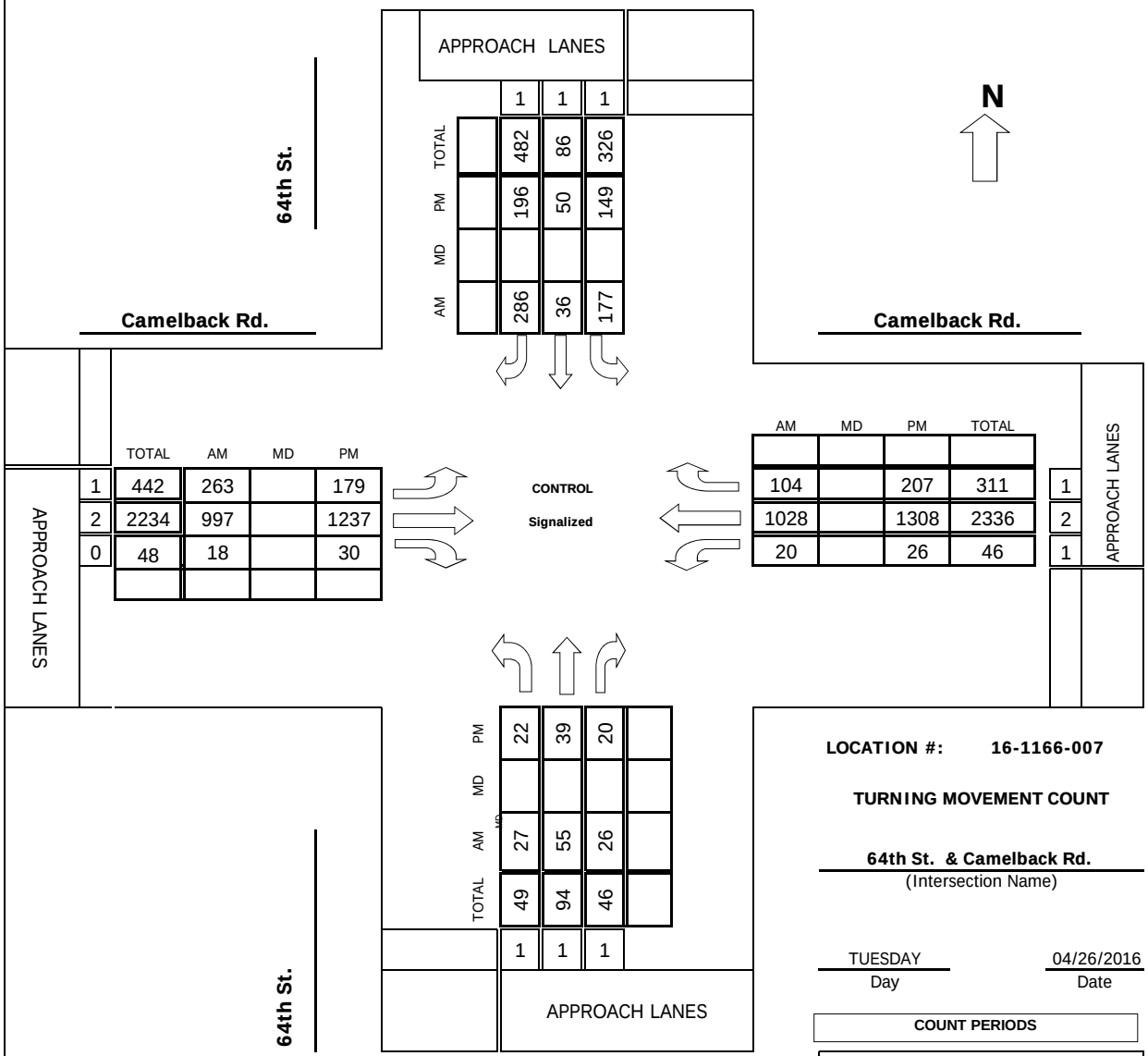
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-007

TMC SUMMARY OF 64th St. & Camelback Rd.



LOCATION #: 16-1166-007

TURNING MOVEMENT COUNT

64th St. & Camelback Rd.
(Intersection Name)

TUESDAY
Day

04/26/2016
Date

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

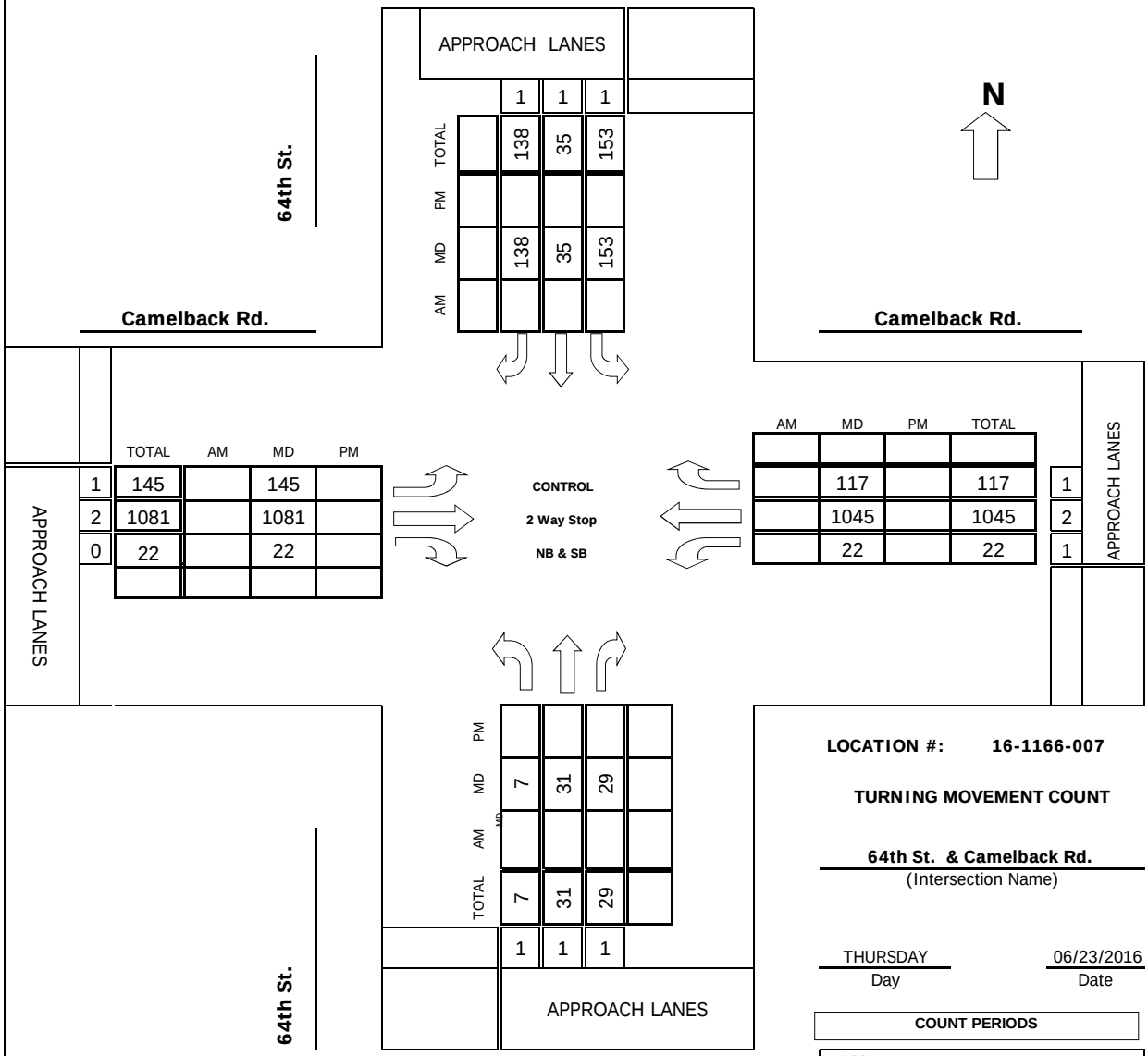
PM PEAK HOUR 500 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-007

TMC SUMMARY OF



LOCATION #: 16-1166-007

TURNING MOVEMENT COUNT

64th St. & Camelback Rd.
(Intersection Name)

THURSDAY
Day

06/23/2016
Date

COUNT PERIODS

AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 145 PM

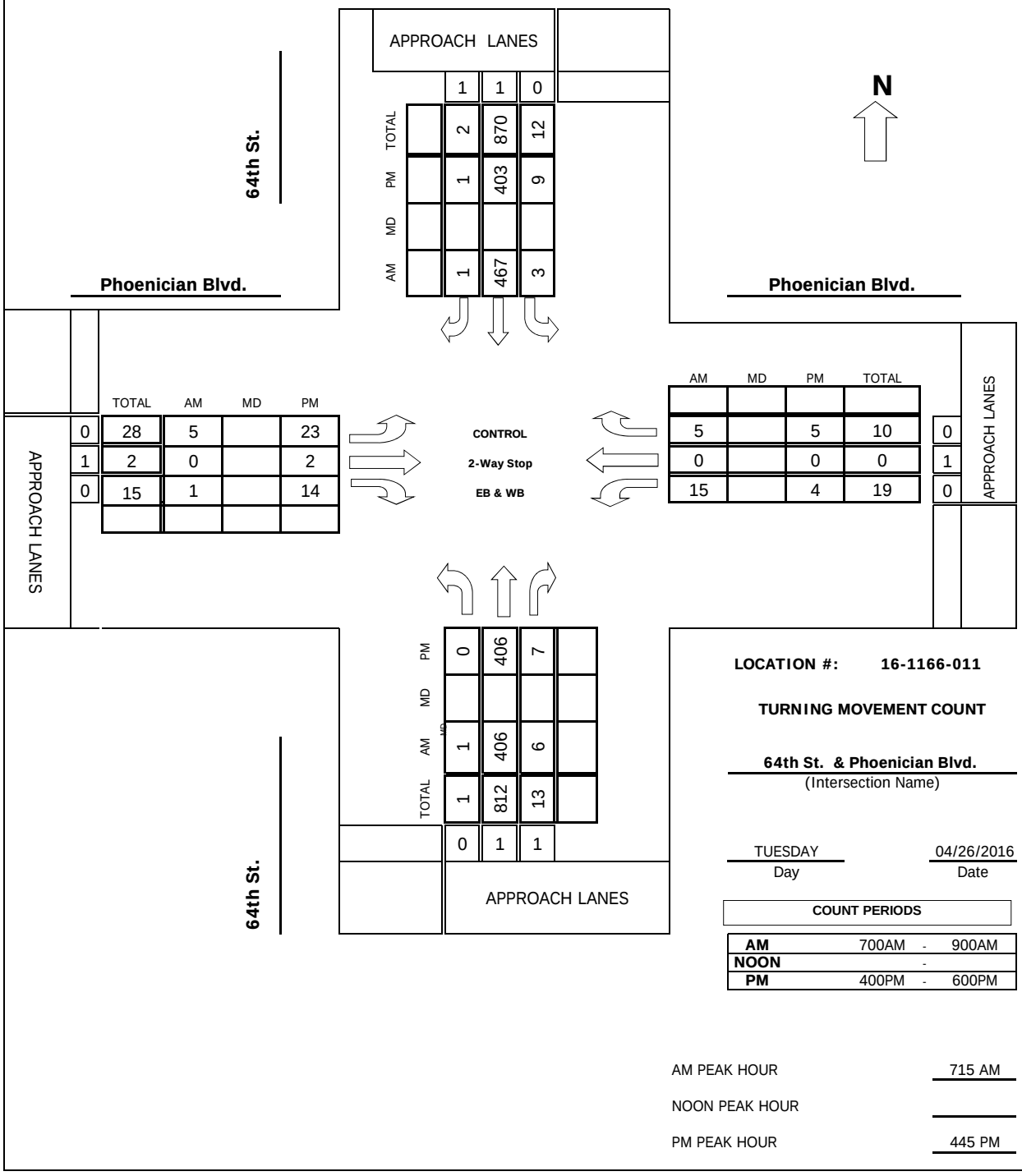
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-011

TMC SUMMARY OF 64th St. & Phoenician Blvd.



LOCATION #: 16-1166-011

TURNING MOVEMENT COUNT

64th St. & Phoenician Blvd.
(Intersection Name)

TUESDAY (Day) 04/26/2016 (Date)

COUNT PERIODS

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

AM PEAK HOUR 715 AM

NOON PEAK HOUR

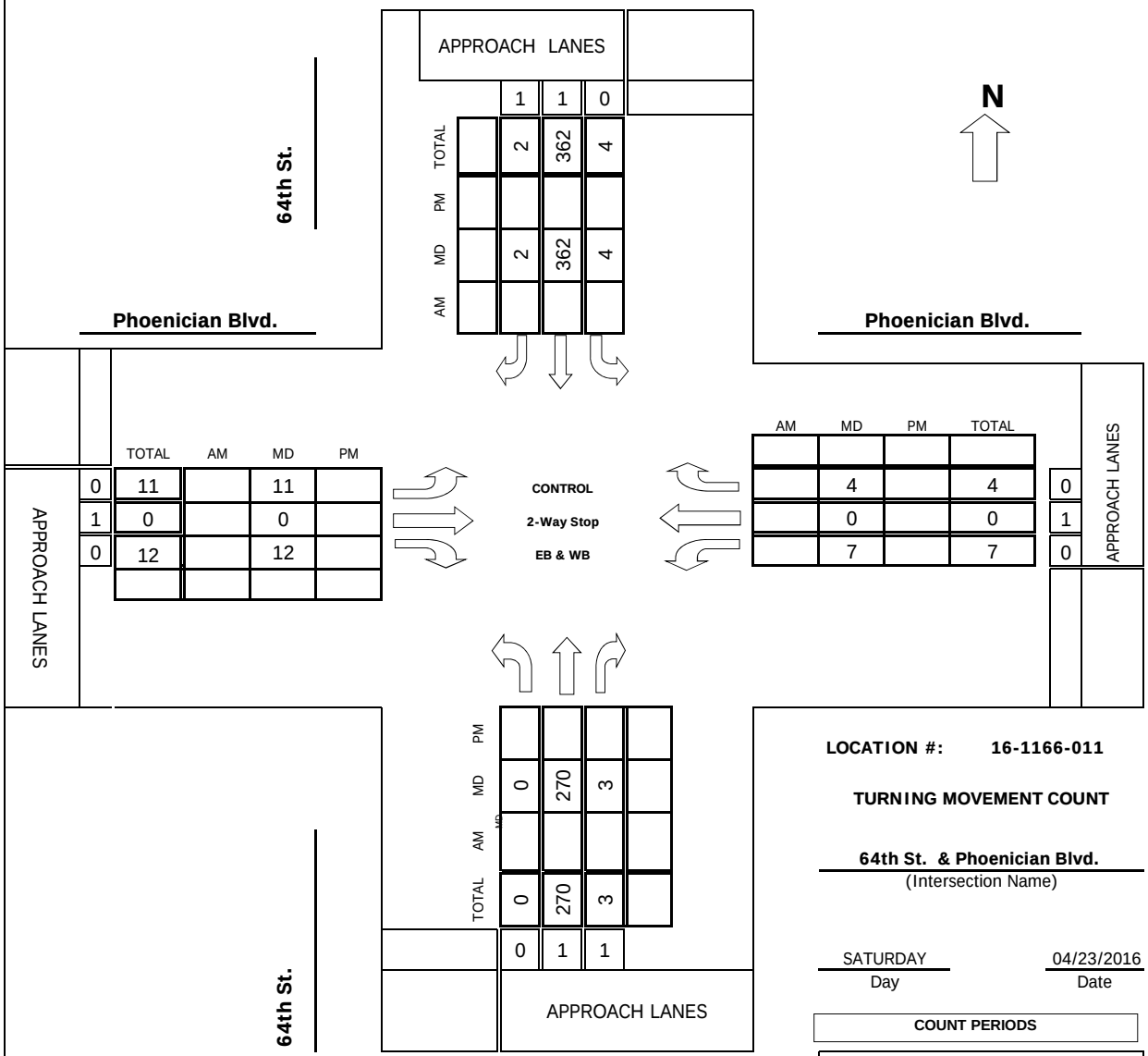
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-011

TMC SUMMARY OF



LOCATION #: 16-1166-011

TURNING MOVEMENT COUNT

64th St. & Phoenician Blvd.
(Intersection Name)

SATURDAY (Day) 04/23/2016 (Date)

COUNT PERIODS

AM	
NOON	12:00 PM - 2:00 PM
PM	

AM PEAK HOUR

NOON PEAK HOUR 1100 AM

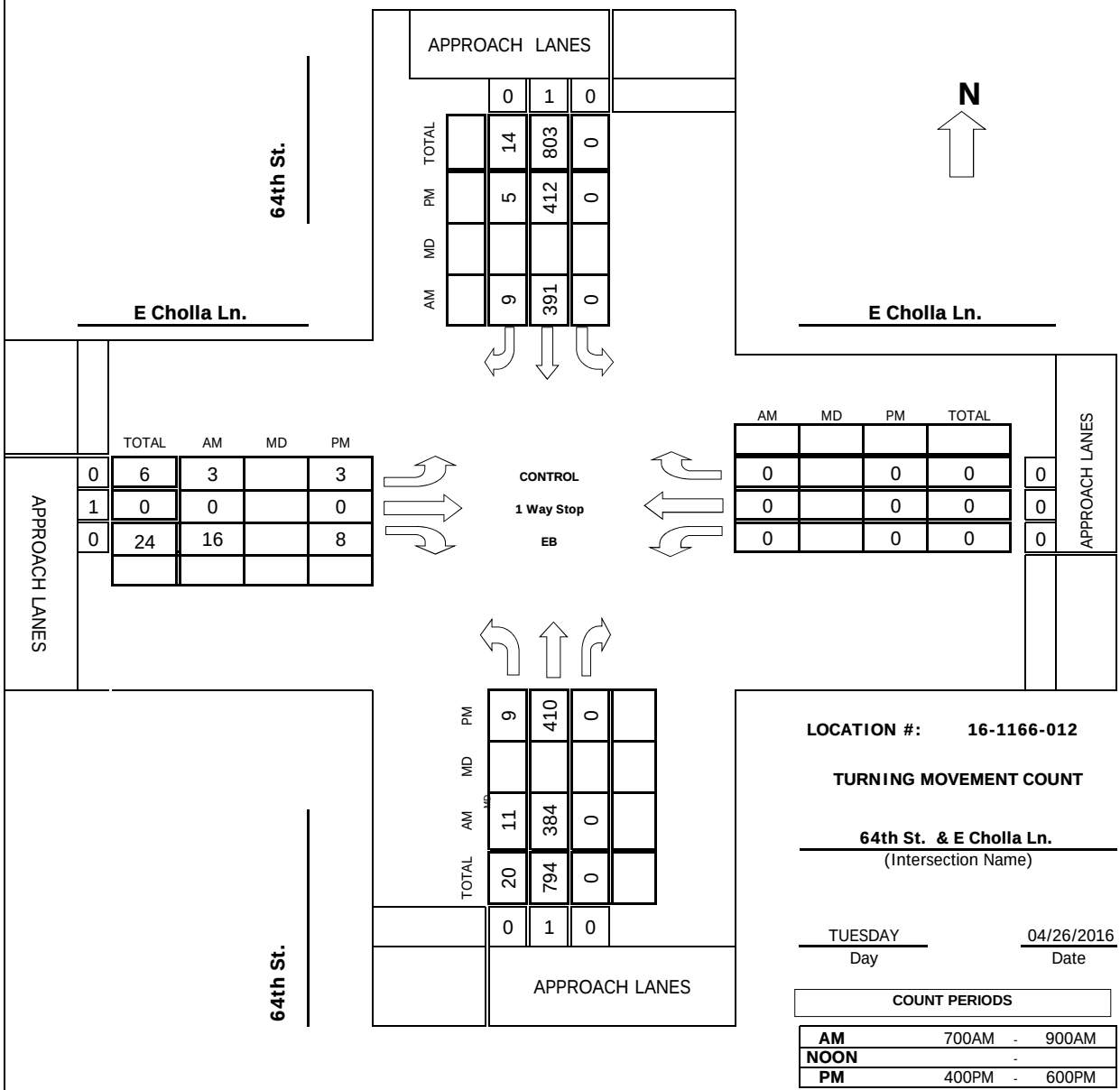
PM PEAK HOUR

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-012

TMC SUMMARY OF 64th St. & E Cholla Ln.



LOCATION #: 16-1166-012

TURNING MOVEMENT COUNT

64th St. & E Cholla Ln.
(Intersection Name)

TUESDAY (Day) 04/26/2016 (Date)

COUNT PERIODS

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

AM PEAK HOUR 730 AM

NOON PEAK HOUR

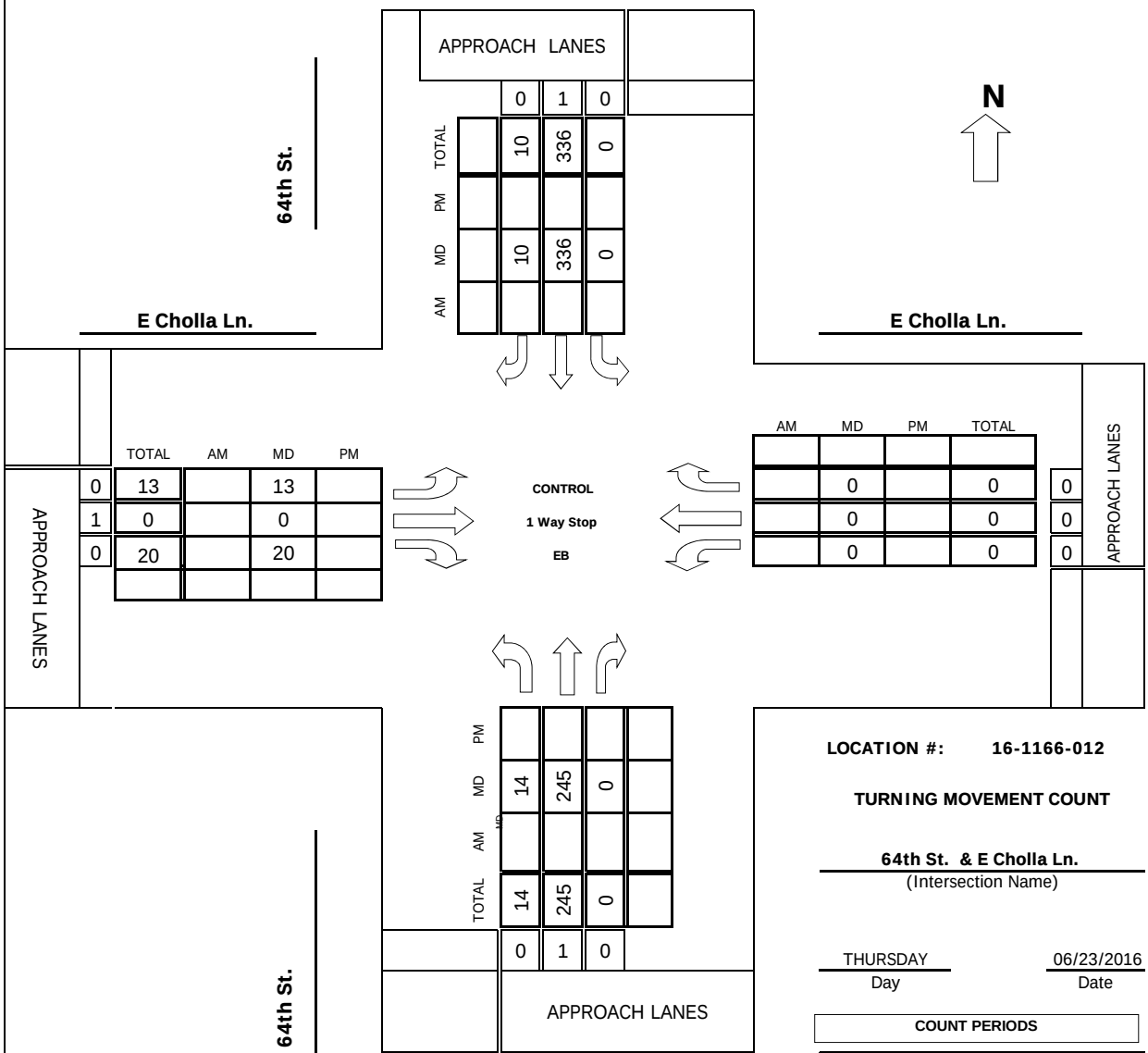
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 16-1166-012

TMC SUMMARY OF



LOCATION #: 16-1166-012

TURNING MOVEMENT COUNT

64th St. & E Cholla Ln.
(Intersection Name)

THURSDAY (Day) 06/23/2016 (Date)

COUNT PERIODS		
AM		
NOON	12:00 PM -	2:00 PM
PM		

AM PEAK HOUR

NOON PEAK HOUR 1100 AM

PM PEAK HOUR

APPENDIX C

EXISTING PEAK HOUR ANALYSIS

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	184	606	18	16	731	121	43	103	18	127	106	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	200	659	20	17	795	132	47	112	20	138	115	309
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	3325	101	488	1637	272	152	770	134	363	452	405
Arrive On Green	0.07	0.66	0.66	0.54	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5072	154	758	3039	505	959	3013	526	1253	1770	1583
Grp Volume(v), veh/h	200	440	239	17	463	464	47	65	67	138	115	309
Grp Sat Flow(s),veh/h/ln	1774	1695	1836	758	1770	1774	959	1770	1770	1253	1770	1583
Q Serve(g_s), s	4.2	4.6	4.6	1.0	14.7	14.7	4.3	2.5	2.6	8.6	4.7	16.2
Cycle Q Clear(g_c), s	4.2	4.6	4.6	1.0	14.7	14.7	20.5	2.5	2.6	11.3	4.7	16.2
Prop In Lane	1.00		0.08	1.00		0.28	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	434	2222	1203	488	953	955	152	452	452	363	452	405
V/C Ratio(X)	0.46	0.20	0.20	0.03	0.49	0.49	0.31	0.14	0.15	0.38	0.25	0.76
Avail Cap(c_a), veh/h	621	2222	1203	488	953	955	152	452	452	363	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	6.1	6.1	9.8	13.0	13.0	40.5	25.9	25.9	30.3	26.7	31.0
Incr Delay (d2), s/veh	0.8	0.2	0.4	0.1	1.8	1.8	5.2	0.7	0.7	3.0	1.4	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	4.0	4.4	0.4	12.0	12.1	2.4	2.4	2.5	5.9	4.4	13.4
LnGrp Delay(d),s/veh	9.9	6.3	6.5	9.9	14.7	14.7	45.7	26.5	26.6	33.3	28.0	43.8
LnGrp LOS	A	A	A	A	B	B	D	C	C	C	C	D
Approach Vol, veh/h		879			944			179			562	
Approach Delay, s/veh		7.2			14.7			31.6			38.0	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	10.5	52.5
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		22.5		6.6		18.2	6.2	16.7
Green Ext Time (p_c), s		0.2		16.2		1.8	0.4	11.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	143	563	170	100	573	60	78	367	111	50	514	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	155	612	185	109	623	65	85	399	121	54	559	185
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	1132	342	329	1654	172	249	866	260	317	1047	345
Arrive On Green	0.42	0.42	0.42	0.04	0.51	0.51	0.32	0.32	0.32	0.03	0.40	0.40
Sat Flow, veh/h	751	2681	809	1774	3236	337	713	2685	805	1774	2617	863
Grp Volume(v), veh/h	155	404	393	109	340	348	85	261	259	54	377	367
Grp Sat Flow(s),veh/h/ln	751	1770	1720	1774	1770	1803	713	1770	1721	1774	1770	1710
Q Serve(g_s), s	14.2	15.4	15.4	3.0	10.5	10.5	9.3	10.6	10.8	1.8	14.6	14.7
Cycle Q Clear(g_c), s	16.7	15.4	15.4	3.0	10.5	10.5	17.1	10.6	10.8	1.8	14.6	14.7
Prop In Lane	1.00		0.47	1.00		0.19	1.00		0.47	1.00		0.50
Lane Grp Cap(c), veh/h	376	747	726	329	904	922	249	571	555	317	708	684
V/C Ratio(X)	0.41	0.54	0.54	0.33	0.38	0.38	0.34	0.46	0.47	0.17	0.53	0.54
Avail Cap(c_a), veh/h	376	747	726	329	904	922	249	571	555	337	708	684
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	19.5	19.5	14.5	13.3	13.3	29.8	24.2	24.3	18.9	20.6	20.6
Incr Delay (d2), s/veh	3.3	2.8	2.9	0.6	1.2	1.2	3.7	2.6	2.8	0.3	2.9	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.9	12.8	12.5	2.7	9.2	9.4	3.7	9.4	9.4	1.6	12.2	12.0
LnGrp Delay(d),s/veh	24.1	22.3	22.4	15.1	14.5	14.5	33.5	26.9	27.1	19.2	23.5	23.6
LnGrp LOS	C	C	C	B	B	B	C	C	C	B	C	C
Approach Vol, veh/h		952			797			605			798	
Approach Delay, s/veh		22.6			14.6			27.9			23.2	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.0	33.0	8.0	42.0		40.0		50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	4.0	28.0	4.0	38.0		36.0		46.0
Max Q Clear Time (g_c+I1), s	3.8	19.1	5.0	18.7		16.7		12.5
Green Ext Time (p_c), s	0.0	5.4	0.0	10.7		8.8		14.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	25	60	94	25	26	33	286	51	15	237	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	15	27	65	102	27	28	36	311	55	16	258	13
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	191	238	187	46	36	877	1417	1204	801	1417	1204
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.76	0.76	0.76	0.76	0.76	0.76
Sat Flow, veh/h	442	1267	1583	801	308	241	1104	1863	1583	1012	1863	1583
Grp Volume(v), veh/h	42	0	65	157	0	0	36	311	55	16	258	13
Grp Sat Flow(s),veh/h/ln	1709	0	1583	1350	0	0	1104	1863	1583	1012	1863	1583
Q Serve(g_s), s	0.0	0.0	3.3	8.5	0.0	0.0	0.8	4.3	0.8	0.4	3.5	0.2
Cycle Q Clear(g_c), s	1.8	0.0	3.3	10.2	0.0	0.0	4.3	4.3	0.8	4.7	3.5	0.2
Prop In Lane	0.36		1.00	0.65		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	238	269	0	0	877	1417	1204	801	1417	1204
V/C Ratio(X)	0.13	0.00	0.27	0.58	0.00	0.00	0.04	0.22	0.05	0.02	0.18	0.01
Avail Cap(c_a), veh/h	665	0	581	576	0	0	877	1417	1204	801	1417	1204
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	0.0	33.9	37.1	0.0	0.0	3.6	3.1	2.7	3.8	3.0	2.6
Incr Delay (d2), s/veh	0.2	0.0	0.6	2.0	0.0	0.0	0.1	0.4	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	2.6	7.0	0.0	0.0	0.5	4.1	0.6	0.2	3.3	0.1
LnGrp Delay(d),s/veh	33.4	0.0	34.5	39.1	0.0	0.0	3.7	3.5	2.7	3.8	3.3	2.6
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		107			157			402			287	
Approach Delay, s/veh		34.1			39.1			3.4			3.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.5		17.5		72.5		17.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		6.3		5.3		6.7		12.2
Green Ext Time (p_c), s		4.4		1.4		4.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	973	109	112	983	13	132	6	146	9	9	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	1058	118	122	1068	14	143	7	159	10	10	11
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	2115	946	365	2464	32	374	15	339	240	180	198
Arrive On Green	0.60	0.60	0.60	0.09	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	519	3539	1583	1774	3577	47	1385	67	1526	1215	812	893
Grp Volume(v), veh/h	21	1058	118	122	528	554	143	0	166	10	0	21
Grp Sat Flow(s),veh/h/ln	519	1770	1583	1774	1770	1854	1385	0	1593	1215	0	1705
Q Serve(g_s), s	1.5	15.4	2.9	2.3	0.0	0.0	8.2	0.0	8.1	0.6	0.0	0.9
Cycle Q Clear(g_c), s	1.5	15.4	2.9	2.3	0.0	0.0	9.0	0.0	8.1	8.8	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.96	1.00		0.52
Lane Grp Cap(c), veh/h	390	2115	946	365	1219	1278	374	0	354	240	0	379
V/C Ratio(X)	0.05	0.50	0.12	0.33	0.43	0.43	0.38	0.00	0.47	0.04	0.00	0.06
Avail Cap(c_a), veh/h	390	2115	946	499	1219	1278	374	0	354	240	0	379
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.6	10.4	7.9	7.2	0.0	0.0	31.1	0.0	30.4	34.2	0.0	27.6
Incr Delay (d2), s/veh	0.3	0.8	0.3	0.5	1.1	1.1	2.9	0.0	4.4	0.3	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(95%),veh/ln	0.4	12.3	2.4	2.0	0.7	0.7	6.1	0.0	7.3	0.4	0.0	0.8
LnGrp Delay(d),s/veh	7.9	11.2	8.1	7.8	1.1	1.1	34.1	0.0	34.8	34.5	0.0	27.8
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		1197			1204			309			31	
Approach Delay, s/veh		10.9			1.8			34.5			30.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	8.2	57.8		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		11.0	4.3	17.4		10.8		2.0
Green Ext Time (p_c), s		1.1	0.1	20.0		1.1		30.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 7/15/2016

