



September 6, 2016

Mr. Marcus Fuller  
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City of Palm Springs  
3200 E. Tahquitz Canyon Way  
Palm Springs, CA 92262

***SUBJECT: Potential Traffic Impacts of a Third Access for the Serena Park Development (TTM 36691) Via Francis Drive***

Dear Mr. Fuller;

Endo Engineering has been asked to evaluate the potential traffic impacts associated with the addition of a third access for the future residents of the Serena Park development via the eastern terminus of Francis Street to improve access to and from the southwest. Endo Engineering previously prepared the *Palm Springs Country Club (Tentative Tract Map 36691) Traffic Impact Analysis* (dated February 10, 2014) addressing the General Plan Amendment, Planned Development District, and Tentative Tract Map 36691 proposed to allow the development of the project site with up to 441 residential dwelling units. The supplemental analysis provided below evaluates the potential traffic impacts associated with minor modifications to the proposed site access plan. The Francis Drive access that was previously proposed as gated and limited to emergency access only is evaluated herein as a public access for use by future residents. The same development previously addressed is evaluated below, but with public access to the surrounding street system proposed at all three locations shown in Figure 1.

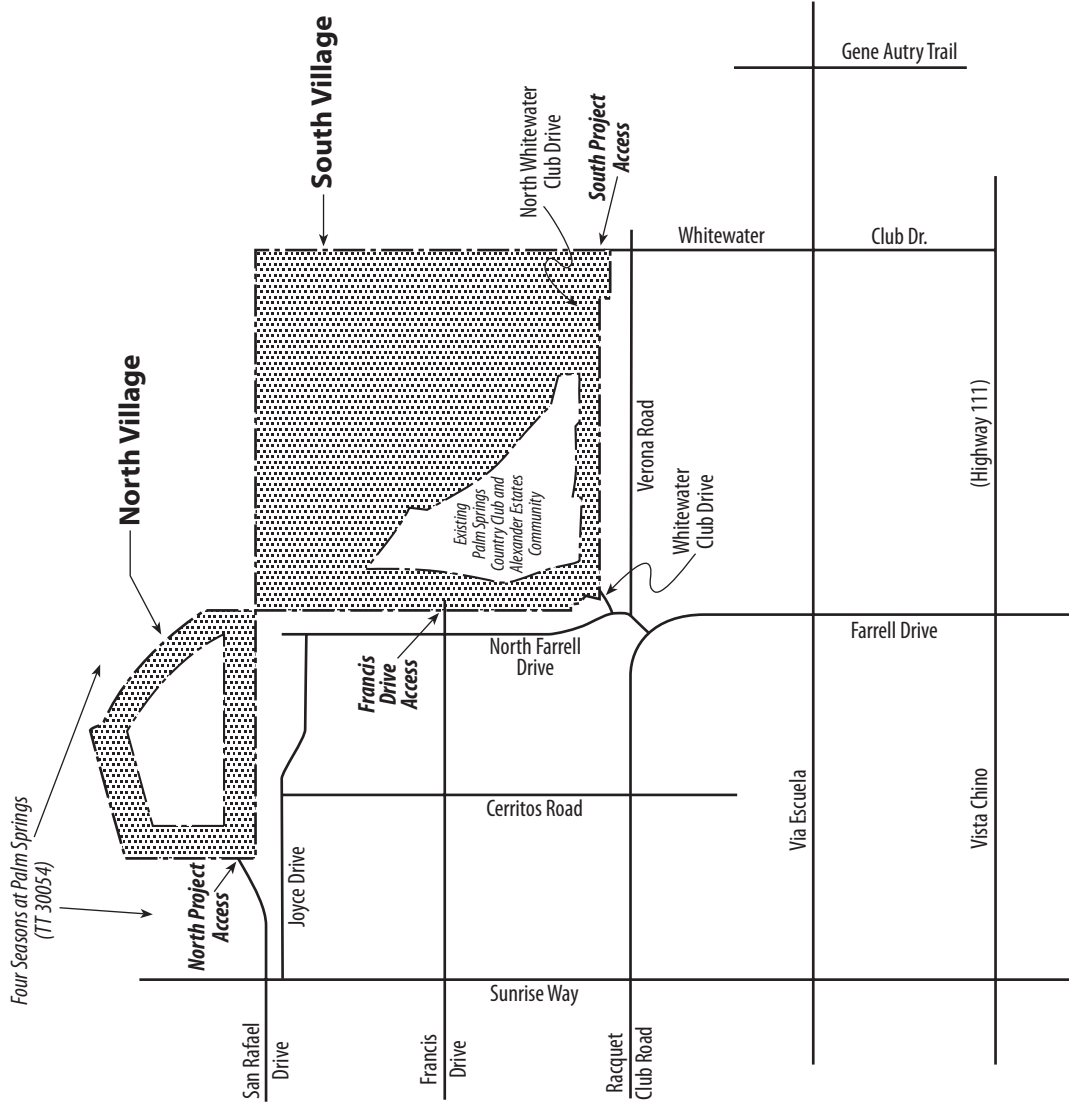
***Project Location and Description***

The site is located north of Verona Road, between Sunrise Way and North Whitewater Club Drive. It is comprised of 156.18 gross acres (125.88 net acres) formerly developed as the non-residential portion of the Palm Springs Country Club project. The project site was previously developed as a private golf course, driving range, and golf clubhouse with four tennis courts. As the development was not economically sustainable, the clubhouse was demolished and the turf associated with the fallow 18-hole golf course was removed.

The currently proposed Serena Park development includes development within two planning areas (the North Village and the South Village) with three access locations, as shown in Figure 1. The North Village is located north of San Rafael Drive and could include up to 137 multi-family attached cluster dwelling units. The South Village is located between San Rafael Drive and Verona Road and could include up to 304 single-family detached dwelling units. Although the development that is ultimately approved may include fewer dwelling units, this analysis addresses the same 441 residential dwelling units previously evaluated in the 2014 traffic impact study (2014 TIS). This will facilitate a direct comparison of conditions with and without the currently proposed access modifications.

The proposed site access connection to Francis Drive, east of Farrell Drive, would improve access to the southwest for future residents of the northern half of the South Village as well as those who live in the western portion of the South Village. Francis Drive would provide the shortest route to Sunrise Way, Racquet Club Road, and Farrell Drive for those residents. Based on the internal circulation plan, lot layout, and location of the three site access points, the Francis Drive access is projected to attract approximately twelve percent of the project-related traffic previously assumed to enter and exit the site through the North Project Access and the South Project Access shown in Figure 1.

Figure 1  
Project Location



## **Previous Traffic Study**

Endo Engineering prepared the *Palm Springs Country Club (Tentative Tract Map 36691) Traffic Impact Analysis* dated February 10, 2014. That study evaluated the traffic impacts at ten key intersections associated with replacing the fallow former Palm Springs Country Club Golf Course and clubhouse facilities with the development of up to 441 residential dwelling units and the dedication of a 5.37-acre site for a future public park. The site access plan evaluated at that time included a gated access: (1) to the northwest via San Rafael Drive, east of Sunrise Way, and (2) to the southeast via North Whitewater Club Drive, north of Verona Road. A gated emergency access connection was assumed at the eastern terminus of Francis Drive (east of North Farrell Drive).

Since the access connection to Francis Drive was originally limited to emergency use only, traffic counts were not made west of the South Village along Francis Drive or Cerritos Road in conjunction with the 2014 TIS. An analysis of traffic operations during the peak hours at intersections along Francis Drive and Cerritos Road was not required or included in the 2014 TIS, since no site traffic was expected to use these Collector Streets at that time.

## **Scope of Analysis**

The proposed public access connection to Francis Drive would reduce the future traffic volumes at both the North Project Access (on East San Rafael Drive) and the South Project Access (on North Whitewater Club Drive). Therefore, the project-related traffic impacts in the vicinity of these two site access connections would be reduced to levels below those previously identified in the 2014 TIS. However, the increase in site traffic volumes in the vicinity of the Francis Drive access connection could potentially result in new traffic impacts in the area located west of the South Village that were not previously identified in the 2014 TIS.

New traffic counts were collected in the area west of the South Village that could be affected by site traffic. The new traffic count data was used to evaluate the significance of the potential traffic impacts associated with allowing public access to the project site via Francis Drive. Figure 2 shows the study area addressed, the locations where new traffic counts were made, and the key intersections that were evaluated. The key intersections evaluated were selected to identify any potentially significant localized impacts that would require mitigation as a result of a third project access via Francis Drive.

The current peak hour traffic operations were evaluated for the key intersections shown in Figure 2. Site traffic was redistributed to the surrounding street system through all three of the site access points. Future year 2030 traffic projections were developed with and without site traffic. Future year 2030 peak hour traffic operations were evaluated for the key intersections west of the South Village, with and without site traffic, to assess the significance of the potential impacts and determine if mitigation would be warranted.

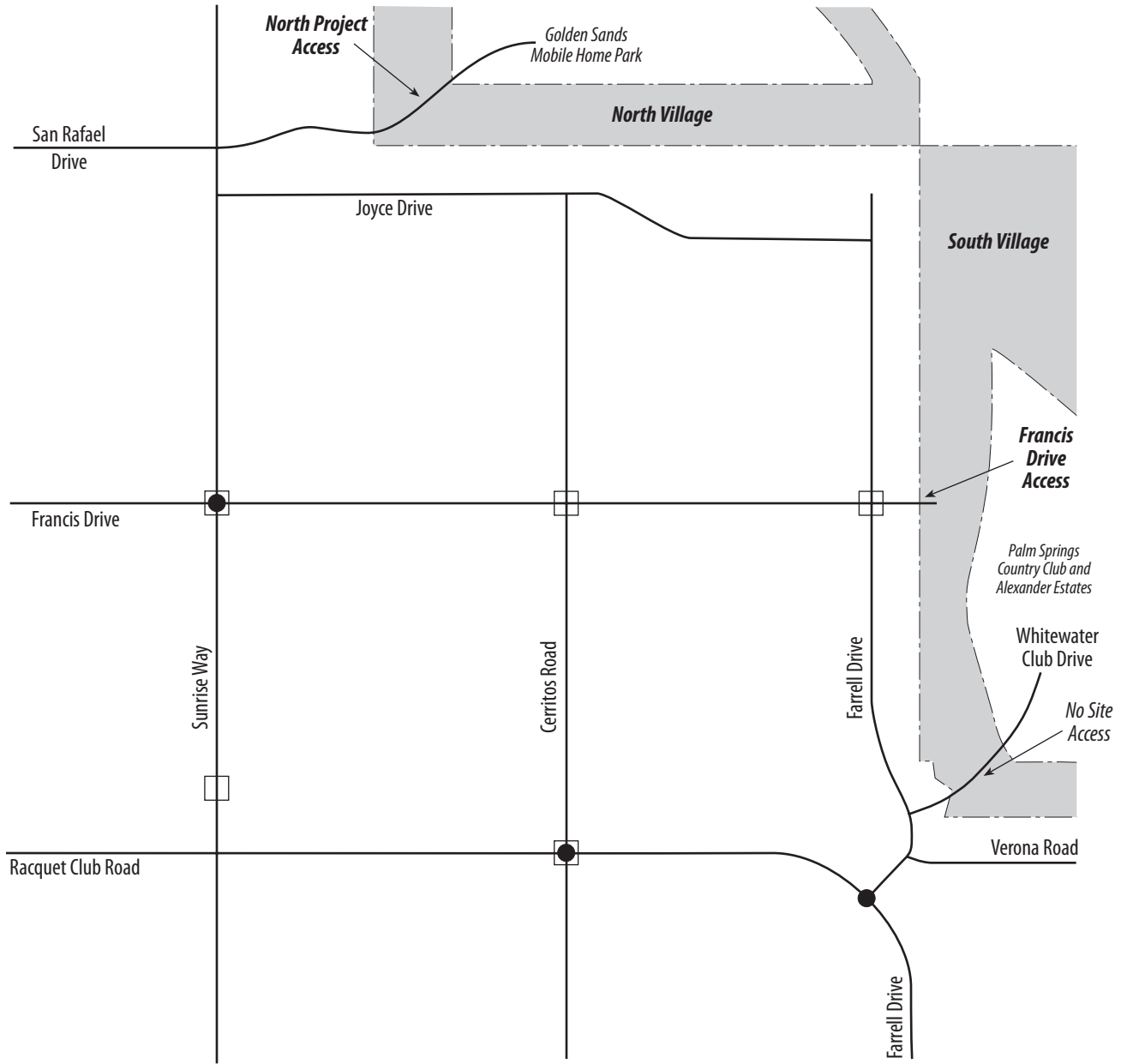
## **Supplemental Baseline Information**

### ***Surrounding Street System***

Figure 3 provides supplemental information related to the surrounding street system in the area west of the South Village that could be affected by site traffic using Francis Drive for access. The number of midblock through lanes is shown therein as well as the current traffic control at the intersections.

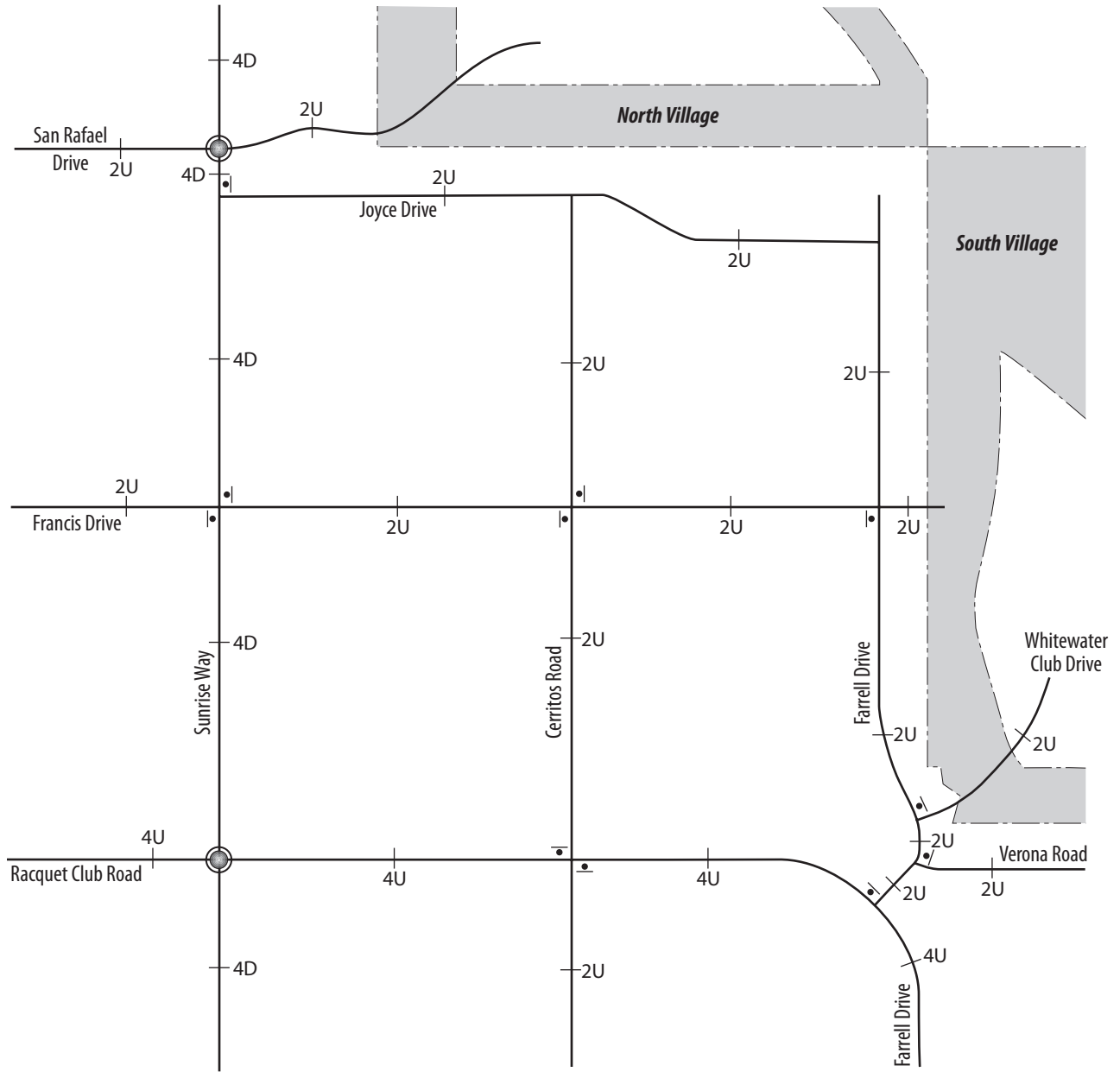
Figure 2-2 in the 2014 TIS shows the current classifications of the General Plan circulation system in the study area adopted in the 2007 *Palm Springs General Plan*. The City of Palm Springs has identified a daily design capacity of 11,700 vehicles per day for 2-lane Collector Streets. The primary site access route along North Whitewater Club Drive and Verona Road would rely on Collector Streets with sufficient capacity to accommodate the future project-related traffic volumes.

