TRAFFIC IMPACT STUDY FOR THE SKYPARK AT SANTA'S VILLAGE PROJECT

SKYFOREST, CALIFORNIA

MAY 2016

PREPARED FOR

SKYPARK AT SANTA'S VILLAGE

PREPARED BY

Gibson
transportation consulting, inc.

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Prepared for:

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Prepared by:

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Chapter 1
Introduction

Gibson Transportation Consulting, Inc. (GTC) was asked to prepare a traffic impact analysis (TIA) for the Skypark at Santa's Village Project (Project) located on State Route (SR) 18 in Skyforest, California. The methodology and assumptions used in this analysis were established in conjunction with the interim *Traffic Impact Study Guidelines* (County of San Bernardino Department of Public Works Traffic Division, April 2014) as well as with the California Department of Transportation (Caltrans). The analysis presented in this traffic study incorporates all previous responses to comments from Caltrans and the County of San Bernardino staff on earlier draft reports; specific comments are available in the appendices.

PROJECT LOCATION

The Project Site is located on SR 18 in Skyforest near Kuffel Canyon Road in the County of San Bernardino (County). The Project Site is surrounded by mostly forest and mountainous terrain, with a small residential development to the west.

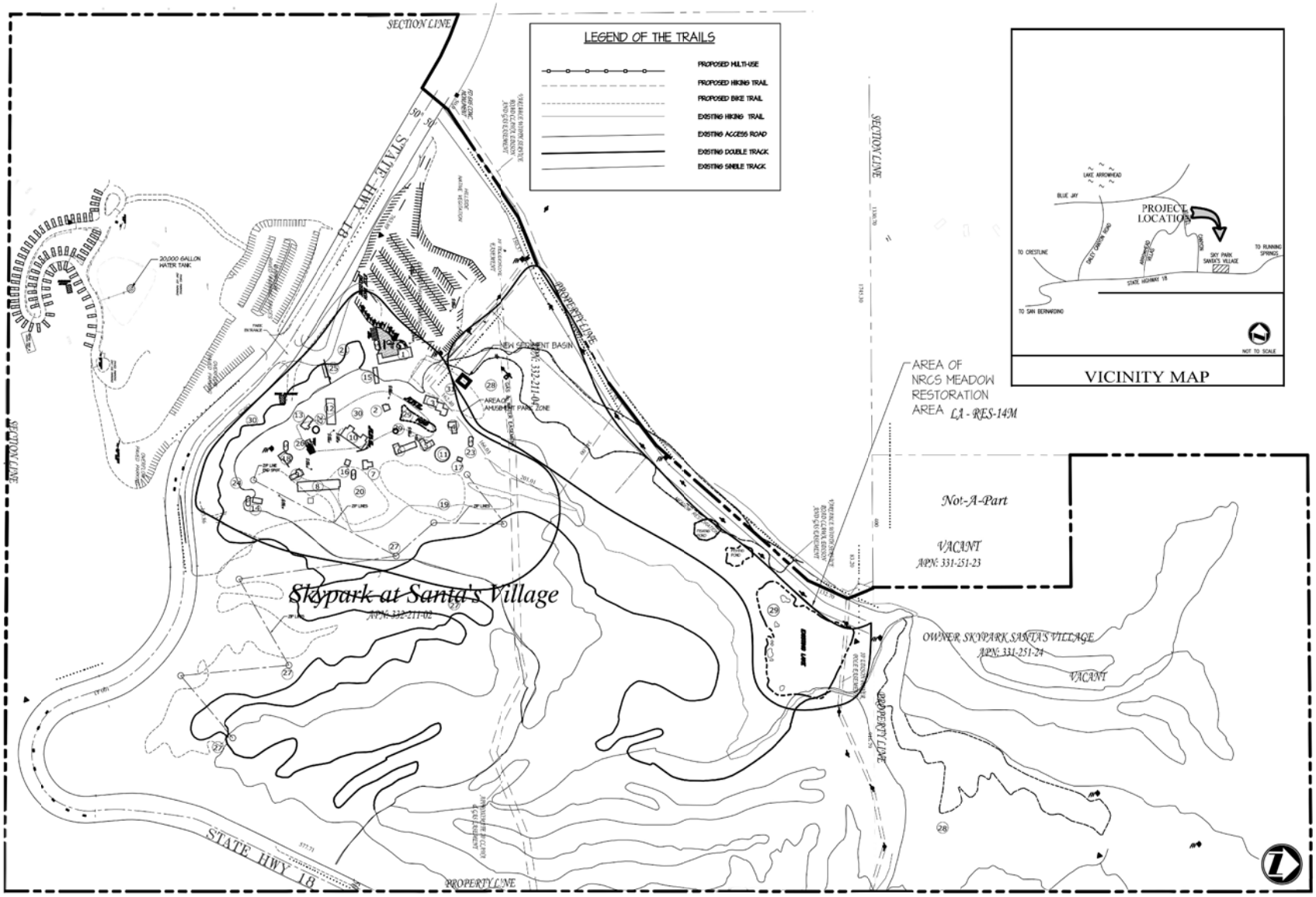
PROJECT DESCRIPTION

The Project, which is expected to be operational in 2016, includes the renovation and reopening of a theme park facility previously known as Santa's Village. The Project contains approximately 23,389 square feet (sf) of recreational and retail facilities, a 70-space campground, and two main parking lots, one on the north side and one on the south side of SR 18. The driveways to both parking lots will be aligned to create a central signalized access point to the Project, and SR 18 will be widened to accommodate left-turn lanes into the Project driveways from both directions. Pedestrian access will be provided by an at-grade crosswalk across SR 18 with pedestrian phasing. The crosswalk will connect the two parking lots and lead to a pathway that will connect to the park entrance.

Figure 1 illustrates the proposed Project site plan.

ORGANIZATION OF REPORT

This report is divided into 13 chapters, including this introduction. Chapter 2 describes the methodology used for the TIA. Chapter 3 describes the existing circulation system, traffic volumes, and traffic conditions in the Study Area. Chapter 4 forecasts and analyzes opening year base operating conditions without Project traffic. Chapter 5 forecasts and analyzes full build-out base operating conditions without Project traffic. Chapter 6 describes the procedure used to generate Project traffic volumes and the traffic distribution patterns throughout the Study Area. Chapter 7 presents the intersection operating conditions associated with operation of the Project added to Existing Conditions. Chapter 8 presents the intersection operating conditions associated with operation of the Project added to Opening Year without Project Conditions (Year 2016). Chapter 9 presents the intersection operating conditions associated with operation of the Project added to Full Build-Out without Project Conditions (Year 2035). Chapter 10 assesses the potentially significant traffic impacts associated with the Project compared to the existing, opening year, and full build-out conditions. Chapter 11 presents the recommended transportation improvement at the Project access points. Chapter 12 provides a review of the Project site access and circulation plan. Chapter 13 summarizes the analyses and study conclusions. Analysis worksheets, traffic counts, and any related documents are provided in the appendices.



Source: Jonathan L. Zane Architecture

SITE PLAN

FIGURE 1

Chapter 2

Traffic Impact Analysis Methodology

This chapter describes the traffic scenarios analyzed, the methodologies used for assessing intersection and street segment operating conditions, and the significant traffic impact criteria used in the analysis.

STUDY SCOPE AND METHODOLOGY

This TIA has been prepared in accordance with the Caltrans and County guidelines, adopted policies, procedures, and standards, and provides a comprehensive analysis of the potential traffic impacts associated with the Project. The *Scope for Traffic Study*, provided in Appendix A, was prepared in consultation with the County.

As described in more detail below, the study analyzed the potential Project-generated traffic impacts on the street system surrounding the Project Site when compared to Existing Conditions (Year 2015), Opening Year Conditions (Year 2016) and Full Build-Out Conditions (Year 2035). After consultation with Caltrans and the County, it was determined that intersection traffic impacts for the Project would be evaluated on Saturday and Sunday during the morning peak hours (9:00 AM to 11:00 AM) when the highest number of park guests will be arriving and afternoon peak hours (2:30 PM to 4:30 PM) when the highest number of park guests will be departing. The analysis of Opening Year traffic forecasts was conducted assuming full occupation of the Project and is based on projected traffic conditions in Year 2016 both with and without development of the Project. The analysis of Full Build-Out traffic forecasts was conducted assuming full build-out of the region surrounding the Project and is based on projected traffic conditions in Year 2035 both with and without development of the Project.

Accordingly, the following traffic scenarios were developed and analyzed as part of this study:

- Existing Conditions (Year 2015) – The analysis of existing traffic conditions provides a basis for the assessment of existing and future traffic conditions with the addition of Project traffic. The Existing Conditions analysis includes a description of key area streets and highways, traffic volumes and current operating conditions, and transit service in the Project Site vicinity. In accordance with County procedures and after discussions with Caltrans and the County, intersection turning movement counts were collected in December 2014 during typical weekend morning (9:00 AM to 11:00 AM) and afternoon (2:30 PM to 4:30 PM) peak hours. To account for the high volume of truck traffic on SR 18, a Passenger Car Equivalency factor of 4.5 was applied to 10% of the base vehicular counts, per the direction of Caltrans. Furthermore, these counts were grown by 1% to reflect Year 2015 conditions. Field inspections of the Study Area, which include documentation of lane configurations and signal phasing for the analyzed intersections, were conducted in January 2015.

- Existing plus Project Conditions (Year 2015) – This scenario analyzes the intersection operating conditions that could be expected if the Project was fully occupied given the existing street system and traffic volumes. In this scenario, the Project-generated traffic is added to the Existing Conditions (Year 2015) traffic volumes.

- Opening Year without Project Conditions (Year 2016) – This scenario analyzes the potential intersection operating conditions that could be expected as a result of adding one year of regional growth and related project traffic to the existing volumes by Year 2016. This analysis provides the baseline conditions by which Project impacts are evaluated in the future at full occupancy.

- Opening Year plus Project Conditions (Year 2016) – This scenario analyzes the potential intersection operating conditions that could be expected if the Project is built in the projected buildout year (2016) by adding the Project traffic to the Opening Year without Project Conditions (Year 2016) traffic volumes.

- Full Build-Out without Project Conditions (Year 2035) – This scenario analyzes the potential intersection operating conditions that could be expected as a result of adding regional growth and related project traffic to the existing volumes by Year 2035. This analysis provides the baseline conditions by which Project impacts are evaluated in the future at full build-out of the region.

- Full Build-Out plus Project Conditions (Year 2035) – This scenario analyzes the potential intersection operating conditions that could be expected with the Project built in Year 2035 by adding the Project traffic to the Full Build-Out without Project Conditions (Year 2035) traffic volumes.

Intersection Capacity Analyses Methodology

Intersection capacity was analyzed using the methodologies adopted by the County. In accordance with the County policy, the intersection capacity analysis was conducted using Synchro software, which is based on the *2010 Highway Capacity Manual* (Transportation Research Board, 2010) (HCM), for signalized and unsignalized intersections. The HCM signalized methodology calculates the average delay, in seconds, for each vehicle passing through intersection during the peak hour, while the HCM unsignalized methodology calculates the vehicular delay, in seconds, for all vehicular movements.

Vehicular delay is equated to a level of service (LOS) designation to characterize the traffic flow experienced by drivers. Table 1 presents a description of the LOS categories, which range from excellent, nearly free-flow traffic at LOS A to congested, stop-and-go conditions at LOS F, for both signalized and unsignalized intersections, based upon their calculated delay output.

Significant Impact Criteria

Per *Traffic Impact Study Guidelines,* determination of Project traffic impacts are defined by the County's significant impact criteria, and are based on the change in LOS for the affected intersection as follows:

> ***"Signalized Intersections.*** *Any study intersection that is operating at a LOS A, B, C or D for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall mitigate the impact to bring the intersection back to at least LOS D.*
>
> *"Any study intersection that is operating at a LOS E or F for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to the project traffic being added.*
>
> ***"Unsignalized Intersections.*** *An impact is considered significant if the study determines that either section a) or both sections b) and c) occur:*

"a) The addition of project related traffic causes the intersection to move from a LOS D or better to a LOS E or worse

OR

"b) The project contributes additional traffic to an intersection that is already projected to operate at an LOS E or F with background traffic

AND

"c) One or both of the following conditions are met:

1) The project adds ten (10) or more trips to any approach

2) The intersection meets the peak hour traffic signal warrant after the addition of project traffic."

Congestion Management Program (CMP) Analysis

The CMP is a state-mandated program that serves as the monitoring and analytical basis for transportation funding decisions in the County made through the Regional Transportation Improvement Program and State Transportation Improvement Program processes. There are no CMP arterial monitoring intersections in the Project vicinity and, thus, no CMP analysis was performed.

TABLE 1
LEVEL OF SERVICE DEFINITIONS
SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

Level of Service	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)	Definition
A	0.0 - 10.0	0.0 - 10.0	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	10.1 - 20.0	10.1 - 15.0	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	20.1 - 35.0	15.1 - 25.0	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	35.1 - 55.0	25.1 - 35.0	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	55.1 - 80.0	35.1 - 50.0	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80.0	> 50.0	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source
Highway Capacity Manual 2010, Transportation Research Board, 2010.

Chapter 3
Existing Conditions

A comprehensive data collection effort was undertaken to develop a detailed description of existing conditions in the Project Study Area. The existing conditions analysis relevant to this study includes an assessment of the existing street system, lane configurations, intersection traffic controls, an analysis of traffic volumes and current operating conditions, and an evaluation of the existing public transit service.

STUDY AREA

The Study Area was established by reviewing the existing intersection/corridor operations, Project peak hour vehicle trip generation, the anticipated distribution of Project vehicular trips, and the potential impacts of Project traffic.

A traffic analysis study area generally comprises those locations with the greatest potential to experience significant traffic impacts due to the Project as defined by the lead agency. In the traffic engineering practice, a study area generally includes those intersections that are:

1. Immediately adjacent or in close proximity to the project site
2. In the vicinity of the project site that are documented to have current or projected future adverse operational issues
3. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements (e.g., at freeway ramp intersections).

The Project Study Area was designed to ensure that all potentially significantly impacted intersections, prior to any improvements, were analyzed, and the boundary of the Study Area was extended, as necessary, to confirm that there were no significant impacts at or outside the

boundary of the Study Area by reviewing the Project traffic's travel patterns. The intersections selected for analysis are consistent with the above criteria.