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	1409	1	0	1365	0	4	0	2	1	0	3
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1532	1	0	1484	0	4	0	2	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1484	0	0	1533	0	0	2285	3027	766	2261	3027	742
Stage 1	-	-	-	-	-	-	1543	1543	-	1484	1484	-
Stage 2	-	-	-	-	-	-	742	1484	-	777	1543	-
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	449	-	-	430	-	-	21	13	345	22	13	358
Stage 1	-	-	-	-	-	-	120	175	-	131	187	-
Stage 2	-	-	-	-	-	-	374	187	-	356	175	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	449	-	-	430	-	-	21	13	345	22	13	358
Mov Cap-2 Maneuver	-	-	-	-	-	-	21	13	-	22	13	-
Stage 1	-	-	-	-	-	-	119	173	-	130	187	-
Stage 2	-	-	-	-	-	-	371	187	-	350	173	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	149.6	56.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	21	345	449	-	-	430	-	-	74
HCM Lane V/C Ratio	0.207	0.006	0.012	-	-	-	-	-	0.059
HCM Control Delay (s)	216.7	15.5	13.1	-	-	0	-	-	56.7
HCM Lane LOS	F	C	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.6	0	0	-	-	0	-	-	0.2

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 7/15/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1320	2	4	1334	6	1	0	7	3	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1435	2	4	1450	7	1	0	8	3	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1457	0	0	1437	0	0	2170	2901	718	2179	2899	728
Stage 1	-	-	-	-	-	-	1436	1436	-	1462	1462	-
Stage 2	-	-	-	-	-	-	734	1465	-	717	1437	-
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	460	-	-	468	-	-	26	16	371	26	16	366
Stage 1	-	-	-	-	-	-	140	197	-	135	192	-
Stage 2	-	-	-	-	-	-	378	191	-	387	197	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	460	-	-	468	-	-	26	16	371	25	16	366
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	16	-	25	16	-
Stage 1	-	-	-	-	-	-	140	197	-	135	190	-
Stage 2	-	-	-	-	-	-	373	189	-	379	197	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	32.4	108.7
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	140	460	-	-	468	-	-	40
HCM Lane V/C Ratio	0.062	-	-	-	0.009	-	-	0.136
HCM Control Delay (s)	32.4	0	-	-	12.8	-	-	108.7
HCM Lane LOS	D	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1339	1	1	1373	0	4
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1455	1	1	1492	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1457	0	2204	728
Stage 1	-	-	-	-	1456	-
Stage 2	-	-	-	-	748	-
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	-	-	460	-	38	366
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	429	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	460	-	38	366
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	366	-	-	460	-
HCM Lane V/C Ratio	0.012	-	-	0.002	-
HCM Control Delay (s)	15	-	-	12.8	0.1
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	117	1254	11	9	1296	211	26	2	21	43	2	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	127	1363	12	10	1409	229	28	2	23	47	2	35
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	2636	23	368	2595	1161	296	23	262	307	15	268
Arrive On Green	1.00	1.00	1.00	0.73	0.73	0.73	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	305	3595	32	393	3539	1583	1365	128	1474	1380	86	1510
Grp Volume(v), veh/h	127	671	704	10	1409	229	28	0	25	47	0	37
Grp Sat Flow(s),veh/h/ln	305	1770	1857	393	1770	1583	1365	0	1603	1380	0	1596
Q Serve(g_s), s	20.8	0.0	0.0	0.6	15.9	4.1	1.6	0.0	1.2	2.7	0.0	1.8
Cycle Q Clear(g_c), s	36.7	0.0	0.0	0.6	15.9	4.1	3.3	0.0	1.2	3.8	0.0	1.8
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.92	1.00		0.95
Lane Grp Cap(c), veh/h	250	1298	1362	368	2595	1161	296	0	285	307	0	284
V/C Ratio(X)	0.51	0.52	0.52	0.03	0.54	0.20	0.09	0.00	0.09	0.15	0.00	0.13
Avail Cap(c_a), veh/h	250	1298	1362	368	2595	1161	296	0	285	307	0	284
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	4.4	0.0	0.0	3.3	5.3	3.7	32.6	0.0	30.9	32.5	0.0	31.1
Incr Delay (d2), s/veh	7.2	1.5	1.4	0.1	0.8	0.4	0.6	0.0	0.6	1.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	1.0	1.0	0.1	12.5	3.3	1.2	0.0	1.0	2.0	0.0	1.5
LnGrp Delay(d),s/veh	11.6	1.5	1.4	3.4	6.1	4.1	33.2	0.0	31.5	33.6	0.0	32.1
LnGrp LOS	B	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		1502			1648			53			84	
Approach Delay, s/veh		2.3			5.8			32.4			32.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		5.3		38.7		5.8		17.9
Green Ext Time (p_c), s		0.3		24.8		0.3		41.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1328	6	2	1400	0	3	0	11	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1443	7	2	1522	0	3	0	12	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1522	0	0	1450	0	0	2212	2973	725	2248	2976	761
Stage 1	-	-	-	-	-	-	1447	1447	-	1526	1526	-
Stage 2	-	-	-	-	-	-	765	1526	-	722	1450	-
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	434	-	-	463	-	-	24	14	368	23	14	348
Stage 1	-	-	-	-	-	-	138	195	-	123	178	-
Stage 2	-	-	-	-	-	-	362	178	-	384	194	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	434	-	-	463	-	-	24	14	368	22	14	348
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	14	-	22	14	-
Stage 1	-	-	-	-	-	-	138	195	-	123	177	-
Stage 2	-	-	-	-	-	-	360	177	-	372	194	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	53	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	90	434	-	-	463	-	-	-
HCM Lane V/C Ratio	0.169	-	-	-	0.005	-	-	-
HCM Control Delay (s)	53	0	-	-	12.8	-	-	0
HCM Lane LOS	F	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1284	23	32	1379	5	15	0	14	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1396	25	35	1499	5	16	0	15	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1504	0	0	1421	0	0	2234	2989	710	2275	2998	752
Stage 1	-	-	-	-	-	-	1415	1415	-	1571	1571	-
Stage 2	-	-	-	-	-	-	819	1574	-	704	1427	-
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	441	-	-	475	-	-	23	14	376	22	13	353
Stage 1	-	-	-	-	-	-	144	202	-	115	169	-
Stage 2	-	-	-	-	-	-	336	169	-	394	199	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	441	-	-	475	-	-	22	13	376	20	12	353
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	13	-	20	12	-
Stage 1	-	-	-	-	-	-	143	201	-	114	157	-
Stage 2	-	-	-	-	-	-	311	157	-	375	198	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	232.2	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	40	441	-	-	475	-	-	-
HCM Lane V/C Ratio	0.788	0.007	-	-	0.073	-	-	-
HCM Control Delay (s)	232.2	13.2	-	-	13.2	-	-	0
HCM Lane LOS	F	B	-	-	B	-	-	A
HCM 95th %tile Q(veh)	2.9	0	-	-	0.2	-	-	-

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	267	1013	18	20	1045	106	27	56	26	180	37	291
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	290	1101	20	22	1136	115	29	61	28	196	40	316
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	2027	37	353	1698	760	347	517	440	410	517	440
Arrive On Green	0.22	1.00	1.00	0.02	0.48	0.48	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3556	65	1774	3539	1583	1021	1863	1583	1303	1863	1583
Grp Volume(v), veh/h	290	548	573	22	1136	115	29	61	28	196	40	316
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1583	1021	1863	1583	1303	1863	1583
Q Serve(g_s), s	7.5	0.0	0.0	0.6	22.1	3.7	1.9	2.2	1.2	11.9	1.4	16.2
Cycle Q Clear(g_c), s	7.5	0.0	0.0	0.6	22.1	3.7	3.4	2.2	1.2	14.1	1.4	16.2
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	1009	1055	353	1698	760	347	517	440	410	517	440
V/C Ratio(X)	0.77	0.54	0.54	0.06	0.67	0.15	0.08	0.12	0.06	0.48	0.08	0.72
Avail Cap(c_a), veh/h	459	1009	1055	399	1698	760	347	517	440	410	517	440
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	13.4	0.0	0.0	11.5	17.9	13.1	25.2	24.3	23.9	29.5	24.0	29.3
Incr Delay (d2), s/veh	6.3	2.1	2.0	0.1	2.1	0.4	0.5	0.5	0.3	4.0	0.3	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.5	1.1	1.1	0.5	16.7	3.0	1.1	2.2	1.0	8.3	1.4	12.9
LnGrp Delay(d),s/veh	19.8	2.1	2.0	11.5	20.1	13.6	25.7	24.7	24.2	33.5	24.3	39.0
LnGrp LOS	B	A	A	B	C	B	C	C	C	C	C	D
Approach Vol, veh/h		1411			1273			118			552	
Approach Delay, s/veh		5.7			19.3			24.8			36.0	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	5.7	55.3		29.0	13.8	47.2
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	4.0	49.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		5.4	2.6	2.0		18.2	9.5	24.1
Green Ext Time (p_c), s		2.5	0.0	28.1		1.6	0.4	12.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

7/15/2016

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	0	2	15	0	5	2	413	6	3	475	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	2	16	0	5	2	449	7	3	516	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	979	976	516	977	976	449	516	0	0	449	0	0
Stage 1	523	523	-	453	453	-	-	-	-	-	-	-
Stage 2	456	453	-	524	523	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	229	251	559	230	251	610	1050	-	-	1111	-	-
Stage 1	537	530	-	586	570	-	-	-	-	-	-	-
Stage 2	584	570	-	537	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	226	250	559	228	250	610	1050	-	-	1111	-	-
Mov Cap-2 Maneuver	226	250	-	228	250	-	-	-	-	-	-	-
Stage 1	536	529	-	585	569	-	-	-	-	-	-	-
Stage 2	578	569	-	533	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	19.3	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1050	-	-	226	559	228	610	1111	-	-
HCM Lane V/C Ratio	0.002	-	-	0.053	0.004	0.072	0.009	0.003	-	-
HCM Control Delay (s)	8.4	-	-	21.8	11.5	22	11	8.2	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	16	11	390	397	9
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	17	12	424	432	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	884	436	441	0	-	0
Stage 1	436	-	-	-	-	-
Stage 2	448	-	-	-	-	-
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	316	620	1119	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	313	620	1119	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1119	- 582	-	-
HCM Lane V/C Ratio	0.011	- 0.035	-	-
HCM Control Delay (s)	8.3	- 11.4	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	157	951	25	33	703	116	30	112	26	154	130	126
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	171	1034	27	36	764	126	33	122	28	167	141	137
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	3228	84	357	1591	262	310	799	178	382	492	440
Arrive On Green	0.07	0.63	0.63	0.52	0.52	0.52	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5096	133	530	3042	502	1097	2876	642	1232	1770	1583
Grp Volume(v), veh/h	171	688	373	36	444	446	33	74	76	167	141	137
Grp Sat Flow(s),veh/h/ln	1774	1695	1839	530	1770	1774	1097	1770	1749	1232	1770	1583
Q Serve(g_s), s	3.7	8.4	8.4	3.1	14.4	14.4	2.2	2.8	3.0	10.7	5.6	6.2
Cycle Q Clear(g_c), s	3.7	8.4	8.4	3.1	14.4	14.4	8.4	2.8	3.0	13.6	5.6	6.2
Prop In Lane	1.00		0.07	1.00		0.28	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	423	2147	1165	357	926	928	310	492	486	382	492	440
V/C Ratio(X)	0.40	0.32	0.32	0.10	0.48	0.48	0.11	0.15	0.16	0.44	0.29	0.31
Avail Cap(c_a), veh/h	582	2147	1165	357	926	928	310	492	486	382	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	7.6	7.6	11.0	13.7	13.7	29.0	24.5	24.5	29.7	25.5	25.7
Incr Delay (d2), s/veh	0.6	0.4	0.7	0.6	1.8	1.8	0.7	0.6	0.7	3.6	1.5	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	7.3	8.0	0.9	12.0	12.0	1.3	2.6	2.7	7.2	5.3	5.3
LnGrp Delay(d),s/veh	10.2	8.0	8.3	11.5	15.4	15.4	29.7	25.1	25.2	33.3	27.0	27.5
LnGrp LOS	B	A	A	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1232			926			183			445	
Approach Delay, s/veh		8.4			15.3			26.0			29.5	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	9.9	51.1
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		10.4		10.4		15.6	5.7	16.4
Green Ext Time (p_c), s		2.9		21.7		2.3	0.3	14.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	766	107	75	766	80	97	360	83	58	308	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	833	116	82	833	87	105	391	90	63	335	80
Adj No. of Lanes	1	3	0	1	3	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2234	309	372	2704	281	315	719	164	267	948	223
Arrive On Green	0.49	0.49	0.49	0.04	0.58	0.58	0.25	0.25	0.25	0.04	0.33	0.33
Sat Flow, veh/h	605	4517	626	1774	4680	487	967	2864	653	1774	2844	670
Grp Volume(v), veh/h	118	624	325	82	602	318	105	240	241	63	207	208
Grp Sat Flow(s),veh/h/ln	605	1695	1752	1774	1695	1777	967	1770	1748	1774	1770	1744
Q Serve(g_s), s	11.2	10.3	10.4	1.9	8.2	8.3	8.3	10.6	10.8	2.3	7.9	8.1
Cycle Q Clear(g_c), s	12.0	10.3	10.4	1.9	8.2	8.3	9.0	10.6	10.8	2.3	7.9	8.1
Prop In Lane	1.00		0.36	1.00		0.27	1.00		0.37	1.00		0.38
Lane Grp Cap(c), veh/h	374	1677	867	372	1959	1027	315	444	439	267	590	581
V/C Ratio(X)	0.32	0.37	0.37	0.22	0.31	0.31	0.33	0.54	0.55	0.24	0.35	0.36
Avail Cap(c_a), veh/h	374	1677	867	382	1959	1027	315	444	439	298	590	581
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	14.1	14.1	10.3	9.8	9.8	28.9	29.2	29.3	23.1	22.6	22.7
Incr Delay (d2), s/veh	2.2	0.6	1.2	0.3	0.4	0.8	2.8	4.7	4.9	0.5	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	8.6	9.0	1.7	7.0	7.7	4.4	9.6	9.8	2.0	7.4	7.5
LnGrp Delay(d),s/veh	17.0	14.7	15.4	10.6	10.2	10.6	31.8	33.9	34.2	23.6	24.3	24.4
LnGrp LOS	B	B	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1067			1002			586			478	
Approach Delay, s/veh		15.2			10.3			33.6			24.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.4	26.6	7.5	48.5		34.0		56.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	5.6	21.0	4.0	44.0		30.0		52.0
Max Q Clear Time (g_c+I1), s	14.3	12.8	3.9	14.0		10.1		10.3
Green Ext Time (p_c), s	0.0	3.7	0.0	17.8		6.1		21.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	35	52	74	35	40	33	237	63	16	268	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	14	38	57	80	38	43	36	258	68	17	291	12
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	216	233	149	64	56	852	1423	1210	842	1423	1210
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.76	0.76	0.76	0.76	0.76	0.76
Sat Flow, veh/h	296	1472	1583	610	437	382	1072	1863	1583	1050	1863	1583
Grp Volume(v), veh/h	52	0	57	161	0	0	36	258	68	17	291	12
Grp Sat Flow(s),veh/h/ln	768	0	1583	1429	0	0	1072	1863	1583	1050	1863	1583
Q Serve(g_s), s	0.0	0.0	2.9	7.7	0.0	0.0	0.9	3.4	1.0	0.4	3.9	0.2
Cycle Q Clear(g_c), s	2.2	0.0	2.9	9.9	0.0	0.0	4.8	3.4	1.0	3.8	3.9	0.2
Prop In Lane	0.27		1.00	0.50		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	233	270	0	0	852	1423	1210	842	1423	1210
V/C Ratio(X)	0.17	0.00	0.24	0.60	0.00	0.00	0.04	0.18	0.06	0.02	0.20	0.01
Avail Cap(c_a), veh/h	678	0	581	593	0	0	852	1423	1210	842	1423	1210
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	34.0	37.0	0.0	0.0	3.6	2.9	2.6	3.4	3.0	2.5
Incr Delay (d2), s/veh	0.3	0.0	0.5	2.1	0.0	0.0	0.1	0.3	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.0	2.3	7.2	0.0	0.0	0.5	3.3	0.8	0.2	3.9	0.1
LnGrp Delay(d),s/veh	33.9	0.0	34.5	39.2	0.0	0.0	3.7	3.2	2.7	3.5	3.3	2.5
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		109			161			362			320	
Approach Delay, s/veh		34.2			39.2			3.1			3.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.8		17.2		72.8		17.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		6.8		4.9		5.9		11.9
Green Ext Time (p_c), s		4.2		1.5		4.3		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1434	136	137	1449	18	126	12	166	14	8	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	1559	148	149	1575	20	137	13	180	15	9	13
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	2220	993	265	2585	33	327	20	282	172	130	188
Arrive On Green	0.63	0.63	0.63	0.07	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	318	3539	1583	1774	3579	45	1384	108	1492	1185	690	997
Grp Volume(v), veh/h	20	1559	148	149	778	817	137	0	193	15	0	22
Grp Sat Flow(s),veh/h/ln	318	1770	1583	1774	1770	1855	1384	0	1599	1185	0	1687
Q Serve(g_s), s	2.3	26.4	3.5	2.5	3.8	3.8	8.1	0.0	10.0	1.1	0.0	1.0
Cycle Q Clear(g_c), s	2.3	26.4	3.5	2.5	3.8	3.8	9.1	0.0	10.0	11.1	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.93	1.00		0.59
Lane Grp Cap(c), veh/h	280	2220	993	265	1278	1340	327	0	302	172	0	319
V/C Ratio(X)	0.07	0.70	0.15	0.56	0.61	0.61	0.42	0.00	0.64	0.09	0.00	0.07
Avail Cap(c_a), veh/h	280	2220	993	353	1278	1340	327	0	302	172	0	319
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	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	11.2	6.9	13.4	0.6	0.6	33.7	0.0	33.7	38.8	0.0	30.0
Incr Delay (d2), s/veh	0.5	1.9	0.3	1.9	2.2	2.1	3.9	0.0	9.9	1.0	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(95%),veh/ln	0.4	19.3	2.8	4.4	3.8	3.9	6.3	0.0	9.0	0.7	0.0	0.9
LnGrp Delay(d),s/veh	7.2	13.1	7.2	15.3	2.7	2.6	37.7	0.0	43.6	39.8	0.0	30.4
LnGrp LOS	A	B	A	B	A	A	D		D	D		C
Approach Vol, veh/h		1727			1744			330			37	
Approach Delay, s/veh		12.5			3.8			41.1			34.2	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	8.5	60.5		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		12.0	4.5	28.4		13.1		5.8
Green Ext Time (p_c), s		0.8	0.1	21.9		0.7		49.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd

7/13/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1516	1	2	1529	0	2	0	4	1	0	2
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1648	1	2	1662	0	2	0	4	1	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1662	0	0	1649	0	0	2490	3321	824	2496	3321	831
Stage 1	-	-	-	-	-	-	1655	1655	-	1666	1666	-
Stage 2	-	-	-	-	-	-	835	1666	-	830	1655	-
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	383	-	-	388	-	-	15	8	316	15	8	313
Stage 1	-	-	-	-	-	-	102	154	-	100	152	-
Stage 2	-	-	-	-	-	-	328	152	-	331	154	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	383	-	-	388	-	-	15	8	316	15	8	313
Mov Cap-2 Maneuver	-	-	-	-	-	-	15	8	-	15	8	-
Stage 1	-	-	-	-	-	-	101	153	-	99	151	-
Stage 2	-	-	-	-	-	-	324	151	-	324	153	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	105.1	100.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	15	316	383	-	-	388	-	-	41
HCM Lane V/C Ratio	0.145	0.014	0.009	-	-	0.006	-	-	0.08
HCM Control Delay (s)	282.1	16.6	14.5	-	-	14.3	-	-	100.3
HCM Lane LOS	F	C	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.4	0	0	-	-	0	-	-	0.2

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1421	3	3	1560	5	5	0	9	3	0	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1545	3	3	1696	5	5	0	10	3	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1701	0	0	1548	0	0	2400	3254	774	2477	3253	851
Stage 1	-	-	-	-	-	-	1546	1546	-	1705	1705	-
Stage 2	-	-	-	-	-	-	854	1708	-	772	1548	-
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	370	-	-	424	-	-	17	9	341	15	9	303
Stage 1	-	-	-	-	-	-	120	174	-	95	145	-
Stage 2	-	-	-	-	-	-	320	145	-	358	174	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	370	-	-	424	-	-	17	9	341	14	9	303
Mov Cap-2 Maneuver	-	-	-	-	-	-	17	9	-	14	9	-
Stage 1	-	-	-	-	-	-	120	174	-	95	144	-
Stage 2	-	-	-	-	-	-	314	144	-	348	174	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	125.1	176.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	370	-	-	424	-	-	27
HCM Lane V/C Ratio	0.346	-	-	-	0.008	-	-	0.242
HCM Control Delay (s)	125.1	0	-	-	13.6	-	-	176.5
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.7

HCM 2010 TWSC
7: 59th Pl & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1436	1	1	1545	0	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1561	1	1	1679	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1562	0	2403	781
Stage 1	-	-	-	-	1561	-
Stage 2	-	-	-	-	842	-
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	-	-	419	-	28	338
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	419	-	27	338
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	369	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	338	-	-	419	-
HCM Lane V/C Ratio	0.003	-	-	0.003	-
HCM Control Delay (s)	15.7	-	-	13.6	0.2
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 Signalized Intersection Summary
8: Jokake Rd/Phoenician Blvd (N-S) & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	96	1493	11	17	1442	102	16	4	13	123	4	136
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	104	1623	12	18	1567	111	17	4	14	134	4	148
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	2641	20	237	2595	1161	192	65	226	314	7	275
Arrive On Green	0.73	0.73	0.73	1.00	1.00	1.00	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	293	3601	27	306	3539	1583	1230	364	1274	1389	42	1548
Grp Volume(v), veh/h	104	797	838	18	1567	111	17	0	18	134	0	152
Grp Sat Flow(s),veh/h/ln	293	1770	1858	306	1770	1583	1230	0	1638	1389	0	1590
Q Serve(g_s), s	13.2	19.7	19.7	1.7	0.0	0.0	1.1	0.0	0.8	8.0	0.0	7.8
Cycle Q Clear(g_c), s	13.2	19.7	19.7	21.4	0.0	0.0	9.0	0.0	0.8	8.8	0.0	7.8
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.78	1.00		0.97
Lane Grp Cap(c), veh/h	295	1298	1363	237	2595	1161	192	0	291	314	0	283
V/C Ratio(X)	0.35	0.61	0.61	0.08	0.60	0.10	0.09	0.00	0.06	0.43	0.00	0.54
Avail Cap(c_a), veh/h	295	1298	1363	237	2595	1161	192	0	291	314	0	283
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.8	5.8	3.2	0.0	0.0	37.7	0.0	30.8	34.4	0.0	33.6
Incr Delay (d2), s/veh	3.3	2.2	2.1	0.6	1.1	0.2	0.9	0.0	0.4	4.2	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(95%),veh/ln	2.4	15.3	15.9	0.3	0.7	0.1	0.8	0.0	0.7	6.2	0.0	7.2
LnGrp Delay(d),s/veh	8.2	8.0	7.9	3.8	1.1	0.2	38.6	0.0	31.2	38.6	0.0	40.8
LnGrp LOS	A	A	A	A	A	A	D		C	D		D
Approach Vol, veh/h		1739			1696			35			286	
Approach Delay, s/veh		8.0			1.0			34.8			39.8	
Approach LOS		A			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		11.0		21.7		10.8		23.4
Green Ext Time (p_c), s		0.7		40.5		0.7		39.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd

7/13/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1599	11	4	1524	0	4	0	3	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1738	12	4	1657	0	4	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1657	0	0	1750	0	0	2581	3409	875	2534	3415	828
Stage 1	-	-	-	-	-	-	1744	1744	-	1665	1665	-
Stage 2	-	-	-	-	-	-	837	1665	-	869	1750	-
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	385	-	-	354	-	-	13	7	292	14	7	314
Stage 1	-	-	-	-	-	-	90	139	-	101	152	-
Stage 2	-	-	-	-	-	-	327	152	-	313	138	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	385	-	-	354	-	-	13	7	292	14	7	314
Mov Cap-2 Maneuver	-	-	-	-	-	-	13	7	-	14	7	-
Stage 1	-	-	-	-	-	-	90	139	-	101	150	-
Stage 2	-	-	-	-	-	-	323	150	-	310	138	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	238.5	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	22	385	-	-	354	-	-	-
HCM Lane V/C Ratio	0.346	-	-	-	0.012	-	-	-
HCM Control Delay (s)	238.5	0	-	-	15.3	-	-	0
HCM Lane LOS	F	A	-	-	C	-	-	A
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1519	59	43	1491	1	10	0	22	0	0	1
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1651	64	47	1621	1	11	0	24	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1622	0	0	1715	0	0	2587	3398	858	2541	3430	811
Stage 1	-	-	-	-	-	-	1683	1683	-	1715	1715	-
Stage 2	-	-	-	-	-	-	904	1715	-	826	1715	-
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	397	-	-	366	-	-	12	7	300	14	7	322
Stage 1	-	-	-	-	-	-	98	149	-	94	144	-
Stage 2	-	-	-	-	-	-	298	144	-	332	144	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	397	-	-	366	-	-	11	6	300	12	6	322
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	6	-	12	6	-
Stage 1	-	-	-	-	-	-	98	149	-	94	126	-
Stage 2	-	-	-	-	-	-	259	126	-	306	144	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	$ 354	16.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	397	-	-	366	-	-	322
HCM Lane V/C Ratio	1.054	-	-	-	0.128	-	-	0.003
HCM Control Delay (s)	$ 354	0	-	-	16.3	-	-	16.2
HCM Lane LOS	F	A	-	-	C	-	-	C
HCM 95th %tile Q(veh)	3.7	0	-	-	0.4	-	-	0

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	182	1257	30	26	1329	210	22	40	20	151	51	199
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	198	1366	33	28	1445	228	24	43	22	164	55	216
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	2236	54	346	2082	931	287	393	334	336	393	334
Arrive On Green	0.13	1.00	1.00	0.02	0.59	0.59	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3532	85	1774	3539	1583	1104	1863	1583	1331	1863	1583
Grp Volume(v), veh/h	198	684	715	28	1445	228	24	43	22	164	55	216
Grp Sat Flow(s),veh/h/ln	1774	1770	1848	1774	1770	1583	1104	1863	1583	1331	1863	1583
Q Serve(g_s), s	3.9	0.0	0.0	0.6	25.6	6.2	1.6	1.7	1.0	10.2	2.2	11.2
Cycle Q Clear(g_c), s	3.9	0.0	0.0	0.6	25.6	6.2	3.8	1.7	1.0	11.9	2.2	11.2
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	1120	1170	346	2082	931	287	393	334	336	393	334
V/C Ratio(X)	0.68	0.61	0.61	0.08	0.69	0.24	0.08	0.11	0.07	0.49	0.14	0.65
Avail Cap(c_a), veh/h	386	1120	1170	385	2082	931	287	393	334	336	393	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	14.3	0.0	0.0	6.9	12.9	8.9	30.4	28.7	28.4	33.5	28.9	32.4
Incr Delay (d2), s/veh	3.1	2.5	2.4	0.1	1.9	0.6	0.6	0.6	0.4	5.0	0.7	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.5	1.4	1.4	0.5	18.9	5.2	1.0	1.7	0.8	7.6	2.2	9.7
LnGrp Delay(d),s/veh	17.4	2.5	2.4	7.0	14.8	9.5	31.0	29.2	28.8	38.5	29.6	41.7
LnGrp LOS	B	A	A	A	B	A	C	C	C	D	C	D
Approach Vol, veh/h		1597			1701			89			435	
Approach Delay, s/veh		4.3			14.0			29.6			39.0	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	6.0	61.0		23.0	10.1	56.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	4.0	55.0		19.0	11.0	48.0
Max Q Clear Time (g_c+I1), s		5.8	2.6	2.0		13.9	5.9	27.6
Green Ext Time (p_c), s		1.7	0.0	41.5		1.0	0.2	18.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W) 7/13/2016

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	49	4	30	4	0	5	0	413	7	9	409	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	4	33	4	0	5	0	449	8	10	445	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	916	913	445	932	913	449	445	0	0	449	0	0
Stage 1	464	464	-	449	449	-	-	-	-	-	-	-
Stage 2	452	449	-	483	464	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	253	273	613	247	273	610	1115	-	-	1111	-	-
Stage 1	578	564	-	589	572	-	-	-	-	-	-	-
Stage 2	587	572	-	565	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	249	271	613	229	271	610	1115	-	-	1111	-	-
Mov Cap-2 Maneuver	249	271	-	229	271	-	-	-	-	-	-	-
Stage 1	578	559	-	589	572	-	-	-	-	-	-	-
Stage 2	582	572	-	526	559	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	15.4	0	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1115	-	-	249	534	229	610	1111	-	-
HCM Lane V/C Ratio	-	-	-	0.214	0.069	0.019	0.009	0.009	-	-
HCM Control Delay (s)	0	-	-	23.3	12.2	21	11	8.3	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.2	0.1	0	0	-	-

HCM 2010 TWSC
13: 64th St & Cholla Ln 7/13/2016

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	8	9	417	419	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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	9	10	453	455	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	931	458	461	0	-	0
Stage 1	458	-	-	-	-	-
Stage 2	473	-	-	-	-	-
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	296	603	1100	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	603	1100	-	-	-
Mov Cap-2 Maneuver	421	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1100	-	539	-	-
HCM Lane V/C Ratio	0.009	-	0.022	-	-
HCM Control Delay (s)	8.3	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	1181	1	1	1385	3	1	0	1	3	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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1284	1	1	1505	3	1	0	1	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1509	0	0	1285	0	0	2052	2808	642	2164	2807	754
Stage 1	-	-	-	-	-	-	1297	1297	-	1509	1509	-
Stage 2	-	-	-	-	-	-	755	1511	-	655	1298	-
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	439	-	-	536	-	-	32	18	417	26	18	352
Stage 1	-	-	-	-	-	-	171	230	-	126	182	-
Stage 2	-	-	-	-	-	-	367	181	-	421	230	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	439	-	-	536	-	-	32	18	417	26	18	352
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	18	-	26	18	-
Stage 1	-	-	-	-	-	-	168	226	-	124	182	-
Stage 2	-	-	-	-	-	-	366	181	-	413	226	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	67.6	162.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	32	417	439	-	-	536	-	-	26
HCM Lane V/C Ratio	0.034	0.003	0.015	-	-	0.002	-	-	0.125
HCM Control Delay (s)	121.4	13.7	13.3	-	-	11.7	-	-	162.4
HCM Lane LOS	F	B	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0	-	-	0.4

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1182	4	0	1378	2	3	0	0	2	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1285	4	0	1498	2	3	0	0	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1500	0	0	1289	0	0	2045	2796	645	2150	2797	750
Stage 1	-	-	-	-	-	-	1296	1296	-	1499	1499	-
Stage 2	-	-	-	-	-	-	749	1500	-	651	1298	-
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	443	-	-	534	-	-	33	18	415	27	18	354
Stage 1	-	-	-	-	-	-	171	231	-	128	184	-
Stage 2	-	-	-	-	-	-	370	184	-	424	230	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	443	-	-	534	-	-	33	18	415	27	18	354
Mov Cap-2 Maneuver	-	-	-	-	-	-	33	18	-	27	18	-
Stage 1	-	-	-	-	-	-	169	229	-	127	184	-
Stage 2	-	-	-	-	-	-	368	184	-	420	228	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	125.7	83.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	443	-	-	534	-	-	50
HCM Lane V/C Ratio	0.099	0.01	-	-	-	-	-	0.087
HCM Control Delay (s)	125.7	13.2	-	-	0	-	-	83.7
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1186	1	0	1361	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	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1289	1	0	1479	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1290	0	2030	645
Stage 1	-	-	-	-	1290	-
Stage 2	-	-	-	-	740	-
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	-	-	533	-	50	415
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	433	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	533	-	50	415
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	433	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	154	-	-	533	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	28.7	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	1060	15	16	1109	180	9	8	16	342	32	520
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	98	1152	16	17	1205	196	10	9	17	372	35	565
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	1986	28	245	1966	880	80	206	388	556	33	535
Arrive On Green	0.56	0.56	0.56	0.18	0.18	0.18	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	383	3574	50	479	3539	1583	815	578	1092	1379	93	1504
Grp Volume(v), veh/h	98	570	598	17	1205	196	10	0	26	372	0	600
Grp Sat Flow(s),veh/h/ln	383	1770	1854	479	1770	1583	815	0	1670	1379	0	1597
Q Serve(g_s), s	21.8	19.0	19.0	2.9	28.2	9.5	0.0	0.0	0.9	21.8	0.0	32.0
Cycle Q Clear(g_c), s	50.0	19.0	19.0	21.9	28.2	9.5	32.0	0.0	0.9	22.7	0.0	32.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.65	1.00		0.94
Lane Grp Cap(c), veh/h	173	983	1030	245	1966	880	80	0	594	556	0	568
V/C Ratio(X)	0.57	0.58	0.58	0.07	0.61	0.22	0.12	0.00	0.04	0.67	0.00	1.06
Avail Cap(c_a), veh/h	173	983	1030	245	1966	880	80	0	594	556	0	568
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.7	13.1	13.1	33.8	27.8	20.2	45.0	0.0	19.0	26.4	0.0	29.0
Incr Delay (d2), s/veh	12.8	2.5	2.4	0.5	1.4	0.6	3.2	0.0	0.1	6.3	0.0	53.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.5	15.0	15.6	0.8	20.4	7.7	0.6	0.0	0.8	14.2	0.0	40.5
LnGrp Delay(d),s/veh	47.5	15.6	15.5	34.4	29.3	20.8	48.2	0.0	19.1	32.7	0.0	82.5
LnGrp LOS	D	B	B	C	C	C	D		B	C		F
Approach Vol, veh/h		1266			1418			36			972	
Approach Delay, s/veh		18.0			28.2			27.2			63.5	
Approach LOS		B			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		54.0		36.0		54.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		32.0		50.0		32.0		50.0
Max Q Clear Time (g_c+I1), s		34.0		52.0		34.0		30.2
Green Ext Time (p_c), s		0.0		0.0		0.0		16.9