Figure 2  
Study Area and  
Key Intersections



Legend	
●	Key Intersection
□	New Count Location
■	Project Site

Figure 3  
Surrounding Street System



Legend	
$\frac{2U}{ }$	Number of Through Lanes
D = Divided	U = Undivided
•	Stop Sign
⊙	Signalized Intersection

Francis Drive is classified as a Collector Street in the 2007 *Palm Springs General Plan*. Farrell Drive is classified as a Secondary Thoroughfare south of Racquet Club Road. Between Racquet Club Road and Whitewater Club Drive, Farrell Drive is classified as a Collector Street. Between Whitewater Club Drive and Francis Drive, Farrell Drive is a local residential street. Cerritos Road is classified as a Collector Street between Francis Drive and Racquet Club Road.

With Francis Drive, as a third public access connection for future residents, project-related traffic would rely on a Collector street (Francis Drive) for east/west travel. North/south travel by project-related traffic would occur along Collector Streets (Cerritos Road and Farrell Drive) and a local street (Farrell Drive, south of Francis Drive).

### *Updated Current Traffic Volumes*

New midday (11:30 AM - 1:30 PM) and evening (4:00 PM – 6:00 PM) peak hour traffic counts were made by Counts Unlimited, Inc. on August 25, 2016 (Wednesday) at four intersections located west of the South Village. A 24-hour machine traffic count was also made on Sunrise Way, north of Racquet Club Road on August 25, 2016. The traffic count data is provided as Attachment A. The new peak hour traffic count data was increased by fifty percent to reflect peak season conditions in the year 2016. This seasonal adjustment was identified by comparing the new 24-hour traffic count (10,593 ADT) made on Sunrise Way, north of Racquet Club Drive, to the peak season weekday volume of 15,420 ADT at this location shown in the CVAG 2015 *Traffic Census Report*.

Figure 4 shows the existing traffic volumes at the key intersections in the study area based on the new traffic count data, after the seasonal adjustment to reflect peak season conditions. The turning movement volumes shown in Figure 4 at the intersection of Farrell Drive and Racquet Club Road reflect the baseline condition in the 2014 TIS. The midday and evening peak hour turning movement volumes at the key intersections shown in Figure 4 were evaluated to determine the current control delay and levels of service. Figure 5 shows the existing approach lanes and traffic control at the key intersections in this area used to evaluate the peak hour traffic operations.

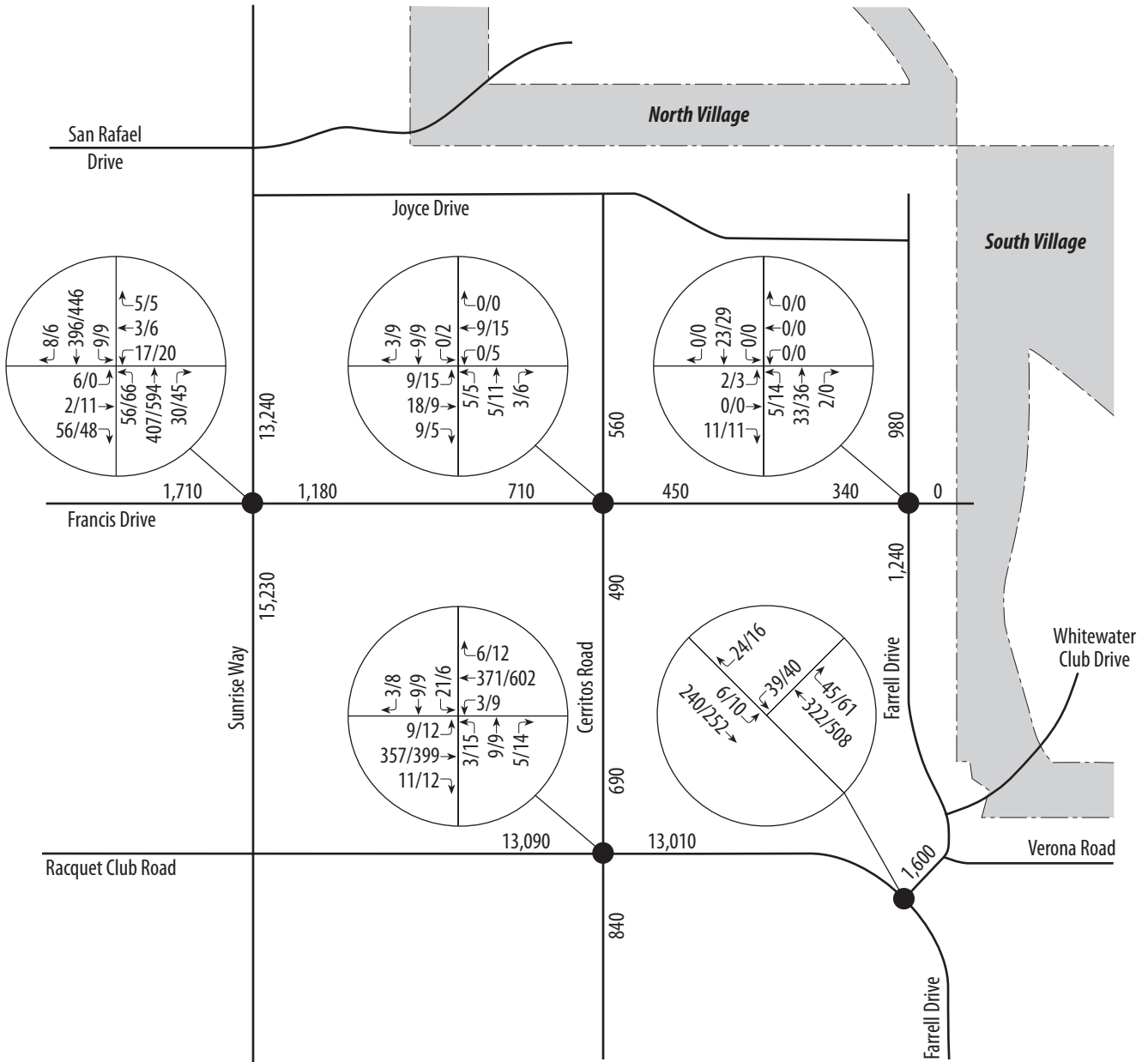
The weekday traffic volumes shown in Figure 4 for the roadway segments adjacent to the key intersections were estimated from the peak hour turning movement volumes by assuming that approximately 8 percent of the weekday traffic volume occurs during the evening peak hour. The current weekday traffic volume on Farrell Drive is approximately 1,240 vehicles per day (VPD) south of Francis Drive and 980 VPD north of Francis Drive. The current weekday traffic volumes on Francis Drive range from 1,180 VPD (east of Sunrise Way) to 340 VPD (west of Farrell Drive). Weekday volumes on Cerritos Road range from 490 VPD (south of Francis Drive) to 690 VPD north of Racquet Club Road.

### *Current Peak Hour Traffic Operations*

The *Palm Springs General Plan* has established that roadways and intersections in the City are required to have sufficient capacity to allow them to operate at LOS D or better when traffic volumes are highest in the winter and spring. Intersection delay can be evaluated during the peak hours using the methodology established in the *Highway Capacity Manual* to determine whether or not mitigation would be necessary to meet the minimum intersection performance standard of LOS D. Although a single LOS is not defined for unsignalized intersections with two-way stop control, it can be concluded that the intersection is operating at an acceptable LOS when the intersection approach with the most delay is providing an acceptable LOS.

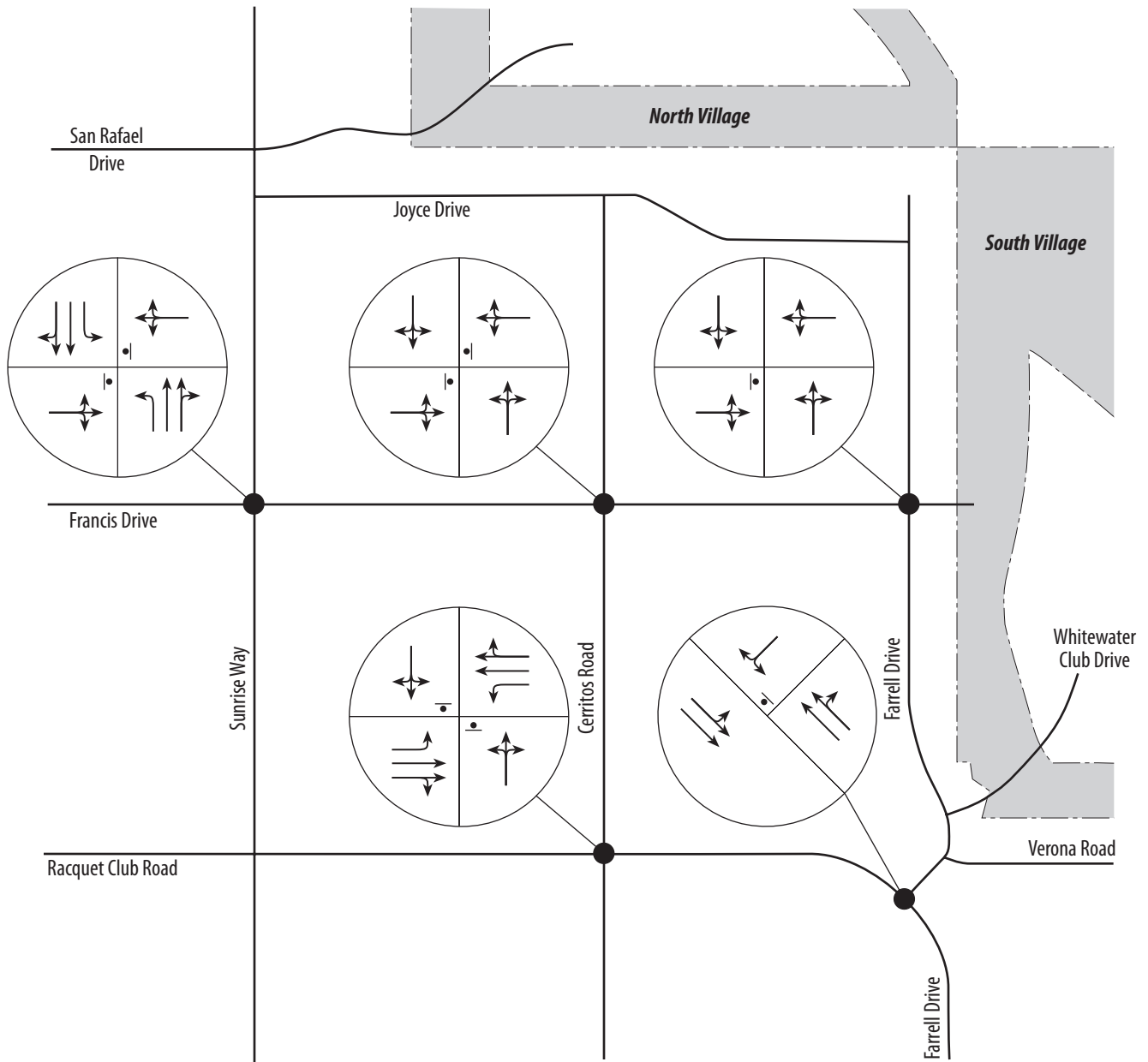
Table 1 shows the current peak hour average control delay and level of service on the minor-street approaches with the most delay at the three unsignalized intersections evaluated. The three intersections evaluated are currently providing acceptable levels of service on all approaches during the midday and evening peak hours. The average control delay is currently lowest during the midday peak hour on the southbound Farrell Drive approach at the intersection of Racquet Club Road, where it is 11.5 seconds per vehicle (LOS B). The average control delay is currently highest during the evening peak hours on the westbound Francis Drive approach at the intersection of Sunrise Way, where it is 28.8 seconds per vehicle (LOS D).

Figure 4  
Existing Traffic Volumes  
(Peak Season Weekday)



Legend	
↑ 5/8	Midday/PM Peak Hour Turning Volume
1,000	Estimated Weekday Volume

Figure 5  
Existing Approach Lanes  
and Traffic Control



Legend	
	Through Lane
	Exclusive Left-Turn Lane
	Shared Through/Right Lane
	Shared Through/Left Lane
	Shared Through/Right/Left Lane
	Stop Sign



**Table 1**  
**Current Weekday Peak Hour LOS at the Key Intersections**  
 (Year 2016 - Peak Season)<sup>a</sup>

Unsignalized Key Intersection	Midday Peak Hour			Evening Peak Hour		
	LOS	Delay (Sec/Veh)	Approach	LOS	Delay (Sec/Veh)	Approach
Sunrise Way @ Francis Drive	C	18.5	WB	D	28.8	WB
Cerritos Road @ Racquet Club Road	C	15.5	SB	C	18.5	SB
Farrell Drive @ Racquet Club Road <sup>b</sup>	B	11.5	SB	B	14.3	SB

a. The HCS+ worksheets are provided in Attachment B. SB=Southbound. WB=Westbound. An 8 percent truck mix was assumed. A peak hour factor of 1.0 was assumed. Unsignalized intersection LOS shown reflects the approach with the most delay (0-10 sec./veh.=LOS A; 10-15 sec./veh.=LOS B; 15-25 sec./veh.=LOS C; 25-35 sec./veh.=LOS D; 35-50 sec./veh.=LOS E; 50+ sec./veh. = LOS F) per HCM 2000 page 17-2 and 17-32. Motorists on the minor-street approaches that are crossing or turning left onto the major street were assumed to be using one-stage gap acceptance (i.e., no median queue storage exists on the major street).

b. The existing turning movement volumes, control delay, and LOS shown for the intersection of Farrell Drive and Racquet Club Road was taken from the *Traffic Impact Study for Tentative Tract Map No. 36691*, February 10, 2014 and reflects year 2013 peak season conditions.

Motorists westbound on Francis Drive at Sunrise Way currently experience LOS B operation during the midday peak hour and LOS D operation during the evening peak hour on weekdays. The control delay is higher for motorists crossing Sunrise Way or turning left onto Sunrise Way than for those making right turns onto Sunrise Way.

The control delay is a function of the number of gaps in the traffic flows on Sunrise Way that are long enough to allow motorists waiting on Francis Drive to either cross Sunrise Way or turn left onto southbound Sunrise Way in a single continuous movement. This is called single-stage gap acceptance. At this four-way intersection, there is no protected refuge area in the median on Sunrise Way where motorists can pause after crossing the near lanes while waiting to complete a two-stage left-turn and merge into the far lanes. Although Sunrise Way is a four-lane divided roadway at Francis Drive, a northbound and southbound left-turn bay occupies the flush median. Eastbound and westbound through movements on Francis Drive are permitted to cross Sunrise Way at this intersection. Since the flush (painted) median on Sunrise Way does not provide a refuge with queue storage space for one vehicle, it was assumed that westbound motorists are not able to cross the near lanes on Sunrise Way then wait in the median for a gap in the traffic in the far lanes in which to complete their left turns. Single-stage gap acceptance was assumed.

Motorists southbound on Cerritos Road at Racquet Club Road experience an average control delay of 15.5 seconds per vehicle during the midday peak hour (LOS B) and 18.5 seconds per vehicle during the evening peak hour (LOS C). The southbound control delay is primarily the result of the volume of conflicting eastbound and westbound traffic on Racquet Club Road. The control delay on Cerritos Road is experienced mostly by southbound motorists crossing or turning left onto Racquet Club Road. The control delay associated with the southbound right-turn movement is lower than the average control delay for the entire southbound approach.

The three intersections evaluated in Table 1 each include at least one four-lane roadway. The peak hour control delay and levels of service were not evaluated for the intersection of Cerritos Road and Francis Drive. The peak hour turning movement volumes shown in Figure 4 are so low at this intersection of two-lane roadways that all approaches are clearly operating at acceptable levels of service with essentially no control delay. This was confirmed with field observations at this intersection during the peak hours.

The existing traffic volumes shown in Figure 4 were compared to the peak hour traffic signal volume warrants. None of the three unsignalized intersections evaluated were found to currently meet or exceed the peak hour traffic signal volume warrants.