A total of six intersections (one signalized and five unsignalized) were selected for analysis. Figure 2 illustrates the location of the Project Site in relation to the surrounding street system and the six study intersections.

The six intersections selected for evaluation are:

1. SR 189 & SR 18 (signalized)
2. Daley Canyon Road & SR 18
3. SR 173 & SR 18
4. Kuffel Canyon Road & SR 18
5. Project Driveways & SR 18 (to be signalized by the Project)
6. Live Oak Drive & SR 18

EXISTING STREET SYSTEM

The Study Area consists of a regional roadway system that offers sub-regional and some local access. These transportation facilities generally provide two travel lanes and generally do not allow parking on either side of the street. Typically, the speed limits range between 35 and 55 miles per hour (mph).

Roadway Descriptions

The following is a brief description of the major streets in the Study Area:

- SR 18 – SR 18 is a two-lane state highway that generally runs in the east-west direction and provides primary regional access to the Project Site. It bisects the Project Site (with parking and theme park on the north side of SR 18 and a separate parking area and camp sites on the south side of the roadway), with access provided via one driveway connecting both parking lots aligned at a signalized intersection. The speed limit in the study area is between 35 mph and 55 mph.

- SR 189 – SR 189 is a two-lane roadway that runs in the north-south direction approximately six miles west of the Project Site. It provides both local and regional access to the Project Site from Lake Gregory as well as Twin Peaks. The posted speed limit is 35 mph.

- Daley Canyon Road – Daley Canyon Road is a two-lane roadway that runs in the north-south direction approximately three miles west of the Project Site. It connects SR 18 with SR 189 on the way toward Lake Arrowhead, providing local and regional access to the Project Site. The posted speed limit is 35 mph.

- SR 173 – SR 173 is a two-lane roadway that runs in the north-south direction approximately 1.5 miles east of the Project Site. It connects SR 18 to Lake Arrowhead and provides local and regional access to the Project Site. The posted speed limit is 35 mph.

- Kuffel Canyon Road – Kuffel Canyon Road is a two-lane roadway that runs in the north-south direction approximately one half-mile west of the Project Site. It mainly provides local access to the Project Site. The posted speed limit is 30 mph.

- Live Oak Drive – Live Oak Drive is a two-lane roadway that runs in the north-south direction approximately four miles east of the Project Site. It connects SR 330 with SR 18 and provides both local and regional access to the Project Site. The posted speed limit is 25 mph.

The existing lane configurations at the Study Area intersections are provided in Appendix B.

EXISTING TRANSIT SYSTEM

The Project area is served by bus lines operated by the Mountain Transit. Bus transit service in the Project vicinity is available along SR 18 and SR 173.

Mountain Transit Route 4 provides service in the Project vicinity and travels east-west on SR 18 and north-south on SR 173. The line travels from Lake Arrowhead to Running Springs via SR 18 and SR 173. The route operates Monday-Friday and since the peak demand for the Project will be on the weekends, no additional transit analysis was conducted.

Figure 3 illustrates the existing transit service in the Study Area.

EXISTING BICYCLE AND PEDESTRIAN NETWORK

Existing Bicycle Facilities

Bicycle lanes are a component of street design with dedicated striping, separating vehicular traffic from bicycle traffic and offering a safer environment for both cyclists and motorists. Bicycle routes are identified as bicycle-friendly streets where motorists and cyclists share the roadway and there is no dedicated striping of a bicycle lane. Bicycle routes are preferably located on collector and lower volume arterial streets. Based on the *San Bernardino County Non-Motorized Transportation Plan* (San Bernardino Associated Governments, May 2014), no bicycle lanes or routes currently exist in the Study Area.

Existing Pedestrian Facilities

The walkability of existing facilities is based on the availability of pedestrian routes necessary to accomplish daily tasks without the use of an automobile. These attributes are quantified by WalkScore.com, which calculates the walkability of specific addresses by taking into account the ease of living in the neighborhood with a reduced reliance on automobile travel and assigns a score out of 100 points. With the limited commercial businesses and cultural facilities in the vicinity, the Project Site is rated with a score of nine of 100 possible points (as of January 29, 2015) and defined as “Car-Dependent so almost all errands require a car.”

No sidewalks currently exist on SR 18. None of the study intersections in the Study Area provide marked pedestrian crosswalks; however, there are no posted signs prohibiting pedestrian crossings at the intersections.

EXISTING TRAFFIC VOLUMES AND LEVELS OF SERVICE

This section presents the existing peak hour turning movement traffic volumes for the study intersections, describes the methodology used to assess the traffic conditions at each intersection, and analyzes the resulting operating conditions at each intersection indicating delay and LOS.

Existing Traffic Volumes

New intersection turning movement counts were collected at five of the study intersections on a typical Saturday and Sunday in December 2014 from 9:00 AM to 11:00 AM and from 2:30 PM to 4:30 PM. These counts were grown by 1% to reflect Year 2015 conditions. The existing SR 18 volumes at the Project driveways were extrapolated from the volumes at the adjacent intersection of Kuffel Canyon Road & SR 18.

The existing intersection traffic volumes on a Saturday and Sunday are shown in Figures 4A and 4B, respectively, and the count summary worksheets are provided in Appendix C. The traffic volumes illustrated in Figures 4A and 4B were analyzed to determine the existing operating conditions at the analyzed intersections.

Existing Intersection Levels of Service

The existing intersection operating conditions for the morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 2A and 2B respectively. As shown, all six study intersections operate at LOS C or better during both the morning and afternoon peak hours on both Saturday and Sunday under Existing Conditions. The Project driveway currently does not generate traffic and, therefore, does not reflect any existing delay.

The LOS calculation worksheets are provided in Appendix D.