Intersection Summary	
HCM 2010 Ctrl Delay	34.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1239	1	1	1205	0	2	0	3	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1347	1	1	1310	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1310	0	0	1348	0	0	2004	2659	674	1985	2660	655
Stage 1	-	-	-	-	-	-	1347	1347	-	1312	1312	-
Stage 2	-	-	-	-	-	-	657	1312	-	673	1348	-
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	524	-	-	507	-	-	35	22	397	36	22	409
Stage 1	-	-	-	-	-	-	159	218	-	167	227	-
Stage 2	-	-	-	-	-	-	420	227	-	411	218	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	524	-	-	507	-	-	35	22	397	36	22	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	35	22	-	36	22	-
Stage 1	-	-	-	-	-	-	159	218	-	167	227	-
Stage 2	-	-	-	-	-	-	419	227	-	408	218	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	55.3	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	77	524	-	-	507	-	-	-
HCM Lane V/C Ratio	0.071	-	-	-	0.002	-	-	-
HCM Control Delay (s)	55.3	0	-	-	12.1	-	-	0
HCM Lane LOS	F	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1268	4	3	1208	2	6	0	5	0	1	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1378	4	3	1313	2	7	0	5	0	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1315	0	0	1383	0	0	2049	2707	691	2014	2708	658
Stage 1	-	-	-	-	-	-	1385	1385	-	1321	1321	-
Stage 2	-	-	-	-	-	-	664	1322	-	693	1387	-
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	522	-	-	491	-	-	32	21	387	34	21	407
Stage 1	-	-	-	-	-	-	151	209	-	165	224	-
Stage 2	-	-	-	-	-	-	416	224	-	400	208	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	522	-	-	491	-	-	30	21	387	33	21	407
Mov Cap-2 Maneuver	-	-	-	-	-	-	30	21	-	33	21	-
Stage 1	-	-	-	-	-	-	150	208	-	164	223	-
Stage 2	-	-	-	-	-	-	408	223	-	393	207	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	93.8	57.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	522	-	-	491	-	-	73
HCM Lane V/C Ratio	0.23	0.004	-	-	0.007	-	-	0.06
HCM Control Delay (s)	93.8	11.9	-	-	12.4	-	-	57.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	147	1098	22	22	1062	119	7	31	29	155	36	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	160	1193	24	24	1154	129	8	34	32	168	39	152
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	2137	43	335	1991	891	351	455	387	386	455	387
Arrive On Green	0.08	0.80	0.80	0.02	0.56	0.56	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3548	71	1774	3539	1583	1187	1863	1583	1330	1863	1583
Grp Volume(v), veh/h	160	595	622	24	1154	129	8	34	32	168	39	152
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1583	1187	1863	1583	1330	1863	1583
Q Serve(g_s), s	3.3	10.9	10.9	0.5	19.0	3.5	0.5	1.3	1.4	10.0	1.5	7.2
Cycle Q Clear(g_c), s	3.3	10.9	10.9	0.5	19.0	3.5	1.9	1.3	1.4	11.3	1.5	7.2
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	336	1066	1114	335	1991	891	351	455	387	386	455	387
V/C Ratio(X)	0.48	0.56	0.56	0.07	0.58	0.14	0.02	0.07	0.08	0.43	0.09	0.39
Avail Cap(c_a), veh/h	467	1066	1114	379	1991	891	351	455	387	386	455	387
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	9.9	4.6	4.7	8.3	12.8	9.4	27.0	26.2	26.2	30.5	26.2	28.4
Incr Delay (d2), s/veh	1.0	2.1	2.0	0.1	1.2	0.3	0.1	0.3	0.4	3.5	0.4	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	9.8	10.1	0.5	14.5	2.9	0.3	1.2	1.2	7.3	1.4	6.3
LnGrp Delay(d),s/veh	11.0	6.8	6.7	8.4	14.0	9.7	27.1	26.5	26.6	34.0	26.6	31.4
LnGrp LOS	B	A	A	A	B	A	C	C	C	C	C	C
Approach Vol, veh/h		1377			1307			74			359	
Approach Delay, s/veh		7.2			13.5			26.6			32.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	5.8	58.2		26.0	9.4	54.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		22.0	4.0	52.0		22.0	12.0	44.0
Max Q Clear Time (g_c+I1), s		3.9	2.5	12.9		13.3	5.3	21.0
Green Ext Time (p_c), s		1.5	0.0	26.7		1.1	0.2	18.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

7/13/2016

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	0	24	7	0	4	0	274	3	4	368	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	26	8	0	4	0	298	3	4	400	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	709	707	400	720	707	298	400	0	0	298	0	0
Stage 1	409	409	-	298	298	-	-	-	-	-	-	-
Stage 2	300	298	-	422	409	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	349	360	650	343	360	741	1159	-	-	1263	-	-
Stage 1	619	596	-	711	667	-	-	-	-	-	-	-
Stage 2	709	667	-	609	596	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	346	359	650	328	359	741	1159	-	-	1263	-	-
Mov Cap-2 Maneuver	346	359	-	328	359	-	-	-	-	-	-	-
Stage 1	619	594	-	711	667	-	-	-	-	-	-	-
Stage 2	705	667	-	583	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	13.9	0	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1159	-	-	346	650	328	741	1263	-	-
HCM Lane V/C Ratio	-	-	-	0.069	0.04	0.023	0.006	0.003	-	-
HCM Control Delay (s)	0	-	-	16.2	10.8	16.2	9.9	7.9	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	0	0	-	-

HCM 2010 TWSC
13: 64th St & Cholla Ln

7/13/2016

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	20	14	249	341	10
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	22	15	271	371	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	677	376	382	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	301	-	-	-	-	-
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	418	670	1176	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	413	670	1176	-	-	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1176	- 599	-	-
HCM Lane V/C Ratio	0.013	- 0.06	-	-
HCM Control Delay (s)	8.1	- 11.4	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.2	-	-

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	193	606	18	16	731	121	43	103	18	127	106	305
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	210	659	20	17	795	132	47	112	20	138	115	332
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	3325	101	486	1628	270	135	770	134	363	452	405
Arrive On Green	0.08	0.66	0.66	0.54	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5072	154	758	3039	505	939	3013	526	1253	1770	1583
Grp Volume(v), veh/h	210	440	239	17	463	464	47	65	67	138	115	332
Grp Sat Flow(s),veh/h/ln	1774	1695	1836	758	1770	1774	939	1770	1770	1253	1770	1583
Q Serve(g_s), s	4.4	4.6	4.6	1.0	14.8	14.8	4.5	2.5	2.6	8.6	4.7	17.8
Cycle Q Clear(g_c), s	4.4	4.6	4.6	1.0	14.8	14.8	22.2	2.5	2.6	11.3	4.7	17.8
Prop In Lane	1.00		0.08	1.00		0.28	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	437	2222	1203	486	948	950	135	452	452	363	452	405
V/C Ratio(X)	0.48	0.20	0.20	0.03	0.49	0.49	0.35	0.14	0.15	0.38	0.25	0.82
Avail Cap(c_a), veh/h	618	2222	1203	486	948	950	135	452	452	363	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.3	6.1	6.1	9.9	13.1	13.1	42.0	25.9	25.9	30.3	26.7	31.6
Incr Delay (d2), s/veh	0.8	0.2	0.4	0.1	1.8	1.8	7.0	0.7	0.7	3.0	1.4	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	4.0	4.4	0.4	12.2	12.2	2.6	2.4	2.5	5.9	4.4	14.7
LnGrp Delay(d),s/veh	10.1	6.3	6.5	10.1	14.9	14.9	49.0	26.5	26.6	33.3	28.0	48.4
LnGrp LOS	B	A	A	B	B	B	D	C	C	C	C	D
Approach Vol, veh/h		889			944			179			585	
Approach Delay, s/veh		7.3			14.8			32.5			40.8	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	10.8	52.2
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		24.2		6.6		19.8	6.4	16.8
Green Ext Time (p_c), s		0.0		16.2		1.4	0.4	11.6

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	143	563	170	100	573	60	78	376	111	50	535	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	155	612	185	109	623	65	85	409	121	54	582	185
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	1132	342	329	1654	172	241	872	255	313	1058	336
Arrive On Green	0.42	0.42	0.42	0.04	0.51	0.51	0.32	0.32	0.32	0.03	0.40	0.40
Sat Flow, veh/h	751	2681	809	1774	3236	337	698	2702	791	1774	2645	839
Grp Volume(v), veh/h	155	404	393	109	340	348	85	266	264	54	389	378
Grp Sat Flow(s),veh/h/ln	751	1770	1720	1774	1770	1803	698	1770	1723	1774	1770	1715
Q Serve(g_s), s	14.2	15.4	15.4	3.0	10.5	10.5	9.6	10.8	11.0	1.8	15.2	15.3
Cycle Q Clear(g_c), s	16.7	15.4	15.4	3.0	10.5	10.5	17.9	10.8	11.0	1.8	15.2	15.3
Prop In Lane	1.00		0.47	1.00		0.19	1.00		0.46	1.00		0.49
Lane Grp Cap(c), veh/h	376	747	726	329	904	922	241	571	556	313	708	686
V/C Ratio(X)	0.41	0.54	0.54	0.33	0.38	0.38	0.35	0.47	0.47	0.17	0.55	0.55
Avail Cap(c_a), veh/h	376	747	726	329	904	922	241	571	556	333	708	686
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	19.5	19.5	14.5	13.3	13.3	30.4	24.3	24.4	19.0	20.8	20.8
Incr Delay (d2), s/veh	3.3	2.8	2.9	0.6	1.2	1.2	4.0	2.7	2.9	0.3	3.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.9	12.8	12.5	2.7	9.2	9.4	3.8	9.6	9.5	1.6	12.6	12.3
LnGrp Delay(d),s/veh	24.1	22.3	22.4	15.1	14.5	14.5	34.4	27.0	27.3	19.2	23.8	24.0
LnGrp LOS	C	C	C	B	B	B	C	C	C	B	C	C
Approach Vol, veh/h		952			797			615			821	
Approach Delay, s/veh		22.6			14.6			28.1			23.6	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.0	33.0	8.0	42.0		40.0		50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	4.0	28.0	4.0	38.0		36.0		46.0
Max Q Clear Time (g_c+I1), s	13.8	19.9	5.0	18.7		17.3		12.5
Green Ext Time (p_c), s	0.0	5.1	0.0	10.7		8.9		14.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	25	60	94	25	26	33	295	51	15	258	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	15	27	65	102	27	28	36	321	55	16	280	13
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	191	238	187	46	36	857	1417	1204	793	1417	1204
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.76	0.76	0.76	0.76	0.76	0.76
Sat Flow, veh/h	442	1267	1583	801	308	241	1082	1863	1583	1003	1863	1583
Grp Volume(v), veh/h	42	0	65	157	0	0	36	321	55	16	280	13
Grp Sat Flow(s),veh/h/ln	1709	0	1583	1350	0	0	1082	1863	1583	1003	1863	1583
Q Serve(g_s), s	0.0	0.0	3.3	8.5	0.0	0.0	0.9	4.5	0.8	0.4	3.8	0.2
Cycle Q Clear(g_c), s	1.8	0.0	3.3	10.2	0.0	0.0	4.7	4.5	0.8	4.9	3.8	0.2
Prop In Lane	0.36		1.00	0.65		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	238	269	0	0	857	1417	1204	793	1417	1204
V/C Ratio(X)	0.13	0.00	0.27	0.58	0.00	0.00	0.04	0.23	0.05	0.02	0.20	0.01
Avail Cap(c_a), veh/h	665	0	581	576	0	0	857	1417	1204	793	1417	1204
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	0.0	33.9	37.1	0.0	0.0	3.7	3.1	2.7	3.8	3.0	2.6
Incr Delay (d2), s/veh	0.2	0.0	0.6	2.0	0.0	0.0	0.1	0.4	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	2.6	7.0	0.0	0.0	0.5	4.3	0.6	0.2	3.7	0.1
LnGrp Delay(d),s/veh	33.4	0.0	34.5	39.1	0.0	0.0	3.8	3.5	2.7	3.9	3.3	2.6
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		107			157			412			309	
Approach Delay, s/veh		34.1			39.1			3.4			3.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.5		17.5		72.5		17.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		6.7		5.3		6.9		12.2
Green Ext Time (p_c), s		4.6		1.4		4.6		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	1001	109	133	1047	13	132	6	155	9	9	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	1088	118	145	1138	14	143	7	168	10	10	11
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	2092	936	364	2467	30	374	14	340	232	180	198
Arrive On Green	0.59	0.59	0.59	0.11	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	486	3539	1583	1774	3581	44	1385	64	1529	1205	812	893
Grp Volume(v), veh/h	21	1088	118	145	562	590	143	0	175	10	0	21
Grp Sat Flow(s),veh/h/ln	486	1770	1583	1774	1770	1855	1385	0	1593	1205	0	1705
Q Serve(g_s), s	1.7	16.3	3.0	2.8	0.0	0.0	8.2	0.0	8.6	0.7	0.0	0.9
Cycle Q Clear(g_c), s	1.7	16.3	3.0	2.8	0.0	0.0	9.0	0.0	8.6	9.3	0.0	0.9
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.96	1.00		0.52
Lane Grp Cap(c), veh/h	367	2092	936	364	1219	1278	374	0	354	232	0	379
V/C Ratio(X)	0.06	0.52	0.13	0.40	0.46	0.46	0.38	0.00	0.49	0.04	0.00	0.06
Avail Cap(c_a), veh/h	367	2092	936	486	1219	1278	374	0	354	232	0	379
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.9	10.9	8.1	7.7	0.0	0.0	31.1	0.0	30.6	34.6	0.0	27.6
Incr Delay (d2), s/veh	0.3	0.9	0.3	0.7	1.3	1.2	2.9	0.0	4.9	0.3	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(95%),veh/ln	0.5	12.8	2.4	2.4	0.8	0.8	6.1	0.0	7.7	0.4	0.0	0.8
LnGrp Delay(d),s/veh	8.2	11.8	8.4	8.4	1.3	1.2	34.1	0.0	35.5	35.0	0.0	27.8
LnGrp LOS	A	B	A	A	A	A	C		D	C		C
Approach Vol, veh/h		1227			1297			318			31	
Approach Delay, s/veh		11.4			2.0			34.8			30.1	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	8.8	57.2		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		11.0	4.8	18.3		11.3		2.0
Green Ext Time (p_c), s		1.1	0.2	20.5		1.1		32.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	A

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd

7/15/2016

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	1446	1	0	1448	1	4	0	2	4	0	5
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1572	1	0	1574	1	4	0	2	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1575	0	0	1573	0	0	2370	3158	786	2371	3158	788
Stage 1	-	-	-	-	-	-	1583	1583	-	1574	1574	-
Stage 2	-	-	-	-	-	-	787	1575	-	797	1584	-
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	414	-	-	415	-	-	18	10	335	18	10	334
Stage 1	-	-	-	-	-	-	113	167	-	115	169	-
Stage 2	-	-	-	-	-	-	351	169	-	346	167	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	414	-	-	415	-	-	18	10	335	18	10	334
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	10	-	18	10	-
Stage 1	-	-	-	-	-	-	112	165	-	114	169	-
Stage 2	-	-	-	-	-	-	345	169	-	340	165	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	178.5	129.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	18	335	414	-	-	415	-	-	38
HCM Lane V/C Ratio	0.242	0.006	0.013	-	-	-	-	-	0.257
HCM Control Delay (s)	259.9	15.8	13.8	-	-	0	-	-	129.9
HCM Lane LOS	F	C	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.7	0	0	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1359	2	4	1417	7	1	0	7	4	0	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1477	2	4	1540	8	1	0	8	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1548	0	0	1479	0	0	2257	3035	740	2292	3032	774
Stage 1	-	-	-	-	-	-	1478	1478	-	1553	1553	-
Stage 2	-	-	-	-	-	-	779	1557	-	739	1479	-
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	424	-	-	451	-	-	22	13	359	21	13	341
Stage 1	-	-	-	-	-	-	132	188	-	118	173	-
Stage 2	-	-	-	-	-	-	355	172	-	375	188	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	424	-	-	451	-	-	22	13	359	20	13	341
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	13	-	20	13	-
Stage 1	-	-	-	-	-	-	132	188	-	118	171	-
Stage 2	-	-	-	-	-	-	348	170	-	367	188	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	36.5	139.1
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	123	424	-	-	451	-	-	34
HCM Lane V/C Ratio	0.071	-	-	-	0.01	-	-	0.224
HCM Control Delay (s)	36.5	0	-	-	13.1	-	-	139.1
HCM Lane LOS	E	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1377	1	1	1446	4	0	0	4	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1497	1	1	1572	4	0	0	4	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1576	0	0	1498	0	0	2292	3082	749	2331	3080	788
Stage 1	-	-	-	-	-	-	1504	1504	-	1576	1576	-
Stage 2	-	-	-	-	-	-	788	1578	-	755	1504	-
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	414	-	-	444	-	-	21	12	354	20	12	334
Stage 1	-	-	-	-	-	-	127	183	-	115	168	-
Stage 2	-	-	-	-	-	-	350	168	-	367	183	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	414	-	-	444	-	-	20	12	354	19	12	334
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	12	-	19	12	-
Stage 1	-	-	-	-	-	-	126	182	-	114	165	-
Stage 2	-	-	-	-	-	-	331	165	-	360	182	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	15.3	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	354	414	-	-	444	-	-	334
HCM Lane V/C Ratio	0.012	0.008	-	-	0.002	-	-	0.036
HCM Control Delay (s)	15.3	13.8	-	-	13.1	0.1	-	16.2
HCM Lane LOS	C	B	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 2010 Signalized Intersection Summary
8: Jokake Rd/Phoenician Blvd (N-S) & Camelback Rd

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	134	1275	11	9	1356	236	26	2	21	84	2	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	146	1386	12	10	1474	257	28	2	23	91	2	53
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	2637	23	362	2595	1161	279	23	262	307	10	273
Arrive On Green	1.00	1.00	1.00	0.98	0.98	0.98	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	279	3596	31	384	3539	1583	1343	128	1474	1380	58	1534
Grp Volume(v), veh/h	146	682	716	10	1474	257	28	0	25	91	0	55
Grp Sat Flow(s),veh/h/ln	279	1770	1857	384	1770	1583	1343	0	1603	1380	0	1592
Q Serve(g_s), s	5.2	0.0	0.0	0.1	2.1	0.5	1.6	0.0	1.2	5.3	0.0	2.6
Cycle Q Clear(g_c), s	7.3	0.0	0.0	0.1	2.1	0.5	4.3	0.0	1.2	6.5	0.0	2.6
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.92	1.00		0.96
Lane Grp Cap(c), veh/h	278	1298	1362	362	2595	1161	279	0	285	307	0	283
V/C Ratio(X)	0.53	0.53	0.53	0.03	0.57	0.22	0.10	0.00	0.09	0.30	0.00	0.19
Avail Cap(c_a), veh/h	278	1298	1362	362	2595	1161	279	0	285	307	0	283
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	0.1	0.0	0.0	0.3	0.3	0.3	33.3	0.0	30.9	33.6	0.0	31.5
Incr Delay (d2), s/veh	6.9	1.5	1.5	0.1	0.9	0.4	0.7	0.0	0.6	2.4	0.0	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(95%),veh/ln	1.4	1.0	1.0	0.0	1.4	0.5	1.2	0.0	1.0	4.0	0.0	2.3
LnGrp Delay(d),s/veh	7.0	1.5	1.5	0.4	1.2	0.7	34.1	0.0	31.5	36.1	0.0	33.0
LnGrp LOS	A	A	A	A	A	A	C		C	D		C
Approach Vol, veh/h		1544			1741			53			146	
Approach Delay, s/veh		2.0			1.2			32.9			34.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		6.3		9.3		8.5		4.1
Green Ext Time (p_c), s		0.5		49.1		0.4		52.9

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd

7/15/2016

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1387	6	2	1475	5	3	0	11	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1508	7	2	1603	5	3	0	12	16	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1609	0	0	1514	0	0	2326	3133	757	2373	3133	804
Stage 1	-	-	-	-	-	-	1520	1520	-	1610	1610	-
Stage 2	-	-	-	-	-	-	806	1613	-	763	1523	-
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	402	-	-	437	-	-	20	11	350	18	11	326
Stage 1	-	-	-	-	-	-	124	179	-	109	162	-
Stage 2	-	-	-	-	-	-	342	161	-	363	179	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	402	-	-	437	-	-	19	11	350	17	11	326
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	11	-	17	11	-
Stage 1	-	-	-	-	-	-	123	177	-	108	161	-
Stage 2	-	-	-	-	-	-	329	160	-	347	177	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	65.8	$ 385.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	74	402	-	-	437	-	-	27
HCM Lane V/C Ratio	0.206	0.011	-	-	0.005	-	-	1.006
HCM Control Delay (s)	65.8	14.1	-	-	13.3	-	-	$ 385.5
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	3.2

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

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1358	23	32	1460	5	15	0	14	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1476	25	35	1587	5	16	0	15	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1592	0	0	1501	0	0	2358	3157	751	2404	3167	796
Stage 1	-	-	-	-	-	-	1495	1495	-	1659	1659	-
Stage 2	-	-	-	-	-	-	863	1662	-	745	1508	-
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	408	-	-	442	-	-	19	11	353	17	10	330
Stage 1	-	-	-	-	-	-	129	185	-	102	153	-
Stage 2	-	-	-	-	-	-	316	153	-	372	182	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	408	-	-	442	-	-	18	10	353	15	9	330
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	10	-	15	9	-
Stage 1	-	-	-	-	-	-	128	184	-	101	141	-
Stage 2	-	-	-	-	-	-	291	141	-	353	181	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	$ 320.8	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	408	-	-	442	-	-	-
HCM Lane V/C Ratio	0.955	0.008	-	-	0.079	-	-	-
HCM Control Delay (s)	$ 320.8	13.9	-	-	13.8	-	-	0
HCM Lane LOS	F	B	-	-	B	-	-	A
HCM 95th %tile Q(veh)	3.3	0	-	-	0.3	-	-	-

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	280	1074	18	20	1081	121	27	56	26	230	37	336
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	304	1167	20	22	1175	132	29	61	28	250	40	365
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	372	2030	35	336	1679	751	336	517	440	410	517	440
Arrive On Green	0.23	1.00	1.00	0.02	0.47	0.47	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3561	61	1774	3539	1583	976	1863	1583	1303	1863	1583
Grp Volume(v), veh/h	304	580	607	22	1175	132	29	61	28	250	40	365
Grp Sat Flow(s),veh/h/ln	1774	1770	1852	1774	1770	1583	976	1863	1583	1303	1863	1583
Q Serve(g_s), s	7.9	0.0	0.0	0.6	23.5	4.3	2.0	2.2	1.2	16.0	1.4	19.5
Cycle Q Clear(g_c), s	7.9	0.0	0.0	0.6	23.5	4.3	3.5	2.2	1.2	18.2	1.4	19.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	372	1009	1056	336	1679	751	336	517	440	410	517	440
V/C Ratio(X)	0.82	0.57	0.58	0.07	0.70	0.18	0.09	0.12	0.06	0.61	0.08	0.83
Avail Cap(c_a), veh/h	445	1009	1056	382	1679	751	336	517	440	410	517	440
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	14.1	0.0	0.0	11.7	18.6	13.6	25.3	24.3	23.9	31.0	24.0	30.5
Incr Delay (d2), s/veh	9.7	2.4	2.3	0.1	2.5	0.5	0.5	0.5	0.3	6.6	0.3	16.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	1.2	1.2	0.5	17.7	3.6	1.1	2.2	1.0	10.7	1.4	15.8
LnGrp Delay(d),s/veh	23.8	2.4	2.3	11.8	21.1	14.1	25.8	24.7	24.2	37.7	24.3	46.9
LnGrp LOS	C	A	A	B	C	B	C	C	C	D	C	D
Approach Vol, veh/h		1491			1329			118			655	
Approach Delay, s/veh		6.7			20.2			24.9			42.0	
Approach LOS		A			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	5.7	55.3		29.0	14.3	46.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	4.0	49.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		5.5	2.6	2.0		21.5	9.9	25.5
Green Ext Time (p_c), s		2.9	0.0	30.0		1.2	0.4	11.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	28	0	96	15	0	5	29	414	6	3	477	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	0	104	16	0	5	32	450	7	3	518	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1041	1038	518	1090	1038	450	518	0	0	450	0	0
Stage 1	525	525	-	513	513	-	-	-	-	-	-	-
Stage 2	516	513	-	577	525	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	208	231	558	193	231	609	1048	-	-	1110	-	-
Stage 1	536	529	-	544	536	-	-	-	-	-	-	-
Stage 2	542	536	-	502	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	223	558	153	223	609	1048	-	-	1110	-	-
Mov Cap-2 Maneuver	201	223	-	153	223	-	-	-	-	-	-	-
Stage 1	520	528	-	527	520	-	-	-	-	-	-	-
Stage 2	521	520	-	407	528	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.9	26.2	0.6	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1048	-	-	201	558	153	609	1110	-	-
HCM Lane V/C Ratio	0.03	-	-	0.151	0.187	0.107	0.009	0.003	-	-
HCM Control Delay (s)	8.5	-	-	26.1	12.9	31.3	11	8.3	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	0.4	0	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	18	12	407	402	9
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	13	442	437	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	910	442	447	0	-	0
Stage 1	442	-	-	-	-	-
Stage 2	468	-	-	-	-	-
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	305	615	1113	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	301	615	1113	-	-	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	623	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1113	-	579	-	-
HCM Lane V/C Ratio	0.012	-	0.039	-	-
HCM Control Delay (s)	8.3	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	951	25	33	703	116	30	112	26	154	130	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	197	1034	27	36	764	126	33	122	28	167	141	151
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	430	3228	84	353	1567	258	298	799	178	382	492	440
Arrive On Green	0.07	0.63	0.63	0.52	0.52	0.52	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5096	133	530	3042	502	1083	2876	642	1232	1770	1583
Grp Volume(v), veh/h	197	688	373	36	444	446	33	74	76	167	141	151
Grp Sat Flow(s),veh/h/ln	1774	1695	1839	530	1770	1774	1083	1770	1749	1232	1770	1583
Q Serve(g_s), s	4.4	8.4	8.4	3.2	14.6	14.6	2.3	2.8	3.0	10.7	5.6	6.9
Cycle Q Clear(g_c), s	4.4	8.4	8.4	3.2	14.6	14.6	9.1	2.8	3.0	13.6	5.6	6.9
Prop In Lane	1.00		0.07	1.00		0.28	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	430	2147	1165	353	912	914	298	492	486	382	492	440
V/C Ratio(X)	0.46	0.32	0.32	0.10	0.49	0.49	0.11	0.15	0.16	0.44	0.29	0.34
Avail Cap(c_a), veh/h	575	2147	1165	353	912	914	298	492	486	382	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	7.6	7.6	11.4	14.1	14.1	29.6	24.5	24.5	29.7	25.5	25.9
Incr Delay (d2), s/veh	0.8	0.4	0.7	0.6	1.9	1.9	0.7	0.6	0.7	3.6	1.5	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	7.3	8.0	0.9	12.2	12.2	1.3	2.6	2.7	7.2	5.3	5.8
LnGrp Delay(d),s/veh	10.7	8.0	8.3	11.9	16.0	16.0	30.3	25.1	25.2	33.3	27.0	28.1
LnGrp LOS	B	A	A	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1258			926			183			459	
Approach Delay, s/veh		8.5			15.8			26.1			29.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	10.6	50.4
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		11.1		10.4		15.6	6.4	16.6
Green Ext Time (p_c), s		2.9		21.7		2.4	0.3	14.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	766	107	75	766	80	97	384	83	58	321	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	833	116	82	833	87	105	417	90	63	349	80
Adj No. of Lanes	1	3	0	1	3	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	2234	309	372	2704	281	309	729	156	257	956	217
Arrive On Green	0.49	0.49	0.49	0.04	0.58	0.58	0.25	0.25	0.25	0.04	0.33	0.33
Sat Flow, veh/h	605	4517	626	1774	4680	487	955	2902	621	1774	2868	650
Grp Volume(v), veh/h	118	624	325	82	602	318	105	253	254	63	214	215
Grp Sat Flow(s),veh/h/ln	605	1695	1752	1774	1695	1777	955	1770	1753	1774	1770	1748
Q Serve(g_s), s	11.2	10.3	10.4	1.9	8.2	8.3	8.5	11.2	11.4	2.3	8.2	8.4
Cycle Q Clear(g_c), s	12.0	10.3	10.4	1.9	8.2	8.3	9.5	11.2	11.4	2.3	8.2	8.4
Prop In Lane	1.00		0.36	1.00		0.27	1.00		0.35	1.00		0.37
Lane Grp Cap(c), veh/h	374	1677	867	372	1959	1027	309	444	440	257	590	583
V/C Ratio(X)	0.32	0.37	0.37	0.22	0.31	0.31	0.34	0.57	0.58	0.24	0.36	0.37
Avail Cap(c_a), veh/h	374	1677	867	382	1959	1027	309	444	440	289	590	583
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	14.1	14.1	10.3	9.8	9.8	29.2	29.4	29.5	23.2	22.7	22.8
Incr Delay (d2), s/veh	2.2	0.6	1.2	0.3	0.4	0.8	3.0	5.2	5.4	0.5	1.7	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	8.6	9.0	1.7	7.0	7.7	4.4	10.2	10.2	2.0	7.7	7.8
LnGrp Delay(d),s/veh	17.0	14.7	15.4	10.6	10.2	10.6	32.2	34.7	34.9	23.7	24.5	24.6
LnGrp LOS	B	B	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1067			1002			612			492	
Approach Delay, s/veh		15.2			10.3			34.4			24.4	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.4	26.6	7.5	48.5		34.0		56.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	5.6	21.0	4.0	44.0		30.0		52.0
Max Q Clear Time (g_c+I1), s	14.3	13.4	3.9	14.0		10.4		10.3
Green Ext Time (p_c), s	0.0	3.7	0.0	17.8		6.3		21.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	35	52	74	35	40	33	261	63	16	281	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	14	38	57	80	38	43	36	284	68	17	305	12
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	216	233	149	64	56	840	1423	1210	820	1423	1210
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.76	0.76	0.76	0.76	0.76	0.76
Sat Flow, veh/h	296	1472	1583	610	437	382	1058	1863	1583	1025	1863	1583
Grp Volume(v), veh/h	52	0	57	161	0	0	36	284	68	17	305	12
Grp Sat Flow(s),veh/h/ln	1768	0	1583	1429	0	0	1058	1863	1583	1025	1863	1583
Q Serve(g_s), s	0.0	0.0	2.9	7.7	0.0	0.0	0.9	3.8	1.0	0.4	4.2	0.2
Cycle Q Clear(g_c), s	2.2	0.0	2.9	9.9	0.0	0.0	5.0	3.8	1.0	4.2	4.2	0.2
Prop In Lane	0.27		1.00	0.50		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	0	233	270	0	0	840	1423	1210	820	1423	1210
V/C Ratio(X)	0.17	0.00	0.24	0.60	0.00	0.00	0.04	0.20	0.06	0.02	0.21	0.01
Avail Cap(c_a), veh/h	678	0	581	593	0	0	840	1423	1210	820	1423	1210
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	34.0	37.0	0.0	0.0	3.7	3.0	2.6	3.5	3.0	2.5
Incr Delay (d2), s/veh	0.3	0.0	0.5	2.1	0.0	0.0	0.1	0.3	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.0	2.3	7.2	0.0	0.0	0.5	3.6	0.8	0.2	4.1	0.1
LnGrp Delay(d),s/veh	33.9	0.0	34.5	39.2	0.0	0.0	3.8	3.3	2.7	3.6	3.3	2.5
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		109			161			388			334	
Approach Delay, s/veh		34.2			39.2			3.2			3.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.8		17.2		72.8		17.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		7.0		4.9		6.2		11.9
Green Ext Time (p_c), s		4.6		1.5		4.6		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1505	136	150	1489	18	126	12	190	14	8	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	1636	148	163	1618	20	137	13	207	15	9	13
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	2208	988	255	2586	32	327	18	284	149	130	188
Arrive On Green	0.62	0.62	0.62	0.07	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	305	3539	1583	1774	3580	44	1384	94	1503	1156	690	997
Grp Volume(v), veh/h	20	1636	148	163	799	839	137	0	220	15	0	22
Grp Sat Flow(s),veh/h/ln	305	1770	1583	1774	1770	1855	1384	0	1597	1156	0	1687
Q Serve(g_s), s	2.4	29.1	3.5	2.8	4.0	4.0	8.1	0.0	11.7	1.1	0.0	1.0
Cycle Q Clear(g_c), s	2.4	29.1	3.5	2.8	4.0	4.0	9.1	0.0	11.7	12.8	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.94	1.00		0.59
Lane Grp Cap(c), veh/h	270	2208	988	255	1278	1340	327	0	302	149	0	319
V/C Ratio(X)	0.07	0.74	0.15	0.64	0.63	0.63	0.42	0.00	0.73	0.10	0.00	0.07
Avail Cap(c_a), veh/h	270	2208	988	337	1278	1340	327	0	302	149	0	319
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	11.8	7.0	16.2	0.6	0.6	33.7	0.0	34.3	40.3	0.0	30.0
Incr Delay (d2), s/veh	0.5	2.3	0.3	2.7	2.3	2.2	3.9	0.0	14.4	1.4	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(95%),veh/ln	0.4	21.1	2.9	5.0	4.0	4.1	6.3	0.0	10.5	0.7	0.0	0.9
LnGrp Delay(d),s/veh	7.3	14.1	7.3	18.9	2.9	2.8	37.7	0.0	48.7	41.7	0.0	30.4
LnGrp LOS	A	B	A	B	A	A	D		D	D		C
Approach Vol, veh/h		1804			1801			357			37	
Approach Delay, s/veh		13.5			4.3			44.5			35.0	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	8.8	60.2		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		13.7	4.8	31.1		14.8		6.0
Green Ext Time (p_c), s		0.6	0.2	19.8		0.5		51.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1609	1	2	1583	2	2	0	4	2	0	2
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1749	1	2	1721	2	2	0	4	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1723	0	0	1750	0	0	2623	3485	875	2609	3485	861
Stage 1	-	-	-	-	-	-	1758	1758	-	1726	1726	-
Stage 2	-	-	-	-	-	-	865	1727	-	883	1759	-
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	363	-	-	354	-	-	12	6	292	12	6	299
Stage 1	-	-	-	-	-	-	88	137	-	92	142	-
Stage 2	-	-	-	-	-	-	315	142	-	307	137	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	363	-	-	354	-	-	12	6	292	12	6	299
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	6	-	12	6	-
Stage 1	-	-	-	-	-	-	87	135	-	91	141	-
Stage 2	-	-	-	-	-	-	311	141	-	299	135	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	132.5	194.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	12	292	363	-	-	354	-	-	23
HCM Lane V/C Ratio	0.181	0.015	0.012	-	-	0.006	-	-	0.189
HCM Control Delay (s)	$ 362.4	17.5	15	-	-	15.2	-	-	194.9
HCM Lane LOS	F	C	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.5	0	0	-	-	0	-	-	0.6