### ***Supplemental Future Traffic Projections***

The current average control delay of 28.8 seconds per westbound vehicle on Francis Drive at Sunrise Way during the evening peak hour is characterized as LOS D operation. As mainline traffic volumes increase in the future on Sunrise Way, many of the motorists currently making westbound left-turns during the peak hours at the intersection of Sunrise Way and Francis Drive are expected to divert to Cerritos Road or Farrell Drive and make a right turn onto Racquet Club Road to minimize their travel time. To ensure a conservative analysis, the expected reduction in the current westbound left-turn volumes was not incorporated in the future traffic projections.

### ***Site Traffic Distribution and Assignment With Access Via Francis Drive***

Origins and destinations associated with the trips generated by the Serena Park development that would be taking access via Francis Drive are located primarily southwest of the project site. Rather than using Francis Drive to turn left onto Sunrise Way during the peak hours, outbound site traffic is expected to use both Cerritos Road and Farrell Drive for north/south travel and turn right onto westbound Racquet Club Road. Both of these alternate routes are expected to continue to provide convenient access for future residents of the site with relatively little control delay as the mainline traffic volumes increase on Sunrise Way in the future.

The trip generation forecast included in the 2014 TIS was assumed and site traffic was redistributed through the North Project Access, the South Project Access, and the Francis Drive Access. The distribution of project-related trips in the area west of the South Village with the Francis Drive access is shown in Figure 6. To ensure a worst-case analysis, none of the project-related trips were assigned to origins or destinations within the study area. All of the trips were assigned beyond the periphery of the study area.

Figure 7 shows the project-related peak hour turning movement traffic volumes at the Francis Drive site access and within the adjacent residential area west of the South Village. The weekday (two-way) site traffic volumes are also shown therein for the roadway segments adjacent to the key intersections. The site traffic volumes shown in Figure 7 using Racquet Club Road and Sunrise Way include both inbound and outbound site traffic using all three of the Serena Park access points. The site traffic volumes shown in Figure 7 at two of the intersections (Cerritos Road @ Francis Drive and Farrell Drive @ Francis Drive) include only inbound and outbound site traffic using the Francis Drive access.

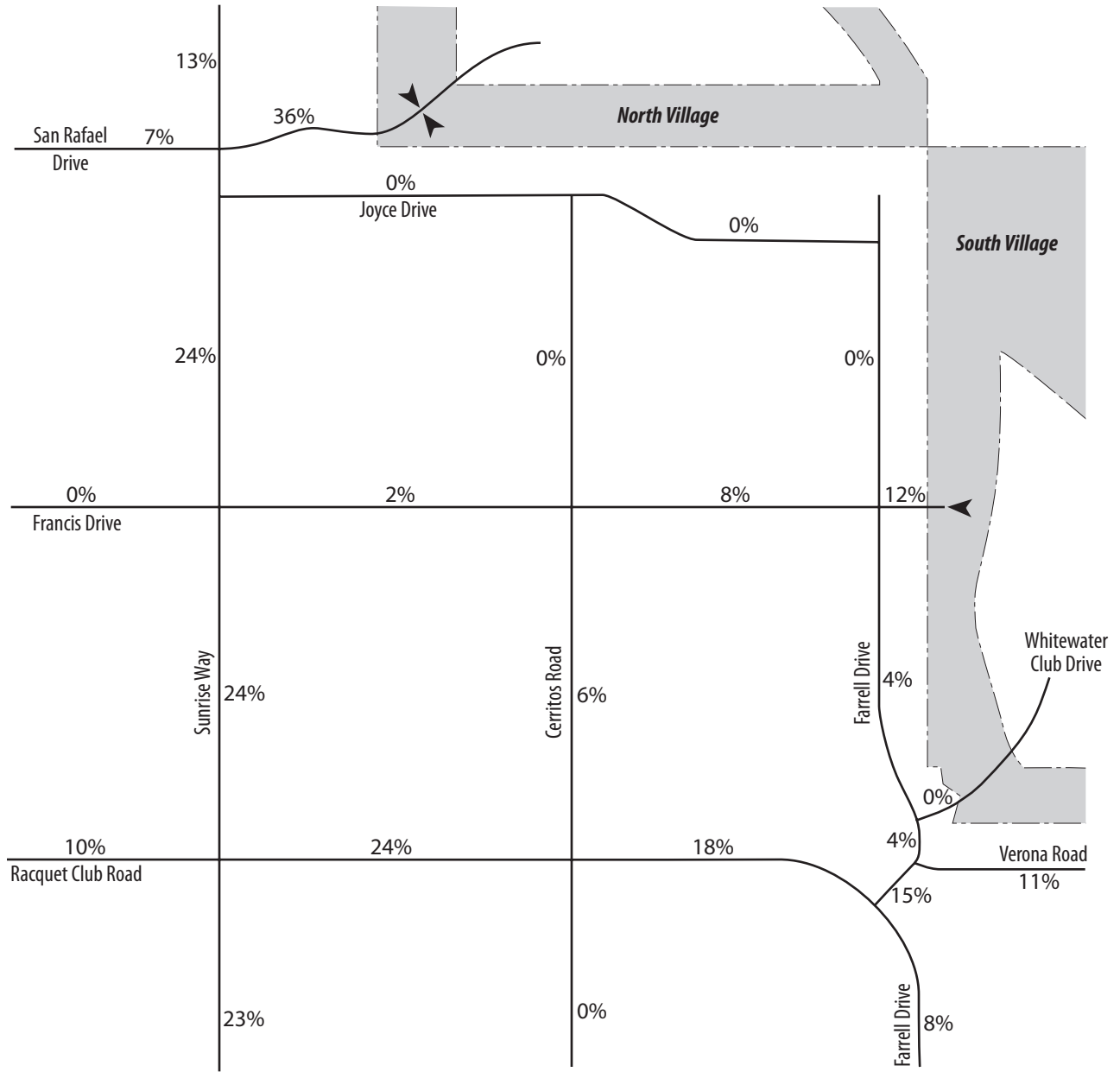
### ***Future Traffic Projections***

The horizon year 2030 traffic projections developed in conjunction with the 2007 *Palm Springs General Plan* were used as the basis for the future traffic projections in the 2014 TIS and this supplemental analysis. The methodology utilized to develop the future traffic projections herein is consistent with that used in the 2014 traffic study.

Although some Collector Streets were included in the 2007 General Plan traffic model, future year 2030 traffic projections were not provided for all of the Collector Streets within the study area. The two-lane local streets within the study area were not included in the 2007 General Plan traffic model. For roadways without future year 2030 traffic projections, a future traffic growth equivalent to ten percent of the current traffic volume was assumed. The residential area along Francis Drive has scattered undeveloped lots that may eventually generate some of these future trips.

Figure 8 provides the future planning horizon year 2030 through traffic volumes, prior to the addition of the traffic generated by the proposed Serena Park project. Figure 9 shows the year 2030 total traffic volumes, following the addition of the traffic generated by the completed Serena Park project with three public access points including Francis Drive, east of Farrell Drive.

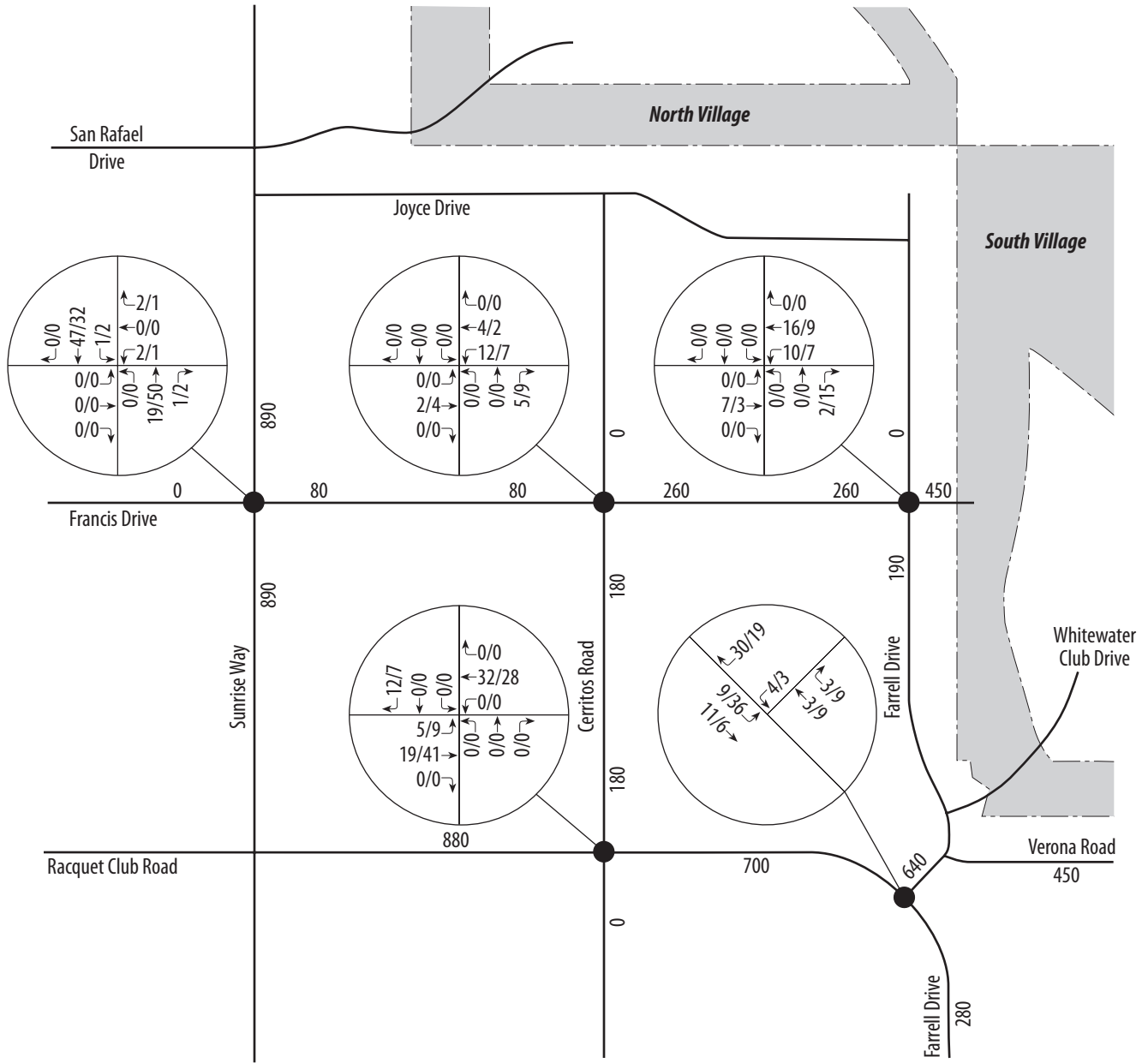
Figure 6  
Site Traffic Distribution



**Legend**

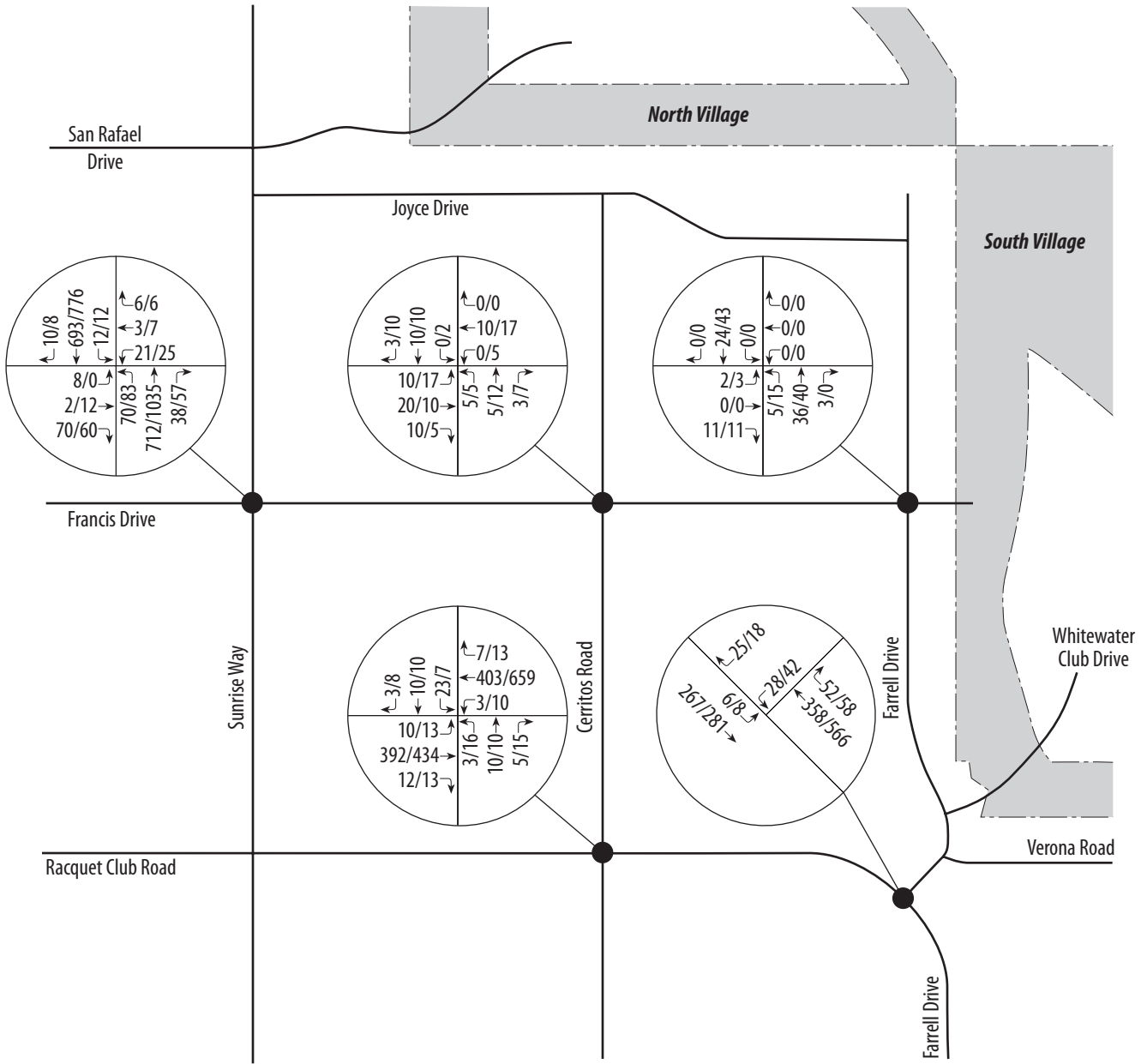
- 100% Percent of Site Traffic (Inbound + Outbound)
- ◀ Site Access