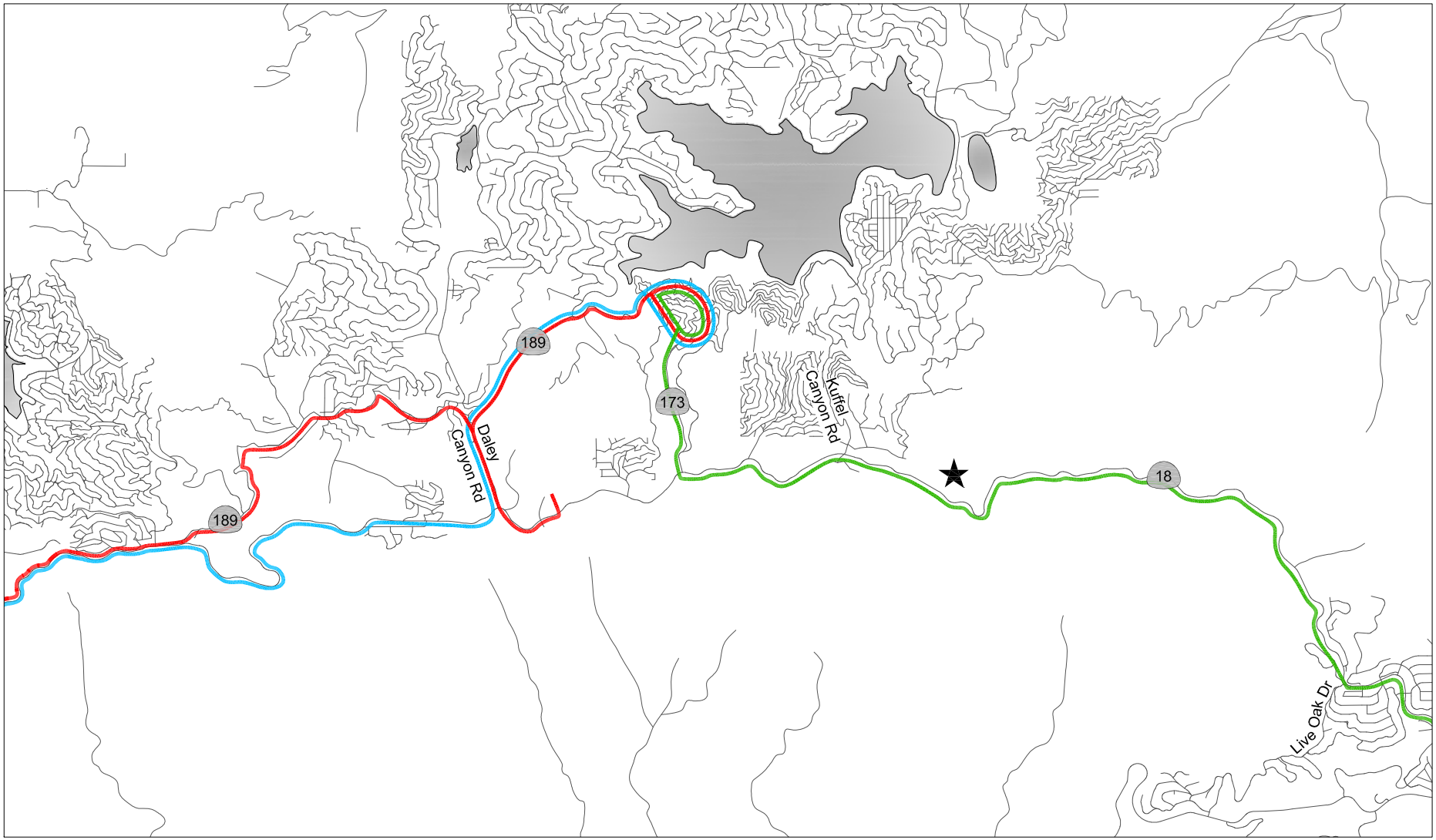
LEGEND

- Project Site
- Signalized Study Intersection
- Unsignalized Study Intersection

N
Not to Scale

STUDY AREA

FIGURE 2



LEGEND

★ Project Site

RIM Route 2

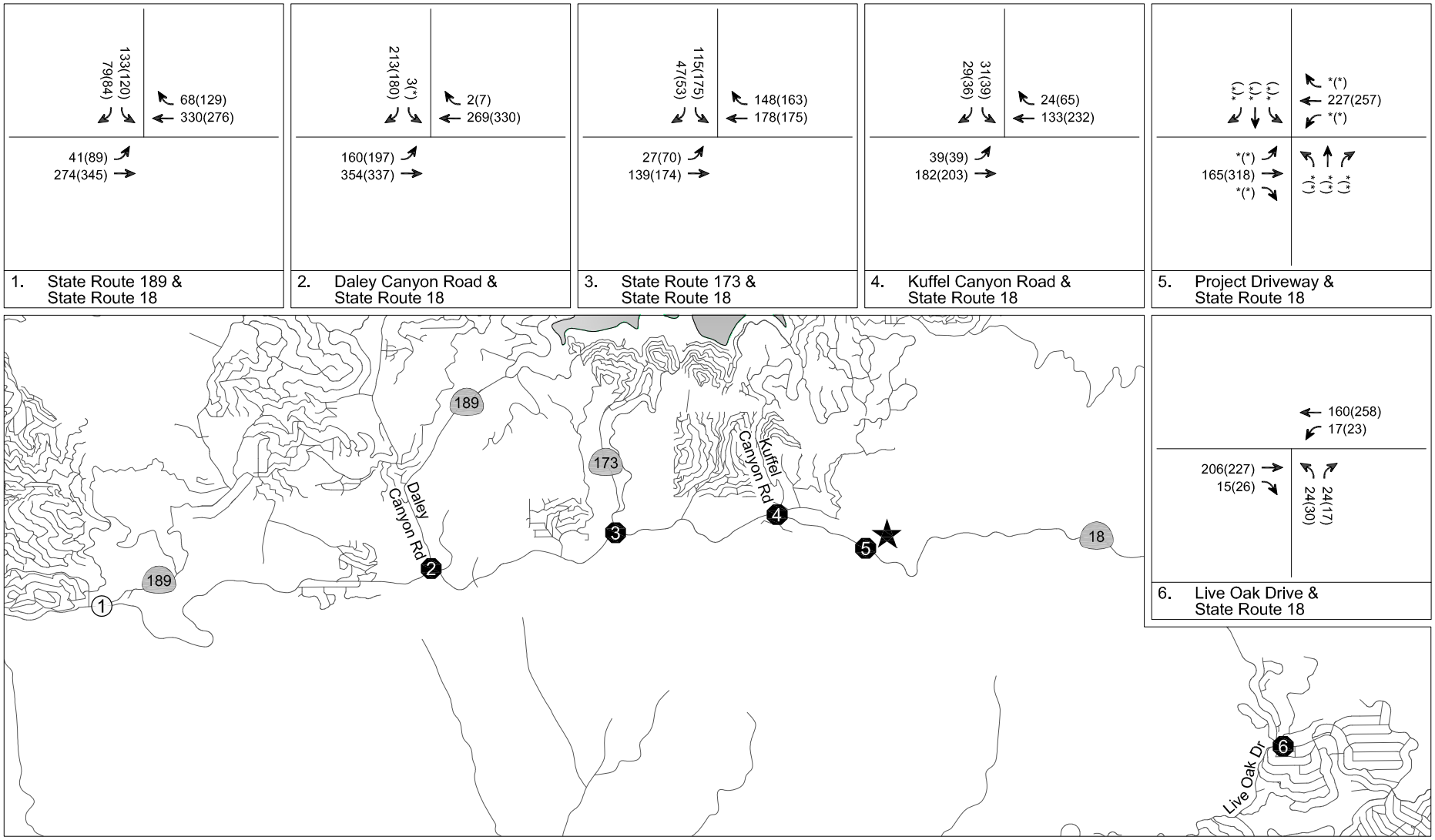
RIM Route 4

RIM Off the Mountain

N
Not to Scale

EXISTING TRANSIT SERVICE

FIGURE 3

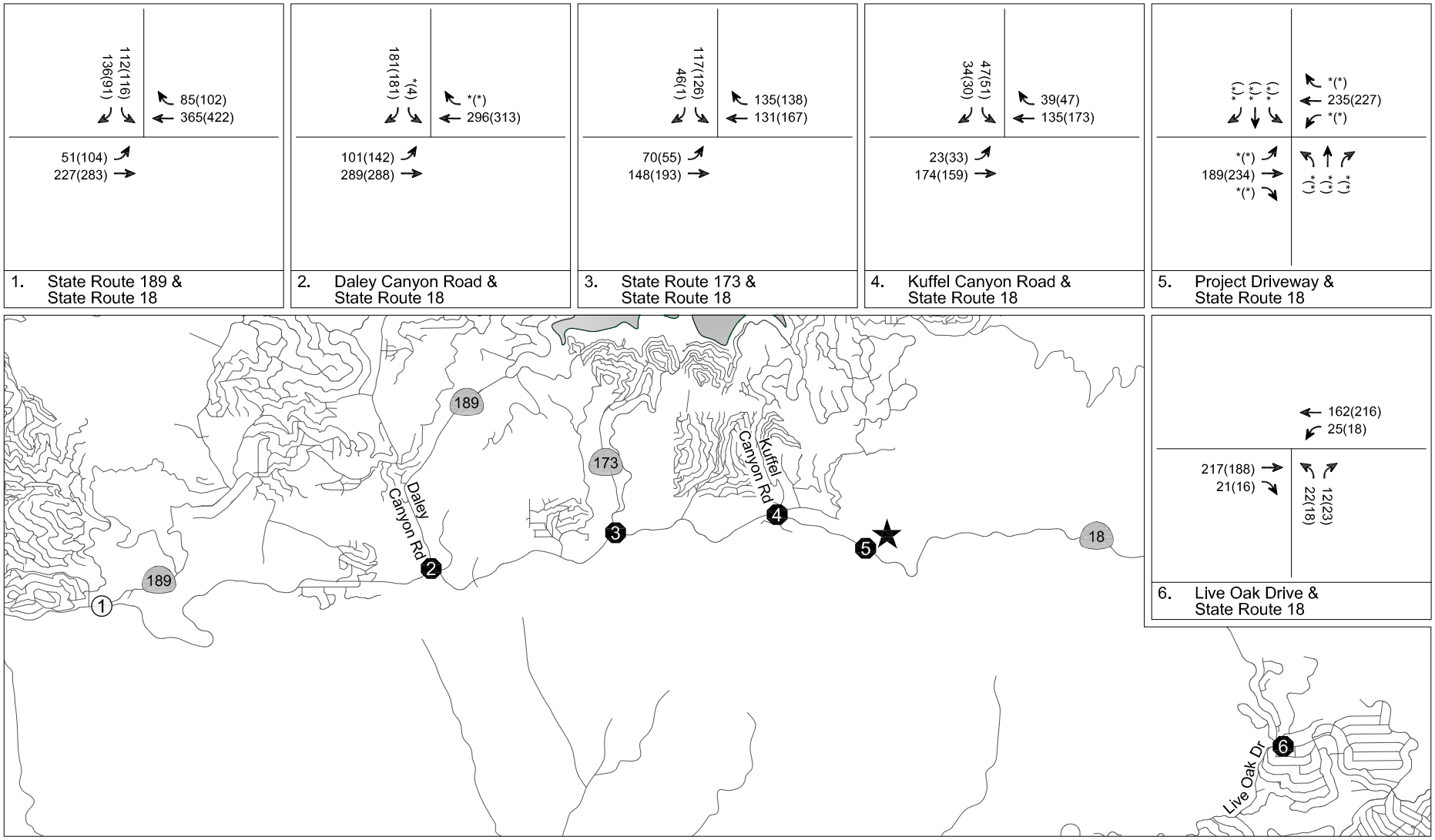


LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection
- X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes
- * Negligible Volume
- N Not to Scale

EXISTING CONDITIONS (YEAR 2015)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 4A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

EXISTING CONDITIONS (YEAR 2015)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 4B

TABLE 2A
EXISTING CONDITIONS (YEAR 2015)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	14.2 13.9	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	12.4 12.4	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	13.9 20.8	B C
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	10.9 12.5	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	10.9 12.4	B B

Notes:

[a] All locations analyzed using HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

TABLE 2B
EXISTING CONDITIONS (YEAR 2015)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	15.9 15.6	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	11.9 12.6	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	14.8 16.4	B C
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	11.0 11.7	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	11.4 10.8	B B

Notes:

[a] All locations analyzed using HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

Chapter 4

Opening Year without Project Conditions

In accordance with California Environmental Quality Act (CEQA) requirements, the Project's TIA considers the effects of the Project in relation to other developments either proposed, approved, or under construction in the Study Area. These development proposals and the methodologies used in projecting Opening Year traffic conditions without the Project are discussed in this chapter. The Opening Year roadway network conditions are also discussed in terms of anticipated supply, demand, and operations (system performance). The Opening Year of 2016 was selected to coincide with the projected occupancy of the Project.

CEQA GUIDELINES REGARDING FUTURE TRAFFIC CONDITIONS

The forecast of Opening Year without Project Conditions was prepared in accordance with procedures outlined in Section 15130 of *Guidelines for Implementation of the California Environmental Quality Act*, *Chapter 3, Title 14, California Code of Regulations* (California Natural Resources Agency, amended July 27, 2007) (*Guidelines*). Specifically, *Guidelines* provides two options for developing the cumulative traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> "(B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency."

OPENING YEAR WITHOUT PROJECT TRAFFIC VOLUMES

The Opening Year without Project traffic volumes reflect growth in traffic over existing conditions from two sources. The first source is the ambient growth that increases the base traffic due to regional growth and development outside the Study Area. The second source is the contribution of traffic generated by projects proposed, approved, or under construction in the vicinity of the Study Area (collectively, the Related Projects).

Ambient Traffic Growth

Existing traffic is expected to increase as a result of regional growth and development. Based on direction from Caltrans and the County, an ambient growth factor of 1.0% per year (derived from *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future* (Southern California Association of Governments, April 2012) (the SCAG RTP) was used to adjust the existing traffic volumes to the Project's projected occupancy year of 2016. The total adjustment applied over the one-year period to full occupancy of the Project was, therefore, 1.0%.

Related Projects

In accordance with CEQA requirements, this study considered the effects of the Project in relation to the Related Projects. Considering the isolated location of the Project Site, no Related Projects are identified that add traffic to the study intersections as reported by the County. Any future projects that may be proposed between now and occupancy of the Project are accounted for in the ambient growth calculations.

Figures 5A and 5B illustrate the resulting Future without Project intersection traffic volumes on the weekend, which includes the existing traffic levels plus one year of ambient growth.

FUTURE IMPROVEMENTS

Future Bicycle System

Based on the *San Bernardino County Non-Motorized Transportation Plan*, the following bicycle facilities are planned along corridors within the Study Area:

Bicycle Lanes (Class II). These are facilities where a portion of the roadway has been designated by striping, signaling, and pavement markings for the preferential or exclusive use of bicyclists; they include:

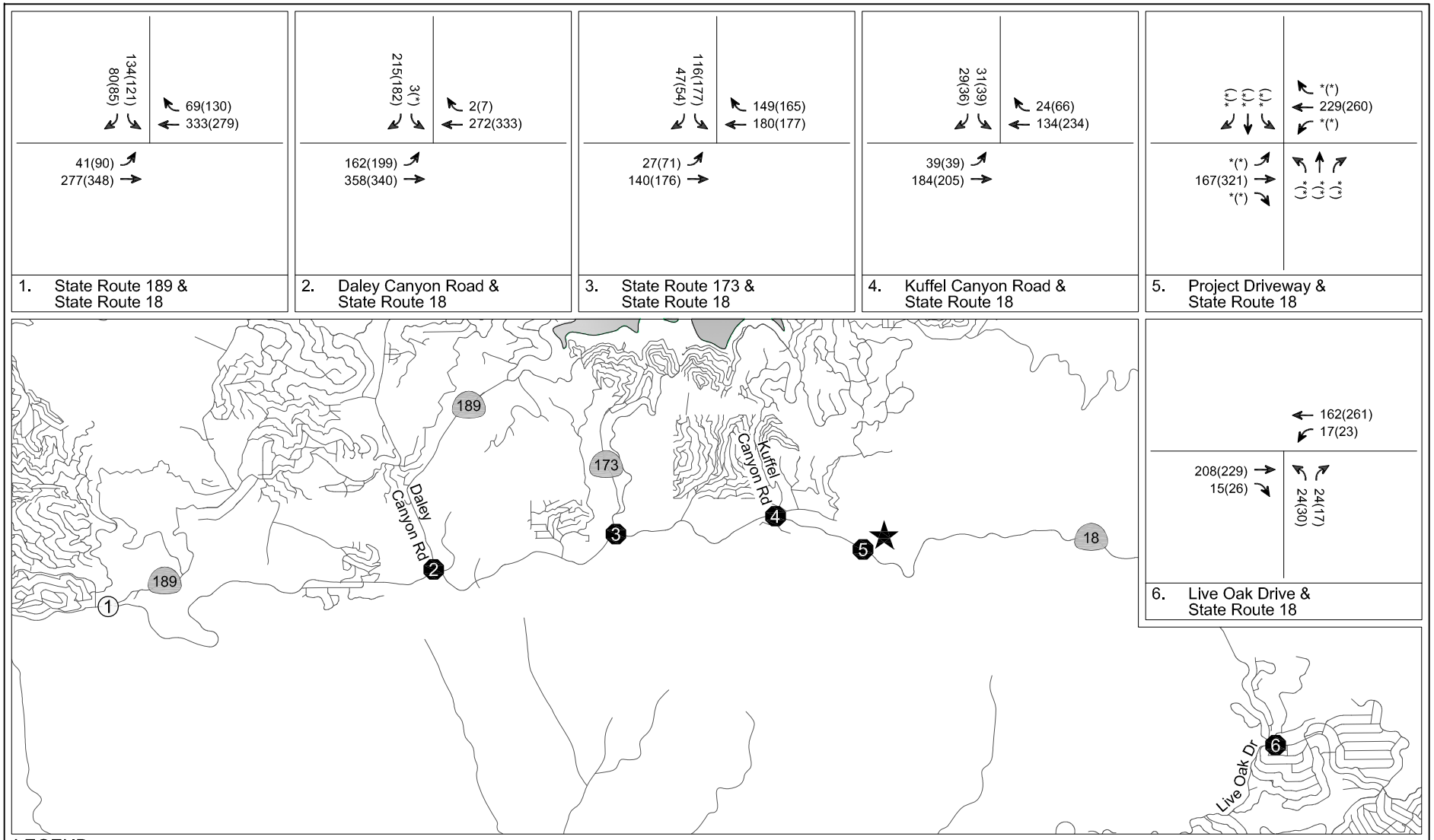
- Kuffel Canyon Road between SR 18 and SR 173
- Daley Canyon Road between SR 18 and SR 189

INTERSECTION OPERATIONS

This section presents the methodology and results of the intersection operations for the Future without Project Conditions that are defined by the traffic volumes, intersection lane configurations, and roadways that would exist in Year 2016. No future roadway improvements were included as part of the future conditions analyses.

The projected Opening Year without Project intersection operating conditions for the morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 3A and 3B, respectively. As shown, all six study intersections operate at LOS C or better during both the morning and afternoon peak hours on both Saturday and Sunday under Opening Year without Project Conditions. The Project driveway does not currently generate traffic and, therefore, does not reflect delay values under this scenario.

The LOS calculation worksheets are provided in Appendix D.



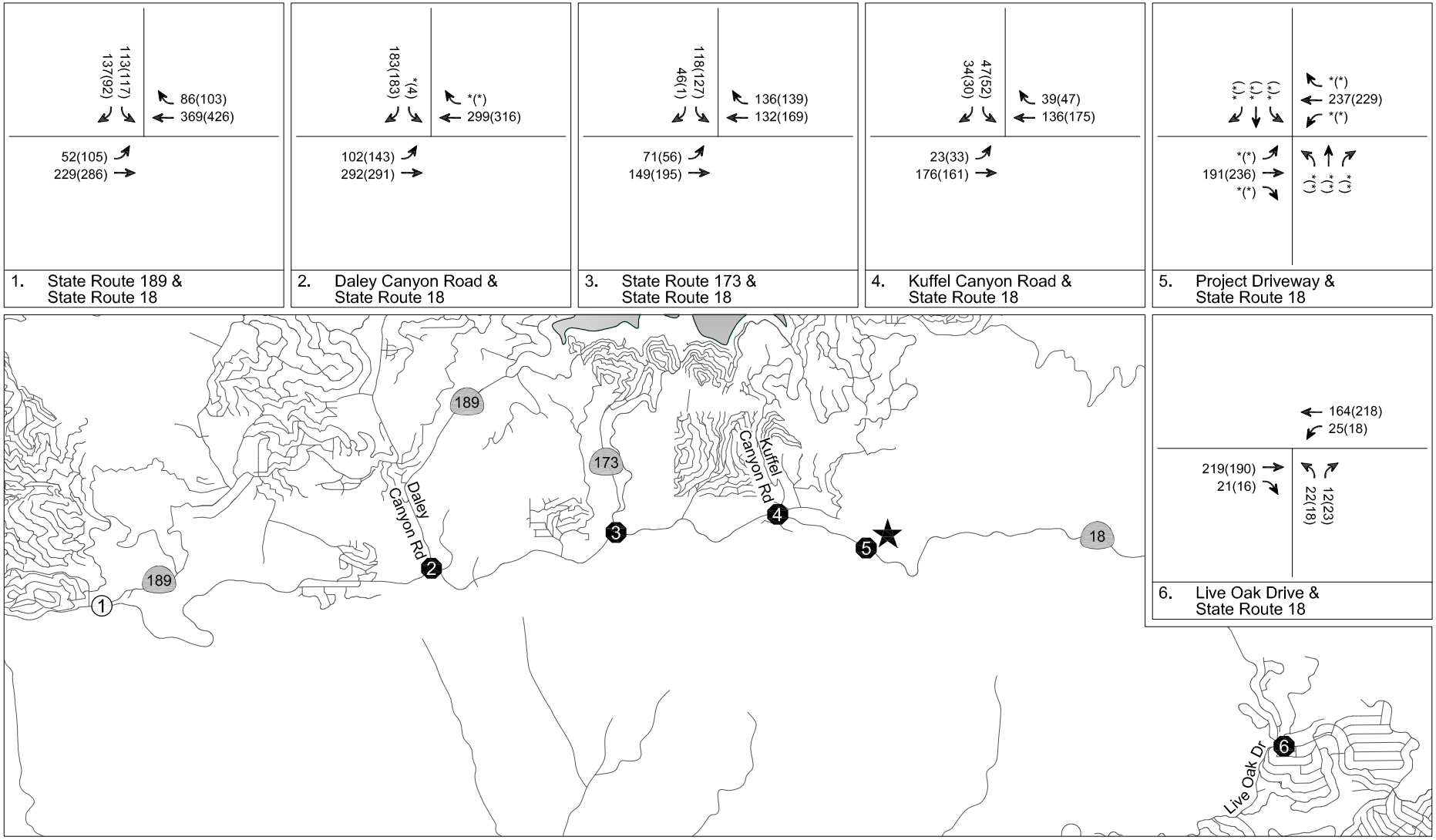
LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection
- X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes
- * Negligible Volume

N
Not to Scale

OPENING YEAR CONDITIONS (YEAR 2016)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 5A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

OPENING YEAR CONDITIONS (YEAR 2016)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 5B

TABLE 3A
OPENING YEAR CONDITIONS (YEAR 2016)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Opening Year (Year 2016)	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	14.3 13.9	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	12.4 12.5	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	14.0 21.3	B C
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	10.9 12.6	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	10.9 12.4	B B

Notes:

[a] All locations analyzed with HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

TABLE 3B
OPENING YEAR CONDITIONS (YEAR 2016)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Opening Year (Year 2016)	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	16.0 15.6	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	12.0 12.6	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	14.9 16.7	B C
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	11.1 11.8	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	11.4 10.8	B B

Notes:

[a] All locations analyzed with HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

Chapter 5

Full Build-Out without Project Conditions

In accordance with the County's requirements, the Project's TIA considers the effects of the Project in relation to all other developments either proposed, approved, or under construction in the Study Area over the next 20 years. These development proposals and the methodologies used in projecting future traffic conditions without the Project are discussed in this section. The Full Build-Out Year 2035 roadway network conditions are also discussed in this chapter in terms of anticipated supply, demand, and operations (system performance). The Full Build-Out Year of 2035 was selected to consider the full build-out of the region surrounding the Project.