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1514	3	3	1615	6	5	0	9	4	0	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1646	3	3	1755	7	5	0	10	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1762	0	0	1649	0	0	2531	3415	824	2588	3414	881
Stage 1	-	-	-	-	-	-	1647	1647	-	1765	1765	-
Stage 2	-	-	-	-	-	-	884	1768	-	823	1649	-
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	351	-	-	388	-	-	14	7	316	12	7	290
Stage 1	-	-	-	-	-	-	103	155	-	87	136	-
Stage 2	-	-	-	-	-	-	307	135	-	334	155	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	351	-	-	388	-	-	14	7	316	12	7	290
Mov Cap-2 Maneuver	-	-	-	-	-	-	14	7	-	12	7	-
Stage 1	-	-	-	-	-	-	103	155	-	87	135	-
Stage 2	-	-	-	-	-	-	301	134	-	324	155	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	164.6	269.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	36	351	-	-	388	-	-	20
HCM Lane V/C Ratio	0.423	-	-	-	0.008	-	-	0.38
HCM Control Delay (s)	164.6	0	-	-	14.4	-	-	269.8
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	1517	1	1	1593	20	0	0	1	0	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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	1649	1	1	1732	22	0	0	1	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1753	0	0	1650	0	0	2546	3433	825	2598	3423	877
Stage 1	-	-	-	-	-	-	1678	1678	-	1745	1745	-
Stage 2	-	-	-	-	-	-	868	1755	-	853	1678	-
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	353	-	-	387	-	-	13	7	316	12	7	292
Stage 1	-	-	-	-	-	-	99	150	-	90	139	-
Stage 2	-	-	-	-	-	-	314	137	-	320	150	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	353	-	-	387	-	-	11	6	316	11	6	292
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	6	-	11	6	-
Stage 1	-	-	-	-	-	-	95	144	-	86	124	-
Stage 2	-	-	-	-	-	-	272	122	-	306	144	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	16.4	17.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	316	353	-	-	387	-	-	292
HCM Lane V/C Ratio	0.003	0.04	-	-	0.003	-	-	0.026
HCM Control Delay (s)	16.4	15.6	-	-	14.3	0.8	-	17.7
HCM Lane LOS	C	C	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	114	1555	11	17	1499	130	16	4	13	150	4	147
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	124	1690	12	18	1629	141	17	4	14	163	4	160
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	2642	19	223	2595	1161	181	65	226	314	7	276
Arrive On Green	0.73	0.73	0.73	1.00	1.00	1.00	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	268	3602	26	287	3539	1583	1217	364	1274	1389	39	1550
Grp Volume(v), veh/h	124	830	872	18	1629	141	17	0	18	163	0	164
Grp Sat Flow(s),veh/h/ln	268	1770	1858	287	1770	1583	1217	0	1638	1389	0	1589
Q Serve(g_s), s	20.6	21.2	21.2	2.0	0.0	0.0	1.2	0.0	0.8	9.9	0.0	8.5
Cycle Q Clear(g_c), s	20.6	21.2	21.2	23.2	0.0	0.0	9.7	0.0	0.8	10.8	0.0	8.5
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.78	1.00		0.98
Lane Grp Cap(c), veh/h	277	1298	1363	223	2595	1161	181	0	291	314	0	283
V/C Ratio(X)	0.45	0.64	0.64	0.08	0.63	0.12	0.09	0.00	0.06	0.52	0.00	0.58
Avail Cap(c_a), veh/h	277	1298	1363	223	2595	1161	181	0	291	314	0	283
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	6.0	6.0	3.7	0.0	0.0	38.4	0.0	30.8	35.2	0.0	33.9
Incr Delay (d2), s/veh	5.2	2.4	2.3	0.7	1.2	0.2	1.0	0.0	0.4	6.0	0.0	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	16.5	17.1	0.4	0.8	0.1	0.8	0.0	0.7	7.7	0.0	7.8
LnGrp Delay(d),s/veh	11.1	8.4	8.3	4.4	1.2	0.2	39.4	0.0	31.2	41.2	0.0	42.4
LnGrp LOS	B	A	A	A	A	A	D		C	D		D
Approach Vol, veh/h		1826			1788			35			327	
Approach Delay, s/veh		8.6			1.1			35.2			41.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		11.7		23.2		12.8		25.2
Green Ext Time (p_c), s		0.7		40.2		0.5		38.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	1678	11	4	1603	15	4	0	3	9	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1824	12	4	1742	16	4	0	3	10	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1759	0	0	1836	0	0	2732	3619	918	2693	3617	879
Stage 1	-	-	-	-	-	-	1852	1852	-	1759	1759	-
Stage 2	-	-	-	-	-	-	880	1767	-	934	1858	-
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	351	-	-	328	-	-	10	5	274	10	5	291
Stage 1	-	-	-	-	-	-	77	123	-	88	137	-
Stage 2	-	-	-	-	-	-	308	135	-	286	122	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	351	-	-	328	-	-	9	5	274	10	5	291
Mov Cap-2 Maneuver	-	-	-	-	-	-	9	5	-	10	5	-
Stage 1	-	-	-	-	-	-	75	119	-	85	135	-
Stage 2	-	-	-	-	-	-	297	133	-	274	118	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	$ 393.1	$ 555.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	15	351	-	-	328	-	-	16
HCM Lane V/C Ratio	0.507	0.031	-	-	0.013	-	-	1.019
HCM Control Delay (s)	$ 393.1	15.6	-	-	16.1	-	-	$ 555.5
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	2.5

Notes

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

HCM 2010 TWSC
10: 62nd St & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1607	59	43	1585	1	10	0	22	0	0	1
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1747	64	47	1723	1	11	0	24	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1724	0	0	1811	0	0	2734	3596	905	2690	3628	862
Stage 1	-	-	-	-	-	-	1779	1779	-	1817	1817	-
Stage 2	-	-	-	-	-	-	955	1817	-	873	1811	-
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	363	-	-	335	-	-	~ 10	5	279	10	5	298
Stage 1	-	-	-	-	-	-	85	133	-	81	128	-
Stage 2	-	-	-	-	-	-	278	128	-	311	129	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	363	-	-	335	-	-	~ 9	4	279	8	4	298
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	4	-	8	4	-
Stage 1	-	-	-	-	-	-	85	133	-	81	110	-
Stage 2	-	-	-	-	-	-	238	110	-	284	129	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	$ 488.7	17.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	27	363	-	-	335	-	-	298
HCM Lane V/C Ratio	1.288	-	-	-	0.14	-	-	0.004
HCM Control Delay (s)	$ 488.7	0	-	-	17.5	-	-	17.1
HCM Lane LOS	F	A	-	-	C	-	-	C
HCM 95th %tile Q(veh)	4.1	0	-	-	0.5	-	-	0

Notes

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

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	233	1294	30	26	1394	268	22	40	20	184	51	228
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	253	1407	33	28	1515	291	24	43	22	200	55	248
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	2238	52	331	2025	906	281	393	334	336	393	334
Arrive On Green	0.17	1.00	1.00	0.02	0.57	0.57	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3535	83	1774	3539	1583	1072	1863	1583	1331	1863	1583
Grp Volume(v), veh/h	253	704	736	28	1515	291	24	43	22	200	55	248
Grp Sat Flow(s),veh/h/ln	1774	1770	1848	1774	1770	1583	1072	1863	1583	1331	1863	1583
Q Serve(g_s), s	5.3	0.0	0.0	0.6	28.8	8.7	1.7	1.7	1.0	12.8	2.2	13.2
Cycle Q Clear(g_c), s	5.3	0.0	0.0	0.6	28.8	8.7	3.8	1.7	1.0	14.5	2.2	13.2
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	1120	1170	331	2025	906	281	393	334	336	393	334
V/C Ratio(X)	0.86	0.63	0.63	0.08	0.75	0.32	0.09	0.11	0.07	0.59	0.14	0.74
Avail Cap(c_a), veh/h	362	1120	1170	370	2025	906	281	393	334	336	393	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	16.5	0.0	0.0	7.5	14.4	10.1	30.4	28.7	28.4	34.5	28.9	33.2
Incr Delay (d2), s/veh	16.1	2.7	2.6	0.1	2.6	0.9	0.6	0.6	0.4	7.5	0.7	13.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.3	1.5	1.5	0.5	20.9	7.3	1.0	1.7	0.8	9.2	2.2	11.4
LnGrp Delay(d),s/veh	32.7	2.7	2.6	7.6	17.0	11.0	31.0	29.2	28.8	42.1	29.6	47.0
LnGrp LOS	C	A	A	A	B	B	C	C	C	D	C	D
Approach Vol, veh/h		1693			1834			89			503	
Approach Delay, s/veh		7.1			15.9			29.6			43.2	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	6.0	61.0		23.0	11.5	55.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	4.0	55.0		19.0	11.0	48.0
Max Q Clear Time (g_c+I1), s		5.8	2.6	2.0		16.5	7.3	30.8
Green Ext Time (p_c), s		1.9	0.0	43.4		0.6	0.3	15.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

7/13/2016

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	60	4	91	4	0	5	108	414	7	9	410	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	4	99	4	0	5	117	450	8	10	446	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1153	1150	446	1202	1150	450	446	0	0	450	0	0
Stage 1	465	465	-	685	685	-	-	-	-	-	-	-
Stage 2	688	685	-	517	465	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	174	198	612	161	198	609	1114	-	-	1110	-	-
Stage 1	578	563	-	438	448	-	-	-	-	-	-	-
Stage 2	436	448	-	541	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	158	176	612	121	176	609	1114	-	-	1110	-	-
Mov Cap-2 Maneuver	158	176	-	121	176	-	-	-	-	-	-	-
Stage 1	517	558	-	392	401	-	-	-	-	-	-	-
Stage 2	387	401	-	446	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.6	22.1	1.8	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1114	-	-	158	554	121	609	1110	-	-
HCM Lane V/C Ratio	0.105	-	-	0.413	0.186	0.036	0.009	0.009	-	-
HCM Control Delay (s)	8.6	-	-	42.9	13	35.9	11	8.3	-	-
HCM Lane LOS	A	-	-	E	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	1.8	0.7	0.1	0	0	-	-

HCM 2010 TWSC
13: 64th St & Cholla Ln 7/13/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	9	10	428	438	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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	10	11	465	476	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	966	479	482	0	-	0
Stage 1	479	-	-	-	-	-
Stage 2	487	-	-	-	-	-
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	282	587	1081	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	279	587	1081	-	-	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1081	-	529	-	-
HCM Lane V/C Ratio	0.01	-	0.025	-	-
HCM Control Delay (s)	8.4	-	12	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	8	1257	1	1	1450	6	1	0	1	5	0	1
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1366	1	1	1576	7	1	0	1	5	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1583	0	0	1367	0	0	2174	2969	684	2283	2967	791
Stage 1	-	-	-	-	-	-	1384	1384	-	1582	1582	-
Stage 2	-	-	-	-	-	-	790	1585	-	701	1385	-
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	411	-	-	498	-	-	26	14	391	21	14	332
Stage 1	-	-	-	-	-	-	151	209	-	114	167	-
Stage 2	-	-	-	-	-	-	350	167	-	395	209	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	411	-	-	498	-	-	25	14	391	21	14	332
Mov Cap-2 Maneuver	-	-	-	-	-	-	25	14	-	21	14	-
Stage 1	-	-	-	-	-	-	148	204	-	112	167	-
Stage 2	-	-	-	-	-	-	348	167	-	385	204	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	84.8	193.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	25	391	411	-	-	498	-	-	25
HCM Lane V/C Ratio	0.043	0.003	0.021	-	-	0.002	-	-	0.261
HCM Control Delay (s)	155.4	14.2	13.9	-	-	12.2	-	-	193.8
HCM Lane LOS	F	B	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	0.8

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1260	4	0	1445	3	3	0	0	3	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1370	4	0	1571	3	3	0	0	3	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1574	0	0	1374	0	0	2165	2954	687	2265	2955	787
Stage 1	-	-	-	-	-	-	1380	1380	-	1572	1572	-
Stage 2	-	-	-	-	-	-	785	1574	-	693	1383	-
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	415	-	-	495	-	-	26	14	389	22	14	334
Stage 1	-	-	-	-	-	-	152	210	-	115	169	-
Stage 2	-	-	-	-	-	-	352	169	-	400	209	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	415	-	-	495	-	-	26	14	389	22	14	334
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	14	-	22	14	-
Stage 1	-	-	-	-	-	-	151	208	-	114	169	-
Stage 2	-	-	-	-	-	-	350	169	-	396	207	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	162.4	125.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	26	415	-	-	495	-	-	35
HCM Lane V/C Ratio	0.125	0.01	-	-	-	-	-	0.155
HCM Control Delay (s)	162.4	13.8	-	-	0	-	-	125.9
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.5

HCM 2010 TWSC
7: 59th Pl & Camelback Rd 7/13/2016

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	1255	1	0	1421	14	2	0	0	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1364	1	0	1545	15	2	0	0	0	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1560	0	0	1365	0	0	2158	2946	683	2256	2939	780
Stage 1	-	-	-	-	-	-	1386	1386	-	1552	1552	-
Stage 2	-	-	-	-	-	-	772	1560	-	704	1387	-
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	420	-	-	499	-	-	27	15	392	22	15	338
Stage 1	-	-	-	-	-	-	151	209	-	119	173	-
Stage 2	-	-	-	-	-	-	358	171	-	394	208	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	420	-	-	499	-	-	26	15	392	22	15	338
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	15	-	22	15	-
Stage 1	-	-	-	-	-	-	147	204	-	116	173	-
Stage 2	-	-	-	-	-	-	349	171	-	384	203	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	155.7	15.9
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	26	420	-	-	499	-	-	338
HCM Lane V/C Ratio	0.084	0.026	-	-	-	-	-	0.026
HCM Control Delay (s)	155.7	13.8	-	-	0	-	-	15.9
HCM Lane LOS	F	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1

HCM 2010 Signalized Intersection Summary
8: Jokake Rd/Phoenician Blvd (N-S) & Camelback Rd

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	1110	15	16	1167	208	9	8	16	378	32	536
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	1207	16	17	1268	226	10	9	17	411	35	583
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1987	26	229	1966	880	80	206	388	556	32	536
Arrive On Green	0.56	0.56	0.56	0.18	0.18	0.18	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	351	3577	47	454	3539	1583	802	578	1092	1379	90	1506
Grp Volume(v), veh/h	118	597	626	17	1268	226	10	0	26	411	0	618
Grp Sat Flow(s),veh/h/ln	351	1770	1854	454	1770	1583	802	0	1670	1379	0	1597
Q Serve(g_s), s	20.1	20.4	20.4	3.0	29.9	11.0	0.0	0.0	0.9	25.0	0.0	32.0
Cycle Q Clear(g_c), s	50.0	20.4	20.4	23.4	29.9	11.0	32.0	0.0	0.9	25.9	0.0	32.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.65	1.00		0.94
Lane Grp Cap(c), veh/h	158	983	1030	229	1966	880	80	0	594	556	0	568
V/C Ratio(X)	0.74	0.61	0.61	0.07	0.64	0.26	0.12	0.00	0.04	0.74	0.00	1.09
Avail Cap(c_a), veh/h	158	983	1030	229	1966	880	80	0	594	556	0	568
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.3	13.4	13.4	35.1	28.5	20.8	45.0	0.0	19.0	27.5	0.0	29.0
Incr Delay (d2), s/veh	26.9	2.8	2.7	0.6	1.6	0.7	3.2	0.0	0.1	8.5	0.0	64.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.4	15.9	16.5	0.8	21.4	8.7	0.6	0.0	0.8	16.2	0.0	43.4
LnGrp Delay(d),s/veh	65.2	16.2	16.1	35.7	30.2	21.5	48.2	0.0	19.1	36.0	0.0	93.0
LnGrp LOS	E	B	B	D	C	C	D		B	D		F
Approach Vol, veh/h		1341			1511			36			1029	
Approach Delay, s/veh		20.5			28.9			27.2			70.3	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		54.0		36.0		54.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		32.0		50.0		32.0		50.0
Max Q Clear Time (g_c+I1), s		34.0		52.0		34.0		31.9
Green Ext Time (p_c), s		0.0		0.0		0.0		16.2

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd

7/13/2016

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	1316	1	1	1284	13	2	0	3	11	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1430	1	1	1396	14	2	0	3	12	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1410	0	0	1432	0	0	2151	2863	716	2140	2856	705
Stage 1	-	-	-	-	-	-	1451	1451	-	1405	1405	-
Stage 2	-	-	-	-	-	-	700	1412	-	735	1451	-
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	480	-	-	470	-	-	27	16	373	28	17	379
Stage 1	-	-	-	-	-	-	137	194	-	147	204	-
Stage 2	-	-	-	-	-	-	396	203	-	377	194	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	480	-	-	470	-	-	26	16	373	27	17	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	16	-	27	17	-
Stage 1	-	-	-	-	-	-	134	190	-	144	204	-
Stage 2	-	-	-	-	-	-	387	203	-	366	190	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	72.1	150.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	59	480	-	-	470	-	-	42
HCM Lane V/C Ratio	0.092	0.02	-	-	0.002	-	-	0.466
HCM Control Delay (s)	72.1	12.7	-	-	12.7	-	-	150.6
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.6

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1356	4	3	1301	2	6	0	5	0	1	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1474	4	3	1414	2	7	0	5	0	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1416	0	0	1478	0	0	2194	2903	739	2163	2905	708
Stage 1	-	-	-	-	-	-	1480	1480	-	1422	1422	-
Stage 2	-	-	-	-	-	-	714	1423	-	741	1483	-
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	477	-	-	452	-	-	25	15	360	27	15	377
Stage 1	-	-	-	-	-	-	132	188	-	143	200	-
Stage 2	-	-	-	-	-	-	388	200	-	374	187	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	477	-	-	452	-	-	23	15	360	26	15	377
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	15	-	26	15	-
Stage 1	-	-	-	-	-	-	131	187	-	142	199	-
Stage 2	-	-	-	-	-	-	380	199	-	367	186	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	129.6	77.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	40	477	-	-	452	-	-	54
HCM Lane V/C Ratio	0.299	0.005	-	-	0.007	-	-	0.081
HCM Control Delay (s)	129.6	12.6	-	-	13	-	-	77.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	186	1147	22	22	1121	163	7	31	29	192	36	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	202	1247	24	24	1218	177	8	34	32	209	39	188
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	2139	41	320	1950	872	342	455	387	386	455	387
Arrive On Green	0.09	0.80	0.80	0.02	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3552	68	1774	3539	1583	1149	1863	1583	1330	1863	1583
Grp Volume(v), veh/h	202	621	650	24	1218	177	8	34	32	209	39	188
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1583	1149	1863	1583	1330	1863	1583
Q Serve(g_s), s	4.2	11.8	11.8	0.5	21.2	5.1	0.5	1.3	1.4	12.9	1.5	9.2
Cycle Q Clear(g_c), s	4.2	11.8	11.8	0.5	21.2	5.1	1.9	1.3	1.4	14.2	1.5	9.2
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	1066	1114	320	1950	872	342	455	387	386	455	387
V/C Ratio(X)	0.62	0.58	0.58	0.08	0.62	0.20	0.02	0.07	0.08	0.54	0.09	0.49
Avail Cap(c_a), veh/h	438	1066	1114	363	1950	872	342	455	387	386	455	387
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	12.2	4.7	4.7	8.7	13.8	10.2	27.0	26.2	26.2	31.6	26.2	29.2
Incr Delay (d2), s/veh	1.9	2.3	2.2	0.1	1.5	0.5	0.1	0.3	0.4	5.3	0.4	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	10.2	10.5	0.5	16.1	4.2	0.3	1.2	1.2	9.1	1.4	8.0
LnGrp Delay(d),s/veh	14.1	7.1	7.0	8.8	15.4	10.7	27.1	26.5	26.6	37.0	26.6	33.5
LnGrp LOS	B	A	A	A	B	B	C	C	C	D	C	C
Approach Vol, veh/h		1473			1419			74			436	
Approach Delay, s/veh		8.0			14.7			26.6			34.5	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	5.8	58.2		26.0	10.4	53.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		22.0	4.0	52.0		22.0	12.0	44.0
Max Q Clear Time (g_c+I1), s		3.9	2.5	13.8		16.2	6.2	23.2
Green Ext Time (p_c), s		1.7	0.0	28.0		1.0	0.3	17.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	34	0	94	7	0	4	82	275	3	4	369	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	0	102	8	0	4	89	299	3	4	401	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	889	887	401	938	887	299	401	0	0	299	0	0
Stage 1	410	410	-	477	477	-	-	-	-	-	-	-
Stage 2	479	477	-	461	410	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	264	283	649	244	283	741	1158	-	-	1262	-	-
Stage 1	619	595	-	569	556	-	-	-	-	-	-	-
Stage 2	568	556	-	581	595	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	260	649	193	260	741	1158	-	-	1262	-	-
Mov Cap-2 Maneuver	246	260	-	193	260	-	-	-	-	-	-	-
Stage 1	571	593	-	525	513	-	-	-	-	-	-	-
Stage 2	521	513	-	488	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	19.1	1.9	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1158	-	-	246	649	193	741	1262	-	-
HCM Lane V/C Ratio	0.077	-	-	0.15	0.157	0.039	0.006	0.003	-	-
HCM Control Delay (s)	8.4	-	-	22.2	11.6	24.4	9.9	7.9	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.6	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	21	15	261	355	10
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	23	16	284	386	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	707	391	397	0	-	0
Stage 1	391	-	-	-	-	-
Stage 2	316	-	-	-	-	-
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	402	658	1162	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	396	658	1162	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	729	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1162	-	588	-	-
HCM Lane V/C Ratio	0.014	-	0.063	-	-
HCM Control Delay (s)	8.1	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

7/15/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	0	96	15	0	5	29	414	6	3	477	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	30	0	104	16	0	5	32	450	7	3	518	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	0	160	129	0	160	724	1509	1283	834	1509	1283
Arrive On Green	0.10	0.00	0.10	0.10	0.00	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	1405	0	1583	1285	0	1583	873	1863	1583	931	1863	1583
Grp Volume(v), veh/h	30	0	104	16	0	5	32	450	7	3	518	8
Grp Sat Flow(s),veh/h/ln	1405	0	1583	1285	0	1583	873	1863	1583	931	1863	1583
Q Serve(g_s), s	1.8	0.0	5.7	1.1	0.0	0.3	0.3	0.0	0.0	0.1	6.6	0.1
Cycle Q Clear(g_c), s	2.0	0.0	5.7	6.8	0.0	0.3	6.9	0.0	0.0	0.1	6.6	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	160	129	0	160	724	1509	1283	834	1509	1283
V/C Ratio(X)	0.14	0.00	0.65	0.12	0.00	0.03	0.04	0.30	0.01	0.00	0.34	0.01
Avail Cap(c_a), veh/h	388	0	352	284	0	352	724	1509	1283	834	1509	1283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	38.9	42.2	0.0	36.5	0.3	0.0	0.0	1.6	2.2	1.6
Incr Delay (d2), s/veh	0.3	0.0	4.4	0.4	0.0	0.1	0.1	0.4	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	4.8	0.7	0.0	0.2	0.1	0.3	0.0	0.0	6.4	0.1
LnGrp Delay(d),s/veh	37.7	0.0	43.3	42.6	0.0	36.6	0.4	0.4	0.0	1.6	2.9	1.6
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		134			21			489			529	
Approach Delay, s/veh		42.1			41.2			0.4			2.8	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		76.9		13.1		76.9		13.1
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		62.0		20.0		62.0		20.0
Max Q Clear Time (g_c+I1), s		8.9		7.7		8.6		8.8
Green Ext Time (p_c), s		8.3		0.5		8.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	0	94	7	0	4	82	275	3	4	369	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	37	0	102	8	0	4	89	299	3	4	401	20
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	0	150	121	0	150	817	1521	1293	956	1521	1293
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.82	0.82	0.82
Sat Flow, veh/h	1407	0	1583	1287	0	1583	962	1863	1583	1073	1863	1583
Grp Volume(v), veh/h	37	0	102	8	0	4	89	299	3	4	401	20
Grp Sat Flow(s),veh/h/ln	1407	0	1583	1287	0	1583	962	1863	1583	1073	1863	1583
Q Serve(g_s), s	2.2	0.0	5.6	0.5	0.0	0.2	0.6	0.0	0.0	0.1	4.5	0.2
Cycle Q Clear(g_c), s	2.4	0.0	5.6	6.2	0.0	0.2	5.1	0.0	0.0	0.1	4.5	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	210	0	150	121	0	150	817	1521	1293	956	1521	1293
V/C Ratio(X)	0.18	0.00	0.68	0.07	0.00	0.03	0.11	0.20	0.00	0.00	0.26	0.02
Avail Cap(c_a), veh/h	421	0	387	314	0	387	817	1521	1293	956	1521	1293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	39.4	42.4	0.0	37.0	0.2	0.0	0.0	1.5	1.9	1.5
Incr Delay (d2), s/veh	0.4	0.0	5.4	0.2	0.0	0.1	0.2	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	4.8	0.4	0.0	0.2	0.3	0.2	0.0	0.0	4.3	0.2
LnGrp Delay(d),s/veh	38.5	0.0	44.8	42.6	0.0	37.1	0.4	0.3	0.0	1.5	2.4	1.6
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		139			12			391			425	
Approach Delay, s/veh		43.1			40.8			0.3			2.3	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.5		12.5		77.5		12.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		7.1		7.6		6.5		8.2
Green Ext Time (p_c), s		5.8		0.6		5.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

7/13/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	4	91	4	0	5	108	414	7	9	410	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	65	4	99	4	0	5	117	450	8	10	446	23
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	6	144	120	0	148	779	1523	1294	840	1523	1294
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.82	0.82	0.82
Sat Flow, veh/h	1405	62	1531	1286	0	1583	920	1863	1583	930	1863	1583
Grp Volume(v), veh/h	65	0	103	4	0	5	117	450	8	10	446	23
Grp Sat Flow(s),veh/h/ln	1405	0	1593	1286	0	1583	920	1863	1583	930	1863	1583
Q Serve(g_s), s	4.0	0.0	5.6	0.3	0.0	0.3	1.0	0.0	0.0	0.2	5.2	0.2
Cycle Q Clear(g_c), s	4.2	0.0	5.6	5.9	0.0	0.3	6.1	0.0	0.0	0.2	5.2	0.2
Prop In Lane	1.00		0.96	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	208	0	149	120	0	148	779	1523	1294	840	1523	1294
V/C Ratio(X)	0.31	0.00	0.69	0.03	0.00	0.03	0.15	0.30	0.01	0.01	0.29	0.02
Avail Cap(c_a), veh/h	420	0	389	314	0	387	779	1523	1294	840	1523	1294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	0.0	39.5	42.4	0.0	37.1	0.2	0.0	0.0	1.5	2.0	1.5
Incr Delay (d2), s/veh	0.9	0.0	5.6	0.1	0.0	0.1	0.3	0.4	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	4.9	0.2	0.0	0.2	0.5	0.3	0.0	0.1	5.1	0.2
LnGrp Delay(d),s/veh	39.8	0.0	45.1	42.5	0.0	37.2	0.6	0.4	0.0	1.5	2.5	1.5
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		168			9			575			479	
Approach Delay, s/veh		43.1			39.5			0.4			2.4	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.6		12.4		77.6		12.4
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		8.1		7.6		7.2		7.9
Green Ext Time (p_c), s		8.2		0.6		8.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

APPENDIX D

TRIP GENERATION CALCULATIONS

Land Use	ITE LUC	ITE Land Use Name	Quantity	Units	AM Distribution In	AM Distribution Out	PM Distribution In	PM Distribution Out	Sat Distribution In	Sat Distribution Out
Parcel A - Resort (no additional trips)										
Parcel B - Open Space (no additional trips)										
Parcel C - Single Family Residential	210	Single-Family Detached Housing	84	Dwelling Units	25%	75%	63%	37%	54%	46%
Parcel D - Multi Family Residential	233	Luxury Condominium/Townhouse	100	Dwelling Units	23%	77%	63%	37%	54%	46%
Parcel E - Multi Family Residential	233	Luxury Condominium/Townhouse	32	Dwelling Units	23%	77%	63%	37%	54%	46%
Parcel F - Single Family Residential	210	Single-Family Detached Housing	34	Dwelling Units	25%	75%	63%	37%	54%	46%
Parcel G - Multi Family Residential	233	Luxury Condominium/Townhouse	5	Dwelling Units	23%	77%	63%	37%	54%	46%
Parcel H - Multi Family Residential	233	Luxury Condominium/Townhouse	30	Dwelling Units	23%	77%	63%	37%	54%	46%
Parcel I - Multi Family Residential	233	Luxury Condominium/Townhouse	68	Dwelling Units	23%	77%	63%	37%	54%	46%
Parcel J - Resort Casitas	330	Resort Hotel	20	Rooms	72%	28%	43%	57%	56%	44%
Parcel K - Single Family Residential	210	Single-Family Detached Housing	9	Dwelling Units	25%	75%	63%	37%	54%	46%

Notes: *Trip Generation Manual* does not provide data for the Saturday peak hour or LUC 233 Luxury peakCondominium/Townhouse - the Saturday hour rate for LUC 230 Residential Condominium/Townhouse is used instead.