Figure 7  
Project-Related Traffic Volumes



Legend	
↑ 5/8	Midday/PM Peak Hour Turning Volume
1,000	Estimated Weekday Volume

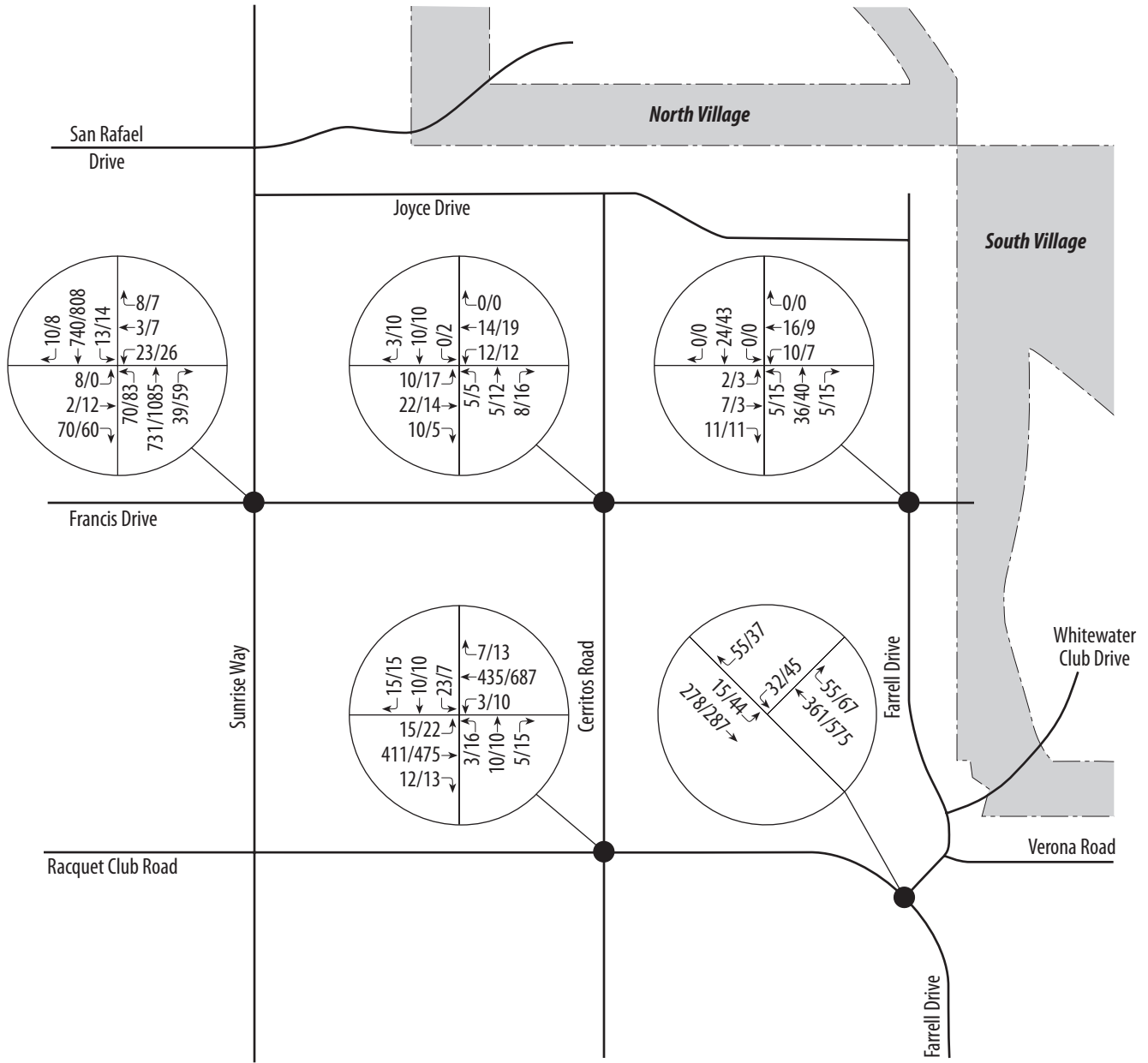
**Figure 8**  
**Through Traffic Volumes**  
 (Year 2030)



**Legend**

↑ 5/8 Midday/PM Peak  
 Hour Turning Volume

Figure 9  
Total Traffic Volumes  
(Year 2030)



**Legend**

↖ 5/8 Midday/PM Peak  
Hour Turning Volume

Table 2 provides the current and future peak season weekday traffic volumes for comparison to the project-related weekday traffic projections. Future year 2030 through traffic projections (without site traffic) and total traffic projections (with site traffic) are provided for those roadway segments within the study area where a change in the weekday traffic volume is expected to occur as a result of the opening of the Francis Drive access to residential traffic generated within the Serena Park development.

**Table 2**  
**Peak Season Weekday Traffic Volume Projections**

Roadway Segment	Existing Year 2016	Site Traffic	Year 2030 No Project	Year 2030+ Project
<b>Francis Drive</b>				
- East of Sunrise Way	1,180	80	1,300	1,380
- West of Cerritos Road	710	80	780	860
- East of Cerritos Road	450	260	500	760
- West of Farrell Drive	340	260	370	630
- East of Farrell Drive	0	450	0	450
<b>Farrell Drive</b>				
- South of Francis Drive	1,240	190	1,360	1,550
- North of Racquet Club Road	1,600	640	2,400	3,040
<b>Cerritos Road</b>				
- South of Francis Drive	490	180	540	720
- North of Racquet Club Road	690	180	760	940

a. The Site Traffic volumes and the Year 2030+Project traffic volumes shown include trips associated with buildout of the Serena Park development entering and leaving the site through all three of the site access points (the North Project Access, the South Project Access and the Francis Drive Access).

b. The year 2030 No Project traffic volumes shown do not include any of the trips that would be generated by the Serena Park development.

The current weekday traffic volume on Farrell Drive, between Whitewater Club Drive and Francis Drive is approximately 1,240 vehicles per day. There is no future traffic projection for this roadway segment from the General Plan Traffic Model. Without the Serena Park development, the current traffic volume was assumed to increase by ten percent to 1,360 VPD by the year 2030. The project is projected to add 190 daily trips to this roadway. The 2030+project daily traffic volume is projected to be 1,550 vehicles per day. The City of Palm Springs has identified a design capacity of 11,700 vehicles per day for 2-lane collector streets. Although the City of Palm Springs has not adopted a daily capacity for local streets, Farrell Drive should be able to accommodate the projected increase in traffic volumes shown in Table 2. No significant project-related impact is projected to occur on this roadway segment.

Current weekday traffic volumes on Francis Drive range from a high of 1,180 VPD, east of Sunrise Way, to a low of 340 ADT, west of Farrell Drive. The projected year 2030+project daily traffic volumes range from 1,380 ADT, east of Sunrise Way, to 630 ADT, west of Farrell Drive. The future traffic projection of 450 VPD for Francis Drive, east of Farrell Drive, is entirely project-related traffic. These projected traffic volumes are within the capacity of Francis Drive. No significant project-related impact is projected to occur on Francis Drive.

Based on the future traffic projections for Sunrise Way in the 2007 *Palm Springs General Plan*, westbound vehicles on Francis Drive currently crossing or turning left onto Sunrise Way in the peak hours are projected to experience LOS F operation by the year 2030, with or without project-related traffic. This intersection does not appear to be a good candidate for signalization, since the

projected peak hour approach volumes on Francis Drive are not sufficient to meet or exceed the minimum minor-street approach volume necessary to consider traffic signal control. The poor levels of service experienced by motorists on the Francis Drive approaches are the result of high traffic volumes on Sunrise, and would occur even if only a few motorists were using the Francis Drive approaches.

Since there are alternative access routes available, motorists making turning movements with long delays will divert to alternate routes as traffic volumes increase in the future. The peak hour traffic counts at the intersection of Francis Drive and Sunrise Way currently show that the number of westbound vehicles turning left onto Sunrise Way from Francis Drive is only half the number of returning vehicles (making northbound right turns from Sunrise Way onto Francis Drive) at this intersection. The new counts indicate that motorists are already diverting to other routes to avoid the delay associated with the westbound left-turn movement at this intersection.

### **Supplemental Future Operational Analysis**

#### *Future Year 2030 Traffic Operations*

Table 3 summarizes the horizon year 2030 control delay and levels of service during the peak hours at the key intersections with and without the traffic generated by the development of the Serena Park project. With the three access connections proposed to serve with the Serena Park project, two of the three intersections evaluated are projected to operate at acceptable levels of service (LOS D or better) in the horizon year 2030 with and without site traffic volumes. The westbound approach on Francis Drive at the intersection of Sunrise Way is projected to experience excessive control delay and operate at LOS F with or without site traffic volumes in the evening peak hours of the year 2030.

**Table 3**  
**Year 2030 Weekday Peak Hour LOS at the Key Intersections<sup>a</sup>**

Unsignalized Key Intersection	Midday Peak Hour			Evening Peak Hour		
	LOS	Delay (Sec/Veh)	Approach	LOS	Delay (Sec/Veh)	Approach
<b>Year 2030 - No Site Traffic</b>						
Sunrise Way @ Francis Drive	E	43.1	WB	F	182.4	WB
Cerritos Road @ Racquet Club Road	C	16.6	SB	C	20.7	SB
Farrell Drive @ Racquet Club Road	B	11.4	SB	C	15.1	SB
<b>Year 2030 - With Site Traffic</b>						
Sunrise Way @ Francis Drive	E	47.3	WB	F	260.9	WB
Cerritos Road @ Racquet Club Road	C	16.0	NB	C	20.7	NB
Farrell Drive @ Racquet Club Road	B	11.2	SB	C	15.6	SB

- The HCS+ worksheets are provided in Attachment B. TWSC=Two-Way Stop Control. A 5 percent truck mix and a peak hour factor of 1.0 were assumed. NB = Northbound. SB = Southbound. EB = Eastbound.
- Values shown assume a traffic signal is installed and a single southbound left-turn lane is striped on Indian Canyon Drive. Based on the projected southbound left-turn peak hour volumes (which exceed 300 VPH) dual southbound left-turn lanes would be recommended. Dual southbound left-turn lanes would improve the intersection operation by one service level and reduce the required southbound queue storage space. HCS+ worksheets are provided in Attachment B with single and dual southbound left-turn lanes at this intersection.
- The values shown reflect two exit lanes at each site access as well as a dedicated westbound left-turn entry lane. No dedicated eastbound right-turn lane was assumed.



The average control delay on the westbound approach at the intersection of Sunrise Way and Francis Drive is currently 28.8 seconds per vehicle (LOS D) during the evening peak hour. During the evening peak hour, only 31 vehicles are currently using the westbound approach at this intersection. This level of service is not the result of a large number of vehicles on Francis Drive approaching Sunrise Way, but rather the relatively small number of gaps in the traffic flows on Sunrise Way that allow vehicles on Francis Drive to cross or turn left onto Sunrise Way.

The 60 percent increase in the current traffic volume projected for Sunrise Way by the General Plan traffic model will reduce the number of gaps and the length of the gaps in the traffic flows on Sunrise Way. This will cause the average delay experienced by motorists westbound on Francis Drive at Sunrise Way to increase until the traffic operations on this approach eventually degrade to LOS F. Motorists familiar with the area will adapt by diverting to alternate routes during the evening peak hour to avoid what they perceive to be excessive delay. Alternate routes exist with adequate capacity to accommodate motorists who opt to avoid the future peak hour delay associated with the westbound left-turn movement from Francis Drive onto Sunrise Way. Southbound travel on Cerritos Road or Farrell Drive, followed by a right turn onto Racquet Club Road would allow residents of the study area to travel to the southwest without the delay projected for the westbound approach at the intersection of Sunrise Way and Francis Drive. There is projected to be adequate capacity on all approaches at the intersections of Cerritos Road with Racquet Club Road and Farrell Drive with Racquet Club Road to accommodate year 2030+project traffic volumes at acceptable levels of service without signalization.

Based upon the peak hour traffic signal volume warrants in the California MUTCD, signalization would not be considered or recommended as an appropriate form of traffic control for this intersection. The westbound (minor-street) approach volumes on Francis Drive at Sunrise Way are projected to remain less than one half of the minimum threshold criteria identified in the California MUTCD for traffic signal control to be considered and studied as a potentially viable option.

### **Effect of Adding a Third Site Access Via Francis Drive**

The use of Francis Drive for access by the future residents of Serena Park would reduce the traffic volumes at the North Project Access and the South Project Access to the Serena Park development shown in Figure 1. The Francis Drive access is projected to attract approximately 12 percent of the site traffic. With the additional access afforded by Francis Drive, the portion of the future site traffic that would utilize the North Project Access is projected to decrease from 40 percent to 36 percent. Similarly, the site traffic projected to use the South Project Access is projected to decrease from 60 percent to 52 percent with access via Francis Drive.

The intersections in the immediate vicinity of the North Project Access and the South Project Access are projected to serve lower traffic volumes with the Francis Drive access. Intersections located outside of the study area shown in Figure 2 are expected to have traffic impacts and associated mitigation unchanged from that identified in the *Palm Springs Country Club (Tentative Tract Map 36691) Traffic Impact Analysis* (dated February 10, 2014).

### **Findings and Recommendations**

1. The three key intersections evaluated are unsignalized and currently operating at acceptable levels of service during the midday and evening peak hours in the peak traffic season.
2. Per the 2014 TIS, the Serena Park development would generate approximately 3,740 weekday trip-ends including 291 trip-ends (71 inbound and 220 outbound) during the midday peak hour and 364 trip-ends

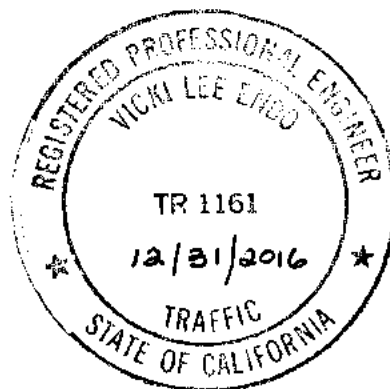
4. Two of the three key intersections evaluated are projected to operate at acceptable levels of service during the peak hours in the year 2030 with and without project-related traffic volumes. No new traffic signals would be required at the intersections evaluated to accommodate the Serena Park development at acceptable levels of service.
5. The 60 percent increase in the current traffic volume on Sunrise Way projected by the General Plan traffic model will reduce the number of gaps and the length of the gaps in the traffic flows on Sunrise Way. This will cause the average delay experienced by motorists westbound on Francis Drive at Sunrise Way to increase until the traffic operations on this approach eventually degrade to LOS F.
6. The year 2030 westbound approach volume of 40 vehicles during the evening peak hour would be equivalent to 53 percent of the minimum threshold identified in the California MUTCD to warrant the consideration of traffic signal control for this intersection. Therefore, traffic signal control would not be warranted or recommended as mitigation for this intersection. Motorists familiar with the area will adapt by diverting to alternate routes during the evening peak hour to avoid what they perceive to be excessive delay. Alternate routes exist with adequate capacity to accommodate motorists who opt to avoid the future peak hour delay associated with the westbound left-turn movement from Francis Drive onto Sunrise Way.
7. Project-related traffic impacts and mitigation identified in the 2014 TIS for intersections located outside of the study area shown in Figure 2 are expected to remain unchanged.
8. A STOP sign and limit line should be installed at the intersection of Farrell Drive and Francis Drive on the westbound approach.

We trust that this supplemental information adequately responds to any concerns regarding the minor modifications to the site access proposed to serve the Serena Park development. If questions or comments arise, please do not hesitate to contact our offices by telephone at (949) 362-0020, or via electronic mail at [endoengr@cox.net](mailto:endoengr@cox.net).

Sincerely,  
ENDO ENGINEERING

*Gregory Endo*  
Gregory Endo  
Principal

Attachments:  
A – New Traffic Count Data  
B – HCS+ Worksheets



*Vicki Lee Endo*

Vicki Lee Endo  
Registered Professional Traffic Engineer  
TR-1161

## ***Attachments***

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- A. Traffic Count Data
  - B. HCM 2000 Methodology and Worksheets
-

## ***Attachment A***

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**24-HOUR MACHINE COUNT DATA  
PEAK HOUR TURNING MOVEMENT COUNTS**

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# Counts Unlimited, Inc.