FULL BUILD-OUT WITHOUT PROJECT TRAFFIC VOLUMES

The Full Build-Out Year without Project traffic volumes reflect growth in traffic over existing conditions. The first source is the ambient growth that increases the base traffic due to regional growth and development outside the Study Area. The second source is the contribution of traffic generated by the Related Projects.

Ambient Traffic Growth

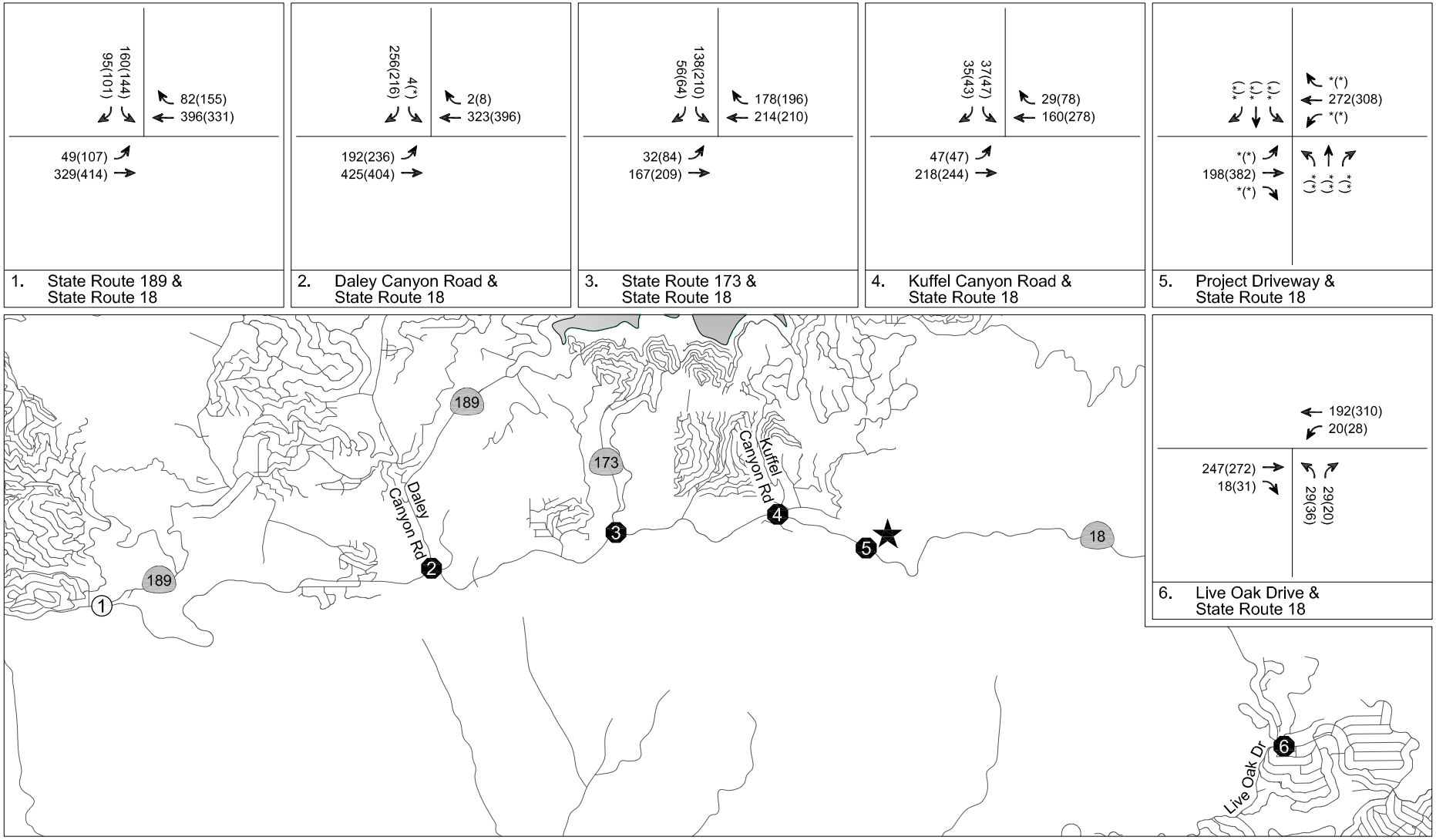
Existing traffic is expected to increase as a result of regional land use growth and local development. Based on the direction from Caltrans and the County, an ambient growth factor of 1.0% per year (derived from the SCAG RTP) was used to adjust the existing traffic volumes to reflect the Study Area's projected full buildout conditions in 2035. The total adjustment applied over the 20-year period to full buildout of the Project was, therefore, 20.0%.

The resulting Full Build-Out without Project intersection traffic volumes are illustrated in Figures 6A and 6B.

INTERSECTION OPERATIONS

The projected Full Build-Out without Project (Year 2035) intersection operating conditions for the morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 4A and 4B, respectively. These calculations assume that no future roadway improvements would be implemented over the 20-year time period. As shown, all six study intersections operate at LOS D or better during both the morning and afternoon peak hours on both Saturday and Sunday under the Full Build-Out without Project Conditions. The Project driveway does not generate traffic for this scenario and, therefore, does not result in vehicular delay.

The LOS calculation worksheets are provided in Appendix D.



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

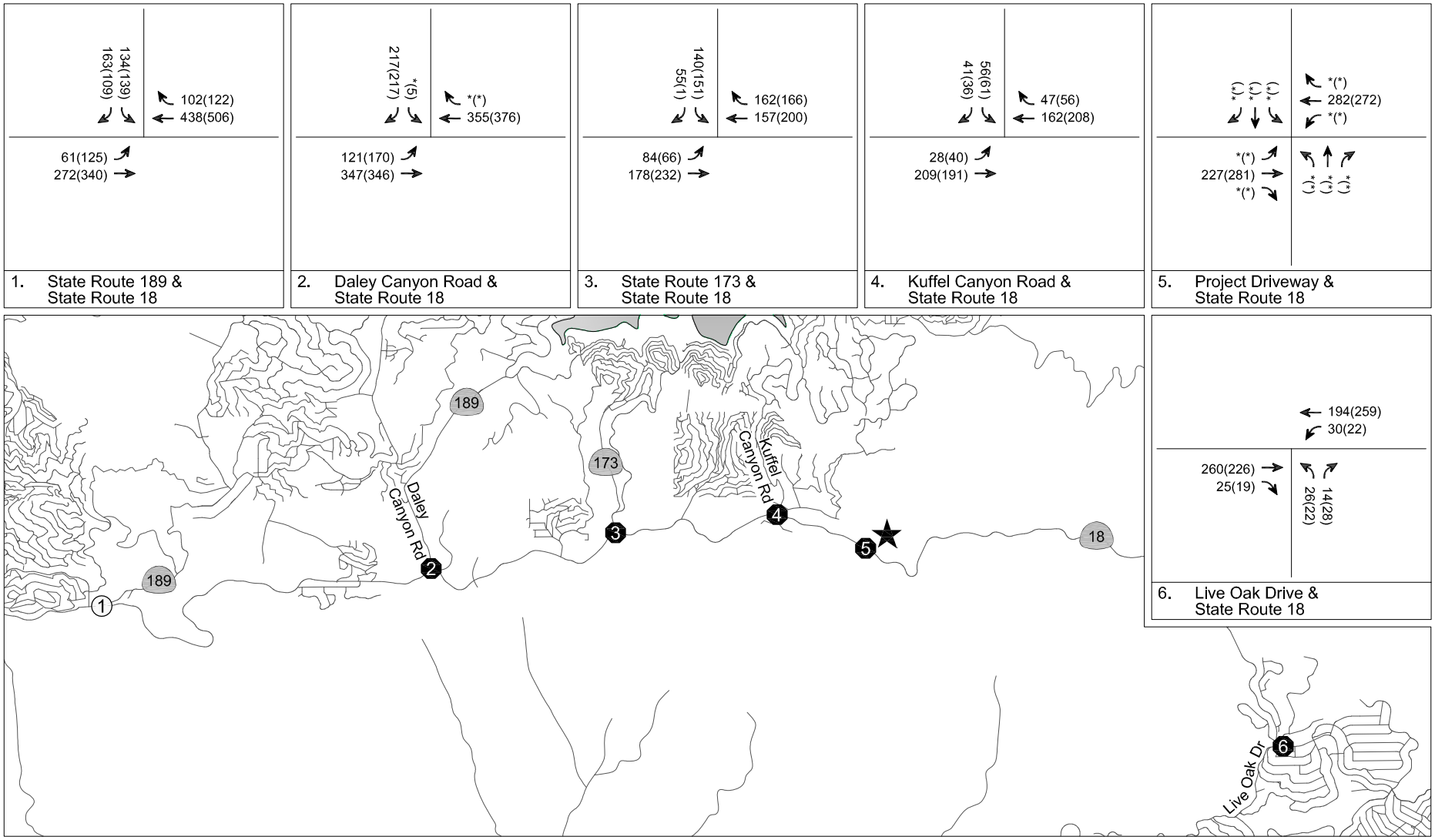
X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

FULL BUILD-OUT CONDITIONS (YEAR 2035)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 6A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

FULL BUILD-OUT CONDITIONS (YEAR 2035)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 6B

TABLE 4A
FULL BUILD-OUT CONDITIONS (YEAR 2035)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Full Build-Out (Year 2035)	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	15.2 15.3	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	13.4 13.3	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	15.2 26.7	C D
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	11.3 13.4	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	11.3 13.1	B B

Notes:

[a] All locations analyzed with HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

TABLE 4B
FULL BUILD-OUT CONDITIONS (YEAR 2035)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Full Build-Out (Year 2035)	
			Delay (sec)	LOS [a]
1.	State Route 189 & State Route 18 [b]	A.M. P.M.	16.7 16.8	B B
2.	Daley Canyon Road & State Route 18 [c]	A.M. P.M.	12.6 13.6	B B
3.	State Route 173 & State Route 18 [c]	A.M. P.M.	16.5 18.7	C C
4.	Kuffel Canyon Road & State Route 18 [c]	A.M. P.M.	11.5 12.3	B B
5.	Project Driveways & State Route 18 [c][d]	A.M. P.M.	0.0 0.0	A A
6.	Live Oak Drive & State Route 18 [c]	A.M. P.M.	11.8 11.2	B B

Notes:

[a] All locations analyzed with HCM methodology

[b] Signalized intersection

[c] Unsignalized intersection

[d] Based on Existing cross-section of SR 18

Chapter 6
Project Traffic

An estimate of the Project's potential trip generation, trip distribution patterns, and trip assignment was prepared for the Project.

PROJECT TRAFFIC VOLUMES

The first step of the forecasting process is trip generation, which estimates the total arriving and departing trips generated by the Project on a peak hour basis by applying the appropriate vehicle trip generation equations, or rates, to the size and land use designation of the Project development.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound Project trips. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the Study Area. Localized routes of travel through the Study Area are developed based on existing traffic patterns and relative travel times on various corridors.

The third step of the forecasting process is traffic assignment. This involves applying the traffic generated by the Project (the trip generation) to the intersections and street segments in the Study Area according to the projected trip distribution patterns. These traffic volumes can then be added to existing and future background conditions to represent the cumulative effect of including Project related traffic volumes to the Study Area once the Project is complete.

With the forecasting process complete and Project traffic assignments developed, the impact of the proposed Project is isolated by comparing operational (i.e., LOS) conditions at the study intersections using expected future traffic volumes without and with to forecast Project traffic. The need for site-specific and/or cumulative local area traffic improvements may then be evaluated and the significance of the Project's impacts identified.

Project Trip Generation

As mentioned, the Project is a theme park style facility consisting of several recreational and retail buildings totaling approximately 23,389 sf and a 70-site campground. The occupants of the campground will primarily be visitors of the park and, thus, were accommodated within the park's trip generation. The Institute of Transportation Engineers' *Trip Generation, 9th Edition* (2012) does not contain a land use category that accurately describes the potential development at the Project. Therefore, as described in *Trip Generation Handbook, 3rd Edition* (Institute of Transportation Engineers, 2014), a trip generation estimate was developed from known data about the land use.

The Project trip generation is based on the Peak, Design, and Average Day visitor attendance levels for the Project as supplied by the Project Applicant. These visitor attendance levels were based on historical activity levels at the Project and represent a conservative estimate of the likely usage patterns for the Project.