	ADT		AM Peak Hour				PM Peak Hour				Sat Peak Hour			
Land Use	Avg Rate	Total	Avg Rate	In	Out	Total	Avg Rate	In	Out	Total	Avg Rate	In	Out	Total
Parcel A - Resort (no additional trips)														
Parcel B - Open Space (no additional trips)														
Parcel C - Single Family Residential	10.65	896	0.82	17	52	69	1.07	57	33	90	0.99	45	39	84
Parcel D - Multi Family Residential	5.86	586	0.56	13	43	56	0.55	35	20	55	0.47	25	22	47
Parcel E - Multi Family Residential	5.86	188	0.56	4	14	18	0.55	11	7	18	0.47	9	7	16
Parcel F - Single Family Residential	11.45	390	0.99	9	25	34	1.17	25	15	40	1.15	22	18	40
Parcel G - Multi Family Residential	5.86	30	0.56	1	2	3	0.55	2	1	3	0.47	2	1	3
Parcel H - Multi Family Residential	5.86	176	0.56	4	13	17	0.55	11	6	17	0.47	8	7	15
Parcel I - Multi Family Residential	5.86	400	0.56	9	30	39	0.55	24	14	38	0.47	17	15	32
Parcel J - Resort Casita	5.00	100	2.44	35	14	49	0.42	4	5	9	1.23	14	11	25
Parcel K - Single Family Residential	12.73	116	1.78	4	13	17	1.34	8	5	13	1.86	9	8	17
TOTALS		2,882		96	206	302		177	106	283		151	128	279

APPENDIX E

BACKGROUND TRAFFIC CALCULATIONS

Location of counts: Camelback Road, west of 56th Street
Source(s): Traffic Volume Map, Published on City of Phoenix Website (20015 and 2011)

	Year	Volume	Avg Growth Rate to 2015	Expansion Factor to 2015
End	2015	30,324		
Beginning	2011	29,418	0.8%	1.031

Growth Rate Used	0.8%
Per-Year Multiplier	1.008

Year	Expansion Factor(s)	
2016	1.000	
2017	1.008	
2018	1.016	<- Expansion factor to opening
2019	1.024	
2020	1.032	
2021	1.041	
2022	1.049	
2023	1.057	<- Expansion factor to 5 years after opening
2024	1.066	
2025	1.074	
2026	1.083	
2027	1.092	
2028	1.100	
2029	1.109	
2030	1.118	
2031	1.127	
2032	1.136	
2033	1.145	
2034	1.154	
2035	1.163	
2036	1.173	

APPENDIX F

2018 PEAK HOUR TRAFFIC ANALYSIS

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	285	772	31	23	877	183	35	194	36	184	244	403
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	310	839	34	25	953	199	38	211	39	200	265	438
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	3287	133	399	1473	307	80	765	139	303	452	405
Arrive On Green	0.11	0.66	0.66	0.51	0.51	0.51	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5014	203	632	2917	608	741	2993	544	1125	1770	1583
Grp Volume(v), veh/h	310	567	306	25	578	574	38	123	127	200	265	438
Grp Sat Flow(s),veh/h/ln	1774	1695	1827	632	1770	1755	741	1770	1767	1125	1770	1583
Q Serve(g_s), s	7.0	6.2	6.2	1.8	21.6	21.7	0.0	5.0	5.2	15.6	11.8	23.0
Cycle Q Clear(g_c), s	7.0	6.2	6.2	1.8	21.6	21.7	23.0	5.0	5.2	20.8	11.8	23.0
Prop In Lane	1.00		0.11	1.00		0.35	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	397	2222	1198	399	894	887	80	452	452	303	452	405
V/C Ratio(X)	0.78	0.25	0.26	0.06	0.65	0.65	0.47	0.27	0.28	0.66	0.59	1.08
Avail Cap(c_a), veh/h	524	2222	1198	399	894	887	80	452	452	303	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	6.4	6.4	11.5	16.4	16.4	45.0	26.8	26.9	35.2	29.3	33.5
Incr Delay (d2), s/veh	5.5	0.3	0.5	0.3	3.6	3.6	18.9	1.5	1.5	10.8	5.5	68.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	5.4	6.0	0.6	16.8	16.8	2.4	4.7	4.9	9.7	10.6	31.9
LnGrp Delay(d),s/veh	20.4	6.7	6.9	11.8	20.0	20.0	63.9	28.3	28.4	46.0	34.8	102.2
LnGrp LOS	C	A	A	B	B	C	E	C	C	D	C	F
Approach Vol, veh/h		1183			1177			288			903	
Approach Delay, s/veh		10.4			19.8			33.0			70.0	
Approach LOS		B			B			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	13.5	49.5
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		25.0		8.2		25.0	9.0	23.7
Green Ext Time (p_c), s		0.0		23.8		0.0	0.6	11.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	516	209	130	571	61	102	502	88	58	713	185
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	188	561	227	141	621	66	111	546	96	63	775	201
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	1040	420	331	1650	175	177	963	169	276	1113	289
Arrive On Green	0.42	0.42	0.42	0.04	0.51	0.51	0.32	0.32	0.32	0.04	0.40	0.40
Sat Flow, veh/h	752	2463	994	1774	3229	343	574	3012	528	1774	2783	722
Grp Volume(v), veh/h	188	403	385	141	340	347	111	320	322	63	493	483
Grp Sat Flow(s),veh/h/ln	752	1770	1687	1774	1770	1802	574	1770	1770	1774	1770	1735
Q Serve(g_s), s	18.2	15.3	15.4	4.0	10.5	10.5	15.2	13.5	13.6	2.1	20.8	20.8
Cycle Q Clear(g_c), s	20.7	15.3	15.4	4.0	10.5	10.5	28.8	13.5	13.6	2.1	20.8	20.8
Prop In Lane	1.00		0.59	1.00		0.19	1.00		0.30	1.00		0.42
Lane Grp Cap(c), veh/h	377	747	712	331	904	921	177	566	566	276	708	694
V/C Ratio(X)	0.50	0.54	0.54	0.43	0.38	0.38	0.63	0.57	0.57	0.23	0.70	0.70
Avail Cap(c_a), veh/h	377	747	712	331	904	921	177	566	566	291	708	694
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	19.4	19.5	14.9	13.3	13.3	38.4	25.4	25.5	19.5	22.5	22.5
Incr Delay (d2), s/veh	4.7	2.8	2.9	0.9	1.2	1.2	15.7	4.1	4.1	0.4	5.6	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.6	12.7	12.3	3.5	9.2	9.4	6.3	11.6	11.7	1.9	16.7	16.5
LnGrp Delay(d),s/veh	26.7	22.2	22.4	15.8	14.5	14.5	54.1	29.5	29.6	20.0	28.0	28.2
LnGrp LOS	C	C	C	B	B	B	D	C	C	B	C	C
Approach Vol, veh/h		976			828			753			1039	
Approach Delay, s/veh		23.2			14.7			33.2			27.6	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.2	32.8	8.0	42.0		40.0		50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	4.0	28.0	4.0	38.0		36.0		46.0
Max Q Clear Time (g_c+I1), s	4.1	30.8	6.0	22.7		22.8		12.5
Green Ext Time (p_c), s	0.0	0.0	0.0	9.4		8.9		14.5

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	30	95	233	49	37	77	432	158	12	636	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	16	33	103	253	53	40	84	470	172	13	691	26
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	194	375	484	352	59	45	353	1128	959	450	1128	959
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	461	1228	1583	926	194	146	731	1863	1583	784	1863	1583
Grp Volume(v), veh/h	49	0	103	346	0	0	84	470	172	13	691	26
Grp Sat Flow(s),veh/h/ln	1689	0	1583	1267	0	0	731	1863	1583	784	1863	1583
Q Serve(g_s), s	0.0	0.0	4.3	22.1	0.0	0.0	7.3	12.0	4.3	0.8	20.9	0.6
Cycle Q Clear(g_c), s	1.7	0.0	4.3	23.8	0.0	0.0	28.3	12.0	4.3	12.8	20.9	0.6
Prop In Lane	0.33		1.00	0.73		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	569	0	484	456	0	0	353	1128	959	450	1128	959
V/C Ratio(X)	0.09	0.00	0.21	0.76	0.00	0.00	0.24	0.42	0.18	0.03	0.61	0.03
Avail Cap(c_a), veh/h	669	0	581	539	0	0	353	1128	959	450	1128	959
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	23.2	30.8	0.0	0.0	20.0	9.4	7.9	12.7	11.1	7.1
Incr Delay (d2), s/veh	0.1	0.0	0.2	5.2	0.0	0.0	1.6	1.1	0.4	0.1	2.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	3.5	13.7	0.0	0.0	2.9	10.7	3.6	0.3	17.1	0.5
LnGrp Delay(d),s/veh	22.3	0.0	23.4	35.9	0.0	0.0	21.6	10.5	8.3	12.9	13.6	7.2
LnGrp LOS	C		C	D			C	B	A	B	B	A
Approach Vol, veh/h		152			346			726			730	
Approach Delay, s/veh		23.1			35.9			11.3			13.4	
Approach LOS		C			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		58.5		31.5		58.5		31.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		30.3		6.3		22.9		25.8
Green Ext Time (p_c), s		9.3		3.1		10.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1275	239	219	1318	11	211	14	273	7	19	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	1386	260	238	1433	12	229	15	297	8	21	37
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	1996	893	309	2478	21	340	17	337	115	135	237
Arrive On Green	0.56	0.56	0.56	0.16	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	367	3539	1583	1774	3597	30	1340	77	1518	1063	606	1068
Grp Volume(v), veh/h	12	1386	260	238	705	740	229	0	312	8	0	58
Grp Sat Flow(s),veh/h/ln	367	1770	1583	1774	1770	1857	1340	0	1595	1063	0	1674
Q Serve(g_s), s	1.3	25.3	7.7	5.0	0.0	0.0	15.0	0.0	17.0	0.7	0.0	2.5
Cycle Q Clear(g_c), s	1.3	25.3	7.7	5.0	0.0	0.0	17.5	0.0	17.0	17.7	0.0	2.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.95	1.00		0.64
Lane Grp Cap(c), veh/h	287	1996	893	309	1219	1280	340	0	354	115	0	372
V/C Ratio(X)	0.04	0.69	0.29	0.77	0.58	0.58	0.67	0.00	0.88	0.07	0.00	0.16
Avail Cap(c_a), veh/h	287	1996	893	383	1219	1280	340	0	354	115	0	372
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	14.1	10.2	14.8	0.0	0.0	35.2	0.0	33.8	42.4	0.0	28.2
Incr Delay (d2), s/veh	0.3	2.0	0.8	7.5	2.0	1.9	10.2	0.0	25.4	1.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	18.5	6.3	6.8	1.2	1.2	10.7	0.0	15.1	0.4	0.0	2.3
LnGrp Delay(d),s/veh	9.1	16.1	11.1	22.3	2.0	1.9	45.4	0.0	59.2	43.6	0.0	29.1
LnGrp LOS	A	B	B	C	A	A	D		E	D		C
Approach Vol, veh/h		1658			1683			541			66	
Approach Delay, s/veh		15.3			4.8			53.4			30.8	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	11.3	54.7		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		19.5	7.0	27.3		19.7		2.0
Green Ext Time (p_c), s		0.2	0.3	17.9		0.1		46.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	1447	1	0	1445	1	4	0	2	4	0	5
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1573	1	0	1571	1	4	0	2	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1572	0	0	1574	0	0	2371	3158	787	2370	3158	786
Stage 1	-	-	-	-	-	-	1586	1586	-	1571	1571	-
Stage 2	-	-	-	-	-	-	785	1572	-	799	1587	-
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	415	-	-	415	-	-	18	10	334	18	10	335
Stage 1	-	-	-	-	-	-	113	166	-	115	169	-
Stage 2	-	-	-	-	-	-	352	169	-	345	166	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	415	-	-	415	-	-	17	10	334	18	10	335
Mov Cap-2 Maneuver	-	-	-	-	-	-	17	10	-	18	10	-
Stage 1	-	-	-	-	-	-	111	163	-	113	169	-
Stage 2	-	-	-	-	-	-	346	169	-	337	163	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	190.7	129.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	17	334	415	-	-	415	-	-	38
HCM Lane V/C Ratio	0.256	0.007	0.016	-	-	-	-	-	0.257
HCM Control Delay (s)	278.2	15.8	13.8	-	-	0	-	-	129.9
HCM Lane LOS	F	C	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.7	0	0	-	-	0	-	-	0.8

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1361	2	4	1415	6	1	0	7	4	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1479	2	4	1538	7	1	0	8	4	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1545	0	0	1482	0	0	2258	3033	741	2290	3032	772
Stage 1	-	-	-	-	-	-	1480	1480	-	1550	1550	-
Stage 2	-	-	-	-	-	-	778	1553	-	740	1482	-
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	426	-	-	450	-	-	22	13	359	21	13	342
Stage 1	-	-	-	-	-	-	132	188	-	119	173	-
Stage 2	-	-	-	-	-	-	355	173	-	375	187	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	426	-	-	450	-	-	22	13	359	20	13	342
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	13	-	20	13	-
Stage 1	-	-	-	-	-	-	132	188	-	119	171	-
Stage 2	-	-	-	-	-	-	350	171	-	367	187	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	36.5	162
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	123	426	-	-	450	-	-	29
HCM Lane V/C Ratio	0.071	-	-	-	0.01	-	-	0.225
HCM Control Delay (s)	36.5	0	-	-	13.1	-	-	162
HCM Lane LOS	E	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1379	1	1	1449	2	0	0	4	0	0	5
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1499	1	1	1575	2	0	0	4	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1577	0	0	1500	0	0	2294	3083	750	2332	3082	789
Stage 1	-	-	-	-	-	-	1504	1504	-	1578	1578	-
Stage 2	-	-	-	-	-	-	790	1579	-	754	1504	-
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	414	-	-	443	-	-	21	12	354	20	12	333
Stage 1	-	-	-	-	-	-	127	183	-	114	168	-
Stage 2	-	-	-	-	-	-	350	168	-	367	183	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	414	-	-	443	-	-	20	12	354	19	12	333
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	12	-	19	12	-
Stage 1	-	-	-	-	-	-	126	182	-	113	165	-
Stage 2	-	-	-	-	-	-	338	165	-	361	182	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	15.3	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	354	414	-	-	443	-	-	333
HCM Lane V/C Ratio	0.012	0.005	-	-	0.002	-	-	0.016
HCM Control Delay (s)	15.3	13.7	-	-	13.1	0.1	-	16
HCM Lane LOS	C	B	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	136	1275	11	9	1354	239	26	2	21	82	2	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	1386	12	10	1472	260	28	2	23	89	2	58
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	2637	23	362	2595	1161	275	23	262	307	9	273
Arrive On Green	1.00	1.00	1.00	0.98	0.98	0.98	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	278	3596	31	384	3539	1583	1337	128	1474	1380	53	1538
Grp Volume(v), veh/h	148	682	716	10	1472	260	28	0	25	89	0	60
Grp Sat Flow(s),veh/h/ln	278	1770	1857	384	1770	1583	1337	0	1603	1380	0	1591
Q Serve(g_s), s	5.4	0.0	0.0	0.1	2.1	0.5	1.6	0.0	1.2	5.2	0.0	2.9
Cycle Q Clear(g_c), s	7.5	0.0	0.0	0.1	2.1	0.5	4.5	0.0	1.2	6.4	0.0	2.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.92	1.00		0.97
Lane Grp Cap(c), veh/h	278	1298	1362	362	2595	1161	275	0	285	307	0	283
V/C Ratio(X)	0.53	0.53	0.53	0.03	0.57	0.22	0.10	0.00	0.09	0.29	0.00	0.21
Avail Cap(c_a), veh/h	278	1298	1362	362	2595	1161	275	0	285	307	0	283
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	0.1	0.0	0.0	0.3	0.3	0.3	33.6	0.0	30.9	33.6	0.0	31.6
Incr Delay (d2), s/veh	7.1	1.5	1.5	0.1	0.9	0.4	0.7	0.0	0.6	2.4	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	1.0	1.0	0.0	1.4	0.5	1.2	0.0	1.0	3.9	0.0	2.5
LnGrp Delay(d),s/veh	7.3	1.5	1.5	0.4	1.2	0.7	34.3	0.0	31.5	35.9	0.0	33.3
LnGrp LOS	A	A	A	A	A	A	C		C	D		C
Approach Vol, veh/h		1546			1742			53			149	
Approach Delay, s/veh		2.0			1.2			33.0			34.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		6.5		9.5		8.4		4.1
Green Ext Time (p_c), s		0.5		49.0		0.4		53.0

Intersection Summary	
HCM 2010 Ctrl Delay	3.5
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1384	6	2	1476	5	3	0	11	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1504	7	2	1604	5	3	0	12	16	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1610	0	0	1511	0	0	2323	3130	755	2372	3131	805
Stage 1	-	-	-	-	-	-	1516	1516	-	1611	1611	-
Stage 2	-	-	-	-	-	-	807	1614	-	761	1520	-
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	402	-	-	439	-	-	20	11	351	18	11	325
Stage 1	-	-	-	-	-	-	125	180	-	109	162	-
Stage 2	-	-	-	-	-	-	341	161	-	364	179	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	402	-	-	439	-	-	19	11	351	17	11	325
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	11	-	17	11	-
Stage 1	-	-	-	-	-	-	124	178	-	108	161	-
Stage 2	-	-	-	-	-	-	328	160	-	348	177	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	65.8	$ 385.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	74	402	-	-	439	-	-	27
HCM Lane V/C Ratio	0.206	0.011	-	-	0.005	-	-	1.006
HCM Control Delay (s)	65.8	14.1	-	-	13.2	-	-	$ 385.5
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	3.2

Notes

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

HCM 2010 TWSC
10: 62nd St & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1355	23	32	1460	5	15	0	14	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1473	25	35	1587	5	16	0	15	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1592	0	0	1498	0	0	2355	3154	749	2402	3163	796
Stage 1	-	-	-	-	-	-	1492	1492	-	1659	1659	-
Stage 2	-	-	-	-	-	-	863	1662	-	743	1504	-
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	408	-	-	444	-	-	19	11	354	17	10	330
Stage 1	-	-	-	-	-	-	129	185	-	102	153	-
Stage 2	-	-	-	-	-	-	316	153	-	373	183	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	408	-	-	444	-	-	18	10	354	15	9	330
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	10	-	15	9	-
Stage 1	-	-	-	-	-	-	128	184	-	101	141	-
Stage 2	-	-	-	-	-	-	291	141	-	354	182	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	$ 320.8	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	408	-	-	444	-	-	-
HCM Lane V/C Ratio	0.955	0.008	-	-	0.078	-	-	-
HCM Control Delay (s)	$ 320.8	13.9	-	-	13.8	-	-	0
HCM Lane LOS	F	B	-	-	B	-	-	A
HCM 95th %tile Q(veh)	3.3	0	-	-	0.3	-	-	-

Notes

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

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	281	1071	18	20	1082	121	27	56	26	230	37	335
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	305	1164	20	22	1176	132	29	61	28	250	40	364
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	2030	35	337	1678	751	336	517	440	410	517	440
Arrive On Green	0.23	1.00	1.00	0.02	0.47	0.47	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3560	61	1774	3539	1583	977	1863	1583	1303	1863	1583
Grp Volume(v), veh/h	305	578	606	22	1176	132	29	61	28	250	40	364
Grp Sat Flow(s),veh/h/ln	1774	1770	1852	1774	1770	1583	977	1863	1583	1303	1863	1583
Q Serve(g_s), s	8.0	0.0	0.0	0.6	23.6	4.3	2.0	2.2	1.2	16.0	1.4	19.4
Cycle Q Clear(g_c), s	8.0	0.0	0.0	0.6	23.6	4.3	3.5	2.2	1.2	18.2	1.4	19.4
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	1009	1056	337	1678	751	336	517	440	410	517	440
V/C Ratio(X)	0.82	0.57	0.57	0.07	0.70	0.18	0.09	0.12	0.06	0.61	0.08	0.83
Avail Cap(c_a), veh/h	445	1009	1056	382	1678	751	336	517	440	410	517	440
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	14.1	0.0	0.0	11.7	18.6	13.6	25.3	24.3	23.9	31.0	24.0	30.5
Incr Delay (d2), s/veh	9.8	2.4	2.3	0.1	2.5	0.5	0.5	0.5	0.3	6.6	0.3	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	1.2	1.2	0.5	17.7	3.6	1.1	2.2	1.0	10.7	1.4	15.8
LnGrp Delay(d),s/veh	24.0	2.4	2.3	11.8	21.1	14.1	25.8	24.7	24.2	37.7	24.3	46.7
LnGrp LOS	C	A	A	B	C	B	C	C	C	D	C	D
Approach Vol, veh/h		1489			1330			118			654	
Approach Delay, s/veh		6.8			20.3			24.9			41.9	
Approach LOS		A			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	5.7	55.3		29.0	14.3	46.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	4.0	49.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		5.5	2.6	2.0		21.4	10.0	25.6
Green Ext Time (p_c), s		2.9	0.0	30.0		1.2	0.4	11.4

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	27	0	95	15	0	5	31	413	6	3	476	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	0	103	16	0	5	34	449	7	3	517	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1043	1040	517	1092	1040	449	517	0	0	449	0	0
Stage 1	524	524	-	516	516	-	-	-	-	-	-	-
Stage 2	519	516	-	576	524	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	207	230	558	192	230	610	1049	-	-	1111	-	-
Stage 1	537	530	-	542	534	-	-	-	-	-	-	-
Stage 2	540	534	-	503	530	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	200	222	558	152	222	610	1049	-	-	1111	-	-
Mov Cap-2 Maneuver	200	222	-	152	222	-	-	-	-	-	-	-
Stage 1	520	529	-	524	517	-	-	-	-	-	-	-
Stage 2	518	517	-	409	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	26.4	0.6	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1049	-	-	200	558	152	610	1111	-	-
HCM Lane V/C Ratio	0.032	-	-	0.147	0.185	0.107	0.009	0.003	-	-
HCM Control Delay (s)	8.5	-	-	26.1	12.9	31.5	11	8.2	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	0.4	0	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	17	11	406	402	9
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	18	12	441	437	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	907	442	447	0	-	0
Stage 1	442	-	-	-	-	-
Stage 2	465	-	-	-	-	-
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	306	615	1113	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	303	615	1113	-	-	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1113	- 577	-	-
HCM Lane V/C Ratio	0.011	- 0.038	-	-
HCM Control Delay (s)	8.3	- 11.5	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	222	1033	23	33	830	176	21	134	33	193	143	243
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	241	1123	25	36	902	191	23	146	36	210	155	264
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	3242	72	325	1459	309	208	787	189	364	492	440
Arrive On Green	0.09	0.63	0.63	0.50	0.50	0.50	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5119	114	488	2908	615	964	2833	680	1197	1770	1583
Grp Volume(v), veh/h	241	744	404	36	549	544	23	90	92	210	155	264
Grp Sat Flow(s),veh/h/ln	1774	1695	1843	488	1770	1754	964	1770	1743	1197	1770	1583
Q Serve(g_s), s	5.5	9.3	9.3	3.6	20.2	20.2	1.9	3.5	3.6	14.6	6.2	13.0
Cycle Q Clear(g_c), s	5.5	9.3	9.3	3.6	20.2	20.2	14.9	3.5	3.6	18.2	6.2	13.0
Prop In Lane	1.00		0.06	1.00		0.35	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	377	2147	1167	325	888	880	208	492	484	364	492	440
V/C Ratio(X)	0.64	0.35	0.35	0.11	0.62	0.62	0.11	0.18	0.19	0.58	0.32	0.60
Avail Cap(c_a), veh/h	498	2147	1167	325	888	880	208	492	484	364	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	7.7	7.8	12.1	16.2	16.2	34.6	24.7	24.8	31.7	25.7	28.2
Incr Delay (d2), s/veh	1.8	0.4	0.8	0.7	3.2	3.3	1.1	0.8	0.9	6.5	1.7	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	7.8	8.5	1.0	15.9	15.8	1.0	3.3	3.3	9.3	5.9	10.5
LnGrp Delay(d),s/veh	14.8	8.2	8.6	12.8	19.4	19.5	35.7	25.5	25.7	38.2	27.4	34.1
LnGrp LOS	B	A	A	B	B	B	D	C	C	D	C	C
Approach Vol, veh/h		1389			1129			205			629	
Approach Delay, s/veh		9.5			19.2			26.7			33.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	11.9	49.1
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		16.9		11.3		20.2	7.5	22.2
Green Ext Time (p_c), s		3.0		26.4		2.0	0.4	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	720	188	98	609	56	140	445	109	56	449	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	114	783	204	107	662	61	152	484	118	61	488	104
Adj No. of Lanes	1	3	0	1	3	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	1970	509	366	2740	251	243	713	173	224	969	205
Arrive On Green	0.49	0.49	0.49	0.04	0.58	0.58	0.25	0.25	0.25	0.04	0.33	0.33
Sat Flow, veh/h	727	4029	1041	1774	4743	434	821	2826	685	1774	2907	616
Grp Volume(v), veh/h	114	658	329	107	472	251	152	302	300	61	296	296
Grp Sat Flow(s),veh/h/ln	727	1695	1679	1774	1695	1786	821	1770	1742	1774	1770	1754
Q Serve(g_s), s	8.5	11.1	11.2	2.6	6.1	6.2	16.4	13.8	14.0	2.2	12.1	12.2
Cycle Q Clear(g_c), s	8.5	11.1	11.2	2.6	6.1	6.2	21.3	13.8	14.0	2.2	12.1	12.2
Prop In Lane	1.00		0.62	1.00		0.24	1.00		0.39	1.00		0.35
Lane Grp Cap(c), veh/h	436	1657	821	366	1959	1032	243	446	439	224	590	585
V/C Ratio(X)	0.26	0.40	0.40	0.29	0.24	0.24	0.63	0.68	0.68	0.27	0.50	0.51
Avail Cap(c_a), veh/h	436	1657	821	366	1959	1032	243	446	439	257	590	585
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	14.6	14.6	10.7	9.3	9.3	35.5	30.3	30.4	23.7	24.0	24.1
Incr Delay (d2), s/veh	1.5	0.7	1.5	0.4	0.3	0.6	11.6	8.0	8.3	0.7	3.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	9.0	9.3	2.3	5.2	5.8	8.0	12.3	12.3	2.0	10.5	10.5
LnGrp Delay(d),s/veh	15.4	15.3	16.1	11.1	9.6	9.9	47.2	38.3	38.7	24.3	27.0	27.2
LnGrp LOS	B	B	B	B	A	A	D	D	D	C	C	C
Approach Vol, veh/h		1101			830			754			653	
Approach Delay, s/veh		15.5			9.9			40.3			26.8	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.3	26.7	8.0	48.0		34.0		56.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	5.6	21.0	4.0	44.0		30.0		52.0
Max Q Clear Time (g_c+I1), s	14.2	23.3	4.6	13.2		14.2		8.2
Green Ext Time (p_c), s	0.0	0.0	0.0	16.2		7.7		19.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	63	50	92	58	31	66	336	111	25	423	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	21	68	54	100	63	34	72	365	121	27	460	28
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	278	298	170	97	43	652	1347	1145	674	1347	1145
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	259	1478	1583	583	514	229	904	1863	1583	906	1863	1583
Grp Volume(v), veh/h	89	0	54	197	0	0	72	365	121	27	460	28
Grp Sat Flow(s),veh/h/ln	737	0	1583	1326	0	0	904	1863	1583	906	1863	1583
Q Serve(g_s), s	0.0	0.0	2.6	9.5	0.0	0.0	2.9	6.1	2.1	1.0	8.2	0.4
Cycle Q Clear(g_c), s	3.7	0.0	2.6	13.2	0.0	0.0	11.0	6.1	2.1	7.0	8.2	0.4
Prop In Lane	0.24		1.00	0.51		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	0	298	310	0	0	652	1347	1145	674	1347	1145
V/C Ratio(X)	0.24	0.00	0.18	0.64	0.00	0.00	0.11	0.27	0.11	0.04	0.34	0.02
Avail Cap(c_a), veh/h	677	0	581	572	0	0	652	1347	1145	674	1347	1145
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	30.7	35.5	0.0	0.0	6.6	4.3	3.7	5.5	4.6	3.5
Incr Delay (d2), s/veh	0.3	0.0	0.3	2.2	0.0	0.0	0.3	0.5	0.2	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	2.1	8.5	0.0	0.0	1.4	5.8	1.7	0.5	7.8	0.4
LnGrp Delay(d),s/veh	31.5	0.0	31.0	37.6	0.0	0.0	7.0	4.8	3.9	5.6	5.3	3.6
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		143			197			558			515	
Approach Delay, s/veh		31.3			37.6			4.9			5.2	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		69.1		20.9		69.1		20.9
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		13.0		5.7		10.2		15.2
Green Ext Time (p_c), s		7.5		2.0		7.6		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1404	198	243	1451	10	162	14	187	12	16	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	15	1526	215	264	1577	11	176	15	203	13	17	18
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	2122	949	300	2602	18	315	21	281	151	157	166
Arrive On Green	0.60	0.60	0.60	0.10	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	320	3539	1583	1774	3603	25	1368	110	1490	1158	829	878
Grp Volume(v), veh/h	15	1526	215	264	774	814	176	0	218	13	0	35
Grp Sat Flow(s),veh/h/ln	320	1770	1583	1774	1770	1858	1368	0	1600	1158	0	1708
Q Serve(g_s), s	1.8	27.3	5.7	4.9	3.7	3.7	11.0	0.0	11.5	1.0	0.0	1.5
Cycle Q Clear(g_c), s	1.8	27.3	5.7	4.9	3.7	3.7	12.5	0.0	11.5	12.5	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.93	1.00		0.51
Lane Grp Cap(c), veh/h	272	2122	949	300	1278	1342	315	0	302	151	0	323
V/C Ratio(X)	0.06	0.72	0.23	0.88	0.61	0.61	0.56	0.00	0.72	0.09	0.00	0.11
Avail Cap(c_a), veh/h	272	2122	949	339	1278	1342	315	0	302	151	0	323
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.6	12.7	8.3	17.4	0.6	0.6	35.4	0.0	34.3	40.1	0.0	30.2
Incr Delay (d2), s/veh	0.4	2.1	0.6	20.6	2.1	2.0	7.0	0.0	13.9	1.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	19.9	4.7	9.6	3.8	3.9	8.3	0.0	10.4	0.6	0.0	1.4
LnGrp Delay(d),s/veh	8.0	14.8	8.9	38.0	2.7	2.6	42.4	0.0	48.2	41.3	0.0	30.9
LnGrp LOS	A	B	A	D	A	A	D		D	D		C
Approach Vol, veh/h		1756			1852			394			48	
Approach Delay, s/veh		14.0			7.7			45.6			33.7	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	11.0	58.0		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		14.5	6.9	29.3		14.5		5.7
Green Ext Time (p_c), s		0.6	0.2	21.1		0.6		49.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd

11/7/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1586	1	2	1571	2	2	0	4	2	0	2
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1724	1	2	1708	2	2	0	4	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1710	0	0	1725	0	0	2591	3447	863	2584	3447	855
Stage 1	-	-	-	-	-	-	1733	1733	-	1713	1713	-
Stage 2	-	-	-	-	-	-	858	1714	-	871	1734	-
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	367	-	-	362	-	-	12	7	298	13	7	302
Stage 1	-	-	-	-	-	-	91	141	-	94	144	-
Stage 2	-	-	-	-	-	-	318	144	-	312	141	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	367	-	-	362	-	-	12	7	298	13	7	302
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	7	-	13	7	-
Stage 1	-	-	-	-	-	-	90	139	-	93	143	-
Stage 2	-	-	-	-	-	-	314	143	-	304	139	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	132.3	177.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	12	298	367	-	-	362	-	-	25
HCM Lane V/C Ratio	0.181	0.015	0.012	-	-	0.006	-	-	0.174
HCM Control Delay (s)	$ 362.4	17.3	14.9	-	-	15	-	-	177.2
HCM Lane LOS	F	C	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.5	0	0	-	-	0	-	-	0.5

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1491	3	3	1603	6	5	0	9	4	0	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1621	3	3	1742	7	5	0	10	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1749	0	0	1624	0	0	2500	3377	812	2562	3376	874
Stage 1	-	-	-	-	-	-	1622	1622	-	1752	1752	-
Stage 2	-	-	-	-	-	-	878	1755	-	810	1624	-
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	355	-	-	397	-	-	15	7	322	13	7	293
Stage 1	-	-	-	-	-	-	107	160	-	89	138	-
Stage 2	-	-	-	-	-	-	309	137	-	340	159	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	355	-	-	397	-	-	15	7	322	13	7	293
Mov Cap-2 Maneuver	-	-	-	-	-	-	15	7	-	13	7	-
Stage 1	-	-	-	-	-	-	107	160	-	89	137	-
Stage 2	-	-	-	-	-	-	303	136	-	330	159	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	147.3	238.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	39	355	-	-	397	-	-	22
HCM Lane V/C Ratio	0.39	-	-	-	0.008	-	-	0.346
HCM Control Delay (s)	147.3	0	-	-	14.1	-	-	238.5
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	1

HCM 2010 TWSC
7: 59th Pl & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1502	1	1	1587	7	0	0	1	0	0	2
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1633	1	1	1725	8	0	0	1	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1733	0	0	1634	0	0	2507	3377	817	2556	3373	866
Stage 1	-	-	-	-	-	-	1642	1642	-	1731	1731	-
Stage 2	-	-	-	-	-	-	865	1735	-	825	1642	-
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	360	-	-	393	-	-	14	7	320	13	8	297
Stage 1	-	-	-	-	-	-	104	156	-	91	141	-
Stage 2	-	-	-	-	-	-	315	140	-	333	156	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	360	-	-	393	-	-	13	6	320	12	7	297
Mov Cap-2 Maneuver	-	-	-	-	-	-	13	6	-	12	7	-
Stage 1	-	-	-	-	-	-	103	154	-	90	131	-
Stage 2	-	-	-	-	-	-	291	130	-	328	154	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	16.3	17.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	320	360	-	-	393	-	-	297
HCM Lane V/C Ratio	0.003	0.012	-	-	0.003	-	-	0.007
HCM Control Delay (s)	16.3	15.1	-	-	14.2	0.5	-	17.2
HCM Lane LOS	C	C	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

HCM 2010 Signalized Intersection Summary
8: Jokake Rd/Phoenician Blvd (N-S) & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	1546	11	17	1481	122	16	4	13	140	4	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	1680	12	18	1610	133	17	4	14	152	4	158
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	282	2642	19	225	2595	1161	183	65	226	314	7	276
Arrive On Green	0.73	0.73	0.73	1.00	1.00	1.00	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	276	3602	26	290	3539	1583	1219	364	1274	1389	39	1550
Grp Volume(v), veh/h	118	825	867	18	1610	133	17	0	18	152	0	162
Grp Sat Flow(s),veh/h/ln	276	1770	1858	290	1770	1583	1219	0	1638	1389	0	1589
Q Serve(g_s), s	18.0	21.0	21.0	1.9	0.0	0.0	1.2	0.0	0.8	9.2	0.0	8.4
Cycle Q Clear(g_c), s	18.0	21.0	21.0	22.9	0.0	0.0	9.6	0.0	0.8	10.0	0.0	8.4
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.78	1.00		0.98
Lane Grp Cap(c), veh/h	282	1298	1363	225	2595	1161	183	0	291	314	0	283
V/C Ratio(X)	0.42	0.64	0.64	0.08	0.62	0.11	0.09	0.00	0.06	0.48	0.00	0.57
Avail Cap(c_a), veh/h	282	1298	1363	225	2595	1161	183	0	291	314	0	283
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	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	6.0	6.0	3.7	0.0	0.0	38.3	0.0	30.8	34.9	0.0	33.9
Incr Delay (d2), s/veh	4.5	2.4	2.3	0.7	1.1	0.2	1.0	0.0	0.4	5.2	0.0	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	16.4	17.0	0.3	0.7	0.1	0.8	0.0	0.7	7.1	0.0	7.7
LnGrp Delay(d),s/veh	10.1	8.4	8.3	4.3	1.1	0.2	39.3	0.0	31.2	40.2	0.0	42.1
LnGrp LOS	B	A	A	A	A	A	D		C	D		D
Approach Vol, veh/h		1810			1761			35			314	
Approach Delay, s/veh		8.4			1.1			35.1			41.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		11.6		23.0		12.0		24.9
Green Ext Time (p_c), s		0.7		40.2		0.6		38.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd

11/7/2016

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	1659	11	4	1577	15	4	0	3	9	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1803	12	4	1714	16	4	0	3	10	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1730	0	0	1815	0	0	2697	3570	908	2654	3568	865
Stage 1	-	-	-	-	-	-	1831	1831	-	1731	1731	-
Stage 2	-	-	-	-	-	-	866	1739	-	923	1837	-
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	361	-	-	334	-	-	10	6	278	11	6	297
Stage 1	-	-	-	-	-	-	79	126	-	91	141	-
Stage 2	-	-	-	-	-	-	314	140	-	290	125	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	361	-	-	334	-	-	9	6	278	11	6	297
Mov Cap-2 Maneuver	-	-	-	-	-	-	9	6	-	11	6	-
Stage 1	-	-	-	-	-	-	77	122	-	88	139	-
Stage 2	-	-	-	-	-	-	303	138	-	278	121	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	$ 393.1	$ 470.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	15	361	-	-	334	-	-	18
HCM Lane V/C Ratio	0.507	0.03	-	-	0.013	-	-	0.906
HCM Control Delay (s)	$ 393.1	15.3	-	-	15.9	-	-	$ 470.1
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	2.4

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

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1588	59	43	1559	1	10	0	22	0	0	1
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1726	64	47	1695	1	11	0	24	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1696	0	0	1790	0	0	2699	3547	895	2652	3579	848
Stage 1	-	-	-	-	-	-	1758	1758	-	1789	1789	-
Stage 2	-	-	-	-	-	-	941	1789	-	863	1790	-
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	372	-	-	342	-	-	~ 10	6	284	11	5	305
Stage 1	-	-	-	-	-	-	88	137	-	84	132	-
Stage 2	-	-	-	-	-	-	283	132	-	316	132	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	372	-	-	342	-	-	~ 9	5	284	9	4	305
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	5	-	9	4	-
Stage 1	-	-	-	-	-	-	88	137	-	84	114	-
Stage 2	-	-	-	-	-	-	243	114	-	289	132	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	$ 488.7	16.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	27	372	-	-	342	-	-	305
HCM Lane V/C Ratio	1.288	-	-	-	0.137	-	-	0.004
HCM Control Delay (s)	$ 488.7	0	-	-	17.2	-	-	16.8
HCM Lane LOS	F	A	-	-	C	-	-	C
HCM 95th %tile Q(veh)	4.1	0	-	-	0.5	-	-	0

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	224	1284	30	26	1373	257	22	40	20	178	51	223
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	243	1396	33	28	1492	279	24	43	22	193	55	242
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	2238	53	334	2035	911	282	393	334	336	393	334
Arrive On Green	0.16	1.00	1.00	0.02	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3534	83	1774	3539	1583	1078	1863	1583	1331	1863	1583
Grp Volume(v), veh/h	243	698	731	28	1492	279	24	43	22	193	55	242
Grp Sat Flow(s),veh/h/ln	1774	1770	1848	1774	1770	1583	1078	1863	1583	1331	1863	1583
Q Serve(g_s), s	5.0	0.0	0.0	0.6	27.9	8.2	1.7	1.7	1.0	12.3	2.2	12.8
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.6	27.9	8.2	3.8	1.7	1.0	14.0	2.2	12.8
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	1120	1170	334	2035	911	282	393	334	336	393	334
V/C Ratio(X)	0.83	0.62	0.62	0.08	0.73	0.31	0.09	0.11	0.07	0.57	0.14	0.72
Avail Cap(c_a), veh/h	368	1120	1170	373	2035	911	282	393	334	336	393	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	16.2	0.0	0.0	7.4	14.0	9.9	30.4	28.7	28.4	34.3	28.9	33.1
Incr Delay (d2), s/veh	11.9	2.6	2.5	0.1	2.4	0.9	0.6	0.6	0.4	7.0	0.7	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.6	1.5	1.5	0.5	20.3	6.8	1.0	1.7	0.8	8.9	2.2	11.0
LnGrp Delay(d),s/veh	28.0	2.6	2.5	7.5	16.4	10.7	31.0	29.2	28.8	41.3	29.6	45.9
LnGrp LOS	C	A	A	A	B	B	C	C	C	D	C	D
Approach Vol, veh/h		1672			1799			89			490	
Approach Delay, s/veh		6.3			15.4			29.6			42.2	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	6.0	61.0		23.0	11.2	55.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	4.0	55.0		19.0	11.0	48.0
Max Q Clear Time (g_c+I1), s		5.8	2.6	2.0		16.0	7.0	29.9
Green Ext Time (p_c), s		1.9	0.0	42.9		0.7	0.3	16.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W) 11/7/2016

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	58	4	81	4	0	5	88	414	7	9	410	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	4	88	4	0	5	96	450	8	10	446	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1109	1106	446	1152	1106	450	446	0	0	450	0	0
Stage 1	465	465	-	641	641	-	-	-	-	-	-	-
Stage 2	644	641	-	511	465	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	187	210	612	175	210	609	1114	-	-	1110	-	-
Stage 1	578	563	-	463	469	-	-	-	-	-	-	-
Stage 2	461	469	-	545	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	172	190	612	137	190	609	1114	-	-	1110	-	-
Mov Cap-2 Maneuver	172	190	-	137	190	-	-	-	-	-	-	-
Stage 1	528	558	-	423	429	-	-	-	-	-	-	-
Stage 2	418	429	-	459	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.9	20.4	1.5	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1114	-	-	172	554	137	609	1110	-	-
HCM Lane V/C Ratio	0.086	-	-	0.367	0.167	0.032	0.009	0.009	-	-
HCM Control Delay (s)	8.5	-	-	37.6	12.8	32.1	11	8.3	-	-
HCM Lane LOS	A	-	-	E	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.6	0.6	0.1	0	0	-	-

HCM 2010 TWSC
13: 64th St & Cholla Ln 11/7/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	9	10	426	434	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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	10	11	463	472	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	959	474	477	0	-	0
Stage 1	474	-	-	-	-	-
Stage 2	485	-	-	-	-	-
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	285	590	1085	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	282	590	1085	-	-	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1085	-	532	-	-
HCM Lane V/C Ratio	0.01	-	0.025	-	-
HCM Control Delay (s)	8.4	-	11.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	1240	1	1	1435	5	1	0	1	5	0	1
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1348	1	1	1560	5	1	0	1	5	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1565	0	0	1349	0	0	2146	2931	674	2254	2929	783
Stage 1	-	-	-	-	-	-	1364	1364	-	1565	1565	-
Stage 2	-	-	-	-	-	-	782	1567	-	689	1364	-
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	418	-	-	506	-	-	27	15	397	23	15	337
Stage 1	-	-	-	-	-	-	155	214	-	116	170	-
Stage 2	-	-	-	-	-	-	353	170	-	402	214	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	418	-	-	506	-	-	26	15	397	23	15	337
Mov Cap-2 Maneuver	-	-	-	-	-	-	26	15	-	23	15	-
Stage 1	-	-	-	-	-	-	152	210	-	114	170	-
Stage 2	-	-	-	-	-	-	351	170	-	393	210	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	81.8	176.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	26	397	418	-	-	506	-	-	27
HCM Lane V/C Ratio	0.042	0.003	0.018	-	-	0.002	-	-	0.242
HCM Control Delay (s)	149.4	14.1	13.8	-	-	12.1	-	-	176.5
HCM Lane LOS	F	B	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	0.7

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1243	4	0	1429	3	3	0	0	3	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1351	4	0	1553	3	3	0	0	3	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1557	0	0	1355	0	0	2139	2919	678	2239	2919	778
Stage 1	-	-	-	-	-	-	1362	1362	-	1555	1555	-
Stage 2	-	-	-	-	-	-	777	1557	-	684	1364	-
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	421	-	-	504	-	-	28	15	395	23	15	339
Stage 1	-	-	-	-	-	-	156	214	-	118	172	-
Stage 2	-	-	-	-	-	-	356	172	-	405	214	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	421	-	-	504	-	-	28	15	395	23	15	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	15	-	23	15	-
Stage 1	-	-	-	-	-	-	155	212	-	117	172	-
Stage 2	-	-	-	-	-	-	354	172	-	401	212	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	149.9	118.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	421	-	-	504	-	-	37
HCM Lane V/C Ratio	0.116	0.01	-	-	-	-	-	0.147
HCM Control Delay (s)	149.9	13.6	-	-	0	-	-	118.4
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1244	1	0	1410	5	2	0	0	0	0	3
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1352	1	0	1533	5	2	0	0	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1538	0	0	1353	0	0	2125	2897	677	2218	2895	769
Stage 1	-	-	-	-	-	-	1359	1359	-	1535	1535	-
Stage 2	-	-	-	-	-	-	766	1538	-	683	1360	-
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	428	-	-	504	-	-	28	16	395	24	16	344
Stage 1	-	-	-	-	-	-	157	215	-	122	176	-
Stage 2	-	-	-	-	-	-	361	176	-	405	215	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	428	-	-	504	-	-	28	16	395	24	16	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	16	-	24	16	-
Stage 1	-	-	-	-	-	-	156	213	-	121	176	-
Stage 2	-	-	-	-	-	-	358	176	-	402	213	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	144.1	15.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	28	428	-	-	504	-	-	344
HCM Lane V/C Ratio	0.078	0.008	-	-	-	-	-	0.009
HCM Control Delay (s)	144.1	13.5	-	-	0	-	-	15.6
HCM Lane LOS	F	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	1103	15	16	1151	202	9	8	16	364	32	532
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	114	1199	16	17	1251	220	10	9	17	396	35	578
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	1987	27	232	1966	880	80	206	388	556	32	535
Arrive On Green	0.56	0.56	0.56	0.18	0.18	0.18	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	358	3576	48	458	3539	1583	806	578	1092	1379	91	1506
Grp Volume(v), veh/h	114	593	622	17	1251	220	10	0	26	396	0	613
Grp Sat Flow(s),veh/h/ln	358	1770	1854	458	1770	1583	806	0	1670	1379	0	1597
Q Serve(g_s), s	20.6	20.2	20.2	3.0	29.4	10.7	0.0	0.0	0.9	23.7	0.0	32.0
Cycle Q Clear(g_c), s	50.0	20.2	20.2	23.2	29.4	10.7	32.0	0.0	0.9	24.7	0.0	32.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.65	1.00		0.94
Lane Grp Cap(c), veh/h	162	983	1030	232	1966	880	80	0	594	556	0	568
V/C Ratio(X)	0.70	0.60	0.60	0.07	0.64	0.25	0.12	0.00	0.04	0.71	0.00	1.08
Avail Cap(c_a), veh/h	162	983	1030	232	1966	880	80	0	594	556	0	568
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	13.4	13.4	34.9	28.3	20.7	45.0	0.0	19.0	27.1	0.0	29.0
Incr Delay (d2), s/veh	22.6	2.7	2.6	0.6	1.6	0.7	3.2	0.0	0.1	7.6	0.0	61.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.9	15.8	16.4	0.8	21.2	8.5	0.6	0.0	0.8	15.4	0.0	42.6
LnGrp Delay(d),s/veh	60.2	16.1	16.0	35.5	29.9	21.4	48.2	0.0	19.1	34.6	0.0	90.0
LnGrp LOS	E	B	B	D	C	C	D		B	C		F
Approach Vol, veh/h		1329			1488			36			1009	
Approach Delay, s/veh		19.8			28.7			27.2			68.3	
Approach LOS		B			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		54.0		36.0		54.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		32.0		50.0		32.0		50.0
Max Q Clear Time (g_c+I1), s		34.0		52.0		34.0		31.4
Green Ext Time (p_c), s		0.0		0.0		0.0		16.5

Intersection Summary	
HCM 2010 Ctrl Delay	36.0
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	1296	1	1	1262	13	2	0	3	11	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1409	1	1	1372	14	2	0	3	12	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1386	0	0	1410	0	0	2117	2817	705	2105	2810	693
Stage 1	-	-	-	-	-	-	1429	1429	-	1381	1381	-
Stage 2	-	-	-	-	-	-	688	1388	-	724	1429	-
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	490	-	-	480	-	-	29	18	379	29	18	386
Stage 1	-	-	-	-	-	-	142	199	-	152	210	-
Stage 2	-	-	-	-	-	-	403	208	-	383	199	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	490	-	-	480	-	-	28	18	379	28	18	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	18	-	28	18	-
Stage 1	-	-	-	-	-	-	139	195	-	149	210	-
Stage 2	-	-	-	-	-	-	394	208	-	372	195	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	67.5	140.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	63	490	-	-	480	-	-	44
HCM Lane V/C Ratio	0.086	0.02	-	-	0.002	-	-	0.445
HCM Control Delay (s)	67.5	12.5	-	-	12.5	-	-	140.7
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.6

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1335	4	3	1278	2	6	0	5	0	1	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1451	4	3	1389	2	7	0	5	0	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1391	0	0	1455	0	0	2160	2856	728	2127	2857	696
Stage 1	-	-	-	-	-	-	1458	1458	-	1397	1397	-
Stage 2	-	-	-	-	-	-	702	1398	-	730	1460	-
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	488	-	-	461	-	-	27	17	366	28	17	384
Stage 1	-	-	-	-	-	-	136	192	-	148	206	-
Stage 2	-	-	-	-	-	-	395	206	-	380	192	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	488	-	-	461	-	-	25	17	366	27	17	384
Mov Cap-2 Maneuver	-	-	-	-	-	-	25	17	-	27	17	-
Stage 1	-	-	-	-	-	-	135	191	-	147	205	-
Stage 2	-	-	-	-	-	-	387	205	-	373	191	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	118.3	69.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	43	488	-	-	461	-	-	60
HCM Lane V/C Ratio	0.278	0.004	-	-	0.007	-	-	0.072
HCM Control Delay (s)	118.3	12.4	-	-	12.9	-	-	69.6
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.2

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	1133	22	22	1105	155	7	31	29	186	36	168
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	195	1232	24	24	1201	168	8	34	32	202	39	183
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	2138	42	324	1957	876	343	455	387	386	455	387
Arrive On Green	0.09	0.80	0.80	0.02	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3551	69	1774	3539	1583	1154	1863	1583	1330	1863	1583
Grp Volume(v), veh/h	195	614	642	24	1201	168	8	34	32	202	39	183
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1583	1154	1863	1583	1330	1863	1583
Q Serve(g_s), s	4.0	11.5	11.6	0.5	20.7	4.8	0.5	1.3	1.4	12.4	1.5	8.9
Cycle Q Clear(g_c), s	4.0	11.5	11.6	0.5	20.7	4.8	1.9	1.3	1.4	13.7	1.5	8.9
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	1066	1114	324	1957	876	343	455	387	386	455	387
V/C Ratio(X)	0.59	0.58	0.58	0.07	0.61	0.19	0.02	0.07	0.08	0.52	0.09	0.47
Avail Cap(c_a), veh/h	444	1066	1114	367	1957	876	343	455	387	386	455	387
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	11.6	4.7	4.7	8.6	13.6	10.1	27.0	26.2	26.2	31.4	26.2	29.0
Incr Delay (d2), s/veh	1.7	2.3	2.2	0.1	1.4	0.5	0.1	0.3	0.4	5.0	0.4	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	10.1	10.4	0.5	15.7	3.9	0.3	1.2	1.2	8.8	1.4	7.7
LnGrp Delay(d),s/veh	13.3	7.0	6.9	8.7	15.1	10.5	27.1	26.5	26.6	36.4	26.6	33.1
LnGrp LOS	B	A	A	A	B	B	C	C	C	D	C	C
Approach Vol, veh/h		1451			1393			74			424	
Approach Delay, s/veh		7.8			14.4			26.6			34.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	5.8	58.2		26.0	10.2	53.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		22.0	4.0	52.0		22.0	12.0	44.0
Max Q Clear Time (g_c+I1), s		3.9	2.5	13.6		15.7	6.0	22.7
Green Ext Time (p_c), s		1.7	0.0	27.7		1.0	0.3	17.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	32	0	82	7	0	4	67	275	3	4	369	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	0	89	8	0	4	73	299	3	4	401	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	857	855	401	899	855	299	401	0	0	299	0	0
Stage 1	410	410	-	445	445	-	-	-	-	-	-	-
Stage 2	447	445	-	454	410	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	277	296	649	260	296	741	1158	-	-	1262	-	-
Stage 1	619	595	-	592	575	-	-	-	-	-	-	-
Stage 2	591	575	-	586	595	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	261	276	649	213	276	741	1158	-	-	1262	-	-
Mov Cap-2 Maneuver	261	276	-	213	276	-	-	-	-	-	-	-
Stage 1	580	593	-	555	539	-	-	-	-	-	-	-
Stage 2	550	539	-	504	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	17.9	1.6	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1158	-	-	261	649	213	741	1262	-	-
HCM Lane V/C Ratio	0.063	-	-	0.133	0.137	0.036	0.006	0.003	-	-
HCM Control Delay (s)	8.3	-	-	20.9	11.4	22.5	9.9	7.9	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.5	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	21	15	259	353	10
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	23	16	282	384	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	703	389	395	0	-	0
Stage 1	389	-	-	-	-	-
Stage 2	314	-	-	-	-	-
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	404	659	1164	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	398	659	1164	-	-	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1164	- 590	-	-
HCM Lane V/C Ratio	0.014	- 0.063	-	-
HCM Control Delay (s)	8.1	- 11.5	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	285	772	31	23	877	183	35	194	36	184	244	403
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	310	839	34	25	953	199	38	211	39	200	265	329
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	3287	133	399	1473	307	129	765	139	303	452	405
Arrive On Green	0.11	0.66	0.66	0.51	0.51	0.51	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5014	203	632	2917	608	820	2993	544	1125	1770	1583
Grp Volume(v), veh/h	310	567	306	25	578	574	38	123	127	200	265	329
Grp Sat Flow(s),veh/h/ln	1774	1695	1827	632	1770	1755	820	1770	1767	1125	1770	1583
Q Serve(g_s), s	7.0	6.2	6.2	1.8	21.6	21.7	4.1	5.0	5.2	15.6	11.8	17.6
Cycle Q Clear(g_c), s	7.0	6.2	6.2	1.8	21.6	21.7	21.7	5.0	5.2	20.8	11.8	17.6
Prop In Lane	1.00		0.11	1.00		0.35	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	397	2222	1198	399	894	887	129	452	452	303	452	405
V/C Ratio(X)	0.78	0.25	0.26	0.06	0.65	0.65	0.29	0.27	0.28	0.66	0.59	0.81
Avail Cap(c_a), veh/h	524	2222	1198	399	894	887	129	452	452	303	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	6.4	6.4	11.5	16.4	16.4	41.7	26.8	26.9	35.2	29.3	31.5
Incr Delay (d2), s/veh	5.5	0.3	0.5	0.3	3.6	3.6	5.7	1.5	1.5	10.8	5.5	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	5.4	6.0	0.6	16.8	16.8	2.0	4.7	4.9	9.7	10.6	14.6
LnGrp Delay(d),s/veh	20.4	6.7	6.9	11.8	20.0	20.0	47.3	28.3	28.4	46.0	34.8	47.7
LnGrp LOS	C	A	A	B	B	C	D	C	C	D	C	D
Approach Vol, veh/h		1183			1177			288			794	
Approach Delay, s/veh		10.4			19.8			30.9			43.0	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	13.5	49.5
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		23.7		8.2		22.8	9.0	23.7
Green Ext Time (p_c), s		0.0		23.8		0.1	0.6	11.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1275	239	219	1318	11	211	14	273	7	19	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	12	1386	260	238	1433	12	229	15	254	8	21	37
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	1996	893	309	2478	21	340	20	335	151	135	237
Arrive On Green	0.56	0.56	0.56	0.16	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	367	3539	1583	1774	3597	30	1340	89	1508	1106	606	1068
Grp Volume(v), veh/h	12	1386	260	238	705	740	229	0	269	8	0	58
Grp Sat Flow(s),veh/h/ln	367	1770	1583	1774	1770	1857	1340	0	1597	1106	0	1674
Q Serve(g_s), s	1.3	25.3	7.7	5.0	0.0	0.0	15.0	0.0	14.2	0.6	0.0	2.5
Cycle Q Clear(g_c), s	1.3	25.3	7.7	5.0	0.0	0.0	17.5	0.0	14.2	14.8	0.0	2.5
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.94	1.00		0.64
Lane Grp Cap(c), veh/h	287	1996	893	309	1219	1280	340	0	355	151	0	372
V/C Ratio(X)	0.04	0.69	0.29	0.77	0.58	0.58	0.67	0.00	0.76	0.05	0.00	0.16
Avail Cap(c_a), veh/h	287	1996	893	383	1219	1280	340	0	355	151	0	372
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	14.1	10.2	14.8	0.0	0.0	35.2	0.0	32.7	39.7	0.0	28.2
Incr Delay (d2), s/veh	0.3	2.0	0.8	7.5	2.0	1.9	10.2	0.0	14.1	0.7	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	18.5	6.3	6.8	1.2	1.2	10.7	0.0	12.1	0.4	0.0	2.3
LnGrp Delay(d),s/veh	9.1	16.1	11.1	22.3	2.0	1.9	45.4	0.0	46.8	40.3	0.0	29.1
LnGrp LOS	A	B	B	C	A	A	D		D	D		C
Approach Vol, veh/h		1658			1683			498			66	
Approach Delay, s/veh		15.3			4.8			46.2			30.5	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	11.3	54.7		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		19.5	7.0	27.3		16.8		2.0
Green Ext Time (p_c), s		0.2	0.3	17.9		0.9		46.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	0	95	15	0	5	31	413	6	3	476	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	29	0	103	16	0	5	34	449	7	3	517	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	0	159	128	0	159	725	1511	1284	835	1511	1284
Arrive On Green	0.10	0.00	0.10	0.10	0.00	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	1405	0	1583	1286	0	1583	874	1863	1583	931	1863	1583
Grp Volume(v), veh/h	29	0	103	16	0	5	34	449	7	3	517	8
Grp Sat Flow(s),veh/h/ln	1405	0	1583	1286	0	1583	874	1863	1583	931	1863	1583
Q Serve(g_s), s	1.7	0.0	5.6	1.1	0.0	0.3	0.3	0.0	0.0	0.1	6.5	0.1
Cycle Q Clear(g_c), s	2.0	0.0	5.6	6.7	0.0	0.3	6.9	0.0	0.0	0.1	6.5	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	0	159	128	0	159	725	1511	1284	835	1511	1284
V/C Ratio(X)	0.13	0.00	0.65	0.12	0.00	0.03	0.05	0.30	0.01	0.00	0.34	0.01
Avail Cap(c_a), veh/h	388	0	352	285	0	352	725	1511	1284	835	1511	1284
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	39.0	42.2	0.0	36.5	0.3	0.0	0.0	1.6	2.2	1.6
Incr Delay (d2), s/veh	0.3	0.0	4.4	0.4	0.0	0.1	0.1	0.4	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.8	0.7	0.0	0.2	0.2	0.3	0.0	0.0	6.4	0.1
LnGrp Delay(d),s/veh	37.7	0.0	43.4	42.6	0.0	36.6	0.4	0.4	0.0	1.6	2.8	1.6
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		132			21			490			528	
Approach Delay, s/veh		42.1			41.2			0.4			2.8	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.0		13.0		77.0		13.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		62.0		20.0		62.0		20.0
Max Q Clear Time (g_c+I1), s		8.9		7.6		8.5		8.7
Green Ext Time (p_c), s		8.3		0.5		8.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	222	1033	23	33	830	176	21	134	33	193	143	243
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	241	1123	25	36	902	191	23	146	36	210	155	264
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	3242	72	325	1459	309	208	787	189	364	492	440
Arrive On Green	0.09	0.63	0.63	0.50	0.50	0.50	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5119	114	488	2908	615	964	2833	680	1197	1770	1583
Grp Volume(v), veh/h	241	744	404	36	549	544	23	90	92	210	155	264
Grp Sat Flow(s),veh/h/ln	1774	1695	1843	488	1770	1754	964	1770	1743	1197	1770	1583
Q Serve(g_s), s	5.5	9.3	9.3	3.6	20.2	20.2	1.9	3.5	3.6	14.6	6.2	13.0
Cycle Q Clear(g_c), s	5.5	9.3	9.3	3.6	20.2	20.2	14.9	3.5	3.6	18.2	6.2	13.0
Prop In Lane	1.00		0.06	1.00		0.35	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	377	2147	1167	325	888	880	208	492	484	364	492	440
V/C Ratio(X)	0.64	0.35	0.35	0.11	0.62	0.62	0.11	0.18	0.19	0.58	0.32	0.60
Avail Cap(c_a), veh/h	498	2147	1167	325	888	880	208	492	484	364	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	7.7	7.8	12.1	16.2	16.2	34.6	24.7	24.8	31.7	25.7	28.2
Incr Delay (d2), s/veh	1.8	0.4	0.8	0.7	3.2	3.3	1.1	0.8	0.9	6.5	1.7	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	7.8	8.5	1.0	15.9	15.8	1.0	3.3	3.3	9.3	5.9	10.5
LnGrp Delay(d),s/veh	14.8	8.2	8.6	12.8	19.4	19.5	35.7	25.5	25.7	38.2	27.4	34.1
LnGrp LOS	B	A	A	B	B	B	D	C	C	D	C	C
Approach Vol, veh/h		1389			1129			205			629	
Approach Delay, s/veh		9.5			19.2			26.7			33.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	11.9	49.1
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		16.9		11.3		20.2	7.5	22.2
Green Ext Time (p_c), s		3.0		26.4		2.0	0.4	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	1404	198	243	1451	10	162	14	187	12	16	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	15	1526	215	264	1577	11	176	15	203	13	17	18
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	2122	949	300	2602	18	315	21	281	151	157	166
Arrive On Green	0.60	0.60	0.60	0.10	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	320	3539	1583	1774	3603	25	1368	110	1490	1158	829	878
Grp Volume(v), veh/h	15	1526	215	264	774	814	176	0	218	13	0	35
Grp Sat Flow(s),veh/h/ln	320	1770	1583	1774	1770	1858	1368	0	1600	1158	0	1708
Q Serve(g_s), s	1.8	27.3	5.7	4.9	3.7	3.7	11.0	0.0	11.5	1.0	0.0	1.5
Cycle Q Clear(g_c), s	1.8	27.3	5.7	4.9	3.7	3.7	12.5	0.0	11.5	12.5	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.93	1.00		0.51
Lane Grp Cap(c), veh/h	272	2122	949	300	1278	1342	315	0	302	151	0	323
V/C Ratio(X)	0.06	0.72	0.23	0.88	0.61	0.61	0.56	0.00	0.72	0.09	0.00	0.11
Avail Cap(c_a), veh/h	272	2122	949	339	1278	1342	315	0	302	151	0	323
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.6	12.7	8.3	17.4	0.6	0.6	35.4	0.0	34.3	40.1	0.0	30.2
Incr Delay (d2), s/veh	0.4	2.1	0.6	20.6	2.1	2.0	7.0	0.0	13.9	1.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	19.9	4.7	9.6	3.8	3.9	8.3	0.0	10.4	0.6	0.0	1.4
LnGrp Delay(d),s/veh	8.0	14.8	8.9	38.0	2.7	2.6	42.4	0.0	48.2	41.3	0.0	30.9
LnGrp LOS	A	B	A	D	A	A	D		D	D		C
Approach Vol, veh/h		1756			1852			394			48	
Approach Delay, s/veh		14.0			7.7			45.6			33.7	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	11.0	58.0		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		14.5	6.9	29.3		14.5		5.7
Green Ext Time (p_c), s		0.6	0.2	21.1		0.6		49.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	4	81	4	0	5	88	414	7	9	410	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	63	4	88	4	0	5	96	450	8	10	446	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	6	131	119	0	136	792	1537	1306	847	1537	1306
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.82	0.82	0.82
Sat Flow, veh/h	1405	69	1524	1299	0	1583	925	1863	1583	930	1863	1583
Grp Volume(v), veh/h	63	0	92	4	0	5	96	450	8	10	446	18
Grp Sat Flow(s),veh/h/ln	1405	0	1594	1299	0	1583	925	1863	1583	930	1863	1583
Q Serve(g_s), s	3.9	0.0	5.0	0.3	0.0	0.3	0.7	0.0	0.0	0.2	5.0	0.2
Cycle Q Clear(g_c), s	4.1	0.0	5.0	5.3	0.0	0.3	5.7	0.0	0.0	0.2	5.0	0.2
Prop In Lane	1.00		0.96	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	0	137	119	0	136	792	1537	1306	847	1537	1306
V/C Ratio(X)	0.32	0.00	0.67	0.03	0.00	0.04	0.12	0.29	0.01	0.01	0.29	0.01
Avail Cap(c_a), veh/h	419	0	390	325	0	387	792	1537	1306	847	1537	1306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	0.0	39.9	42.5	0.0	37.7	0.2	0.0	0.0	1.4	1.8	1.4
Incr Delay (d2), s/veh	0.9	0.0	5.5	0.1	0.0	0.1	0.3	0.4	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	4.4	0.2	0.0	0.2	0.4	0.3	0.0	0.1	4.8	0.1
LnGrp Delay(d),s/veh	40.5	0.0	45.4	42.6	0.0	37.8	0.5	0.4	0.0	1.4	2.3	1.4
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		155			9			554			474	
Approach Delay, s/veh		43.4			39.9			0.4			2.2	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.2		11.8		78.2		11.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		7.7		7.0		7.0		7.3
Green Ext Time (p_c), s		8.0		0.6		8.0		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	0	82	7	0	4	67	275	3	4	369	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	35	0	89	8	0	4	73	299	3	4	401	17
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	0	135	120	0	135	831	1539	1308	966	1539	1308
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.83	0.83	0.83
Sat Flow, veh/h	1407	0	1583	1303	0	1583	965	1863	1583	1073	1863	1583
Grp Volume(v), veh/h	35	0	89	8	0	4	73	299	3	4	401	17
Grp Sat Flow(s),veh/h/ln	1407	0	1583	1303	0	1583	965	1863	1583	1073	1863	1583
Q Serve(g_s), s	2.1	0.0	4.9	0.5	0.0	0.2	0.4	0.0	0.0	0.1	4.3	0.2
Cycle Q Clear(g_c), s	2.3	0.0	4.9	5.4	0.0	0.2	4.7	0.0	0.0	0.1	4.3	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	0	135	120	0	135	831	1539	1308	966	1539	1308
V/C Ratio(X)	0.18	0.00	0.66	0.07	0.00	0.03	0.09	0.19	0.00	0.00	0.26	0.01
Avail Cap(c_a), veh/h	421	0	387	327	0	387	831	1539	1308	966	1539	1308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	39.9	42.5	0.0	37.8	0.1	0.0	0.0	1.4	1.7	1.4
Incr Delay (d2), s/veh	0.4	0.0	5.4	0.2	0.0	0.1	0.2	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	4.2	0.4	0.0	0.2	0.3	0.2	0.0	0.0	4.1	0.1
LnGrp Delay(d),s/veh	39.2	0.0	45.3	42.8	0.0	37.8	0.3	0.3	0.0	1.4	2.1	1.4
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		124			12			375			422	
Approach Delay, s/veh		43.6			41.1			0.3			2.1	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.3		11.7		78.3		11.7
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		6.7		6.9		6.3		7.4
Green Ext Time (p_c), s		5.6		0.5		5.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

APPENDIX G

2023 PEAK HOUR TRAFFIC ANALYSIS

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	301	816	33	24	927	193	37	205	38	195	258	425
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	327	887	36	26	1008	210	40	223	41	212	280	462
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	385	3287	133	381	1459	303	80	765	138	296	452	405
Arrive On Green	0.11	0.66	0.66	0.50	0.50	0.50	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5014	203	603	2919	607	715	2995	542	1111	1770	1583
Grp Volume(v), veh/h	327	599	324	26	610	608	40	130	134	212	280	462
Grp Sat Flow(s),veh/h/ln	1774	1695	1827	603	1770	1756	715	1770	1767	1111	1770	1583
Q Serve(g_s), s	7.5	6.7	6.7	2.0	23.7	23.8	0.0	5.3	5.5	17.1	12.6	23.0
Cycle Q Clear(g_c), s	7.5	6.7	6.7	2.0	23.7	23.8	23.0	5.3	5.5	22.6	12.6	23.0
Prop In Lane	1.00		0.11	1.00		0.35	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	385	2222	1198	381	884	877	80	452	452	296	452	405
V/C Ratio(X)	0.85	0.27	0.27	0.07	0.69	0.69	0.50	0.29	0.30	0.72	0.62	1.14
Avail Cap(c_a), veh/h	503	2222	1198	381	884	877	80	452	452	296	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	6.5	6.5	11.8	17.2	17.2	45.0	26.9	27.0	36.1	29.6	33.5
Incr Delay (d2), s/veh	10.4	0.3	0.6	0.3	4.4	4.5	20.6	1.6	1.7	13.8	6.2	89.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.2	5.7	6.3	0.7	18.4	18.4	2.6	5.1	5.2	10.5	11.2	36.1
LnGrp Delay(d),s/veh	26.6	6.8	7.0	12.1	21.6	21.7	65.6	28.5	28.6	49.9	35.9	122.9
LnGrp LOS	C	A	A	B	C	C	E	C	C	D	D	F
Approach Vol, veh/h		1250			1244			304			954	
Approach Delay, s/veh		12.0			21.4			33.5			81.1	
Approach LOS		B			C			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	14.0	49.0
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		25.0		8.7		25.0	9.5	25.8
Green Ext Time (p_c), s		0.0		26.0		0.0	0.6	10.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	183	546	221	137	604	64	108	530	93	61	753	196
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	199	593	240	149	657	70	117	576	101	66	818	213
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	360	1039	420	315	1650	176	162	959	168	265	1112	290
Arrive On Green	0.42	0.42	0.42	0.04	0.51	0.51	0.32	0.32	0.32	0.04	0.40	0.40
Sat Flow, veh/h	725	2462	995	1774	3228	344	545	3013	527	1774	2781	724
Grp Volume(v), veh/h	199	426	407	149	360	367	117	338	339	66	521	510
Grp Sat Flow(s),veh/h/ln	725	1770	1687	1774	1770	1802	545	1770	1770	1774	1770	1735
Q Serve(g_s), s	20.9	16.5	16.5	4.0	11.2	11.3	13.5	14.5	14.6	2.2	22.5	22.5
Cycle Q Clear(g_c), s	24.2	16.5	16.5	4.0	11.2	11.3	28.6	14.5	14.6	2.2	22.5	22.5
Prop In Lane	1.00		0.59	1.00		0.19	1.00		0.30	1.00		0.42
Lane Grp Cap(c), veh/h	360	747	712	315	904	921	162	563	563	265	708	694
V/C Ratio(X)	0.55	0.57	0.57	0.47	0.40	0.40	0.72	0.60	0.60	0.25	0.74	0.74
Avail Cap(c_a), veh/h	360	747	712	315	904	921	162	563	563	278	708	694
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	19.8	19.8	15.9	13.5	13.5	40.3	25.9	25.9	19.8	23.0	23.0
Incr Delay (d2), s/veh	6.0	3.1	3.3	1.1	1.3	1.3	24.4	4.7	4.7	0.5	6.7	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.3	13.5	13.1	2.1	9.7	9.9	7.2	12.3	12.4	1.9	18.1	17.8
LnGrp Delay(d),s/veh	29.4	22.9	23.1	17.0	14.8	14.8	64.7	30.5	30.6	20.2	29.6	29.8
LnGrp LOS	C	C	C	B	B	B	E	C	C	C	C	C
Approach Vol, veh/h		1032			876			794			1097	
Approach Delay, s/veh		24.2			15.2			35.6			29.1	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	7.4	32.6	8.0	42.0		40.0		50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	4.6	28.0	4.0	38.0		36.0		46.0
Max Q Clear Time (g_c+I1), s	4.2	30.6	6.0	26.2		24.5		13.3
Green Ext Time (p_c), s	0.0	0.0	0.0	8.2		8.4		15.6