City of Palm Springs  
 Sunrise Way  
 N/ Racquet Club Road  
 24 Hour Directional Volume Count

PO Box 1178  
 Corona, CA 92878  
 Phone: (951) 268-6268  
 email: counts@countsunlimited.com

PLSSUNRC  
 Site Code: 009-16457

Start Time	8/25/2016 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		10	77			4	71				
12:15		11	75			5	83				
12:30		8	66			6	79				
12:45		8	84	37	302	4	59	19	292	56	594
01:00		8	73			9	61				
01:15		8	70			4	78				
01:30		4	85			3	68				
01:45		6	75	26	303	8	68	24	275	50	578
02:00		12	63			5	66				
02:15		4	78			4	67				
02:30		7	102			5	91				
02:45		6	85	29	328	2	<b>105</b>	16	329	45	657
03:00		3	110			0	<b>77</b>				
03:15		2	<b>110</b>			4	<b>105</b>				
03:30		5	<b>107</b>			6	<b>99</b>				
03:45		1	<b>94</b>	11	421	7	89	17	370	28	791
04:00		3	<b>129</b>			4	90				
04:15		5	99			9	61				
04:30		4	107			11	79				
04:45		6	101	18	436	12	82	36	312	54	748
05:00		8	109			11	88				
05:15		8	102			32	81				
05:30		13	103			33	90				
05:45		18	109	47	423	47	89	123	348	170	771
06:00		17	105			41	74				
06:15		28	117			58	69				
06:30		45	98			105	78				
06:45		58	91	148	411	89	75	293	296	441	707
07:00		41	78			101	64				
07:15		47	88			<b>144</b>	56				
07:30		<b>69</b>	56			<b>164</b>	58				
07:45		<b>100</b>	79	257	301	<b>123</b>	44	532	222	789	523
08:00		<b>77</b>	74			<b>103</b>	46				
08:15		<b>72</b>	102			82	29				
08:30		60	83			113	28				
08:45		66	76	275	335	94	39	392	142	667	477
09:00		67	61			59	31				
09:15		59	64			68	28				
09:30		61	55			69	37				
09:45		63	47	250	227	75	27	271	123	521	350
10:00		69	43			85	23				
10:15		59	40			58	27				
10:30		69	49			82	21				
10:45		73	26	270	158	68	19	293	90	563	248
11:00		82	29			81	20				
11:15		51	36			84	12				
11:30		76	21			78	11				
11:45		80	15	289	101	82	7	325	50	614	151
<b>Total</b>		<b>1657</b>	<b>3746</b>	<b>1657</b>	<b>3746</b>	<b>2341</b>	<b>2849</b>	<b>2341</b>	<b>2849</b>	<b>3998</b>	<b>6595</b>
<b>Combined Total</b>		<b>5403</b>		<b>5403</b>		<b>5190</b>		<b>5190</b>		<b>10593</b>	
AM Peak	-	07:30	-	-	-	07:15	-	-	-	-	-
Vol.	-	318	-	-	-	534	-	-	-	-	-
P.H.F.	-	0.795	-	-	-	0.814	-	-	-	-	-
PM Peak	-	-	03:15	-	-	-	02:45	-	-	-	-
Vol.	-	-	440	-	-	-	386	-	-	-	-
P.H.F.	-	-	0.853	-	-	-	0.919	-	-	-	-
Percentage		30.7%	69.3%			45.1%	54.9%				
ADT/AADT		ADT 10,593		AADT 10,593							

City of Palm Springs  
 N/S: Sunrise Way  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSSUFRMD  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

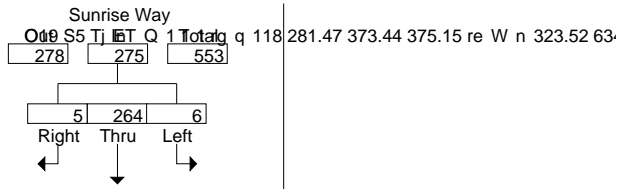
Groups Printed- Total Volume

Start Time	Sunrise Way Southbound				Francis Drive Westbound				Sunrise Way Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
11:30 AM	3	72	0	75	5	1	1	7	9	63	3	75	2	1	7	10	167
11:45 AM	2	67	3	72	2	0	1	3	15	67	6	88	0	0	11	11	174
Total	5	139	3	147	7	1	2	10	24	130	9	163	2	1	18	21	341
12:00 PM	0	57	2	59	3	1	0	4	6	80	4	90	2	0	7	9	162
12:15 PM	1	68	0	69	1	0	1	2	7	61	7	75	0	0	12	12	158
12:30 PM	1	62	0	63	7	0	1	8	10	63	2	75	0	2	11	13	159
12:45 PM	0	46	0	46	2	2	0	4	11	73	2	86	0	2	7	9	145
Total	2	233	2	237	13	3	2	18	34	277	15	326	2	4	37	43	624
01:00 PM	1	52	1	54	5	0	0	5	15	76	3	94	1	0	6	7	160
01:15 PM	0	62	0	62	4	0	1	5	4	66	3	73	1	1	10	12	152
Grand Total	8	486	6	500	29	4	5	38	77	549	30	656	6	6	71	83	1277
Apprch %	1.6	97.2	1.2		76.3	10.5	13.2		11.7	83.7	4.6		7.2	7.2	85.5		
Total %	0.6	38.1	0.5	39.2	2.3	0.3	0.4	3	6	43	2.3	51.4	0.5	0.5	5.6	6.5	

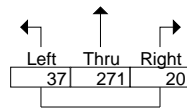
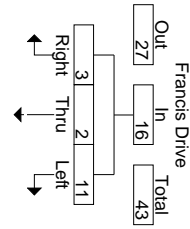
Start Time	Sunrise Way Southbound				Francis Drive Westbound				Sunrise Way Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30 AM																	
11:30 AM	3	72	0	75	5	1	1	7	9	63	3	75	2	1	7	10	167
11:45 AM	2	67	3	72	2	0	1	3	15	67	6	88	0	0	11	11	174
12:00 PM	0	57	2	59	3	1	0	4	6	80	4	90	2	0	7	9	162
12:15 PM	1	68	0	69	1	0	1	2	7	61	7	75	0	0	12	12	158
Total Volume	6	264	5	275	11	2	3	16	37	271	20	328	4	1	37	42	661
% App. Total	2.2	96	1.8		68.8	12.5	18.8		11.3	82.6	6.1		9.5	2.4	88.1		
PHF	.500	.917	.417	.917	.550	.500	.750	.571	.617	.847	.714	.911	.500	.250	.771	.875	.950

City of Palm Springs  
 N/S: Sunrise Way  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSSUFRMD  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 2



Francis Drive



Sunrise Way

City of Palm Springs  
 N/S: Sunrise Way  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSSUFRPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

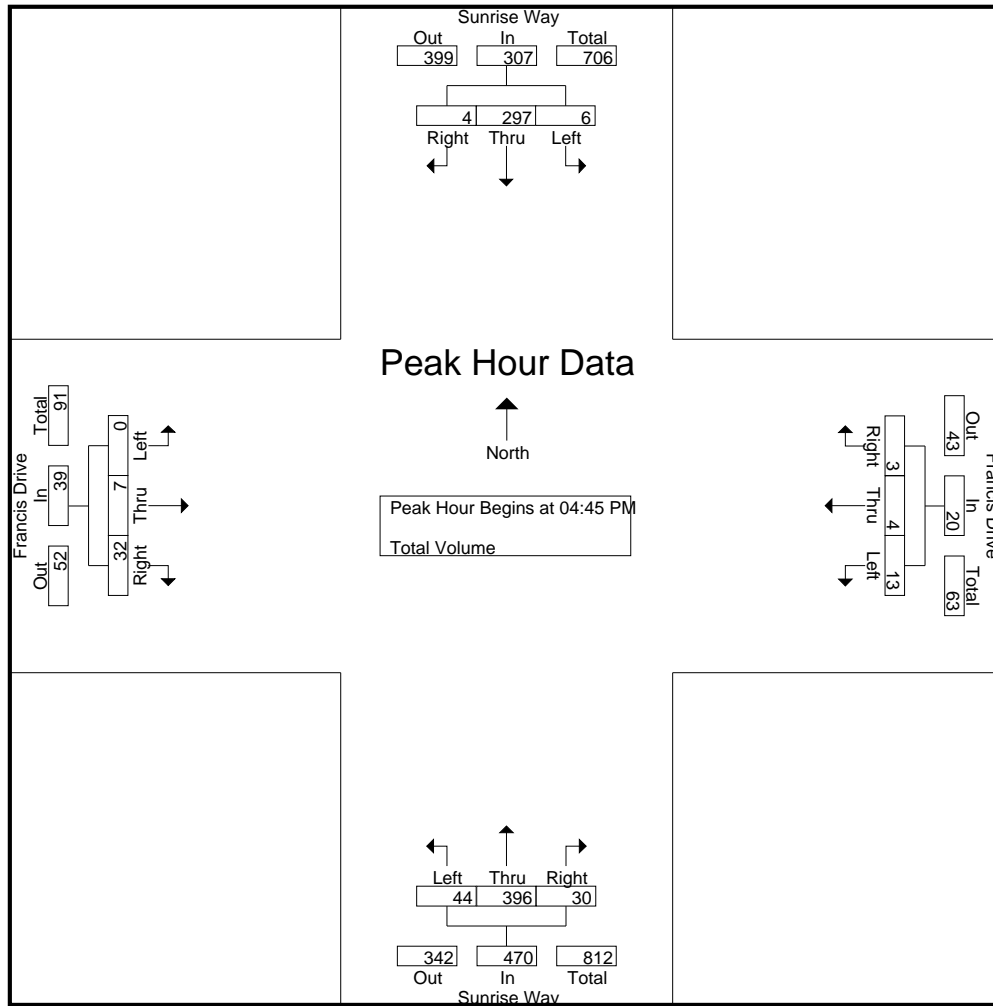
Start Time	Sunrise Way Southbound				Francis Drive Westbound				Sunrise Way Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	4	82	1	87	3	0	0	3	10	118	10	138	1	4	6	11	239
04:15 PM	1	52	1	54	3	0	2	5	9	95	7	111	1	0	4	5	175
04:30 PM	1	62	2	65	7	0	3	10	11	100	9	120	2	1	8	11	206
04:45 PM	2	73	2	77	2	0	0	2	9	107	8	124	0	3	7	10	213
Total	8	269	6	283	15	0	5	20	39	420	34	493	4	8	25	37	833
05:00 PM	3	74	0	77	6	3	1	10	7	99	7	113	0	1	5	6	206
05:15 PM	1	77	2	80	3	0	1	4	16	90	9	115	0	1	7	8	207
05:30 PM	0	73	0	73	2	1	1	4	12	100	6	118	0	2	13	15	210
05:45 PM	0	80	1	81	4	2	3	9	11	90	7	108	0	2	6	8	206
Total	4	304	3	311	15	6	6	27	46	379	29	454	0	6	31	37	829
Grand Total	12	573	9	594	30	6	11	47	85	799	63	947	4	14	56	74	1662
Apprch %	2	96.5	1.5		63.8	12.8	23.4		9	84.4	6.7		5.4	18.9	75.7		
Total %	0.7	34.5	0.5	35.7	1.8	0.4	0.7	2.8	5.1	48.1	3.8	57	0.2	0.8	3.4	4.5	

Start Time	Sunrise Way Southbound				Francis Drive Westbound				Sunrise Way Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	2	73	2	77	2	0	0	2	9	107	8	124	0	3	7	10	213
05:00 PM	3	74	0	77	6	3	1	10	7	99	7	113	0	1	5	6	206
05:15 PM	1	77	2	80	3	0	1	4	16	90	9	115	0	1	7	8	207
05:30 PM	0	73	0	73	2	1	1	4	12	100	6	118	0	2	13	15	210
Total Volume	6	297	4	307	13	4	3	20	44	396	30	470	0	7	32	39	836
% App. Total	2	96.7	1.3		65	20	15		9.4	84.3	6.4		0	17.9	82.1		
PHF	.500	.964	.500	.959	.542	.333	.750	.500	.688	.925	.833	.948	.000	.583	.615	.650	.981



City of Palm Springs  
 N/S: Sunrise Way  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSSUFRPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	3	74	0	77	3	0	2	5	10	118	10	138	0	3	7	10
+15 mins.	1	77	2	80	7	0	3	10	9	95	7	111	0	1	5	6
+30 mins.	0	73	0	73	2	0	0	2	11	100	9	120	0	1	7	8
+45 mins.	0	80	1	81	6	3	1	10	9	107	8	124	0	2	13	15
Total Volume	4	304	3	311	18	3	6	27	39	420	34	493	0	7	32	39
% App. Total	1.3	97.7	1		66.7	11.1	22.2		7.9	85.2	6.9		0	17.9	82.1	
PHF	.333	.950	.375	.960	.643	.250	.500	.675	.886	.890	.850	.893	.000	.583	.615	.650

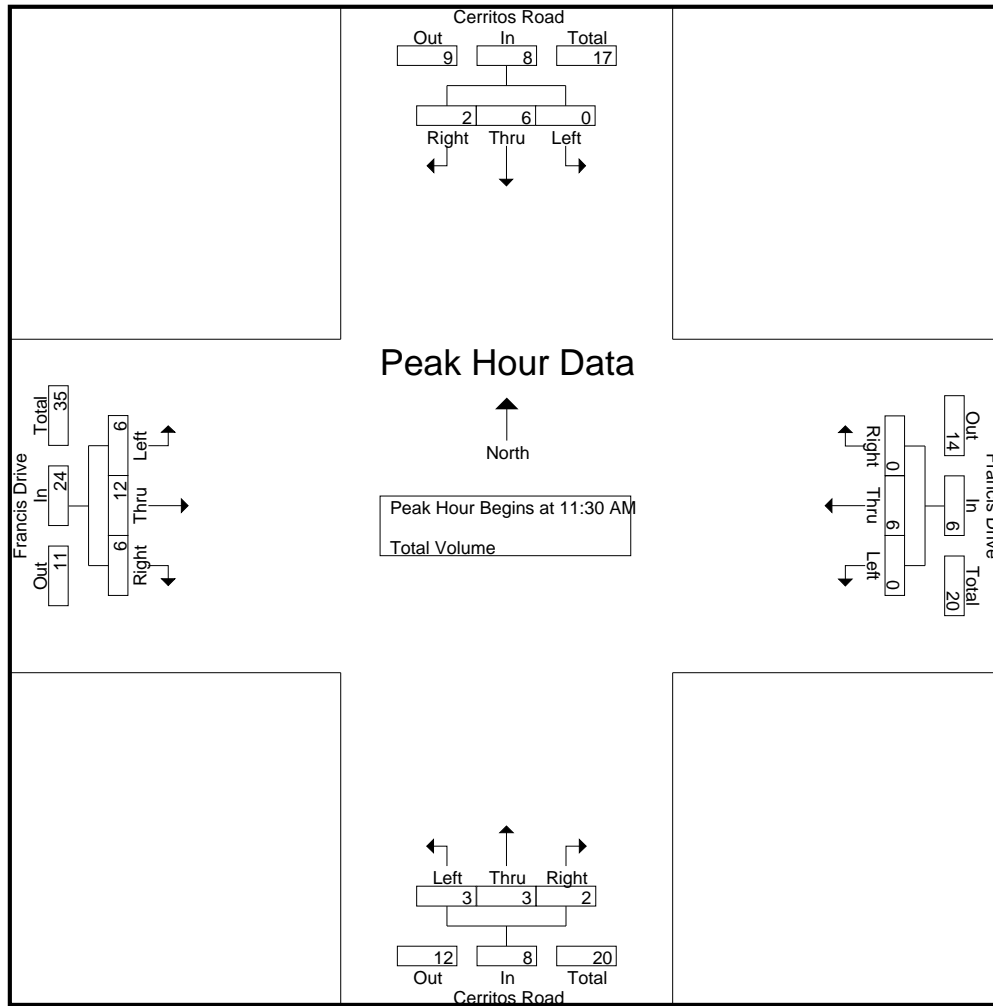
City of Palm Springs  
 N/S: Cerritos Road  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSCEFRMD  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

Start Time	Cerritos Road Southbound				Francis Drive Westbound				Cerritos Road Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
11:30 AM	0	3	1	4	0	2	0	2	2	1	0	3	1	4	1	6	15
11:45 AM	0	1	0	1	0	0	0	0	1	2	1	4	2	1	3	6	11
Total	0	4	1	5	0	2	0	2	3	3	1	7	3	5	4	12	26
12:00 PM	0	0	1	1	0	2	0	2	0	0	1	1	1	3	0	4	8
12:15 PM	0	2	0	2	0	2	0	2	0	0	0	0	2	4	2	8	12
12:30 PM	0	0	0	0	0	1	0	1	1	2	1	4	2	2	0	4	9
12:45 PM	0	2	0	2	0	2	0	2	0	1	0	1	1	1	0	2	7
Total	0	4	1	5	0	7	0	7	1	3	2	6	6	10	2	18	36
01:00 PM	0	2	1	3	0	0	0	0	0	1	1	2	2	0	2	4	9
01:15 PM	0	1	0	1	0	1	1	2	0	2	0	2	0	2	1	3	8
Grand Total	0	11	3	14	0	10	1	11	4	9	4	17	11	17	9	37	79
Apprch %	0	78.6	21.4		0	90.9	9.1		23.5	52.9	23.5		29.7	45.9	24.3		
Total %	0	13.9	3.8	17.7	0	12.7	1.3	13.9	5.1	11.4	5.1	21.5	13.9	21.5	11.4	46.8	

Start Time	Cerritos Road Southbound				Francis Drive Westbound				Cerritos Road Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30 AM																	
11:30 AM	0	3	1	4	0	2	0	2	2	1	0	3	1	4	1	6	15
11:45 AM	0	1	0	1	0	0	0	0	1	2	1	4	2	1	3	6	11
12:00 PM	0	0	1	1	0	2	0	2	0	0	1	1	1	3	0	4	8
12:15 PM	0	2	0	2	0	2	0	2	0	0	0	0	2	4	2	8	12
Total Volume	0	6	2	8	0	6	0	6	3	3	2	8	6	12	6	24	46
% App. Total	0	75	25		0	100	0		37.5	37.5	25		25	50	25		
PHF	.000	.500	.500	.500	.000	.750	.000	.750	.375	.375	.500	.500	.750	.750	.500	.750	.767



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	11:30 AM				12:00 PM				11:45 AM				11:30 AM			
+0 mins.	0	3	1	4	0	2	0	2	1	2	1	4	1	4	1	6
+15 mins.	0	1	0	1	0	2	0	2	0	0	1	1	2	1	3	6
+30 mins.	0	0	1	1	0	1	0	1	0	0	0	0	1	3	0	4
+45 mins.	0	2	0	2	0	2	0	2	1	2	1	4	2	4	2	8
Total Volume	0	6	2	8	0	7	0	7	2	4	3	9	6	12	6	24
% App. Total	0	75	25		0	100	0		22.2	44.4	33.3		25	50	25	
PHF	.000	.500	.500	.500	.000	.875	.000	.875	.500	.500	.750	.563	.750	.750	.500	.750