Southern California theme park/visitor attraction mode split and average vehicle ridership (AVR) levels were used to convert the daily attendance levels to vehicle trips. Hourly travel patterns from theme parks and major visitor attractions were used to identify the likely peak hours of operation for vehicular traffic entering and leaving the Project.

Weekday vs. weekend activity levels were reviewed with the Project Applicant and compared to theme park/visitor attraction patterns.

The trip generation estimates were based on the above assumptions and developed using a trip generation model that was developed by GTC for use in theme park and visitor attraction land uses. The model has been applied to Disneyland, Universal Studios Hollywood, LEGOLAND Carlsbad, University of Phoenix (Arizona Cardinals) Stadium, Dodger Stadium, Angels Stadium, STAPLES Center, Honda Center, and dozens of international theme park projects.

Finally, the entire trip generation package was reviewed with County and Caltrans staffs to gain their approval prior to commencing the TIA.

It was determined that the trip generation assumptions and results appeared reasonable and the Design Day estimates were approved for use in the TIA. The Design Day Saturday conditions were selected as the most appropriate time frame for the study as they represent the greatest combination of background and Project traffic levels.

Table 5A shows a summary of the different trip generation scenarios tested and Table 5B shows a detailed breakdown of the Design Day Saturday conditions. The TIA presented in this report is conservative in that it used the busiest hours of the day (9:00 to 10:00 AM and 3:00 to 4:00 PM), when the Project traffic generates the highest level of traffic. In addition, this analysis is based on the Design Day, which happens only on summer and December weekends. All other days of the year will experience much less Project traffic than a Design Day.

As shown in the tables, the Project is estimated to generate 1,408 daily trips, including 128 trips during the 9:00 to 10:00 AM morning peak hour (113 inbound trips and 15 outbound trips) and 155 trips during the 3:00 to 4:00 PM afternoon peak hour (65 inbound trips and 90 outbound trips). The detailed breakdown for the other scenarios is provided in Appendix E.

Project Trip Distribution

The traffic volumes for the Project were distributed and assigned to the Study Area street system based on existing/anticipated travel patterns in the Study Area for potential theme park visitor origins/destinations. Localized routes of travel through the Study Area were developed based on existing traffic patterns and relative travel times on various corridors and the level of accessibility of the route to and from the Project Site.

Traffic volumes for the Project were distributed to the surrounding street system based on the following general pattern:

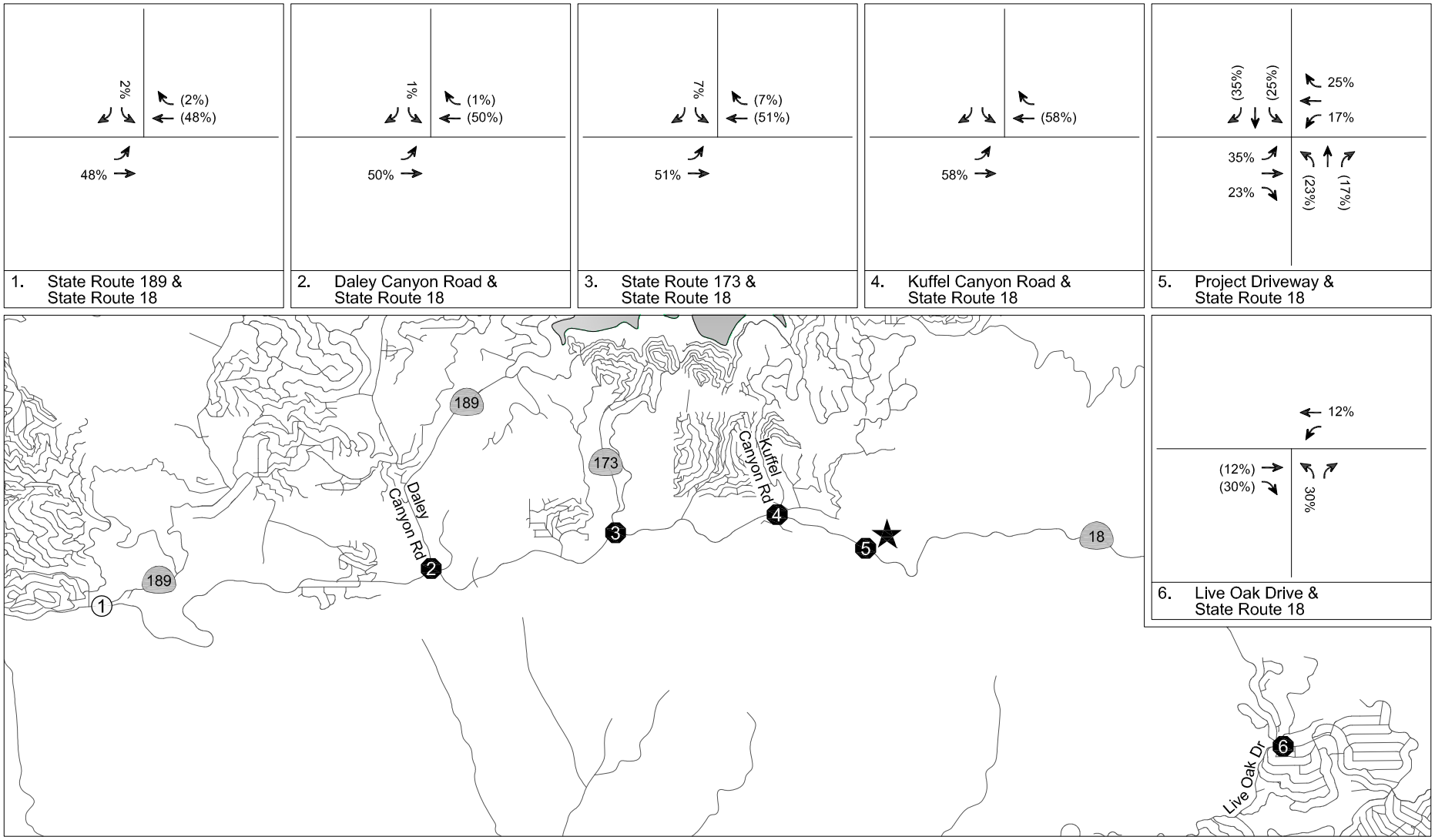
- approximately 10% of the traffic is generated to/from the northwest coming from the Hesperia area
- 8% to/from the north coming from the Lake Arrowhead area
- 12% to/from the northeast coming from the Big Bear area

- 30% to/from the southeast coming from the San Bernardino area using SR 330 and then Live Oak Drive to SR 18
- 40% to/from the southwest coming from the San Bernardino area using SR 18.

Based on the parking space count distribution between the two parking lots, 60% of the Project traffic was distributed to the parking lot north of SR 18 and 40% of the Project traffic was distributed to the parking lot south of SR 18. The Project trip distribution is illustrated in Figure 7.

Project Trip Assignment

The assignment of traffic is calculated by applying the trip distribution patterns to the trip generation estimates. Figure 8 illustrates the net new Project traffic volumes at the study intersections.



LEGEND

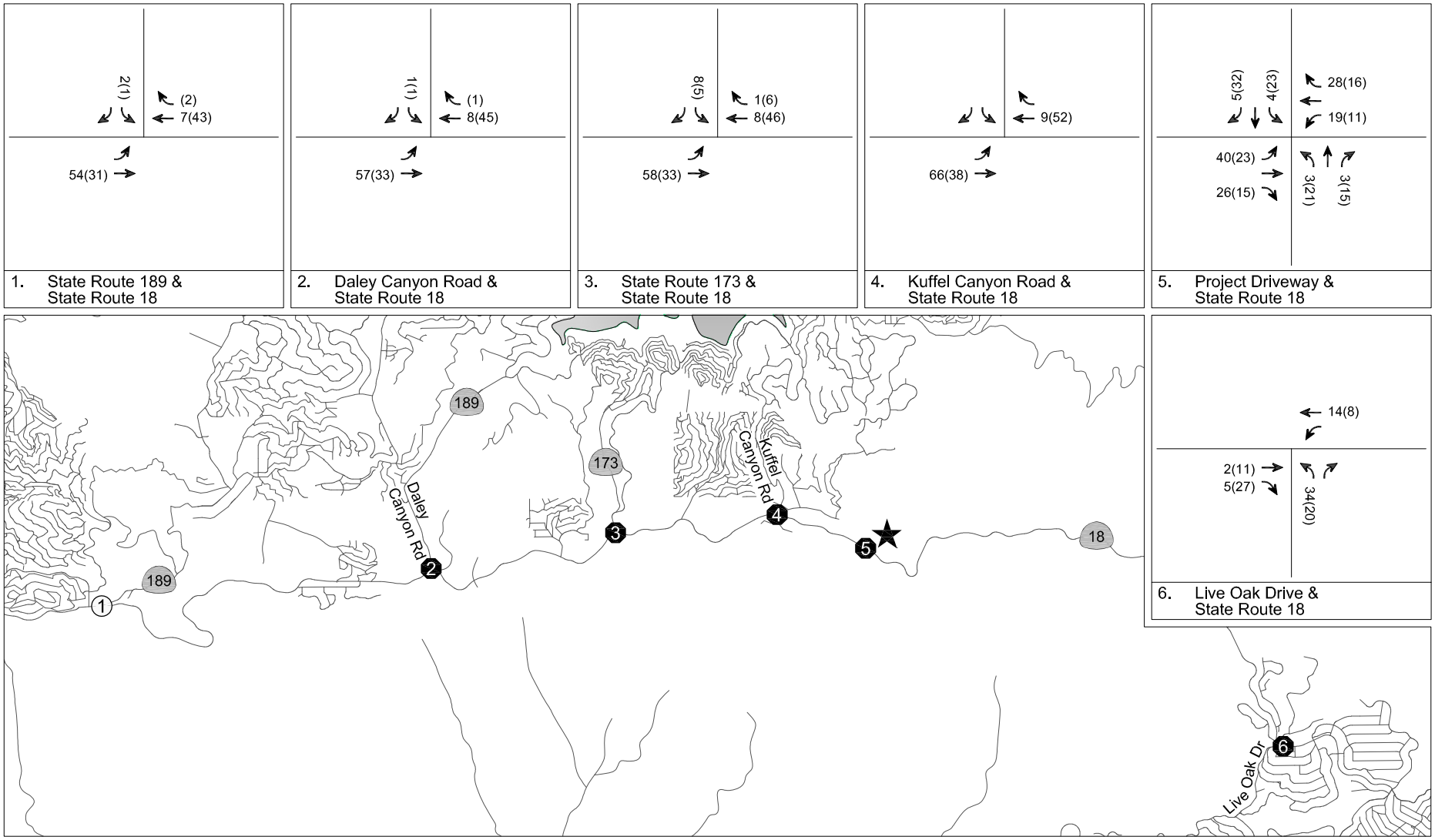
- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X%(X%) Inbound(Outbound) Trip Percentage

N
Not to Scale

PROJECT TRIP DISTRIBUTION

FIGURE 7



LEGEND

- Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) AM(PM) Peak Hour Peak Hour Traffic Volumes

N
Not to Scale

PROJECT-ONLY
PEAK HOUR TRAFFIC VOLUMES

FIGURE
8

TABLE 5A
TRIP GENERATION SUMMARY

PROJECT CONDITION		AM PEAK HOUR (9-10AM)			PM PEAK HOUR (3-4PM)		
		IN	OUT	TOTAL	IN	OUT	TOTAL
PEAK HOUR OF GENERATOR		**113**	**15**	**128**	**65**	**90**	**155**
OTHER CONDITIONS	# DAYS/YEAR	AM PEAK HOUR (7-8AM)			PM PEAK HOUR (5-6PM)		
		IN	OUT	TOTAL	IN	OUT	TOTAL
SUMMER/CHRISTMAS WEEKEND PEAK DAY	6	16	1	17	43	85	128
SUMMER/CHRISTMAS WEEKEND DESIGN DAY	44	13	1	14	34	68	102
SUMMER/CHRISTMAS WEEKDAY	100	15	0	16	10	23	33
WINTER WEEKEND DAY	56	15	0	16	10	23	33
WINTER WEEKDAY	140	13	0	13	1	20	21
PARK CLOSED	19	0	0	0	0	0	0
TOTAL	365						
SPECIAL EVENT		1	0	1	44	23	67

TABLE 5B
DETAILED DESIGN DAY TRIP GENERATION

SCENARIO: SUMMER/CHRISTMAS WEEKEND DESIGN DAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	2,000	(Theme Park Guests)
CAST =	65	
SERVICE VEHICLES =	14	