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	30	95	233	49	37	77	456	158	12	671	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	16	33	103	253	53	40	84	496	172	13	729	26
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	194	375	484	352	59	45	328	1128	959	434	1128	959
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	461	1228	1583	926	194	146	706	1863	1583	766	1863	1583
Grp Volume(v), veh/h	49	0	103	346	0	0	84	496	172	13	729	26
Grp Sat Flow(s),veh/h/ln	1689	0	1583	1267	0	0	706	1863	1583	766	1863	1583
Q Serve(g_s), s	0.0	0.0	4.3	22.1	0.0	0.0	7.9	12.9	4.3	0.8	22.8	0.6
Cycle Q Clear(g_c), s	1.7	0.0	4.3	23.8	0.0	0.0	30.7	12.9	4.3	13.7	22.8	0.6
Prop In Lane	0.33		1.00	0.73		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	569	0	484	456	0	0	328	1128	959	434	1128	959
V/C Ratio(X)	0.09	0.00	0.21	0.76	0.00	0.00	0.26	0.44	0.18	0.03	0.65	0.03
Avail Cap(c_a), veh/h	669	0	581	539	0	0	328	1128	959	434	1128	959
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	23.2	30.8	0.0	0.0	21.5	9.6	7.9	13.2	11.5	7.1
Incr Delay (d2), s/veh	0.1	0.0	0.2	5.2	0.0	0.0	1.9	1.2	0.4	0.1	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	3.5	13.7	0.0	0.0	3.1	11.3	3.6	0.3	18.2	0.5
LnGrp Delay(d),s/veh	22.3	0.0	23.4	35.9	0.0	0.0	23.3	10.8	8.3	13.4	14.4	7.2
LnGrp LOS	C		C	D			C	B	A	B	B	A
Approach Vol, veh/h		152			346			752			768	
Approach Delay, s/veh		23.1			35.9			11.6			14.1	
Approach LOS		C			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		58.5		31.5		58.5		31.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		32.7		6.3		24.8		25.8
Green Ext Time (p_c), s		9.0		3.1		11.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1346	253	230	1390	12	223	15	288	7	20	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	1463	275	250	1511	13	242	16	313	8	22	39
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	1983	887	299	2477	21	338	17	337	101	134	238
Arrive On Green	0.56	0.56	0.56	0.17	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	341	3539	1583	1774	3596	31	1336	78	1517	1047	604	1070
Grp Volume(v), veh/h	13	1463	275	250	743	781	242	0	329	8	0	61
Grp Sat Flow(s),veh/h/ln	341	1770	1583	1774	1770	1857	1336	0	1595	1047	0	1674
Q Serve(g_s), s	1.6	27.9	8.3	5.3	0.0	0.0	16.1	0.0	18.2	0.7	0.0	2.6
Cycle Q Clear(g_c), s	1.6	27.9	8.3	5.3	0.0	0.0	18.7	0.0	18.2	18.9	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.95	1.00		0.64
Lane Grp Cap(c), veh/h	271	1983	887	299	1219	1279	338	0	354	101	0	372
V/C Ratio(X)	0.05	0.74	0.31	0.84	0.61	0.61	0.72	0.00	0.93	0.08	0.00	0.16
Avail Cap(c_a), veh/h	271	1983	887	366	1219	1279	338	0	354	101	0	372
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	14.8	10.5	16.1	0.0	0.0	35.8	0.0	34.3	43.5	0.0	28.3
Incr Delay (d2), s/veh	0.3	2.5	0.9	13.2	2.3	2.2	12.3	0.0	32.7	1.5	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	20.3	6.9	7.8	1.4	1.4	11.4	0.0	16.6	0.4	0.0	2.4
LnGrp Delay(d),s/veh	9.4	17.3	11.4	29.2	2.3	2.2	48.1	0.0	67.0	45.1	0.0	29.2
LnGrp LOS	A	B	B	C	A	A	D		E	D		C
Approach Vol, veh/h		1751			1774			571			69	
Approach Delay, s/veh		16.4			6.0			59.0			31.0	
Approach LOS		B			A			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	11.6	54.4		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		20.7	7.3	29.9		20.9		2.0
Green Ext Time (p_c), s		0.0	0.3	16.0		0.0		48.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	1528	1	0	1523	1	4	0	2	4	0	5
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1661	1	0	1655	1	4	0	2	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1657	0	0	1662	0	0	2502	3331	831	2499	3331	828
Stage 1	-	-	-	-	-	-	1674	1674	-	1656	1656	-
Stage 2	-	-	-	-	-	-	828	1657	-	843	1675	-
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	385	-	-	383	-	-	15	8	313	15	8	314
Stage 1	-	-	-	-	-	-	99	151	-	102	154	-
Stage 2	-	-	-	-	-	-	332	154	-	325	150	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	385	-	-	383	-	-	15	8	313	15	8	314
Mov Cap-2 Maneuver	-	-	-	-	-	-	15	8	-	15	8	-
Stage 1	-	-	-	-	-	-	97	148	-	100	154	-
Stage 2	-	-	-	-	-	-	326	154	-	317	147	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	221.3	161
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	15	313	385	-	-	383	-	-	32
HCM Lane V/C Ratio	0.29	0.007	0.017	-	-	-	-	-	0.306
HCM Control Delay (s)	$ 323.6	16.6	14.5	-	-	0	-	-	161
HCM Lane LOS	F	C	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.8	0	0.1	-	-	0	-	-	1

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1437	2	4	1492	6	1	0	7	4	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1562	2	4	1622	7	1	0	8	4	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1628	0	0	1564	0	0	2383	3200	782	2415	3198	814
Stage 1	-	-	-	-	-	-	1563	1563	-	1634	1634	-
Stage 2	-	-	-	-	-	-	820	1637	-	781	1564	-
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	395	-	-	418	-	-	18	10	337	17	10	321
Stage 1	-	-	-	-	-	-	117	171	-	105	158	-
Stage 2	-	-	-	-	-	-	335	157	-	354	171	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	395	-	-	418	-	-	18	10	337	16	10	321
Mov Cap-2 Maneuver	-	-	-	-	-	-	18	10	-	16	10	-
Stage 1	-	-	-	-	-	-	117	171	-	105	156	-
Stage 2	-	-	-	-	-	-	330	155	-	346	171	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	42.4	214.7
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	105	395	-	-	418	-	-	23
HCM Lane V/C Ratio	0.083	-	-	-	0.01	-	-	0.284
HCM Control Delay (s)	42.4	0	-	-	13.7	-	-	214.7
HCM Lane LOS	E	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1456	1	1	1528	2	0	0	4	0	0	5
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1583	1	1	1661	2	0	0	4	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1663	0	0	1584	0	0	2421	3253	792	2460	3252	832
Stage 1	-	-	-	-	-	-	1588	1588	-	1664	1664	-
Stage 2	-	-	-	-	-	-	833	1665	-	796	1588	-
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	383	-	-	411	-	-	17	9	332	16	9	312
Stage 1	-	-	-	-	-	-	113	166	-	101	152	-
Stage 2	-	-	-	-	-	-	329	152	-	347	166	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	383	-	-	411	-	-	16	9	332	15	9	312
Mov Cap-2 Maneuver	-	-	-	-	-	-	16	9	-	15	9	-
Stage 1	-	-	-	-	-	-	112	165	-	100	147	-
Stage 2	-	-	-	-	-	-	313	147	-	341	165	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	16	16.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	332	383	-	-	411	-	-	312
HCM Lane V/C Ratio	0.013	0.006	-	-	0.003	-	-	0.017
HCM Control Delay (s)	16	14.5	-	-	13.8	0.2	-	16.7
HCM Lane LOS	C	B	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	136	1347	11	9	1428	239	26	2	21	82	2	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	1464	12	10	1552	260	28	2	23	89	2	58
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	2638	22	342	2595	1161	275	23	262	307	9	273
Arrive On Green	1.00	1.00	1.00	0.98	0.98	0.98	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	258	3598	29	357	3539	1583	1337	128	1474	1380	53	1538
Grp Volume(v), veh/h	148	720	756	10	1552	260	28	0	25	89	0	60
Grp Sat Flow(s),veh/h/ln	258	1770	1858	357	1770	1583	1337	0	1603	1380	0	1591
Q Serve(g_s), s	8.4	0.0	0.0	0.1	2.3	0.5	1.6	0.0	1.2	5.2	0.0	2.9
Cycle Q Clear(g_c), s	10.8	0.0	0.0	0.1	2.3	0.5	4.5	0.0	1.2	6.4	0.0	2.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.92	1.00		0.97
Lane Grp Cap(c), veh/h	262	1298	1362	342	2595	1161	275	0	285	307	0	283
V/C Ratio(X)	0.56	0.55	0.56	0.03	0.60	0.22	0.10	0.00	0.09	0.29	0.00	0.21
Avail Cap(c_a), veh/h	262	1298	1362	342	2595	1161	275	0	285	307	0	283
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	0.2	0.0	0.0	0.3	0.3	0.3	33.6	0.0	30.9	33.6	0.0	31.6
Incr Delay (d2), s/veh	8.5	1.7	1.6	0.2	1.0	0.4	0.7	0.0	0.6	2.4	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	1.1	1.1	0.0	1.5	0.5	1.2	0.0	1.0	3.9	0.0	2.5
LnGrp Delay(d),s/veh	8.7	1.7	1.6	0.5	1.4	0.7	34.3	0.0	31.5	35.9	0.0	33.3
LnGrp LOS	A	A	A	A	A	A	C		C	D		C
Approach Vol, veh/h		1624			1822			53			149	
Approach Delay, s/veh		2.3			1.3			33.0			34.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		6.5		12.8		8.4		4.3
Green Ext Time (p_c), s		0.5		48.1		0.4		54.8

Intersection Summary	
HCM 2010 Ctrl Delay	3.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1460	6	2	1556	5	3	0	11	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1587	7	2	1691	5	3	0	12	16	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1697	0	0	1593	0	0	2449	3300	797	2500	3300	848
Stage 1	-	-	-	-	-	-	1599	1599	-	1698	1698	-
Stage 2	-	-	-	-	-	-	850	1701	-	802	1602	-
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	372	-	-	408	-	-	16	8	329	~ 15	8	305
Stage 1	-	-	-	-	-	-	111	164	-	96	146	-
Stage 2	-	-	-	-	-	-	322	146	-	344	163	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	372	-	-	408	-	-	15	8	329	~ 14	8	305
Mov Cap-2 Maneuver	-	-	-	-	-	-	15	8	-	~ 14	8	-
Stage 1	-	-	-	-	-	-	110	162	-	95	145	-
Stage 2	-	-	-	-	-	-	309	145	-	328	161	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	84.3	$ 493.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	60	372	-	-	408	-	-	23
HCM Lane V/C Ratio	0.254	0.012	-	-	0.005	-	-	1.181
HCM Control Delay (s)	84.3	14.8	-	-	13.9	-	-	$ 493.7
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	3.5

Notes

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

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1429	23	32	1539	5	15	0	14	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1553	25	35	1673	5	16	0	15	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1678	0	0	1578	0	0	2478	3320	789	2528	3330	839
Stage 1	-	-	-	-	-	-	1572	1572	-	1745	1745	-
Stage 2	-	-	-	-	-	-	906	1748	-	783	1585	-
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	378	-	-	413	-	-	~ 15	8	333	14	8	309
Stage 1	-	-	-	-	-	-	115	169	-	90	139	-
Stage 2	-	-	-	-	-	-	297	138	-	353	167	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	378	-	-	413	-	-	~ 14	7	333	12	7	309
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 14	7	-	12	7	-
Stage 1	-	-	-	-	-	-	114	168	-	89	127	-
Stage 2	-	-	-	-	-	-	272	126	-	334	166	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	$ 470.2	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	26	378	-	-	413	-	-	-
HCM Lane V/C Ratio	1.212	0.009	-	-	0.084	-	-	-
HCM Control Delay (s)	$ 470.2	14.6	-	-	14.5	-	-	0
HCM Lane LOS	F	B	-	-	B	-	-	A
HCM 95th %tile Q(veh)	3.8	0	-	-	0.3	-	-	-

Notes

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

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	296	1129	19	21	1142	127	29	59	27	240	39	352
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	322	1227	21	23	1241	138	32	64	29	261	42	383
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	2028	35	299	1675	749	330	517	440	407	517	440
Arrive On Green	0.15	0.76	0.76	0.02	0.47	0.47	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3561	61	1774	3539	1583	958	1863	1583	1298	1863	1583
Grp Volume(v), veh/h	322	610	638	23	1241	138	32	64	29	261	42	383
Grp Sat Flow(s),veh/h/ln	1774	1770	1852	1774	1770	1583	958	1863	1583	1298	1863	1583
Q Serve(g_s), s	8.0	13.9	13.9	0.6	25.6	4.5	2.3	2.3	1.2	16.9	1.5	20.7
Cycle Q Clear(g_c), s	8.0	13.9	13.9	0.6	25.6	4.5	3.8	2.3	1.2	19.3	1.5	20.7
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	1008	1055	299	1675	749	330	517	440	407	517	440
V/C Ratio(X)	0.90	0.60	0.61	0.08	0.74	0.18	0.10	0.12	0.07	0.64	0.08	0.87
Avail Cap(c_a), veh/h	430	1008	1055	343	1675	749	330	517	440	407	517	440
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	16.6	6.4	6.4	11.9	19.2	13.7	25.4	24.3	23.9	31.5	24.0	31.0
Incr Delay (d2), s/veh	18.8	2.7	2.6	0.1	3.0	0.5	0.6	0.5	0.3	7.5	0.3	20.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.6	11.6	12.0	0.5	19.0	3.7	1.2	2.3	1.0	11.3	1.5	17.1
LnGrp Delay(d),s/veh	35.5	9.1	9.0	12.0	22.2	14.2	26.0	24.8	24.2	39.1	24.3	51.4
LnGrp LOS	D	A	A	B	C	B	C	C	C	D	C	D
Approach Vol, veh/h		1570			1402			125			686	
Approach Delay, s/veh		14.4			21.3			25.0			45.0	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	5.7	55.3		29.0	14.4	46.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0	4.0	49.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		5.8	2.6	15.9		22.7	10.0	27.6
Green Ext Time (p_c), s		3.1	0.0	25.0		0.8	0.4	10.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	27	0	95	15	0	5	31	437	6	3	503	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	0	103	16	0	5	34	475	7	3	547	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1098	1095	547	1147	1095	475	547	0	0	475	0	0
Stage 1	553	553	-	542	542	-	-	-	-	-	-	-
Stage 2	545	542	-	605	553	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	190	214	537	176	214	590	1022	-	-	1087	-	-
Stage 1	517	514	-	525	520	-	-	-	-	-	-	-
Stage 2	523	520	-	485	514	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	183	206	537	138	206	590	1022	-	-	1087	-	-
Mov Cap-2 Maneuver	183	206	-	138	206	-	-	-	-	-	-	-
Stage 1	500	513	-	508	503	-	-	-	-	-	-	-
Stage 2	501	503	-	391	513	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.6	28.8	0.6	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1022	-	-	183	537	138	590	1087	-	-
HCM Lane V/C Ratio	0.033	-	-	0.16	0.192	0.118	0.009	0.003	-	-
HCM Control Delay (s)	8.6	-	-	28.4	13.3	34.6	11.2	8.3	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0.4	0	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	17	11	428	425	9
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	18	12	465	462	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	956	467	472	0	-	0
Stage 1	467	-	-	-	-	-
Stage 2	489	-	-	-	-	-
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	286	596	1090	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	283	596	1090	-	-	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	609	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1090	-	559	-	-
HCM Lane V/C Ratio	0.011	-	0.039	-	-
HCM Control Delay (s)	8.3	-	11.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	234	1092	24	35	878	186	22	142	35	204	151	256
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	254	1187	26	38	954	202	24	154	38	222	164	278
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	3243	71	308	1447	306	197	787	189	359	492	440
Arrive On Green	0.09	0.63	0.63	0.50	0.50	0.50	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5121	112	459	2909	615	944	2832	681	1186	1770	1583
Grp Volume(v), veh/h	254	786	427	38	580	576	24	95	97	222	164	278
Grp Sat Flow(s),veh/h/ln	1774	1695	1843	459	1770	1754	944	1770	1743	1186	1770	1583
Q Serve(g_s), s	5.8	10.0	10.0	4.1	22.0	22.1	2.1	3.7	3.8	15.9	6.6	13.8
Cycle Q Clear(g_c), s	5.8	10.0	10.0	4.1	22.0	22.1	15.9	3.7	3.8	19.7	6.6	13.8
Prop In Lane	1.00		0.06	1.00		0.35	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	364	2147	1167	308	880	873	197	492	484	359	492	440
V/C Ratio(X)	0.70	0.37	0.37	0.12	0.66	0.66	0.12	0.19	0.20	0.62	0.33	0.63
Avail Cap(c_a), veh/h	478	2147	1167	308	880	873	197	492	484	359	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	7.9	7.9	12.4	16.9	16.9	35.4	24.8	24.9	32.4	25.9	28.5
Incr Delay (d2), s/veh	3.0	0.5	0.9	0.8	3.8	3.9	1.3	0.9	0.9	7.8	1.8	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	8.3	9.0	1.1	17.2	17.1	1.1	3.4	3.5	10.0	6.3	11.1
LnGrp Delay(d),s/veh	17.6	8.4	8.8	13.2	20.7	20.8	36.7	25.7	25.8	40.2	27.7	35.2
LnGrp LOS	B	A	A	B	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1467			1194			216			664	
Approach Delay, s/veh		10.1			20.5			27.0			35.0	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	12.2	48.8
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		17.9		12.0		21.7	7.8	24.1
Green Ext Time (p_c), s		2.9		28.3		1.6	0.4	12.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
2: 56th St & Indian School Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	761	199	104	644	59	148	469	115	59	474	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	121	827	216	113	700	64	161	510	125	64	515	111
Adj No. of Lanes	1	3	0	1	3	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	1968	510	350	2742	249	230	707	172	215	967	207
Arrive On Green	0.49	0.49	0.49	0.04	0.58	0.58	0.25	0.25	0.25	0.04	0.33	0.33
Sat Flow, veh/h	700	4025	1044	1774	4746	431	796	2822	688	1774	2900	622
Grp Volume(v), veh/h	121	696	347	113	499	265	161	319	316	64	313	313
Grp Sat Flow(s),veh/h/ln	700	1695	1679	1774	1695	1787	796	1770	1741	1774	1770	1753
Q Serve(g_s), s	9.6	11.9	12.0	2.7	6.6	6.6	17.0	14.8	15.0	2.3	12.9	13.0
Cycle Q Clear(g_c), s	9.6	11.9	12.0	2.7	6.6	6.6	22.5	14.8	15.0	2.3	12.9	13.0
Prop In Lane	1.00		0.62	1.00		0.24	1.00		0.40	1.00		0.35
Lane Grp Cap(c), veh/h	422	1657	821	350	1959	1032	230	443	436	215	590	584
V/C Ratio(X)	0.29	0.42	0.42	0.32	0.25	0.26	0.70	0.72	0.72	0.30	0.53	0.54
Avail Cap(c_a), veh/h	422	1657	821	350	1959	1032	230	443	436	245	590	584
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	14.8	14.8	10.9	9.4	9.4	37.1	30.8	30.9	23.9	24.3	24.3
Incr Delay (d2), s/veh	1.7	0.8	1.6	0.5	0.3	0.6	16.3	9.7	10.1	0.8	3.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	9.6	9.8	2.4	5.6	6.1	8.7	13.2	13.2	2.1	11.1	11.1
LnGrp Delay(d),s/veh	15.9	15.6	16.4	11.4	9.7	10.0	53.4	40.5	40.9	24.7	27.7	27.8
LnGrp LOS	B	B	B	B	A	B	D	D	D	C	C	C
Approach Vol, veh/h		1164			877			796			690	
Approach Delay, s/veh		15.9			10.0			43.3			27.5	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		7.5	26.5	8.0	48.0		34.0		56.0
Change Period (Y+Rc), s		4.0	4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		5.6	21.0	4.0	44.0		30.0		52.0
Max Q Clear Time (g_c+I1), s		14.3	24.5	4.7	14.0		15.0		8.6
Green Ext Time (p_c), s		0.0	0.0	0.0	17.1		7.9		20.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: 56th St & Lafayette Boulevard

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	63	50	92	58	31	66	354	111	25	447	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	21	68	54	100	63	34	72	385	121	27	486	28
Adj No. of Lanes	0	1	1	0	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	278	298	170	97	43	632	1347	1145	659	1347	1145
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	259	1478	1583	583	514	229	883	1863	1583	889	1863	1583
Grp Volume(v), veh/h	89	0	54	197	0	0	72	385	121	27	486	28
Grp Sat Flow(s),veh/h/ln	1737	0	1583	1326	0	0	883	1863	1583	889	1863	1583
Q Serve(g_s), s	0.0	0.0	2.6	9.5	0.0	0.0	3.0	6.5	2.1	1.0	8.8	0.4
Cycle Q Clear(g_c), s	3.7	0.0	2.6	13.2	0.0	0.0	11.8	6.5	2.1	7.5	8.8	0.4
Prop In Lane	0.24		1.00	0.51		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	0	298	310	0	0	632	1347	1145	659	1347	1145
V/C Ratio(X)	0.24	0.00	0.18	0.64	0.00	0.00	0.11	0.29	0.11	0.04	0.36	0.02
Avail Cap(c_a), veh/h	677	0	581	572	0	0	632	1347	1145	659	1347	1145
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	30.7	35.5	0.0	0.0	6.9	4.4	3.7	5.7	4.7	3.5
Incr Delay (d2), s/veh	0.3	0.0	0.3	2.2	0.0	0.0	0.4	0.5	0.2	0.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	2.1	8.5	0.0	0.0	1.4	6.3	1.7	0.5	8.3	0.4
LnGrp Delay(d),s/veh	31.5	0.0	31.0	37.6	0.0	0.0	7.3	4.9	3.9	5.8	5.4	3.6
LnGrp LOS	C		C	D			A	A	A	A	A	A
Approach Vol, veh/h		143			197			578			541	
Approach Delay, s/veh		31.3			37.6			5.0			5.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		69.1		20.9		69.1		20.9
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		49.0		33.0		49.0		33.0
Max Q Clear Time (g_c+I1), s		13.8		5.7		10.8		15.2
Green Ext Time (p_c), s		8.0		2.0		8.1		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	1481	209	256	1532	11	171	15	197	13	17	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	1610	227	278	1665	12	186	16	214	14	18	20
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	2057	920	310	2601	19	312	21	281	140	153	169
Arrive On Green	0.58	0.58	0.58	0.13	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	294	3539	1583	1774	3602	26	1364	111	1489	1146	807	897
Grp Volume(v), veh/h	16	1610	227	278	817	860	186	0	230	14	0	38
Grp Sat Flow(s),veh/h/ln	294	1770	1583	1774	1770	1858	1364	0	1600	1146	0	1704
Q Serve(g_s), s	2.2	31.5	6.3	6.7	4.3	4.3	11.8	0.0	12.3	1.1	0.0	1.7
Cycle Q Clear(g_c), s	2.2	31.5	6.3	6.7	4.3	4.3	13.5	0.0	12.3	13.3	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.93	1.00		0.53
Lane Grp Cap(c), veh/h	251	2057	920	310	1278	1342	312	0	302	140	0	322
V/C Ratio(X)	0.06	0.78	0.25	0.90	0.64	0.64	0.60	0.00	0.76	0.10	0.00	0.12
Avail Cap(c_a), veh/h	251	2057	920	316	1278	1342	312	0	302	140	0	322
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	14.5	9.2	21.1	0.6	0.6	35.9	0.0	34.6	40.9	0.0	30.3
Incr Delay (d2), s/veh	0.5	3.1	0.6	26.4	2.5	2.4	8.1	0.0	16.4	1.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	22.7	5.2	13.8	4.1	4.2	8.9	0.0	11.1	0.7	0.0	1.5
LnGrp Delay(d),s/veh	8.8	17.5	9.9	47.5	3.0	2.9	44.0	0.0	51.0	42.3	0.0	31.0
LnGrp LOS	A	B	A	D	A	A	D		D	D		C
Approach Vol, veh/h		1853			1955			416			52	
Approach Delay, s/veh		16.5			9.3			47.9			34.1	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	12.7	56.3		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		15.5	8.7	33.5		15.3		6.3
Green Ext Time (p_c), s		0.4	0.0	17.7		0.4		51.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd

11/7/2016

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1673	1	2	1659	2	2	0	4	2	0	2
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1818	1	2	1803	2	2	0	4	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1805	0	0	1820	0	0	2734	3638	910	2727	3637	903
Stage 1	-	-	-	-	-	-	1828	1828	-	1809	1809	-
Stage 2	-	-	-	-	-	-	906	1810	-	918	1828	-
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	337	-	-	333	-	-	10	5	277	10	5	280
Stage 1	-	-	-	-	-	-	79	126	-	82	129	-
Stage 2	-	-	-	-	-	-	297	129	-	292	126	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	337	-	-	333	-	-	10	5	277	10	5	280
Mov Cap-2 Maneuver	-	-	-	-	-	-	10	5	-	10	5	-
Stage 1	-	-	-	-	-	-	78	125	-	81	128	-
Stage 2	-	-	-	-	-	-	293	128	-	284	125	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	160.9	243.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	10	277	337	-	-	333	-	-	19
HCM Lane V/C Ratio	0.217	0.016	0.013	-	-	0.007	-	-	0.229
HCM Control Delay (s)	$ 446.3	18.2	15.8	-	-	15.9	-	-	243.7
HCM Lane LOS	F	C	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	0.5	0	0	-	-	0	-	-	0.7

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1573	3	3	1692	6	5	0	9	4	0	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1710	3	3	1839	7	5	0	10	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1846	0	0	1713	0	0	2637	3563	857	2704	3562	923
Stage 1	-	-	-	-	-	-	1711	1711	-	1849	1849	-
Stage 2	-	-	-	-	-	-	926	1852	-	855	1713	-
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	325	-	-	366	-	-	11	6	301	10	6	272
Stage 1	-	-	-	-	-	-	94	144	-	77	123	-
Stage 2	-	-	-	-	-	-	289	123	-	319	144	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	325	-	-	366	-	-	11	6	301	10	6	272
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	6	-	10	6	-
Stage 1	-	-	-	-	-	-	94	144	-	77	122	-
Stage 2	-	-	-	-	-	-	283	122	-	309	144	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	224.1	$ 333.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	29	325	-	-	366	-	-	17
HCM Lane V/C Ratio	0.525	-	-	-	0.009	-	-	0.448
HCM Control Delay (s)	224.1	0	-	-	14.9	-	-	$ 333.5
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.7	0	-	-	0	-	-	1.2

Notes

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

HCM 2010 TWSC
7: 59th Pl & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1584	1	1	1676	7	0	0	1	0	0	2
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1722	1	1	1822	8	0	0	1	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1829	0	0	1723	0	0	2644	3563	861	2698	3560	915
Stage 1	-	-	-	-	-	-	1731	1731	-	1828	1828	-
Stage 2	-	-	-	-	-	-	913	1832	-	870	1732	-
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	330	-	-	363	-	-	11	6	299	10	6	275
Stage 1	-	-	-	-	-	-	91	141	-	79	126	-
Stage 2	-	-	-	-	-	-	294	126	-	313	141	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	330	-	-	363	-	-	11	6	299	10	6	275
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	6	-	10	6	-
Stage 1	-	-	-	-	-	-	90	139	-	78	126	-
Stage 2	-	-	-	-	-	-	292	126	-	308	139	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	17.1	18.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	299	330	-	-	363	-	-	275
HCM Lane V/C Ratio	0.004	0.013	-	-	0.003	-	-	0.008
HCM Control Delay (s)	17.1	16.1	-	-	14.9	0	-	18.2
HCM Lane LOS	C	C	-	-	B	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

HCM 2010 Signalized Intersection Summary
8: Jokake Rd/Phoenician Blvd (N-S) & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	1632	11	17	1564	122	16	4	13	140	4	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	118	1774	12	18	1700	133	17	4	14	152	4	158
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	2643	18	205	2595	1161	183	65	226	314	7	276
Arrive On Green	0.73	0.73	0.73	1.00	1.00	1.00	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	252	3604	24	264	3539	1583	1219	364	1274	1389	39	1550
Grp Volume(v), veh/h	118	870	916	18	1700	133	17	0	18	152	0	162
Grp Sat Flow(s),veh/h/ln	252	1770	1858	264	1770	1583	1219	0	1638	1389	0	1589
Q Serve(g_s), s	21.1	23.2	23.3	2.4	0.0	0.0	1.2	0.0	0.8	9.2	0.0	8.4
Cycle Q Clear(g_c), s	21.1	23.2	23.3	25.7	0.0	0.0	9.6	0.0	0.8	10.0	0.0	8.4
Prop In Lane	1.00		0.01	1.00		1.00	1.00		0.78	1.00		0.98
Lane Grp Cap(c), veh/h	265	1298	1363	205	2595	1161	183	0	291	314	0	283
V/C Ratio(X)	0.45	0.67	0.67	0.09	0.65	0.11	0.09	0.00	0.06	0.48	0.00	0.57
Avail Cap(c_a), veh/h	265	1298	1363	205	2595	1161	183	0	291	314	0	283
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	6.3	6.3	4.5	0.0	0.0	38.3	0.0	30.8	34.9	0.0	33.9
Incr Delay (d2), s/veh	5.3	2.8	2.7	0.8	1.3	0.2	1.0	0.0	0.4	5.2	0.0	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	17.8	18.6	0.4	0.8	0.1	0.8	0.0	0.7	7.1	0.0	7.7
LnGrp Delay(d),s/veh	11.3	9.1	9.0	5.4	1.3	0.2	39.3	0.0	31.2	40.2	0.0	42.1
LnGrp LOS	B	A	A	A	A	A	D		C	D		D
Approach Vol, veh/h		1904			1851			35			314	
Approach Delay, s/veh		9.2			1.3			35.1			41.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		70.0		20.0		70.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		16.0		66.0
Max Q Clear Time (g_c+I1), s		11.6		25.3		12.0		27.7
Green Ext Time (p_c), s		0.7		38.9		0.6		36.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd

11/7/2016

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	1751	11	4	1664	15	4	0	3	9	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	1903	12	4	1809	16	4	0	3	10	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1825	0	0	1915	0	0	2844	3765	958	2799	3763	913
Stage 1	-	-	-	-	-	-	1931	1931	-	1826	1826	-
Stage 2	-	-	-	-	-	-	913	1834	-	973	1937	-
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	331	-	-	305	-	-	8	4	258	~ 9	4	276
Stage 1	-	-	-	-	-	-	68	112	-	80	126	-
Stage 2	-	-	-	-	-	-	294	125	-	271	111	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	331	-	-	305	-	-	8	4	258	~ 9	4	276
Mov Cap-2 Maneuver	-	-	-	-	-	-	8	4	-	~ 9	4	-
Stage 1	-	-	-	-	-	-	66	108	-	77	124	-
Stage 2	-	-	-	-	-	-	283	123	-	259	107	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	$ 430.4	$ 607.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	14	331	-	-	305	-	-	15
HCM Lane V/C Ratio	0.543	0.033	-	-	0.014	-	-	1.087
HCM Control Delay (s)	$ 430.4	16.2	-	-	17	-	-	$ 607.7
HCM Lane LOS	F	C	-	-	C	-	-	F
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	2.6