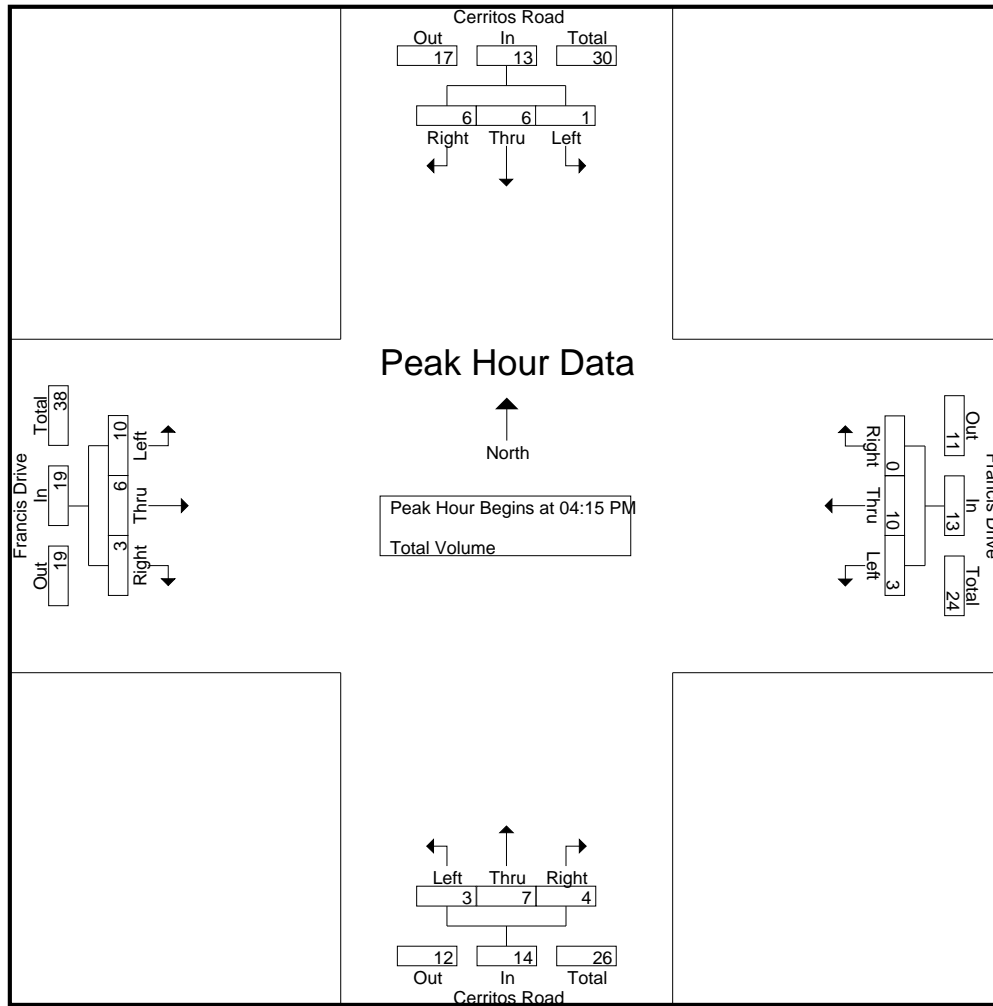
City of Palm Springs  
 N/S: Cerritos Road  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSCEFRPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

Start Time	Cerritos Road Southbound				Francis Drive Westbound				Cerritos Road Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	1	0	1	0	2	0	2	0	1	0	1	6	1	0	7	11
04:15 PM	0	1	2	3	2	2	0	4	2	1	1	4	2	0	2	4	15
04:30 PM	0	2	2	4	0	5	0	5	0	3	0	3	2	2	0	4	16
04:45 PM	0	1	2	3	0	2	0	2	1	1	1	3	1	4	1	6	14
Total	0	5	6	11	2	11	0	13	3	6	2	11	11	7	3	21	56
05:00 PM	1	2	0	3	1	1	0	2	0	2	2	4	5	0	0	5	14
05:15 PM	0	0	1	1	1	0	0	1	0	2	0	2	1	0	1	2	6
05:30 PM	0	1	0	1	1	1	0	2	1	1	1	3	1	1	0	2	8
05:45 PM	0	0	2	2	0	3	0	3	2	2	0	4	2	3	0	5	14
Total	1	3	3	7	3	5	0	8	3	7	3	13	9	4	1	14	42
Grand Total	1	8	9	18	5	16	0	21	6	13	5	24	20	11	4	35	98
Apprch %	5.6	44.4	50		23.8	76.2	0		25	54.2	20.8		57.1	31.4	11.4		
Total %	1	8.2	9.2	18.4	5.1	16.3	0	21.4	6.1	13.3	5.1	24.5	20.4	11.2	4.1	35.7	

Start Time	Cerritos Road Southbound				Francis Drive Westbound				Cerritos Road Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	1	2	3	2	2	0	4	2	1	1	4	2	0	2	4	15
04:30 PM	0	2	2	4	0	5	0	5	0	3	0	3	2	2	0	4	16
04:45 PM	0	1	2	3	0	2	0	2	1	1	1	3	1	4	1	6	14
05:00 PM	1	2	0	3	1	1	0	2	0	2	2	4	5	0	0	5	14
Total Volume	1	6	6	13	3	10	0	13	3	7	4	14	10	6	3	19	59
% App. Total	7.7	46.2	46.2		23.1	76.9	0		21.4	50	28.6		52.6	31.6	15.8		
PHF	.250	.750	.750	.813	.375	.500	.000	.650	.375	.583	.500	.875	.500	.375	.375	.792	.922



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	1	2	3	0	2	0	2	2	1	1	4	6	1	0	7
+15 mins.	0	2	2	4	2	2	0	4	0	3	0	3	2	0	2	4
+30 mins.	0	1	2	3	0	5	0	5	1	1	1	3	2	2	0	4
+45 mins.	1	2	0	3	0	2	0	2	0	2	2	4	1	4	1	6
Total Volume	1	6	6	13	2	11	0	13	3	7	4	14	11	7	3	21
% App. Total	7.7	46.2	46.2		15.4	84.6	0		21.4	50	28.6		52.4	33.3	14.3	
PHF	.250	.750	.750	.813	.250	.550	.000	.650	.375	.583	.500	.875	.458	.438	.375	.750

City of Palm Springs  
 N/S: Farrell Drive  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSFAFRMD  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

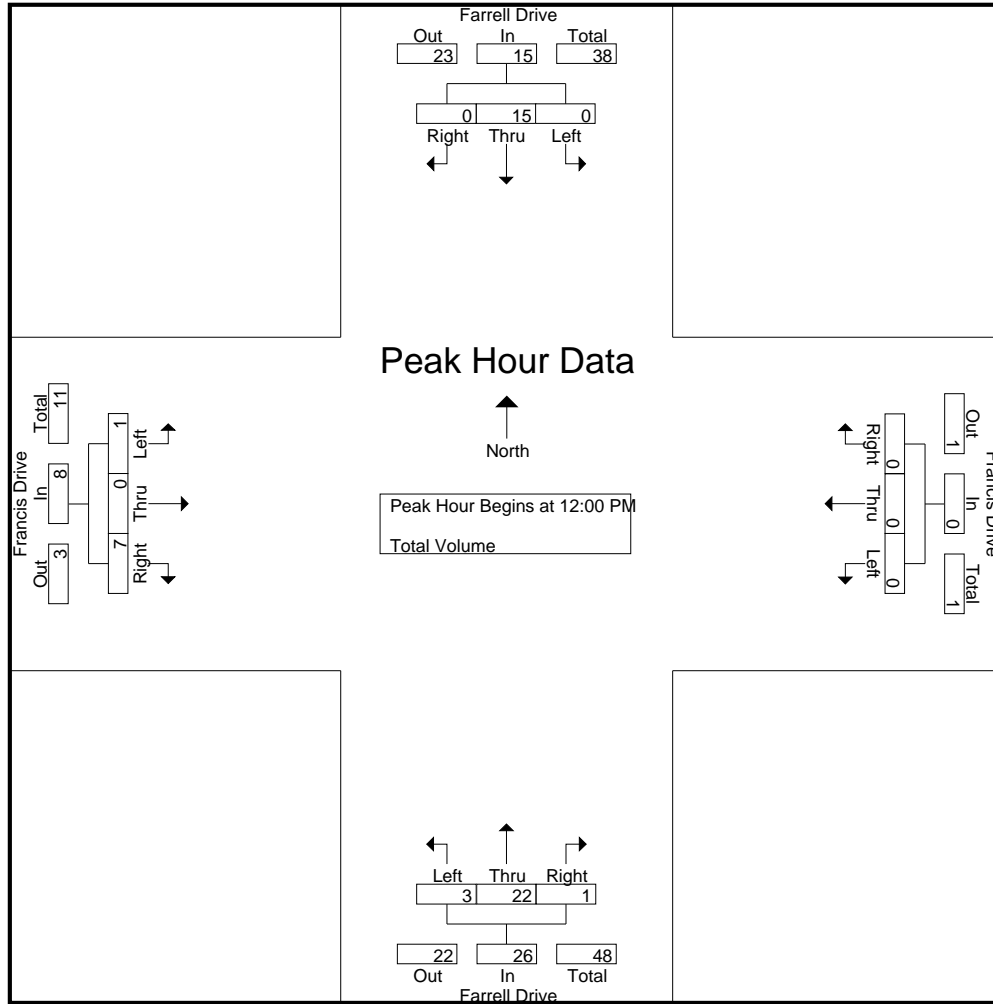
Groups Printed- Total Volume

Start Time	Farrell Drive Southbound				Francis Drive Westbound				Farrell Drive Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
11:30 AM	0	5	1	6	0	0	0	0	2	6	0	8	0	0	2	2	16
11:45 AM	0	6	0	6	1	0	0	1	0	3	0	3	0	0	1	1	11
Total	0	11	1	12	1	0	0	1	2	9	0	11	0	0	3	3	27
12:00 PM	0	2	0	2	0	0	0	0	1	2	0	3	0	0	4	4	9
12:15 PM	0	2	0	2	0	0	0	0	1	7	0	8	1	0	0	1	11
12:30 PM	0	5	0	5	0	0	0	0	0	6	1	7	0	0	3	3	15
12:45 PM	0	6	0	6	0	0	0	0	1	7	0	8	0	0	0	0	14
Total	0	15	0	15	0	0	0	0	3	22	1	26	1	0	7	8	49
01:00 PM	0	4	0	4	0	0	0	0	0	4	0	4	0	0	0	0	8
01:15 PM	0	3	0	3	0	0	0	0	0	4	0	4	0	0	2	2	9
Grand Total	0	33	1	34	1	0	0	1	5	39	1	45	1	0	12	13	93
Apprch %	0	97.1	2.9		100	0	0		11.1	86.7	2.2		7.7	0	92.3		
Total %	0	35.5	1.1	36.6	1.1	0	0	1.1	5.4	41.9	1.1	48.4	1.1	0	12.9	14	

Start Time	Farrell Drive Southbound				Francis Drive Westbound				Farrell Drive Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	2	0	2	0	0	0	0	1	2	0	3	0	0	4	4	9
12:15 PM	0	2	0	2	0	0	0	0	1	7	0	8	1	0	0	1	11
12:30 PM	0	5	0	5	0	0	0	0	0	6	1	7	0	0	3	3	15
12:45 PM	0	6	0	6	0	0	0	0	1	7	0	8	0	0	0	0	14
Total Volume	0	15	0	15	0	0	0	0	3	22	1	26	1	0	7	8	49
% App. Total	0	100	0		0	0	0		11.5	84.6	3.8		12.5	0	87.5		
PHF	.000	.625	.000	.625	.000	.000	.000	.000	.750	.786	.250	.813	.250	.000	.438	.500	.817

City of Palm Springs  
 N/S: Farrell Drive  
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 Weather: Clear

File Name : PLSFAFRMD  
 Site Code : 00916457  
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 Page No : 2



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	12:30 PM				11:30 AM				12:15 PM				11:45 AM			
+0 mins.	0	5	0	5	0	0	0	0	1	7	0	8	0	0	1	1
+15 mins.	0	6	0	6	1	0	0	1	0	6	1	7	0	0	4	4
+30 mins.	0	4	0	4	0	0	0	0	1	7	0	8	1	0	0	1
+45 mins.	0	3	0	3	0	0	0	0	0	4	0	4	0	0	3	3
Total Volume	0	18	0	18	1	0	0	1	2	24	1	27	1	0	8	9
% App. Total	0	100	0		100	0	0		7.4	88.9	3.7		11.1	0	88.9	
PHF	.000	.750	.000	.750	.250	.000	.000	.250	.500	.857	.250	.844	.250	.000	.500	.563

City of Palm Springs  
 N/S: Farrell Drive  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSFAFRPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

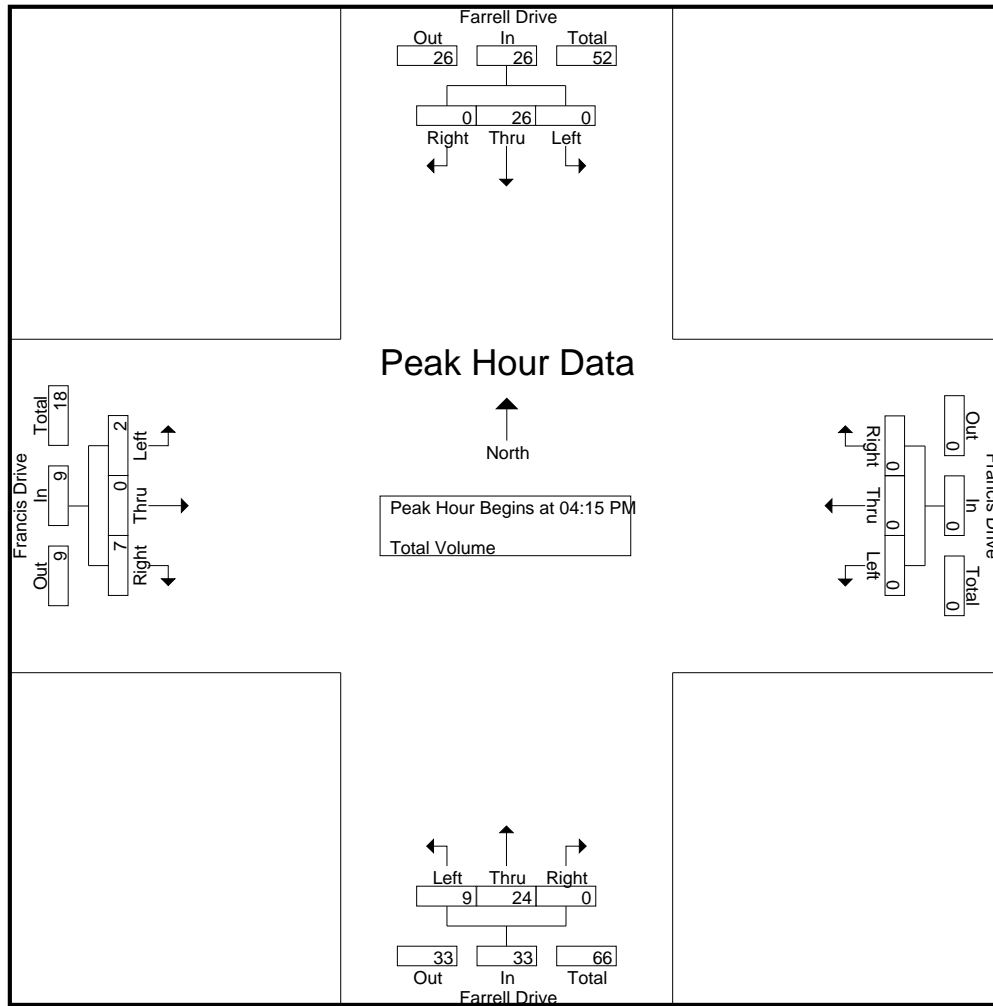
Start Time	Farrell Drive Southbound				Francis Drive Westbound				Farrell Drive Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	2	0	2	1	0	0	1	2	7	0	9	0	0	0	0	12
04:15 PM	0	9	0	9	0	0	0	0	4	9	0	13	0	0	0	0	22
04:30 PM	0	4	0	4	0	0	0	0	4	3	0	7	2	0	1	3	14
04:45 PM	0	8	0	8	0	0	0	0	0	7	0	7	0	0	4	4	19
Total	0	23	0	23	1	0	0	1	10	26	0	36	2	0	5	7	67
05:00 PM	0	5	0	5	0	0	0	0	1	5	0	6	0	0	2	2	13
05:15 PM	0	1	1	2	0	0	0	0	2	4	0	6	0	0	2	2	10
05:30 PM	0	6	0	6	0	0	0	0	2	5	0	7	0	0	0	0	13
05:45 PM	0	3	0	3	0	0	0	0	2	9	0	11	1	0	2	3	17
Total	0	15	1	16	0	0	0	0	7	23	0	30	1	0	6	7	53
Grand Total	0	38	1	39	1	0	0	1	17	49	0	66	3	0	11	14	120
Apprch %	0	97.4	2.6		100	0	0		25.8	74.2	0		21.4	0	78.6		
Total %	0	31.7	0.8	32.5	0.8	0	0	0.8	14.2	40.8	0	55	2.5	0	9.2	11.7	