	GUESTS							EMPLOYEES						
	Theme Park											Service Vehicles		TOTAL
	Valley		Mountains		Local		TP Total	Theme Park		Total				
	Theme Park							EMPLOYEES				Service Vehicles		TOTAL
	Valley		Mountains		Local		TP Total	Theme Park		Total				
TOTAL ATT.	65%	1,300	30%	600	5%	100	2,000	Cast:	65	65				
PERSON TRIPS														
Ins		1,300		600		100	2,000	In:	65	65				2,065
Outs		1,300		600		100	2,000	Out:	65	65				2,065
MODE														
Drive Alone	3%	39	3%	18	4%	4	61	66%	43	43	66%			104	5%
Carpool	95%	1,235	95%	570	96%	96	1,901	32%	21	21	32%			1,922	93%
Tour Bus	2%	26	2%	12	0%	0	38	0%	0	0	0%			38	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	1,300	100%	600	100%	100	2,000	100%	65	65	100%			2,065	100%
OCCUPANCY														
Drive Alone	1.0	39	1.0	18	1.0	4	61	1.0	43	43				104	
Carpool	3.5	353	3.5	163	3.5	27	543	1.10	19	19				562	
Tour Bus	15.0	2	15.0	1	15.0	0	3	15.0	0	0				3	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		394		182		31	607		62	62		Total =	14	683	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				3.02	
PCE														
Car	1.0	392	1.0	181	1.0	31	604	1.0	62	62	100%			666	95%
Tour Bus	1.0	2	1.0	1	1.0	0	3	1.0	0	0	0%			3	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		394		182		31	607		62	62	100%	2.5	36	704	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS							EMPLOYEES			Service Vehicles		TOTAL
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total			
ARRIVALS													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	6	6	18.8%	7	13
8-9 AM	5.0%	20	5.0%	9	5.0%	2	30	25.0%	15	15	18.8%	7	53
9-10 AM	15.0%	59	15.0%	27	15.0%	5	91	25.0%	15	15	18.8%	7	113
10-11 AM	15.4%	61	15.4%	28	15.4%	5	93	2.0%	1	1	18.8%	7	101
11-12 AM	11.7%	46	11.7%	21	11.7%	4	71	2.0%	1	1	3.6%	1	74
12-1 PM	7.6%	30	7.6%	14	7.6%	2	46	2.0%	1	1	3.6%	1	49
1-2 PM	5.6%	22	5.6%	10	5.6%	2	34	0.0%	0	0	3.5%	1	35
2-3 PM	4.2%	17	4.2%	8	4.2%	1	25	0.0%	0	0	3.5%	1	27
3-4 PM	8.5%	33	8.5%	15	8.5%	3	52	20.3%	13	13	3.5%	1	65
4-5 PM	4.5%	18	4.5%	8	4.5%	1	27	8.2%	5	5	3.5%	1	34
5-6 PM	5.4%	21	5.4%	10	5.4%	2	33	0.0%	0	0	3.6%	1	34
6-7 PM	4.1%	16	4.1%	7	4.1%	1	25	0.0%	0	0	0.0%	0	25
7-8 PM	4.2%	17	4.2%	8	4.2%	1	25	0.0%	0	0	0.0%	0	25
8-9 PM	4.1%	16	4.1%	7	4.1%	1	25	0.0%	0	0	0.0%	0	25
9-10 PM	2.8%	11	2.8%	5	2.8%	1	17	0.0%	0	0	0.0%	0	17
10-11 PM	1.9%	7	1.9%	3	1.9%	1	12	2.0%	1	1	0.0%	0	13
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1	0.0%	0	1
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	394	100.0%	182	100.0%	31	607	100.0%	62	62	100.0%	36	704
DEPARTURES													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1	0.0%	0	1
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 AM	1.4%	6	1.4%	3	1.4%	0	8	0.0%	0	0	18.8%	7	15
10-11 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0	18.8%	7	13
11-12 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0	18.8%	7	13
12-1 PM	1.9%	7	1.9%	3	1.9%	1	12	0.0%	0	0	18.8%	7	18
1-2 PM	2.1%	8	2.1%	4	2.1%	1	13	0.0%	0	0	3.6%	1	14
2-3 PM	12.4%	49	12.4%	23	12.4%	4	75	4.0%	2	2	3.5%	1	79
3-4 PM	15.4%	61	12.1%	22	12.1%	4	86	4.0%	2	2	3.5%	1	90
4-5 PM	11.7%	46	13.1%	24	13.1%	4	74	10.0%	6	6	3.5%	1	81
5-6 PM	7.6%	30	11.6%	21	11.6%	4	55	20.0%	12	12	3.5%	1	68
6-7 PM	5.6%	22	7.5%	14	7.5%	2	38	4.0%	2	2	3.6%	1	42
7-8 PM	4.2%	17	6.5%	12	6.5%	2	30	5.4%	3	3	3.6%	1	35
8-9 PM	8.5%	33	7.5%	14	7.5%	2	49	5.0%	3	3	0.0%	0	53
9-10 PM	12.2%	48	9.5%	17	9.5%	3	68	5.0%	3	3	0.0%	0	71
10-11 PM	15.0%	59	12.4%	23	12.4%	4	85	15.0%	9	9	0.0%	0	95
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	12	12	0.0%	0	12
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	3	3	0.0%	0	3
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	394	100.0%	182	100.0%	31	607	100.0%	62	62	100.0%	36	704

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS							EMPLOYEES			Service Vehicles		TOTAL
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total			
ARRIVALS													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	6	6	18.8%	7	13
10-11 AM	15.4%	61	15.4%	28	15.4%	5	93	2.0%	1	1	18.8%	7	101
5-6 PM	5.4%	21	5.4%	10	5.4%	2	33	0.0%	0	0	3.6%	1	34
10-11 PM	1.9%	7	1.9%	3	1.9%	1	12	2.0%	1	1	0.0%	0	13
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
DEPARTURES													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1	0.0%	0	1
10-11 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0	18.8%	7	13
5-6 PM	7.6%	30	11.6%	21	11.6%	4	55	20.0%	12	12	3.5%	1	68
10-11PM	15.0%	59	12.4%	23	12.4%	4	85	15.0%	9	9	0.0%	0	95
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	3	3	0.0%	0	3

Chapter 7
Existing plus Project Conditions

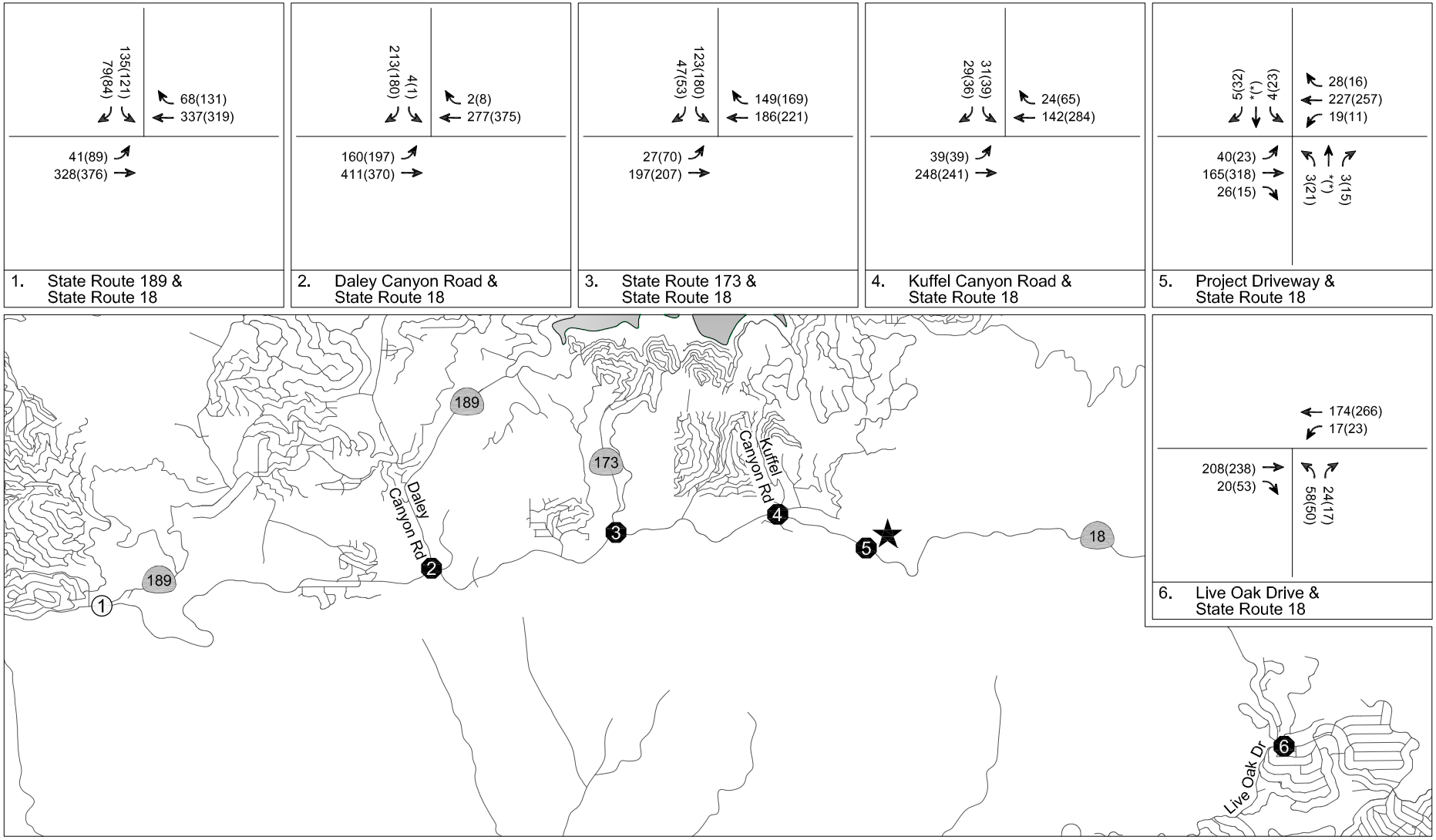
This chapter describes the results of the analysis of intersection operating conditions associated with the Project development added to existing conditions. Within this chapter, the Existing plus Project Conditions are presented for the six study intersections.

INTERSECTION OPERATIONS

The Existing plus Project Conditions are analyzed on the same roadway network as the Existing Conditions. The Project-only traffic volumes described in Chapter 5 and shown in Figure 8 were added to the Existing traffic volumes shown in Figure 4 to obtain the Existing plus Project peak hour traffic volumes shown in Figures 9A and 9B.

The study intersections were analyzed using the methodologies described in Chapter 2. The Existing plus Project intersection operating conditions for morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 6A and 6B, respectively. As shown, under the Existing plus Project Conditions, all six study intersections are projected to operate at LOS D or better during both the morning and afternoon peak hours on both Saturday and Sunday.

Detailed LOS worksheets are provided in Appendix D.



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

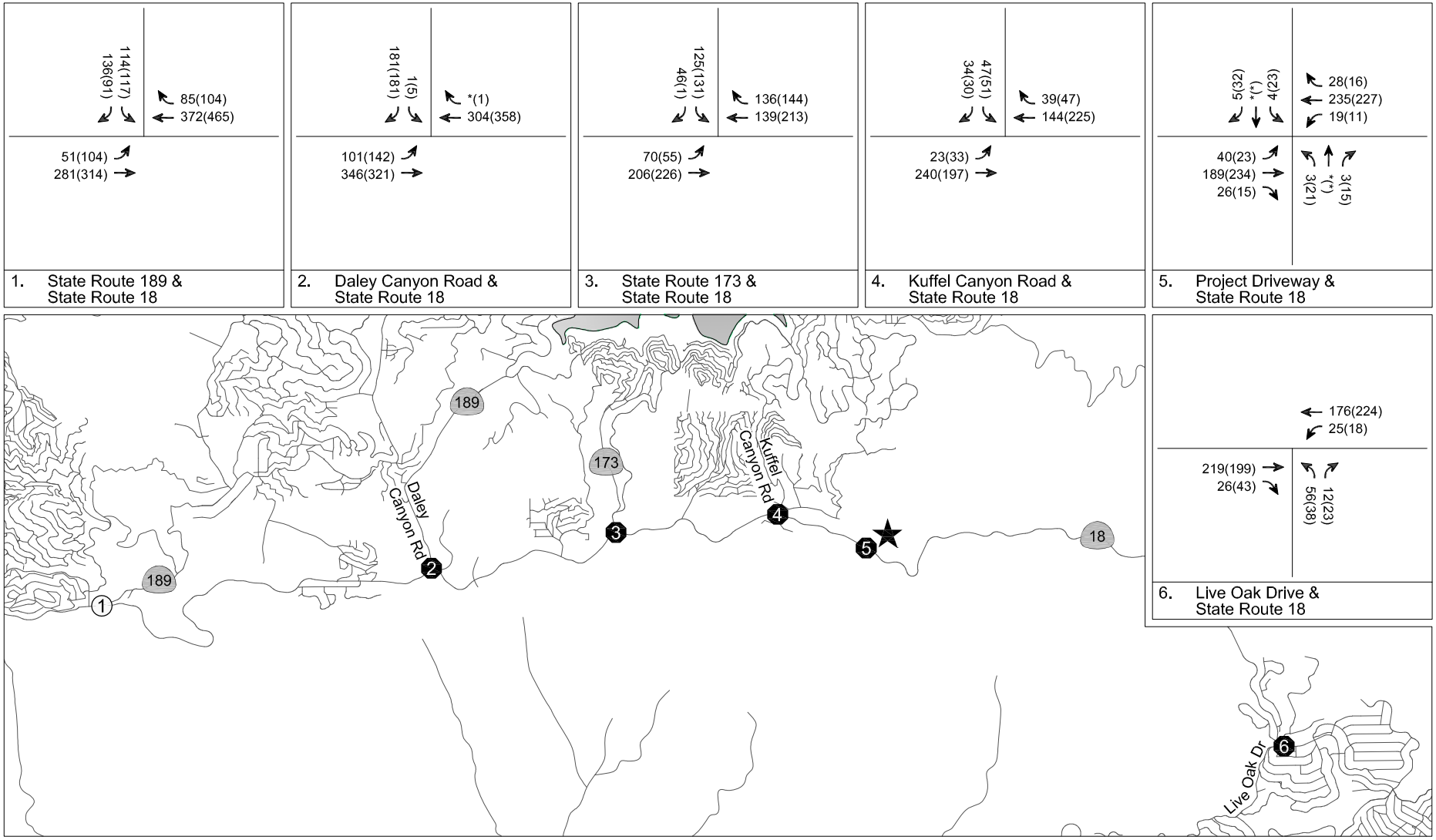
X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

EXISTING PLUS PROJECT CONDITIONS (YEAR 2015)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 9A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

EXISTING PLUS PROJECT CONDITIONS (YEAR 2015)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 9B

TABLE 6A
EXISTING PLUS PROJECT CONDITIONS (YEAR 2015)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing		Existing Plus Project		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	14.2	B	14.2	B	0.0	NO
	State Route 18 [c]	P.M.	13.9	B	14.6	B	0.7	NO
2.	Daley Canyon Road &	A.M.	12.4	B	12.7	B	0.3	NO
	State Route 18 [d]	P.M.	12.4	B	13.3	B	0.9	NO
3.	State Route 173 &	A.M.	13.9	B	15.3	C	1.4	NO
	State Route 18 [d]	P.M.	20.8	C	25.9	D	5.1	NO
4.	Kuffel Canyon Road &	A.M.	10.9	B	11.4	B	0.5	NO
	State Route 18 [d]	P.M.	12.5	B	13.6	B	1.1	NO
5.	Project Driveways &	A.M.	0.0	A	11.7	B	11.7	NO
	State Route 18 [d][e]	P.M.	0.0	A	14.5	B	14.5	NO
6.	Live Oak Drive &	A.M.	10.9	B	12.0	B	1.1	NO
	State Route 18 [d]	P.M.	12.4	B	13.7	B	1.3	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