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

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	1675	59	43	1645	1	10	0	22	0	0	1
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1821	64	47	1788	1	11	0	24	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1789	0	0	1885	0	0	2841	3736	942	2792	3767	895
Stage 1	-	-	-	-	-	-	1853	1853	-	1882	1882	-
Stage 2	-	-	-	-	-	-	988	1883	-	910	1885	-
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	342	-	-	314	-	-	~ 8	4	264	9	4	284
Stage 1	-	-	-	-	-	-	76	122	-	73	118	-
Stage 2	-	-	-	-	-	-	265	118	-	296	118	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	342	-	-	314	-	-	~ 7	3	264	7	3	284
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 7	3	-	7	3	-
Stage 1	-	-	-	-	-	-	76	122	-	73	100	-
Stage 2	-	-	-	-	-	-	224	100	-	269	118	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	$ 710.9	17.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	21	342	-	-	314	-	-	284
HCM Lane V/C Ratio	1.656	-	-	-	0.149	-	-	0.004
HCM Control Delay (s)	$ 710.9	0	-	-	18.5	-	-	17.7
HCM Lane LOS	F	A	-	-	C	-	-	C
HCM 95th %tile Q(veh)	4.6	0	-	-	0.5	-	-	0

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	234	1356	32	27	1449	269	23	42	21	187	54	234
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	254	1474	35	29	1575	292	25	46	23	203	59	254
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	2236	53	318	2021	904	277	393	334	334	393	334
Arrive On Green	0.17	1.00	1.00	0.02	0.57	0.57	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3534	84	1774	3539	1583	1062	1863	1583	1326	1863	1583
Grp Volume(v), veh/h	254	737	772	29	1575	292	25	46	23	203	59	254
Grp Sat Flow(s),veh/h/ln	1774	1770	1848	1774	1770	1583	1062	1863	1583	1326	1863	1583
Q Serve(g_s), s	5.4	0.0	0.0	0.6	31.0	8.7	1.8	1.8	1.0	13.2	2.3	13.6
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.6	31.0	8.7	4.1	1.8	1.0	15.0	2.3	13.6
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	286	1120	1169	318	2021	904	277	393	334	334	393	334
V/C Ratio(X)	0.89	0.66	0.66	0.09	0.78	0.32	0.09	0.12	0.07	0.61	0.15	0.76
Avail Cap(c_a), veh/h	352	1120	1169	356	2021	904	277	393	334	334	393	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	17.3	0.0	0.0	7.5	14.9	10.2	30.6	28.7	28.4	34.8	28.9	33.4
Incr Delay (d2), s/veh	20.3	3.0	2.9	0.1	3.1	0.9	0.6	0.6	0.4	8.0	0.8	15.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.0	1.7	1.7	0.5	22.2	7.3	1.0	1.8	0.9	9.4	2.3	11.8
LnGrp Delay(d),s/veh	37.6	3.0	2.9	7.7	18.0	11.1	31.2	29.3	28.8	42.8	29.7	48.3
LnGrp LOS	D	A	A	A	B	B	C	C	C	D	C	D
Approach Vol, veh/h		1763			1896			94			516	
Approach Delay, s/veh		8.0			16.8			29.7			44.0	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	6.1	60.9		23.0	11.6	55.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	4.0	55.0		19.0	11.0	48.0
Max Q Clear Time (g_c+I1), s		6.1	2.6	2.0		17.0	7.4	33.0
Green Ext Time (p_c), s		2.0	0.0	45.0		0.6	0.3	14.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W) 11/7/2016

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	58	4	81	4	0	5	88	438	7	9	433	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	4	88	4	0	5	96	476	8	10	471	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1160	1157	471	1203	1157	476	471	0	0	476	0	0
Stage 1	490	490	-	667	667	-	-	-	-	-	-	-
Stage 2	670	667	-	536	490	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	172	196	593	161	196	589	1091	-	-	1086	-	-
Stage 1	560	549	-	448	457	-	-	-	-	-	-	-
Stage 2	446	457	-	529	549	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	158	177	593	125	177	589	1091	-	-	1086	-	-
Mov Cap-2 Maneuver	158	177	-	125	177	-	-	-	-	-	-	-
Stage 1	511	544	-	409	417	-	-	-	-	-	-	-
Stage 2	403	417	-	443	544	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.9	21.7	1.4	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1091	-	-	158	534	125	589	1086	-	-
HCM Lane V/C Ratio	0.088	-	-	0.399	0.173	0.035	0.009	0.009	-	-
HCM Control Delay (s)	8.6	-	-	42.1	13.1	34.8	11.2	8.3	-	-
HCM Lane LOS	A	-	-	E	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.7	0.6	0.1	0	0	-	-

HCM 2010 TWSC
13: 64th St & Cholla Ln 11/7/2016

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	9	10	450	458	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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	10	11	489	498	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1012	501	503	0	-	0
Stage 1	501	-	-	-	-	-
Stage 2	511	-	-	-	-	-
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	265	570	1061	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	262	570	1061	-	-	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1061	-	513	-	-
HCM Lane V/C Ratio	0.01	-	0.025	-	-
HCM Control Delay (s)	8.4	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC
5: Los Vecinos Dr/Alta Hacienda Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	1308	1	1	1514	5	1	0	1	5	0	1
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	100	-	-	100	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1422	1	1	1646	5	1	0	1	5	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1651	0	0	1423	0	0	2263	3091	711	2377	3089	826
Stage 1	-	-	-	-	-	-	1438	1438	-	1651	1651	-
Stage 2	-	-	-	-	-	-	825	1653	-	726	1438	-
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	387	-	-	474	-	-	22	12	375	18	12	315
Stage 1	-	-	-	-	-	-	140	197	-	103	155	-
Stage 2	-	-	-	-	-	-	333	154	-	382	197	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	387	-	-	474	-	-	22	12	375	18	12	315
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	12	-	18	12	-
Stage 1	-	-	-	-	-	-	137	193	-	101	155	-
Stage 2	-	-	-	-	-	-	331	154	-	373	193	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	95.8	240.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	22	375	387	-	-	474	-	-	21
HCM Lane V/C Ratio	0.049	0.003	0.02	-	-	0.002	-	-	0.311
HCM Control Delay (s)	177	14.6	14.5	-	-	12.6	-	-	240.4
HCM Lane LOS	F	B	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	0.9

HCM 2010 TWSC
6: Arcadia Ln/Hilltop Rd & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	1311	4	0	1508	3	3	0	0	3	0	2
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1425	4	0	1639	3	3	0	0	3	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1642	0	0	1429	0	0	2256	3078	715	2362	3079	821
Stage 1	-	-	-	-	-	-	1436	1436	-	1641	1641	-
Stage 2	-	-	-	-	-	-	820	1642	-	721	1438	-
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	390	-	-	472	-	-	22	12	373	19	12	318
Stage 1	-	-	-	-	-	-	140	197	-	104	156	-
Stage 2	-	-	-	-	-	-	335	156	-	385	197	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	390	-	-	472	-	-	22	12	373	19	12	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	12	-	19	12	-
Stage 1	-	-	-	-	-	-	139	195	-	103	156	-
Stage 2	-	-	-	-	-	-	333	156	-	381	195	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	195.3	149.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	22	390	-	-	472	-	-	30
HCM Lane V/C Ratio	0.148	0.011	-	-	-	-	-	0.181
HCM Control Delay (s)	195.3	14.3	-	-	0	-	-	149.9
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1312	1	0	1488	5	2	0	0	0	0	3
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	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1426	1	0	1617	5	2	0	0	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1623	0	0	1427	0	0	2242	3056	714	2340	3054	811
Stage 1	-	-	-	-	-	-	1433	1433	-	1620	1620	-
Stage 2	-	-	-	-	-	-	809	1623	-	720	1434	-
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	397	-	-	473	-	-	23	12	374	19	12	322
Stage 1	-	-	-	-	-	-	141	198	-	107	160	-
Stage 2	-	-	-	-	-	-	340	160	-	385	198	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	397	-	-	473	-	-	23	12	374	19	12	322
Mov Cap-2 Maneuver	-	-	-	-	-	-	23	12	-	19	12	-
Stage 1	-	-	-	-	-	-	140	197	-	106	160	-
Stage 2	-	-	-	-	-	-	337	160	-	382	197	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	177.3	16.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	23	397	-	-	473	-	-	322
HCM Lane V/C Ratio	0.095	0.008	-	-	-	-	-	0.01
HCM Control Delay (s)	177.3	14.1	-	-	0	-	-	16.3
HCM Lane LOS	F	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	1164	15	16	1215	202	9	8	16	364	32	532
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	114	1265	16	17	1321	220	10	9	17	396	35	578
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	1988	25	214	1966	880	80	206	388	556	32	535
Arrive On Green	0.56	0.56	0.56	0.18	0.18	0.18	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	335	3579	45	430	3539	1583	806	578	1092	1379	91	1506
Grp Volume(v), veh/h	114	625	656	17	1321	220	10	0	26	396	0	613
Grp Sat Flow(s),veh/h/ln	335	1770	1855	430	1770	1583	806	0	1670	1379	0	1597
Q Serve(g_s), s	18.7	21.9	21.9	3.2	31.3	10.7	0.0	0.0	0.9	23.7	0.0	32.0
Cycle Q Clear(g_c), s	50.0	21.9	21.9	25.1	31.3	10.7	32.0	0.0	0.9	24.7	0.0	32.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.65	1.00		0.94
Lane Grp Cap(c), veh/h	150	983	1030	214	1966	880	80	0	594	556	0	568
V/C Ratio(X)	0.76	0.64	0.64	0.08	0.67	0.25	0.12	0.00	0.04	0.71	0.00	1.08
Avail Cap(c_a), veh/h	150	983	1030	214	1966	880	80	0	594	556	0	568
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	13.7	13.7	36.5	29.1	20.7	45.0	0.0	19.0	27.1	0.0	29.0
Incr Delay (d2), s/veh	30.0	3.1	3.0	0.7	1.9	0.7	3.2	0.0	0.1	7.6	0.0	61.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.3	17.0	17.6	0.8	22.4	8.5	0.6	0.0	0.8	15.4	0.0	42.6
LnGrp Delay(d),s/veh	69.3	16.9	16.8	37.2	31.0	21.4	48.2	0.0	19.1	34.6	0.0	90.0
LnGrp LOS	E	B	B	D	C	C	D		B	C		F
Approach Vol, veh/h		1395			1558			36			1009	
Approach Delay, s/veh		21.1			29.7			27.2			68.3	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		54.0		36.0		54.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		32.0		50.0		32.0		50.0
Max Q Clear Time (g_c+I1), s		34.0		52.0		34.0		33.3
Green Ext Time (p_c), s		0.0		0.0		0.0		15.3

Intersection Summary	
HCM 2010 Ctrl Delay	36.4
HCM 2010 LOS	D

HCM 2010 TWSC
9: 61st Str/Evans Dr & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	1367	1	1	1331	13	2	0	3	11	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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1486	1	1	1447	14	2	0	3	12	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1461	0	0	1487	0	0	2232	2969	743	2219	2963	730
Stage 1	-	-	-	-	-	-	1506	1506	-	1456	1456	-
Stage 2	-	-	-	-	-	-	726	1463	-	763	1507	-
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	458	-	-	448	-	-	23	14	358	24	14	365
Stage 1	-	-	-	-	-	-	127	182	-	136	193	-
Stage 2	-	-	-	-	-	-	382	191	-	363	182	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	458	-	-	448	-	-	22	14	358	23	14	365
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	14	-	23	14	-
Stage 1	-	-	-	-	-	-	124	178	-	133	193	-
Stage 2	-	-	-	-	-	-	373	191	-	352	178	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	85.6	189.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	50	458	-	-	448	-	-	36
HCM Lane V/C Ratio	0.109	0.021	-	-	0.002	-	-	0.543
HCM Control Delay (s)	85.6	13	-	-	13.1	-	-	189.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.9

HCM 2010 TWSC
10: 62nd St & Camelback Rd 11/7/2016

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	1408	4	3	1347	2	6	0	5	0	1	3
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	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1530	4	3	1464	2	7	0	5	0	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1466	0	0	1535	0	0	2276	3010	767	2242	3011	733
Stage 1	-	-	-	-	-	-	1537	1537	-	1472	1472	-
Stage 2	-	-	-	-	-	-	739	1473	-	770	1539	-
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	456	-	-	429	-	-	22	13	345	23	13	363
Stage 1	-	-	-	-	-	-	121	176	-	133	189	-
Stage 2	-	-	-	-	-	-	375	189	-	359	176	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	456	-	-	429	-	-	20	13	345	22	13	363
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	13	-	22	13	-
Stage 1	-	-	-	-	-	-	120	175	-	132	188	-
Stage 2	-	-	-	-	-	-	367	188	-	352	175	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	154	89.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	35	456	-	-	429	-	-	47
HCM Lane V/C Ratio	0.342	0.005	-	-	0.008	-	-	0.093
HCM Control Delay (s)	154	12.9	-	-	13.5	-	-	89.3
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.3

HCM 2010 Signalized Intersection Summary
11: 64th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	187	1196	23	23	1166	162	7	33	31	195	38	176
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	203	1300	25	25	1267	176	8	36	34	212	41	191
Adj No. of Lanes	1	2	0	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	2137	41	306	1949	872	340	455	387	384	455	387
Arrive On Green	0.10	0.80	0.80	0.02	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3552	68	1774	3539	1583	1144	1863	1583	1325	1863	1583
Grp Volume(v), veh/h	203	647	678	25	1267	176	8	36	34	212	41	191
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1770	1583	1144	1863	1583	1325	1863	1583
Q Serve(g_s), s	4.2	12.8	12.8	0.6	22.5	5.1	0.5	1.3	1.5	13.2	1.5	9.3
Cycle Q Clear(g_c), s	4.2	12.8	12.8	0.6	22.5	5.1	2.0	1.3	1.5	14.5	1.5	9.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	317	1065	1113	306	1949	872	340	455	387	384	455	387
V/C Ratio(X)	0.64	0.61	0.61	0.08	0.65	0.20	0.02	0.08	0.09	0.55	0.09	0.49
Avail Cap(c_a), veh/h	427	1065	1113	348	1949	872	340	455	387	384	455	387
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	13.3	4.9	4.9	8.8	14.2	10.2	27.0	26.2	26.3	31.8	26.3	29.2
Incr Delay (d2), s/veh	2.1	2.6	2.5	0.1	1.7	0.5	0.1	0.3	0.4	5.6	0.4	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.4	10.9	11.3	0.5	16.9	4.2	0.3	1.3	1.3	9.2	1.5	8.1
LnGrp Delay(d),s/veh	15.5	7.5	7.3	8.9	15.8	10.7	27.2	26.5	26.7	37.4	26.7	33.7
LnGrp LOS	B	A	A	A	B	B	C	C	C	D	C	C
Approach Vol, veh/h		1528			1468			78			444	
Approach Delay, s/veh		8.5			15.1			26.7			34.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	5.9	58.1		26.0	10.4	53.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		22.0	4.0	52.0		22.0	12.0	44.0
Max Q Clear Time (g_c+I1), s		4.0	2.6	14.8		16.5	6.2	24.5
Green Ext Time (p_c), s		1.8	0.0	28.5		1.0	0.3	16.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

HCM 2010 TWSC
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	32	0	82	7	0	4	67	291	3	4	390	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	95	100	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	0	89	8	0	4	73	316	3	4	424	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	897	895	424	939	895	316	424	0	0	316	0	0
Stage 1	433	433	-	462	462	-	-	-	-	-	-	-
Stage 2	464	462	-	477	433	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	261	280	630	244	280	724	1135	-	-	1244	-	-
Stage 1	601	582	-	580	565	-	-	-	-	-	-	-
Stage 2	578	565	-	569	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	261	630	199	261	724	1135	-	-	1244	-	-
Mov Cap-2 Maneuver	246	261	-	199	261	-	-	-	-	-	-	-
Stage 1	562	580	-	543	529	-	-	-	-	-	-	-
Stage 2	538	529	-	487	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	18.8	1.6	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1135	-	-	246	630	199	724	1244	-	-
HCM Lane V/C Ratio	0.064	-	-	0.141	0.141	0.038	0.006	0.003	-	-
HCM Control Delay (s)	8.4	-	-	22	11.7	23.8	10	7.9	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.5	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	13	21	15	273	373	10
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	23	16	297	405	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	740	411	416	0	-	0
Stage 1	411	-	-	-	-	-
Stage 2	329	-	-	-	-	-
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	384	641	1143	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	641	1143	-	-	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	719	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1143	- 573	-	-
HCM Lane V/C Ratio	0.014	- 0.064	-	-
HCM Control Delay (s)	8.2	- 11.7	-	-
HCM Lane LOS	A	- B	-	-
HCM 95th %tile Q(veh)	0	- 0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	301	816	33	24	927	193	37	205	38	195	258	425
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	327	887	36	26	1008	210	40	223	41	212	280	353
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	385	3287	133	381	1459	303	113	765	138	296	452	405
Arrive On Green	0.11	0.66	0.66	0.50	0.50	0.50	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	5014	203	603	2919	607	791	2995	542	1111	1770	1583
Grp Volume(v), veh/h	327	599	324	26	610	608	40	130	134	212	280	353
Grp Sat Flow(s),veh/h/ln	1774	1695	1827	603	1770	1756	791	1770	1767	1111	1770	1583
Q Serve(g_s), s	7.5	6.7	6.7	2.0	23.7	23.8	3.8	5.3	5.5	17.1	12.6	19.2
Cycle Q Clear(g_c), s	7.5	6.7	6.7	2.0	23.7	23.8	23.0	5.3	5.5	22.6	12.6	19.2
Prop In Lane	1.00		0.11	1.00		0.35	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	385	2222	1198	381	884	877	113	452	452	296	452	405
V/C Ratio(X)	0.85	0.27	0.27	0.07	0.69	0.69	0.35	0.29	0.30	0.72	0.62	0.87
Avail Cap(c_a), veh/h	503	2222	1198	381	884	877	113	452	452	296	452	405
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	6.5	6.5	11.8	17.2	17.2	43.4	26.9	27.0	36.1	29.6	32.1
Incr Delay (d2), s/veh	10.4	0.3	0.6	0.3	4.4	4.5	8.4	1.6	1.7	13.8	6.2	22.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.2	5.7	6.3	0.7	18.4	18.4	2.3	5.1	5.2	10.5	11.2	16.2
LnGrp Delay(d),s/veh	26.6	6.8	7.0	12.1	21.6	21.7	51.9	28.5	28.6	49.9	35.9	54.1
LnGrp LOS	C	A	A	B	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1250			1244			304			845	
Approach Delay, s/veh		12.0			21.4			31.7			47.0	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		27.0		63.0		27.0	14.0	49.0
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.0		59.0		23.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		25.0		8.7		24.6	9.5	25.8
Green Ext Time (p_c), s		0.0		26.0		0.0	0.6	10.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1346	253	230	1390	12	223	15	288	7	20	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	13	1463	275	250	1511	13	242	16	270	8	22	39
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	1983	887	299	2477	21	338	20	335	137	134	238
Arrive On Green	0.56	0.56	0.56	0.17	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	341	3539	1583	1774	3596	31	1336	89	1507	1089	604	1070
Grp Volume(v), veh/h	13	1463	275	250	743	781	242	0	286	8	0	61
Grp Sat Flow(s),veh/h/ln	341	1770	1583	1774	1770	1857	1336	0	1597	1089	0	1674
Q Serve(g_s), s	1.6	27.9	8.3	5.3	0.0	0.0	16.1	0.0	15.3	0.6	0.0	2.6
Cycle Q Clear(g_c), s	1.6	27.9	8.3	5.3	0.0	0.0	18.7	0.0	15.3	15.9	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.94	1.00		0.64
Lane Grp Cap(c), veh/h	271	1983	887	299	1219	1279	338	0	355	137	0	372
V/C Ratio(X)	0.05	0.74	0.31	0.84	0.61	0.61	0.72	0.00	0.81	0.06	0.00	0.16
Avail Cap(c_a), veh/h	271	1983	887	366	1219	1279	338	0	355	137	0	372
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	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.1	14.8	10.5	16.1	0.0	0.0	35.8	0.0	33.2	40.7	0.0	28.3
Incr Delay (d2), s/veh	0.3	2.5	0.9	13.2	2.3	2.2	12.3	0.0	17.6	0.8	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	20.3	6.9	7.8	1.4	1.4	11.4	0.0	13.3	0.4	0.0	2.4
LnGrp Delay(d),s/veh	9.4	17.3	11.4	29.2	2.3	2.2	48.1	0.0	50.7	41.5	0.0	29.2
LnGrp LOS	A	B	B	C	A	A	D		D	D		C
Approach Vol, veh/h		1751			1774			528			69	
Approach Delay, s/veh		16.4			6.0			49.5			30.6	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		24.0	11.6	54.4		24.0		66.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		20.0	11.0	47.0		20.0		62.0
Max Q Clear Time (g_c+I1), s		20.7	7.3	29.9		17.9		2.0
Green Ext Time (p_c), s		0.0	0.3	16.0		0.7		48.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	0	95	15	0	5	31	437	6	3	503	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	29	0	103	16	0	5	34	475	7	3	547	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	217	0	159	128	0	159	703	1511	1284	817	1511	1284
Arrive On Green	0.10	0.00	0.10	0.10	0.00	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	1405	0	1583	1286	0	1583	850	1863	1583	909	1863	1583
Grp Volume(v), veh/h	29	0	103	16	0	5	34	475	7	3	547	8
Grp Sat Flow(s),veh/h/ln	1405	0	1583	1286	0	1583	850	1863	1583	909	1863	1583
Q Serve(g_s), s	1.7	0.0	5.6	1.1	0.0	0.3	0.4	0.0	0.0	0.1	7.1	0.1
Cycle Q Clear(g_c), s	2.0	0.0	5.6	6.7	0.0	0.3	7.4	0.0	0.0	0.1	7.1	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	0	159	128	0	159	703	1511	1284	817	1511	1284
V/C Ratio(X)	0.13	0.00	0.65	0.12	0.00	0.03	0.05	0.31	0.01	0.00	0.36	0.01
Avail Cap(c_a), veh/h	388	0	352	285	0	352	703	1511	1284	817	1511	1284
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.74	0.74	0.74	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	39.0	42.2	0.0	36.5	0.4	0.0	0.0	1.6	2.3	1.6
Incr Delay (d2), s/veh	0.3	0.0	4.4	0.4	0.0	0.1	0.1	0.4	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	4.8	0.7	0.0	0.2	0.2	0.3	0.0	0.0	6.8	0.1
LnGrp Delay(d),s/veh	37.7	0.0	43.4	42.6	0.0	36.6	0.5	0.4	0.0	1.6	3.0	1.6
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		132			21			516			558	
Approach Delay, s/veh		42.1			41.2			0.4			2.9	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.0		13.0		77.0		13.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		62.0		20.0		62.0		20.0
Max Q Clear Time (g_c+I1), s		9.4		7.6		9.1		8.7
Green Ext Time (p_c), s		9.0		0.5		9.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: 56th St & Thomas Road

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	234	1092	24	35	878	186	22	142	35	204	151	256
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	254	1187	26	38	954	202	24	154	38	222	164	278
Adj No. of Lanes	1	3	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	3243	71	308	1447	306	197	787	189	359	492	440
Arrive On Green	0.09	0.63	0.63	0.50	0.50	0.50	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	5121	112	459	2909	615	944	2832	681	1186	1770	1583
Grp Volume(v), veh/h	254	786	427	38	580	576	24	95	97	222	164	278
Grp Sat Flow(s),veh/h/ln	1774	1695	1843	459	1770	1754	944	1770	1743	1186	1770	1583
Q Serve(g_s), s	5.8	10.0	10.0	4.1	22.0	22.1	2.1	3.7	3.8	15.9	6.6	13.8
Cycle Q Clear(g_c), s	5.8	10.0	10.0	4.1	22.0	22.1	15.9	3.7	3.8	19.7	6.6	13.8
Prop In Lane	1.00		0.06	1.00		0.35	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	364	2147	1167	308	880	873	197	492	484	359	492	440
V/C Ratio(X)	0.70	0.37	0.37	0.12	0.66	0.66	0.12	0.19	0.20	0.62	0.33	0.63
Avail Cap(c_a), veh/h	478	2147	1167	308	880	873	197	492	484	359	492	440
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	7.9	7.9	12.4	16.9	16.9	35.4	24.8	24.9	32.4	25.9	28.5
Incr Delay (d2), s/veh	3.0	0.5	0.9	0.8	3.8	3.9	1.3	0.9	0.9	7.8	1.8	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	8.3	9.0	1.1	17.2	17.1	1.1	3.4	3.5	10.0	6.3	11.1
LnGrp Delay(d),s/veh	17.6	8.4	8.8	13.2	20.7	20.8	36.7	25.7	25.8	40.2	27.7	35.2
LnGrp LOS	B	A	A	B	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1467			1194			216			664	
Approach Delay, s/veh		10.1			20.5			27.0			35.0	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	12.2	48.8
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.0		57.0		25.0	14.0	39.0
Max Q Clear Time (g_c+I1), s		17.9		12.0		21.7	7.8	24.1
Green Ext Time (p_c), s		2.9		28.3		1.6	0.4	12.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: 56th St & Camelback Rd

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	1481	209	256	1532	11	171	15	197	13	17	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	1610	227	278	1665	12	186	16	214	14	18	20
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	2057	920	310	2601	19	312	21	281	140	153	169
Arrive On Green	0.58	0.58	0.58	0.13	0.96	0.96	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	294	3539	1583	1774	3602	26	1364	111	1489	1146	807	897
Grp Volume(v), veh/h	16	1610	227	278	817	860	186	0	230	14	0	38
Grp Sat Flow(s),veh/h/ln	294	1770	1583	1774	1770	1858	1364	0	1600	1146	0	1704
Q Serve(g_s), s	2.2	31.5	6.3	6.7	4.3	4.3	11.8	0.0	12.3	1.1	0.0	1.7
Cycle Q Clear(g_c), s	2.2	31.5	6.3	6.7	4.3	4.3	13.5	0.0	12.3	13.3	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.93	1.00		0.53
Lane Grp Cap(c), veh/h	251	2057	920	310	1278	1342	312	0	302	140	0	322
V/C Ratio(X)	0.06	0.78	0.25	0.90	0.64	0.64	0.60	0.00	0.76	0.10	0.00	0.12
Avail Cap(c_a), veh/h	251	2057	920	316	1278	1342	312	0	302	140	0	322
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	14.5	9.2	21.1	0.6	0.6	35.9	0.0	34.6	40.9	0.0	30.3
Incr Delay (d2), s/veh	0.5	3.1	0.6	26.4	2.5	2.4	8.1	0.0	16.4	1.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	22.7	5.2	13.8	4.1	4.2	8.9	0.0	11.1	0.7	0.0	1.5
LnGrp Delay(d),s/veh	8.8	17.5	9.9	47.5	3.0	2.9	44.0	0.0	51.0	42.3	0.0	31.0
LnGrp LOS	A	B	A	D	A	A	D		D	D		C
Approach Vol, veh/h		1853			1955			416			52	
Approach Delay, s/veh		16.5			9.3			47.9			34.1	
Approach LOS		B			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		21.0	12.7	56.3		21.0		69.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		17.0	9.0	52.0		17.0		65.0
Max Q Clear Time (g_c+I1), s		15.5	8.7	33.5		15.3		6.3
Green Ext Time (p_c), s		0.4	0.0	17.7		0.4		51.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	4	81	4	0	5	88	438	7	9	433	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	63	4	88	4	0	5	96	476	8	10	471	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	6	131	119	0	136	772	1537	1306	829	1537	1306
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.82	0.82	0.82
Sat Flow, veh/h	1405	69	1524	1299	0	1583	904	1863	1583	908	1863	1583
Grp Volume(v), veh/h	63	0	92	4	0	5	96	476	8	10	471	18
Grp Sat Flow(s),veh/h/ln	1405	0	1594	1299	0	1583	904	1863	1583	908	1863	1583
Q Serve(g_s), s	3.9	0.0	5.0	0.3	0.0	0.3	0.8	0.0	0.0	0.2	5.3	0.2
Cycle Q Clear(g_c), s	4.1	0.0	5.0	5.3	0.0	0.3	6.1	0.0	0.0	0.2	5.3	0.2
Prop In Lane	1.00		0.96	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	0	137	119	0	136	772	1537	1306	829	1537	1306
V/C Ratio(X)	0.32	0.00	0.67	0.03	0.00	0.04	0.12	0.31	0.01	0.01	0.31	0.01
Avail Cap(c_a), veh/h	419	0	390	325	0	387	772	1537	1306	829	1537	1306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	0.0	39.9	42.5	0.0	37.7	0.2	0.0	0.0	1.4	1.8	1.4
Incr Delay (d2), s/veh	0.9	0.0	5.5	0.1	0.0	0.1	0.3	0.4	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	4.4	0.2	0.0	0.2	0.4	0.3	0.0	0.1	5.1	0.1
LnGrp Delay(d),s/veh	40.5	0.0	45.4	42.6	0.0	37.8	0.5	0.4	0.0	1.4	2.4	1.4
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		155			9			580			499	
Approach Delay, s/veh		43.4			39.9			0.4			2.3	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.2		11.8		78.2		11.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		8.1		7.0		7.3		7.3
Green Ext Time (p_c), s		8.7		0.6		8.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: 64th St & Phoenician Blvd (E-W)

11/7/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	0	82	7	0	4	67	291	3	4	390	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	35	0	89	8	0	4	73	316	3	4	424	17
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	0	135	120	0	135	812	1539	1308	953	1539	1308
Arrive On Green	0.09	0.00	0.09	0.09	0.00	0.09	1.00	1.00	1.00	0.83	0.83	0.83
Sat Flow, veh/h	1407	0	1583	1303	0	1583	944	1863	1583	1056	1863	1583
Grp Volume(v), veh/h	35	0	89	8	0	4	73	316	3	4	424	17
Grp Sat Flow(s),veh/h/ln	1407	0	1583	1303	0	1583	944	1863	1583	1056	1863	1583
Q Serve(g_s), s	2.1	0.0	4.9	0.5	0.0	0.2	0.5	0.0	0.0	0.1	4.6	0.2
Cycle Q Clear(g_c), s	2.3	0.0	4.9	5.4	0.0	0.2	5.1	0.0	0.0	0.1	4.6	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	0	135	120	0	135	812	1539	1308	953	1539	1308
V/C Ratio(X)	0.18	0.00	0.66	0.07	0.00	0.03	0.09	0.21	0.00	0.00	0.28	0.01
Avail Cap(c_a), veh/h	421	0	387	327	0	387	812	1539	1308	953	1539	1308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	39.9	42.5	0.0	37.8	0.2	0.0	0.0	1.4	1.8	1.4
Incr Delay (d2), s/veh	0.4	0.0	5.4	0.2	0.0	0.1	0.2	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	4.2	0.4	0.0	0.2	0.3	0.2	0.0	0.0	4.6	0.1
LnGrp Delay(d),s/veh	39.2	0.0	45.3	42.8	0.0	37.8	0.4	0.3	0.0	1.4	2.2	1.4
LnGrp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		124			12			392			445	
Approach Delay, s/veh		43.6			41.1			0.3			2.2	
Approach LOS		D			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.3		11.7		78.3		11.7
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		60.0		22.0		60.0		22.0
Max Q Clear Time (g_c+I1), s		7.1		6.9		6.6		7.4
Green Ext Time (p_c), s		6.1		0.5		6.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

APPENDIX H

2018 QUEUE LENGTH ANALYSIS

Signalized Intersection
2023

Average Vehicle Length (ft): 25 Cycles: 1.5
Intersection Cycle Length (sec): 90
Equation Used: storage length = 1.5 x (vehicles/hour)/(cycles/hour) x average vehicle length

ID	Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	1.5x(veh/hr)/	Storage Length (ft)
1	56th St. & Thomas Rd.	NB Left	37	0	22	2	50
		SB Left	195	0	204	8	200
		EB Left	301	0	234	12	300
		WB Left	24	0	35	2	50
2	56th St. & Indian School Rd.	NB Left	108	0	148	6	150
		SB Left	61	0	59	3	75
		EB Left	183	0	111	7	175
		WB Left	137	0	104	6	150
3	56th St. & Lafayette Blvd.	NB Left	77	0	66	3	75
		SB Left	12	0	25	1	25
		NB Right	158	0	111	6	150
		SB Right	24	0	26	1	25
		EB Right	95	0	50	4	100
4	56th St. & Camelback Rd.	NB Left	223	0	171	9	225
		SB Left	7	0	13	1	25
		EB Left	12	0	15	1	25
		WB Left	230	0	256	10	250
		EB Right	253	0	209	10	250
8	Phoenician Blvd./Jokake Rd. & Camelback Rd.	NB Left	26	0	16	1	25
		SB Left	82	0	140	6	150
		EB Left	136	0	109	6	150
		WB Left	9	0	17	1	25
		WB Right	239	0	122	9	225
11	64th St. & Camelback Rd.	NB Left	29	0	23	2	50
		SB Left	240	0	187	9	225
		EB Left	296	0	234	12	300
		WB Left	21	0	27	2	50
		NB Right	27	0	21	2	50
		SB Right	352	0	234	14	350
		WB Right	127	0	269	11	275
12	64th St. & Phoenician Blvd. (E-W)	NB Left	31	0	88	4	100
		SB Left	3	0	9	1	25
		NB Right	6	0	7	1	25
		SB Right	7	0	17	1	25

Unsignalized Intersection

2023

Average Vehicle Length (ft): 25

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

ID	Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Storage Length (ft)
5	Alta Hacienda Dr./ Los Vecinos Dr & Camelback Rd.	EB Left	6	0	4	1	25
		WB Left	0	0	2	1	25
6	Hilltop Rd./Arcacia Ln. & Camelback Rd.	EB Left	0	0	0	0	0
		WB Left	4	0	3	1	25
7	59th Pl. & Camelback Rd.	EB Left	2	0	4	1	25
		WB Left	1	0	1	1	25
9	61st St. & Camelback Rd.	EB Left	4	0	10	1	25
		WB Left	2	0	4	1	25
10	62nd St. & Camelback Rd.	EB Left	3	0	0	1	25
		WB Left	32	0	43	2	50
13	Cholla Ln. & 64th St.	NB Left	11	0	10	1	25