Start Time	Farrell Drive Southbound				Francis Drive Westbound				Farrell Drive Northbound				Francis Drive Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	9	0	9	0	0	0	0	4	9	0	13	0	0	0	0	22
04:30 PM	0	4	0	4	0	0	0	0	4	3	0	7	2	0	1	3	14
04:45 PM	0	8	0	8	0	0	0	0	0	7	0	7	0	0	4	4	19
05:00 PM	0	5	0	5	0	0	0	0	1	5	0	6	0	0	2	2	13
Total Volume	0	26	0	26	0	0	0	0	9	24	0	33	2	0	7	9	68
% App. Total	0	100	0		0	0	0		27.3	72.7	0		22.2	0	77.8		
PHF	.000	.722	.000	.722	.000	.000	.000	.000	.563	.667	.000	.635	.250	.000	.438	.563	.773



City of Palm Springs  
 N/S: Farrell Drive  
 E/W: Francis Drive  
 Weather: Clear

File Name : PLSFAFRPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	<b>9</b>	0	<b>9</b>	<b>1</b>	0	0	<b>1</b>	2	7	0	9	<b>2</b>	0	1	<b>3</b>
+15 mins.	0	4	0	4	0	0	0	0	<b>4</b>	<b>9</b>	0	<b>13</b>	0	0	<b>4</b>	<b>4</b>
+30 mins.	0	8	0	8	0	0	0	0	4	3	0	7	0	0	2	2
+45 mins.	0	5	0	5	0	0	0	0	0	7	0	7	0	0	2	2
Total Volume	0	26	0	26	1	0	0	1	10	26	0	36	2	0	9	11
% App. Total	0	100	0		100	0	0		27.8	72.2	0		18.2	0	81.8	
PHF	.000	.722	.000	.722	.250	.000	.000	.250	.625	.722	.000	.692	.250	.000	.563	.688

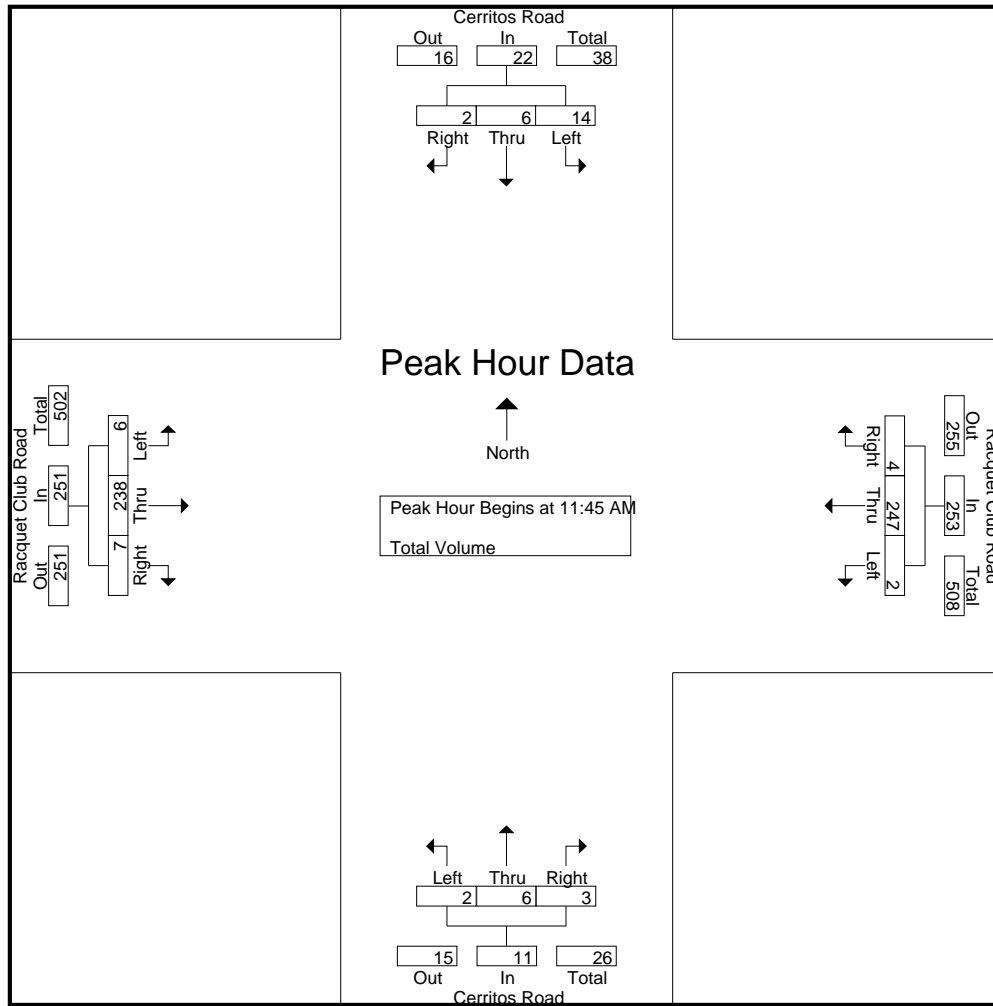
City of Palm Springs  
 N/S: Cerritos Road  
 E/W: Racquet Club Road  
 Weather: Clear

File Name : PLSCERAMD  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

Start Time	Cerritos Road Southbound				Racquet Club Road Westbound				Cerritos Road Northbound				Racquet Club Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
11:30 AM	3	1	0	4	1	51	1	53	5	4	0	9	2	51	0	53	119
11:45 AM	7	2	1	10	1	59	1	61	1	3	1	5	1	62	2	65	141
Total	10	3	1	14	2	110	2	114	6	7	1	14	3	113	2	118	260
12:00 PM	1	3	0	4	0	71	3	74	1	1	0	2	1	51	0	52	132
12:15 PM	3	1	1	5	0	58	0	58	0	0	1	1	3	64	2	69	133
12:30 PM	3	0	0	3	1	59	0	60	0	2	1	3	1	61	3	65	131
12:45 PM	1	0	0	1	0	78	1	79	1	2	0	3	2	45	1	48	131
Total	8	4	1	13	1	266	4	271	2	5	2	9	7	221	6	234	527
01:00 PM	0	1	2	3	0	53	2	55	2	1	3	6	2	51	0	53	117
01:15 PM	2	2	4	8	0	59	1	60	0	2	0	2	1	65	3	69	139
Grand Total	20	10	8	38	3	488	9	500	10	15	6	31	13	450	11	474	1043
Apprch %	52.6	26.3	21.1		0.6	97.6	1.8		32.3	48.4	19.4		2.7	94.9	2.3		
Total %	1.9	1	0.8	3.6	0.3	46.8	0.9	47.9	1	1.4	0.6	3	1.2	43.1	1.1	45.4	

Start Time	Cerritos Road Southbound				Racquet Club Road Westbound				Cerritos Road Northbound				Racquet Club Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	7	2	1	10	1	59	1	61	1	3	1	5	1	62	2	65	141
12:00 PM	1	3	0	4	0	71	3	74	1	1	0	2	1	51	0	52	132
12:15 PM	3	1	1	5	0	58	0	58	0	0	1	1	3	64	2	69	133
12:30 PM	3	0	0	3	1	59	0	60	0	2	1	3	1	61	3	65	131
Total Volume	14	6	2	22	2	247	4	253	2	6	3	11	6	238	7	251	537
% App. Total	63.6	27.3	9.1		0.8	97.6	1.6		18.2	54.5	27.3		2.4	94.8	2.8		
PHF	.500	.500	.500	.550	.500	.870	.333	.855	.500	.500	.750	.550	.500	.930	.583	.909	.952



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	11:30 AM				12:00 PM				11:30 AM				11:45 AM			
+0 mins.	3	1	0	4	0	71	3	74	5	4	0	9	1	62	2	65
+15 mins.	7	2	1	10	0	58	0	58	1	3	1	5	1	51	0	52
+30 mins.	1	3	0	4	1	59	0	60	1	1	0	2	3	64	2	69
+45 mins.	3	1	1	5	0	78	1	79	0	0	1	1	1	61	3	65
Total Volume	14	7	2	23	1	266	4	271	7	8	2	17	6	238	7	251
% App. Total	60.9	30.4	8.7		0.4	98.2	1.5		41.2	47.1	11.8		2.4	94.8	2.8	
PHF	.500	.583	.500	.575	.250	.853	.333	.858	.350	.500	.500	.472	.500	.930	.583	.909

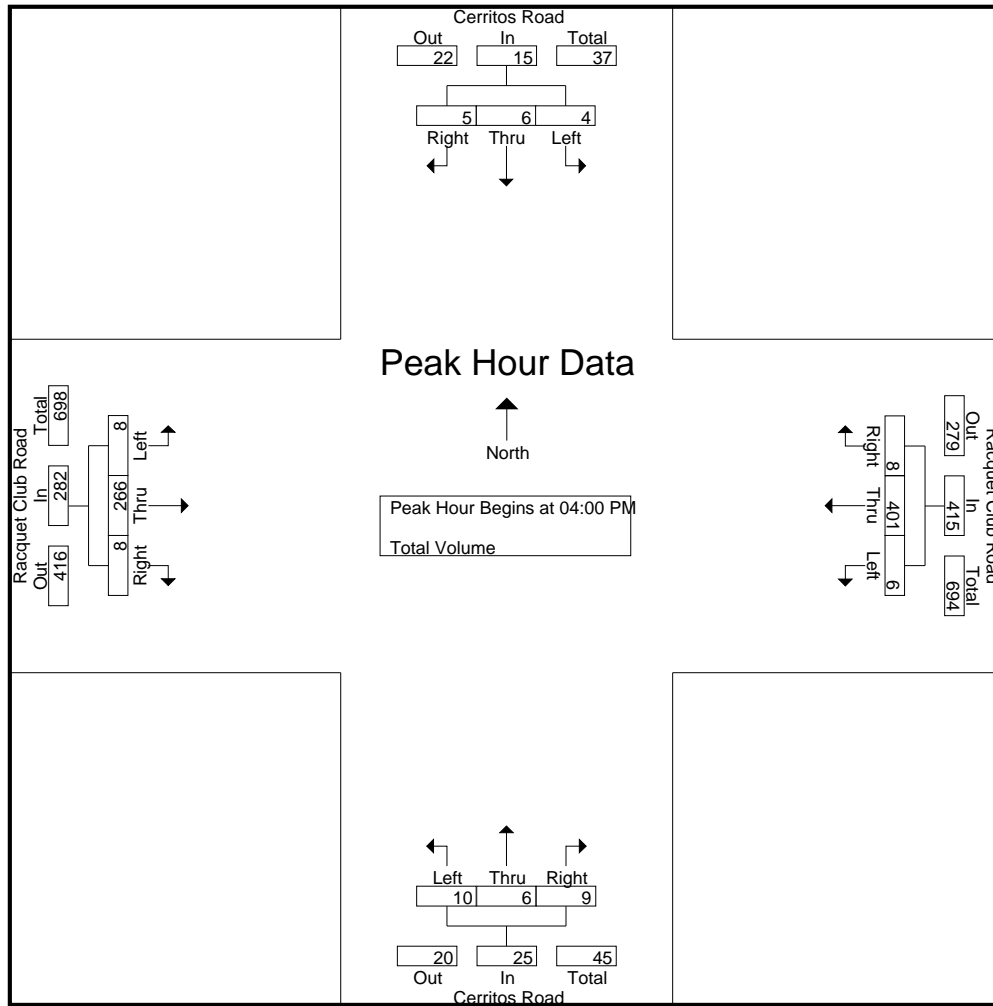
City of Palm Springs  
 N/S: Cerritos Road  
 E/W: Racquet Club Road  
 Weather: Clear

File Name : PLSCERAPM  
 Site Code : 00916457  
 Start Date : 8/25/2016  
 Page No : 1

Groups Printed- Total Volume

Start Time	Cerritos Road Southbound				Racquet Club Road Westbound				Cerritos Road Northbound				Racquet Club Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	1	3	4	2	117	3	122	4	1	4	9	3	79	0	82	217
04:15 PM	3	2	0	5	2	77	2	81	3	2	2	7	1	61	2	64	157
04:30 PM	1	3	2	6	1	104	1	106	0	2	3	5	2	67	3	72	189
04:45 PM	0	0	0	0	1	103	2	106	3	1	0	4	2	59	3	64	174
Total	4	6	5	15	6	401	8	415	10	6	9	25	8	266	8	282	737
05:00 PM	4	3	1	8	0	114	5	119	1	3	1	5	1	64	2	67	199
05:15 PM	1	1	2	4	0	97	2	99	3	4	0	7	3	45	1	49	159
05:30 PM	2	1	1	4	1	94	3	98	0	1	0	1	1	42	0	43	146
05:45 PM	1	1	2	4	1	82	2	85	1	3	0	4	1	62	4	67	160
Total	8	6	6	20	2	387	12	401	5	11	1	17	6	213	7	226	664
Grand Total	12	12	11	35	8	788	20	816	15	17	10	42	14	479	15	508	1401
Apprch %	34.3	34.3	31.4		1	96.6	2.5		35.7	40.5	23.8		2.8	94.3	3		
Total %	0.9	0.9	0.8	2.5	0.6	56.2	1.4	58.2	1.1	1.2	0.7	3	1	34.2	1.1	36.3	

Start Time	Cerritos Road Southbound				Racquet Club Road Westbound				Cerritos Road Northbound				Racquet Club Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	1	3	4	2	117	3	122	4	1	4	9	3	79	0	82	217
04:15 PM	3	2	0	5	2	77	2	81	3	2	2	7	1	61	2	64	157
04:30 PM	1	3	2	6	1	104	1	106	0	2	3	5	2	67	3	72	189
04:45 PM	0	0	0	0	1	103	2	106	3	1	0	4	2	59	3	64	174
Total Volume	4	6	5	15	6	401	8	415	10	6	9	25	8	266	8	282	737
% App. Total	26.7	40	33.3		1.4	96.6	1.9		40	24	36		2.8	94.3	2.8		
PHF	.333	.500	.417	.625	.750	.857	.667	.850	.625	.750	.563	.694	.667	.842	.667	.860	.849



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
 Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	4	3	1	8	1	104	1	106	4	1	4	9	3	79	0	82
+15 mins.	1	1	2	4	1	103	2	106	3	2	2	7	1	61	2	64
+30 mins.	2	1	1	4	0	114	5	119	0	2	3	5	2	67	3	72
+45 mins.	1	1	2	4	0	97	2	99	3	1	0	4	2	59	3	64
Total Volume	8	6	6	20	2	418	10	430	10	6	9	25	8	266	8	282
% App. Total	40	30	30		0.5	97.2	2.3		40	24	36		2.8	94.3	2.8	
PHF	.500	.500	.750	.625	.500	.917	.500	.903	.625	.750	.563	.694	.667	.842	.667	.860

## ***Attachment B***

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**HCM 2000 INTERSECTION ANALYSIS  
METHODOLOGY AND WORKSHEETS**

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**Appendix B**  
**Highway Capacity Manual**  
**Unsignalized Intersection Methodology**

Some of the key intersections in the study area are unsignalized and controlled by STOP signs on one or more of the approaches. Unsignalized intersections are typically categorized as either two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC) intersections. At TWSC intersections, the approaches controlled by the STOP signs (either public streets or private driveways) are referred to as the minor-street approaches. The intersection approaches that are not controlled by STOP signs are called the major-street approaches.