TABLE 6B
EXISTING PLUS PROJECT CONDITIONS (YEAR 2015)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing		Existing Plus Project		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	15.9	B	16.4	B	0.5	NO
	State Route 18 [c]	P.M.	15.6	B	16.6	B	1.0	NO
2.	Daley Canyon Road &	A.M.	11.9	B	12.1	B	0.2	NO
	State Route 18 [d]	P.M.	12.6	B	13.5	B	0.9	NO
3.	State Route 173 &	A.M.	14.8	B	16.5	C	1.7	NO
	State Route 18 [d]	P.M.	16.4	C	19.0	C	2.6	NO
4.	Kuffel Canyon Road &	A.M.	11.0	B	11.6	B	0.6	NO
	State Route 18 [d]	P.M.	11.7	B	12.7	B	1.0	NO
5.	Project Driveways &	A.M.	0.0	A	12.0	B	12.0	NO
	State Route 18 [d][e]	P.M.	0.0	A	12.9	B	12.9	NO
6.	Live Oak Drive &	A.M.	11.4	B	12.5	B	1.1	NO
	State Route 18 [d]	P.M.	10.8	B	11.9	B	1.1	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

Chapter 8

Opening Year plus Project Conditions

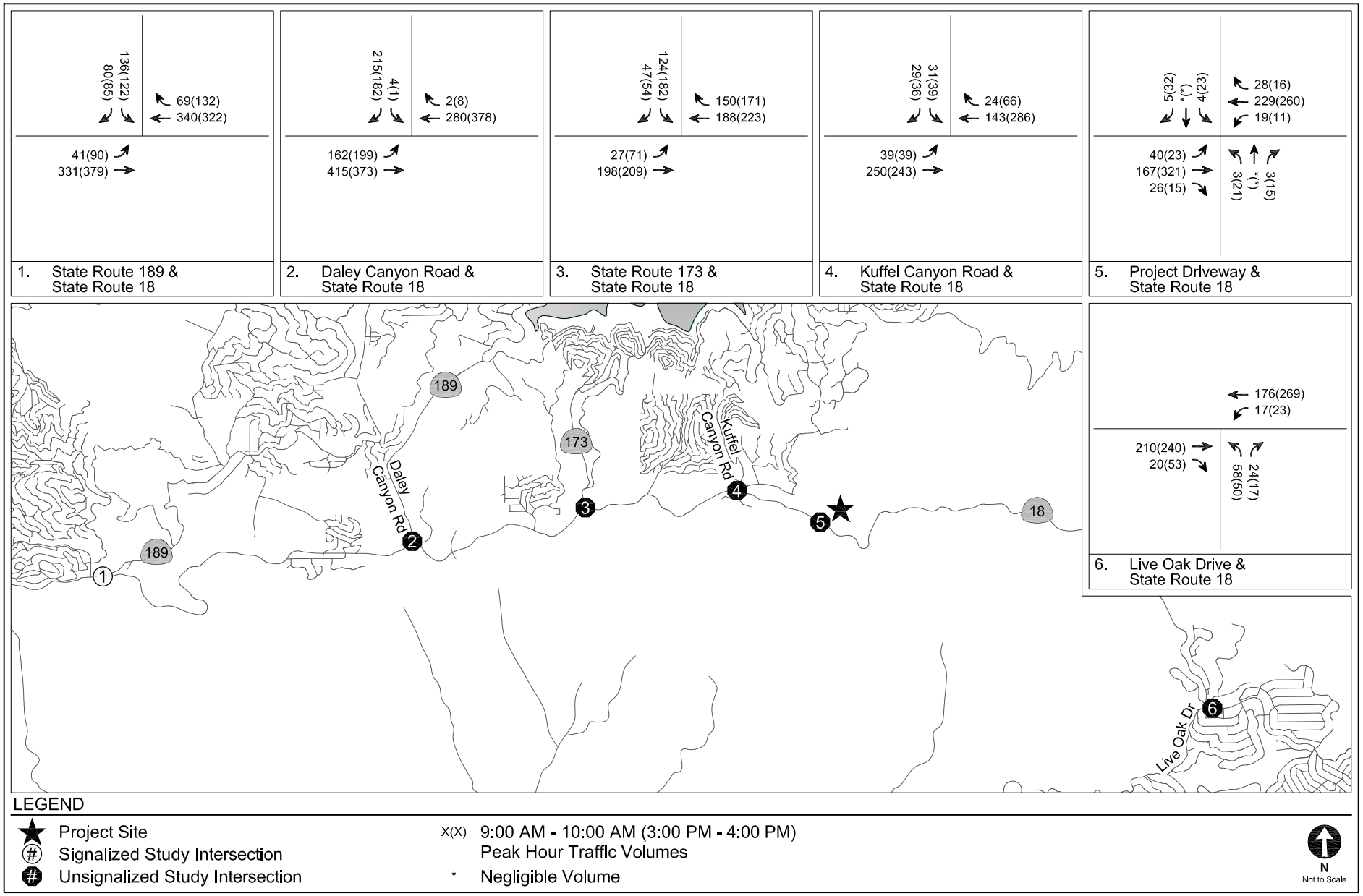
This chapter describes the results of the analysis of intersection operating conditions associated with the Project development added to Opening Year Conditions. The analysis of Year 2016 corresponds to the anticipated occupancy year of the Project. Within this chapter, the Opening Year plus Project Conditions are presented for the six study intersections.

INTERSECTION OPERATIONS

The Project-only traffic volumes described in Chapter 5 and shown in Figure 8 were added to the Opening Year without Project traffic volumes shown in Figure 6. The resulting volumes are illustrated in Figures 10A and 10B and represent Opening Year plus Project Conditions, the traffic volumes, roadways, and intersection configurations that would exist in Year 2016 following full development of the Project without improvements to the roadway network.

The study intersections were analyzed using the methodologies described in Chapter 2. The Opening Year plus Project intersection operating conditions for morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 7A and 7B, respectively. As shown, under the Opening Year plus Project Conditions, all six study intersections are projected to operate at LOS D or better during both the morning and afternoon peak hours on both Saturday and Sunday.

Detailed LOS worksheets are provided in Appendix D.



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

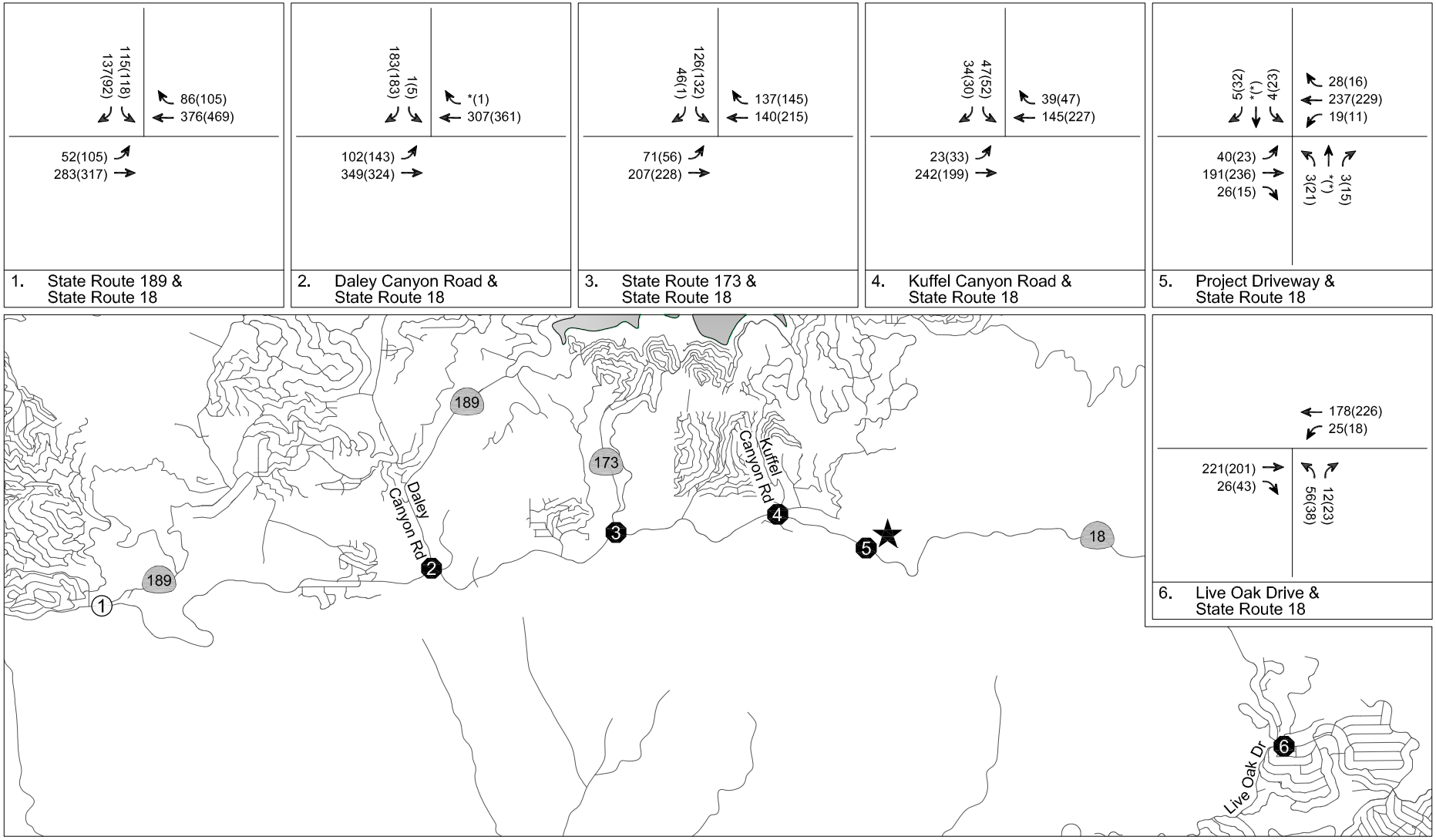
X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

OPENING YEAR PLUS PROJECT CONDITIONS (YEAR 2016)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 10A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

OPENING YEAR PLUS PROJECT CONDITIONS (YEAR 2016)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 10B

TABLE 7A
OPENING YEAR PLUS PROJECT CONDITIONS (YEAR 2016)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Opening Year (Year 2016)		Opening Year Plus Project (Year 2016)		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	14.3	B	14.3	B	0.0	NO
	State Route 18 [c]	P.M.	13.9	B	14.7	B	0.8	NO
2.	Daley Canyon Road &	A.M.	12.4	B	12.8	B	0.4	NO
	State Route 18 [d]	P.M.	12.5	B	13.4	B	0.9	NO
3.	State Route 173 &	A.M.	14.0	B	15.4	C	1.4	NO
	State Route 18 [d]	P.M.	21.3	C	26.8	D	5.5	NO
4.	Kuffel Canyon Road &	A.M.	10.9	B	11.4	B	0.5	NO
	State Route 18 [d]	P.M.	12.6	B	13.7	B	1.1	NO
5.	Project Driveways &	A.M.	0.0	A	11.7	B	11.7	NO
	State Route 18 [d][e]	P.M.	0.0	A	14.6	B	14.6	NO
6.	Live Oak Drive &	A.M.	10.9	B	12.0	B	1.1	NO
	State Route 18 [d]	P.M.	12.4	B	13.7	B	1.3	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

TABLE 7B
OPENING YEAR PLUS PROJECT CONDITIONS (YEAR 2016)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Opening Year (Year 2016)		Opening Year Plus Project (Year 2016)		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	16.0	B	16.7	B	0.7	NO
	State Route 18 [c]	P.M.	15.6	B	16.7	B	1.1	NO
2.	Daley Canyon Road &	A.M.	12.0	B	12.2	B	0.2	NO
	State Route 18 [d]	P.M.	12.6	B	13.6	B	1.0	NO
3.	State Route 173 &	A.M.	14.9	B	16.7	C	1.8	NO
	State Route 18 [d]	P.M.	16.7	C	19.3	C	2.6	NO
4.	Kuffel Canyon Road &	A.M.	11.1	B	11.7	B	0.6	NO
	State Route 18 [d]	P.M.	11.8	B	12.8	B	1.0	NO
5.	Project Driveways &	A.M.	0.0	A	12.0	B	12.0	NO
	State Route 18 [d][e]	P.M.	0.0	A	13.0	B	13.0	NO
6.	Live Oak Drive &	A.M.	11.4	B	12.6	B	1.2	NO
	State Route 18 [d]	P.M.	10.8	B	12.0	B	1.2	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