To evaluate the ability of these intersections to serve traffic demands during peak hours, the capacity is determined for each minor approach movement and the left-turn movement.

intersection delay will increase, as large numbers of vehicles on the major through moves are delayed by the new signal. The increase in total delay may lower the overall intersection LOS. For this reason, excessive delays on the minor legs of two-way stop intersections are only mitigated with a traffic signal when the minor street can no longer effectively provide access, as evidenced by traffic signal warrants being met. This eliminates situations where a large number of motorists are delayed for the benefit of only a few cars.

A two-way left-turn lane (TWLTL) or a raised or striped median allows a minor stream vehicle to cross one major traffic stream at a time. It results in two-stage gap acceptance, provided that sufficient storage space is available in the median or TWLTL to store vehicles. It reduces the critical gap (the minimum gap that would be acceptable to a driver on the minor approach) in the stream of traffic on the major street and increases the capacity of the minor approach.

A flared approach on the minor street increases the capacity of the minor street approach. It allows more vehicles to be served simultaneously. Increasing the length of the flared pavement improves access to the additional lane. Even with a flared approach, vehicles seeking to use the flared lane may be delayed by queued vehicles blocking access to the additional lane. Therefore, flaring does not increase the capacity of the approach to the extent that an additional lane would.

The presence of traffic signals upstream from the intersection on the major street will produce platoons and affect the capacity of the minor street approaches if the signal is located within 0.25 mile of the intersection. Four flow regimes can result: no platoons, platoons from the left only, platoons from the right only and platoons from both directions.



## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Sunrise Way @ Francis Drive
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	8/30/2016	Analysis Year	Existing
Analysis Time Period	Midday Peak		

Project Description: <i>Serena Park</i>	
East/West Street: <i>Francis Drive</i>	North/South Street: <i>Sunrise Way</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

### Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound			
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume (veh/h)	56	407	30	9	396	8	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	56	407	30	9	396	8	
Percent Heavy Vehicles	8	--	--	8	--	--	
Median Type	<i>Raised curb</i>						
RT Channelized			0			0	
Lanes	1	2	0	1	2	0	
Configuration	L	T	TR	L	T	TR	
Upstream Signal		0			0		

Minor Street	Eastbound			Westbound			
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume (veh/h)	6	2	56	17	3	5	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	6	2	56	17	3	5	
Percent Heavy Vehicles	8	8	8	8	8	8	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		

### Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
			7	8	9	10	11	12
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (veh/h)	56	9		25			64	
C (m) (veh/h)	1109	1078		291			648	
v/c	0.05	0.01		0.09			0.10	
95% queue length	0.16	0.03		0.28			0.33	
Control Delay (s/veh)	8.4	8.4		18.5				

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Greg			Intersection	Sunrise Way @ Francis Drive		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	8/30/2016			Analysis Year	Existing		
Analysis Time Period	PM Peak						
Project Description: <i>Serena Park</i>							
East/West Street: <i>Francis Drive</i>				North/South Street: <i>Sunrise Way</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	66	594	45	9	446	6	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	66	594	45	9	446	6	
Percent Heavy Vehicles	8	--	--	8	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	1	2	0	1	2	0	
Configuration	L	T	TR	L	T	TR	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	0	11	48	20	6	5	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	11	48	20	6	5	
Percent Heavy Vehicles	8	8	8	8	8	8	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	66	9		31			59
C (m) (veh/h)	1064	901		182			447
v/c	0.06	0.01		0.17			0.13
95% queue length	0.20	0.03		0.60			0.45
Control Delay (s/veh)	8.6	9.0		28.8			14.3
LOS	A	A		D			B
Approach Delay (s/veh)	--	--	28.8			14.3	
Approach LOS	--	--	D			B	

## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Sunrise Way @ Francis Drive
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	8/30/2016	Analysis Year	Year 2030 - No Proj
Analysis Time Period	Midday Peak		
Project Description: <i>Serena Park</i>			
East/West Street: <i>Francis Drive</i>		North/South Street: <i>Sunrise Way</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	70	712	38	12	693	10
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	70	712	38	12	693	10
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type	<i>Raised curb</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0				

## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Sunrise Way @ Francis Drive
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	8/30/2016	Analysis Year	Year 2030 - No Proj
Analysis Time Period	PM Peak		
Project Description: <i>Serena Park</i>			
East/West Street: <i>Francis Drive</i>		North/South Street: <i>Sunrise Way</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Greg			Intersection	Sunrise Way @ Francis Drive		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	8/30/2016			Analysis Year	Year 2030 - W/ Proj		
Analysis Time Period	Midday Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Francis Drive</i>				North/South Street: <i>Sunrise Way</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	70	731	39	13	740	10	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	70	731	39	13	740	10	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	1	2	0	1	2	0	
Configuration	L	T	TR	L	T	TR	
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	8	2	70	23	3	8	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	8	2	70	23	3	8	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	70	13	34			80	
C (m) (veh/h)	835	821	118			390	
v/c	0.08	0.02	0.29			0.21	
95% queue length	0.27	0.05	1.10			0.76	
Control Delay (s/veh)	9.7	9.5	47.4			16.6	
LOS	A	A	E			C	
Approach Delay (s/veh)	--	--	47.4			16.6	
Approach LOS	--	--	E			C	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Greg			Intersection	Sunrise Way @ Francis Drive		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	8/30/2016			Analysis Year	Year 2030 - W/ Proj		
Analysis Time Period	PM Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Francis Drive</i>				North/South Street: <i>Sunrise Way</i>			
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	83	1085	59	14	808	8	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	83	1085	59	14	808	8	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Raised curb						
RT Channelized			0				0
Lanes	1	2	0	1	2		0
Configuration	L	T	TR	L	T		TR
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	0	12	60	26	7	7	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	12	60	26	7	7	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	83	14		40			72
C (m) (veh/h)	788	590		43			182
v/c	0.11	0.02		0.93			0.40
95% queue length	0.35	0.07		3.69			1.74
Control Delay (s/veh)	10.1	11.2		260.9			37.2
LOS	B	B		F			E
Approach Delay (s/veh)	--	--		260.9			37.2
Approach LOS	--	--		F			E

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Cerritos Rd @ Racquet Club Rd		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Existing		
Analysis Time Period	Midday Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Cerritos Road</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	9	357	11	3	371	6	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	9	357	11	3	371	6	
Percent Heavy Vehicles	8	--	--	8	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		0
Configuration	L	T	TR	L	T		TR
Upstream Signal		0			0		
<b>Minor Street</b>	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	3	9	5	21	9	3	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	3	9	5	21	9	3	
Percent Heavy Vehicles	8	8	8	8	8	8	
Percent Grade (%)		0			0		
Flared Approach		Y			Y		
Storage		1			1		
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration		LTR			LTR		
<b>Delay, Queue Length, and Level of Service</b>							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	9	3	17			33	
C (m) (veh/h)	1136	1145	469			388	
v/c	0.01	0.00	0.04			0.09	
95% queue length	0.02	0.01	0.11			0.28	
Control Delay (s/veh)	8.2	8.2	14.2			15.5	
LOS	A	A	B			C	
Approach Delay (s/veh)	--	--	14.2			15.5	
Approach LOS	--	--	B			C	

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	Greg			Intersection	Cerritos Rd @ Racquet Club Rd			
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs			
Date Performed	9/1/2016			Analysis Year	Existing			
Analysis Time Period	PM Peak							
Project Description <i>Serena Park</i>								
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Cerritos Road</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	12	399	12	9	602	12		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	12	399	12	9	602	12		
Percent Heavy Vehicles	8	--	--	8	--	--		
Median Type	Two Way Left Turn Lane							
RT Channelized			0				0	
Lanes	1	2	0	1	2		0	
Configuration	L	T	TR	L	T		TR	
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	15	9	14	6	9	8		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	15	9	14	6	9	8		
Percent Heavy Vehicles	8	8	8	8	8	8		
Percent Grade (%)		0			0			
Flared Approach		Y			Y			
Storage		1			1			
RT Channelized			0				0	
Lanes	0	1	0	0	1		0	
Configuration		LTR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			LTR		
v (veh/h)	12	9	38			23		
C (m) (veh/h)	922	1103	386			330		
v/c	0.01	0.01	0.10			0.07		
95% queue length	0.04	0.02	0.33			0.22		
Control Delay (s/veh)	9.0	8.3	17.0			18.5		
LOS	A	A	C			C		
Approach Delay (s/veh)	--	--	17.0			18.5		
Approach LOS	--	--	C			C		



TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Cerritos Rd @ Racquet Club Rd		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - No Proj		
Analysis Time Period	Midday Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Cerritos Road</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	10	392	12	3	403	7	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	10	392	12	3	403	7	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		0
Configuration	L	T	TR	L	T		TR
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	3	10	5	23	10	3	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	3	10	5	23	10	3	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		Y			Y		
Storage		1			1		
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	10	3	18			36	
C (m) (veh/h)	1124	1130	422			357	
v/c	0.01	0.00	0.04			0.10	
95% queue length	0.03	0.01	0.13			0.33	
Control Delay (s/veh)	8.2	8.2	15.1			16.6	
LOS	A	A	C			C	
Approach Delay (s/veh)	--	--	15.1			16.6	
Approach LOS	--	--	C			C	

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Cerritos Rd @ Racquet Club Rd		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - No Proj		
Analysis Time Period	PM Peak						
Project Description Serena Park							
East/West Street: Racquet Club Road				North/South Street: Cerritos Road			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	13	434	13	10	659	13	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	13	434	13	10	659	13	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		0
Configuration	L	T	TR	L	T		TR
Upstream Signal		0			0		
<b>Minor Street</b>	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	16	10	15	7	10	8	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	16	10	15	7	10	8	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		Y			Y		
Storage		1			1		
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration		LTR			LTR		
<b>Delay, Queue Length, and Level of Service</b>							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	13	10	41			25	
C (m) (veh/h)	895	1089	344			282	
v/c	0.01	0.01	0.12			0.09	
95% queue length	0.04	0.03	0.40			0.29	
Control Delay (s/veh)	9.1	8.3	18.6			20.7	
LOS	A	A	C			C	
Approach Delay (s/veh)	--	--	18.6			20.7	
Approach LOS	--	--	C			C	

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Cerritos Rd. @ Racquet Club Rd		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - W/ Proj		
Analysis Time Period	Midday Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Cerritos Road</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	15	411	12	3	435	7	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	15	411	12	3	435	7	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0				0
Lanes	1	2	0	1	2		0
Configuration	L	T	TR	L	T		TR
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	3	10	5	23	10	15	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	3	10	5	23	10	15	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		Y			Y		
Storage		1			1		
RT Channelized			0				0
Lanes	0	1	0	0	1		0
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	15	3	18			48	
C (m) (veh/h)	1093	1112	385			435	
v/c	0.01	0.00	0.05			0.11	
95% queue length	0.04	0.01	0.15			0.37	
Control Delay (s/veh)	8.3	8.2	16.0			15.7	
LOS	A	A	C			C	
Approach Delay (s/veh)	--	--	16.0			15.7	
Approach LOS	--	--	C			C	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Greg			Intersection	Cerritos Rd @ Racquet Club Rd		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - W/ Proj		
Analysis Time Period	PM Peak						
Project Description Serena Park							
East/West Street: Racquet Club Road				North/South Street: Cerritos Road			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	22	475	13	10	687	13	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	22	475	13	10	687	13	
Percent Heavy Vehicles	5	--	--	5	--	--	
Median Type	Two Way Left Turn Lane						
RT Channelized			0			0	
Lanes	1	2	0	1	2	0	
Configuration	L	T	TR	L	T	TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	16	10	15	7	10	15	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	16	10	15	7	10	15	
Percent Heavy Vehicles	5	5	5	5	5	5	
Percent Grade (%)		0			0		
Flared Approach		Y			Y		
Storage		1			1		
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LTR			LTR	
v (veh/h)	22	10	41			32	
C (m) (veh/h)	873	1051	298			314	
v/c	0.03	0.01	0.14			0.10	
95% queue length	0.08	0.03	0.47			0.34	
Control Delay (s/veh)	9.2	8.5	20.7			20.3	
LOS	A	A	C			C	
Approach Delay (s/veh)	--	--	20.7			20.3	
Approach LOS	--	--	C			C	

## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Farrell Dr. @ Racquet Club Rd.
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	9/1/2016	Analysis Year	Existing
Analysis Time Period	Midday Peak		
Project Description: <i>Serena Park</i>			
East/West Street: <i>Racquet Club Road</i>		North/South Street: <i>Farrell Drive</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	6	240			322	45
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	6	240	0	0	322	45
Percent Heavy Vehicles	8	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration	<i>LT</i>	<i>T</i>				

## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Farrell Dr. @ Racquet Club Rd.
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	9/1/2016	Analysis Year	Existing
Analysis Time Period	PM Peak		
Project Description <i>Serena Park</i>			
East/West Street: <i>Racquet Club Road</i>		North/South Street: <i>Farrell Drive</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	10	252			508	61
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	10	252	0	0	508	61
Percent Heavy Vehicles	8	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration	<i>LT</i>	<i>T</i>			<i>T</i>	<i>TR</i>
Upstream Signal		0				

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Farrell Dr. @ Racquet Club Rd.		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - No Proj		
Analysis Time Period	Midday Peak						
Project Description: Serena Park							
East/West Street: Racquet Club Road				North/South Street: Farrell Drive			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	6	267			358	52	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	6	267	0	0	358	52	
Percent Heavy Vehicles	5	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	2	0	0	2	0	
Configuration	LT	T			T	TR	
Upstream Signal		0			0		
<b>Minor Street</b>	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				28		25	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	0	0	28	0	25	
Percent Heavy Vehicles	0	0	0	5	0	5	
Percent Grade (%)		0			0		
Flared Approach		N			Y		
Storage		0			1		
RT Channelized			0				0
Lanes	0	0	0	0	0	0	
Configuration					LR		
<b>Delay, Queue Length, and Level of Service</b>							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	6						53
C (m) (veh/h)	1124						888
v/c	0.01						0.06
95% queue length	0.02						0.19
Control Delay (s/veh)	8.2						11.4
LOS	A						B
Approach Delay (s/veh)	--	--					11.4
Approach LOS	--	--					B

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Greg			Intersection	Farrell Dr. @ Racquet Club Rd.		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - No Proj		
Analysis Time Period	PM Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Farrell Drive</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	8	281			566	58	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	8	281	0	0	566	58	
Percent Heavy Vehicles	5	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	2	0	0	2	0	
Configuration	LT	T			T	TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				42		18	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	0	0	42	0	18	
Percent Heavy Vehicles	0	0	0	5	0	5	
Percent Grade (%)		0			0		
Flared Approach		N			Y		
Storage		0			1		
RT Channelized			0				0
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	8						60
C (m) (veh/h)	933						481
v/c	0.01						0.12
95% queue length	0.03						0.42
Control Delay (s/veh)	8.9						15.1
LOS	A						C
Approach Delay (s/veh)	--	--					15.1
Approach LOS	--	--					C



## TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Greg	Intersection	Farrell Dr. @ Racquet Club Rd.
Agency/Co.	Endo Engineering	Jurisdiction	Palm Springs
Date Performed	9/1/2016	Analysis Year	Year 2030 - W/ Proj
Analysis Time Period	Midday Peak		
Project Description: <i>Serena Park</i>			
East/West Street: <i>Racquet Club Road</i>		North/South Street: <i>Farrell Drive</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	15	278			361	55
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	15	278	0	0	361	55
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration	<i>LT</i>	<i>T</i>			<i>T</i>	<i>TR</i>
Upstream Signal		0				

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	Greg			Intersection	Farrell Dr. @ Racquet Club Rd.		
Agency/Co.	Endo Engineering			Jurisdiction	Palm Springs		
Date Performed	9/1/2016			Analysis Year	Year 2030 - W/ Proj		
Analysis Time Period	PM Peak						
Project Description <i>Serena Park</i>							
East/West Street: <i>Racquet Club Road</i>				North/South Street: <i>Farrell Drive</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	44	287			575	67	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	44	287	0	0	575	67	
Percent Heavy Vehicles	5	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	2	0	0	2	0	
Configuration	LT	T			T	TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				45		37	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	0	0	45	0	37	
Percent Heavy Vehicles	0	0	0	5	0	5	
Percent Grade (%)		0			0		
Flared Approach		N			Y		
Storage		0			1		
RT Channelized			0				0
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	44						82
C (m) (veh/h)	918						519
v/c	0.05						0.16
95% queue length	0.15						0.56
Control Delay (s/veh)	9.1						15.6
LOS	A						C
Approach Delay (s/veh)	--	--					15.6
Approach LOS	--	--					C