Chapter 9

Full Build-Out plus Project Conditions

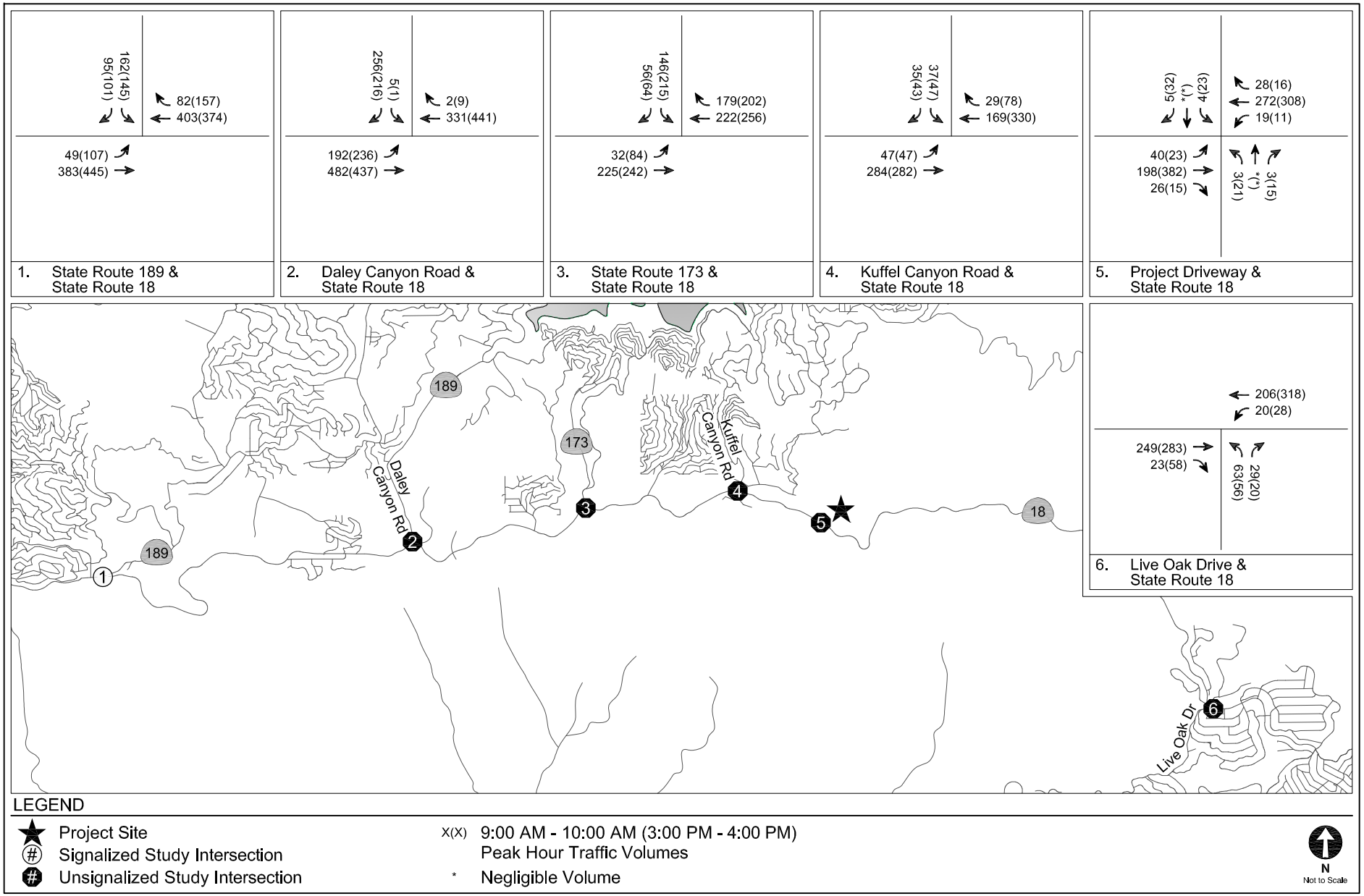
This chapter describes the results of the analysis of intersection operating conditions associated with the Project development added to Full Build-Out Conditions. The analysis of Year 2035 corresponds to the anticipated Full Build-Out year of the area. Within this chapter, the Full Build-Out plus Project Conditions are presented for the six study intersections.

INTERSECTION OPERATIONS

The Project-only traffic volumes described in Chapter 5 and shown in Figure 8 were added to the Full Build-Out without Project traffic volumes shown in Figure 6. The resulting volumes are illustrated in Figures 11A & 11B and represent Full Build-Out plus Project Conditions, the traffic volumes, roadways, and intersection configurations that would exist in Year 2035 following full development of the Project without improvements to the roadway network.

The study intersections were analyzed using the methodologies described in Chapter 2. The Full Build-Out plus Project intersection operating conditions for morning and afternoon peak hours on a Saturday and Sunday are shown in Tables 8A and 8B, respectively. As shown, under the Full Build-Out plus Project Conditions, all six study intersections are projected to operate at LOS D or better during both the morning and afternoon peak hours on both Saturday and Sunday.

Detailed LOS worksheets are provided in Appendix D.



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

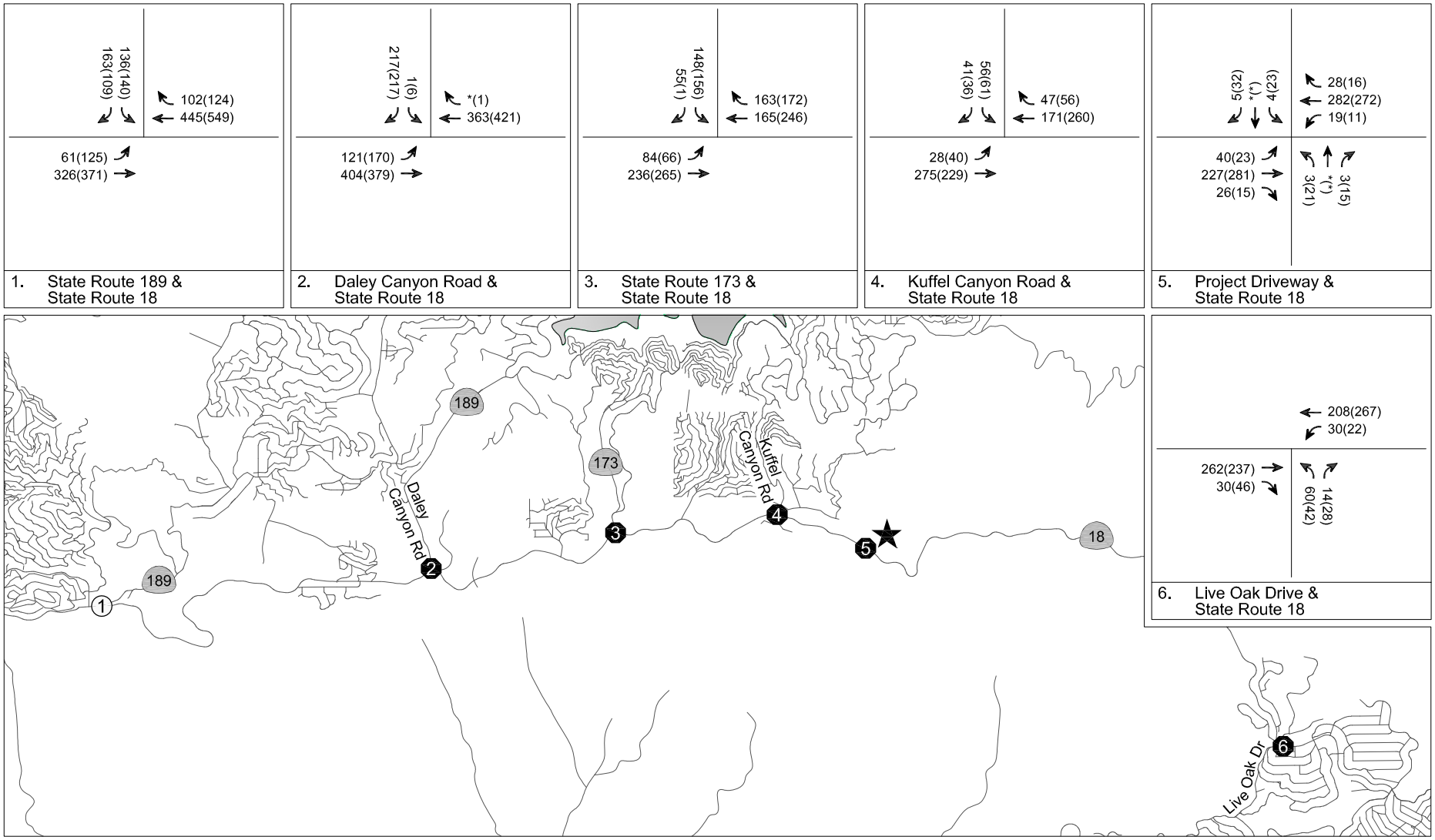
X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

FULL BUILD-OUT PLUS PROJECT CONDITIONS (YEAR 2035)
SATURDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 11A



LEGEND

- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X(X) 9:00 AM - 10:00 AM (3:00 PM - 4:00 PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

FULL BUILD-OUT PLUS PROJECT CONDITIONS (YEAR 2035)
SUNDAY PEAK HOUR TRAFFIC VOLUMES

FIGURE 11B

TABLE 8A
FULL BUILD-OUT PLUS PROJECT CONDITIONS (YEAR 2035)
SATURDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Full Build-Out (Year 2035)		Full Build-Out Plus Project (Year 2035)		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	15.2	B	15.2	B	0.0	NO
	State Route 18 [c]	P.M.	15.3	B	16.6	B	1.3	NO
2.	Daley Canyon Road &	A.M.	13.4	B	13.8	B	0.4	NO
	State Route 18 [d]	P.M.	13.3	B	14.3	B	1.0	NO
3.	State Route 173 &	A.M.	15.2	C	16.9	C	1.7	NO
	State Route 18 [d]	P.M.	26.7	D	34.9	D	8.2	NO
4.	Kuffel Canyon Road &	A.M.	11.3	B	11.8	B	0.5	NO
	State Route 18 [d]	P.M.	13.4	B	14.5	B	1.1	NO
5.	Project Driveways &	A.M.	0.0	A	12.0	B	12.0	NO
	State Route 18 [d][e]	P.M.	0.0	A	15.3	C	15.3	NO
6.	Live Oak Drive &	A.M.	11.3	B	12.4	B	1.1	NO
	State Route 18 [d]	P.M.	13.1	B	14.5	B	1.4	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

TABLE 8B
FULL BUILD-OUT PLUS PROJECT CONDITIONS (YEAR 2035)
SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Full Build-Out (Year 2035)		Full Build-Out Plus Project (Year 2035)		Change in Delay (sec)	Impact [b]
			Delay (sec)	LOS [a]	Delay (sec)	LOS [a]		
1.	State Route 189 &	A.M.	16.7	B	17.3	B	0.6	NO
	State Route 18 [c]	P.M.	16.8	B	18.0	B	1.2	NO
2.	Daley Canyon Road &	A.M.	12.6	B	12.8	B	0.2	NO
	State Route 18 [d]	P.M.	13.6	B	14.6	B	1.0	NO
3.	State Route 173 &	A.M.	16.5	C	18.6	C	2.1	NO
	State Route 18 [d]	P.M.	18.7	C	21.9	C	3.2	NO
4.	Kuffel Canyon Road &	A.M.	11.5	B	12.1	B	0.6	NO
	State Route 18 [d]	P.M.	12.3	B	13.3	B	1.0	NO
5.	Project Driveways &	A.M.	0.0	A	12.3	B	12.3	NO
	State Route 18 [d][e]	P.M.	0.0	A	13.3	B	13.3	NO
6.	Live Oak Drive &	A.M.	11.8	B	13.0	B	1.2	NO
	State Route 18 [d]	P.M.	11.2	B	12.3	B	1.1	NO

Notes:

[a] All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

[c] Signalized intersection

[d] Unsignalized intersection

[e] The no Project condition based on Existing cross-section of SR 18

Chapter 10
Traffic Impact Analysis

This chapter describes the results of the intersection impact analysis for the proposed Project under the Existing (Year 2015), Opening Year (Year 2016), and Full Build-Out (Year 2035) Conditions. The analyses measured significant intersection impacts according to the impact criteria specified by the County.

The relative impact of added Project traffic volumes during the peak hours was evaluated based on a comparative analysis of all three operating conditions without the Project at the study intersections. The previously discussed significance criteria and thresholds outlined in Chapter 2 were used to determine the significance of a traffic impact caused by the Project on the study intersections.

EXISTING PLUS PROJECT CONDITIONS

Tables 7a and 7b show the Project's incremental increases in delay at each of the intersections. Based on the County's significance criteria, the Project is not anticipated to result in significant impacts at any of the study intersections during either peak hour on Saturday and Sunday under the Existing plus Project Conditions.

OPENING YEAR PLUS PROJECT CONDITIONS

Tables 8a and 8b show the Project's incremental increases in delay at each of the intersections. Based on the County's significance criteria, the Project is not anticipated to result in significant impacts at any of the study intersections during either peak hour on Saturday and Sunday under the Opening Year plus Project Conditions.

FULL BUILD-OUT PLUS PROJECT CONDITIONS

Tables 9A and 9B show the Project's incremental increases in delay at each of the intersections. Based on the County's significance criteria, the Project is not anticipated to result in significant impacts at any of the study intersections during either peak hour on Saturday and Sunday under the Full Build-Out Project Conditions.

SIGNAL WARRANT ANALYSIS

A signal warrant analysis was conducted at the unsignalized study intersections for all Project scenarios. Based on this analysis, a signal is warranted under the following conditions at the following study intersections.

Signal warrants are met under Existing Conditions:

- Daley Canyon Road & SR 18
- SR 173 & SR 18

Signal warrants are met under the Full Build-Out plus Project Conditions only:

- Kuffel Canyon Road & State Route 18
- Live Oak Drive & State Route 18

Based on the County's guidelines, the determination that an unsignalized intersection meets the criteria of a traffic signal warrant does not result in a significant impact if the intersection is not operating at LOS E or F. Furthermore, an unsignalized intersection meeting the criteria of a traffic signal warrant does not in itself require the installation of a signal. Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required.

A detailed signal warrant analysis is provided in Appendix F.

OVERALL OPERATING CONSIDERATIONS

Although the analysis showed that the Project would not cause a significant impact at any of the study intersections, there is the potential for an operational-related impact to occur at the Project Driveways & SR 18. Therefore, operational improvements are required at the intersection, as detailed in Chapter 11.

Chapter 11

Transportation Improvement Program

This chapter presents the improvement program designed to alleviate the potential operational impacts at study intersections associated with construction of the Project and to improve traffic operations in the Project vicinity. The various guidelines, methods, and assumptions mandated by the relevant local jurisdiction, wherever applicable, have been used in the preparation of this analysis.

There were no significant traffic impacts found in the Existing plus Project, Opening Year plus Project, or Full Build-Out plus Project analyses. Even the Project driveway could operate with two-way stop sign control without creating a significant impact. However, Caltrans and the County were concerned with potential operational issues that may not be fully measured in the significant impact analysis methodology. Specifically, Caltrans was concerned with the possibility of pedestrians crossing SR 18 unprotected and the number of left turns that would occur from SR 18 into the Project on busy Project days.

To alleviate these operational concerns, traffic turning left into the Project driveways would be served by adding left-turn lanes at the Project driveway approaching from both directions on SR 18. This would minimize the conflict between the vehicles turning into the Project driveways and the vehicles traveling through on SR 18.

Following Caltrans guidelines, an Intersection Control Evaluation (ICE) was conducted at this intersection and is presented in Appendix G.

The ICE evaluated the following alternatives access treatments for the main Project entry point:

1. Single driveway with two-way stop control
2. Split driveways with two-way stop control and a pedestrian underpass
3. Single driveway with four-way stop control

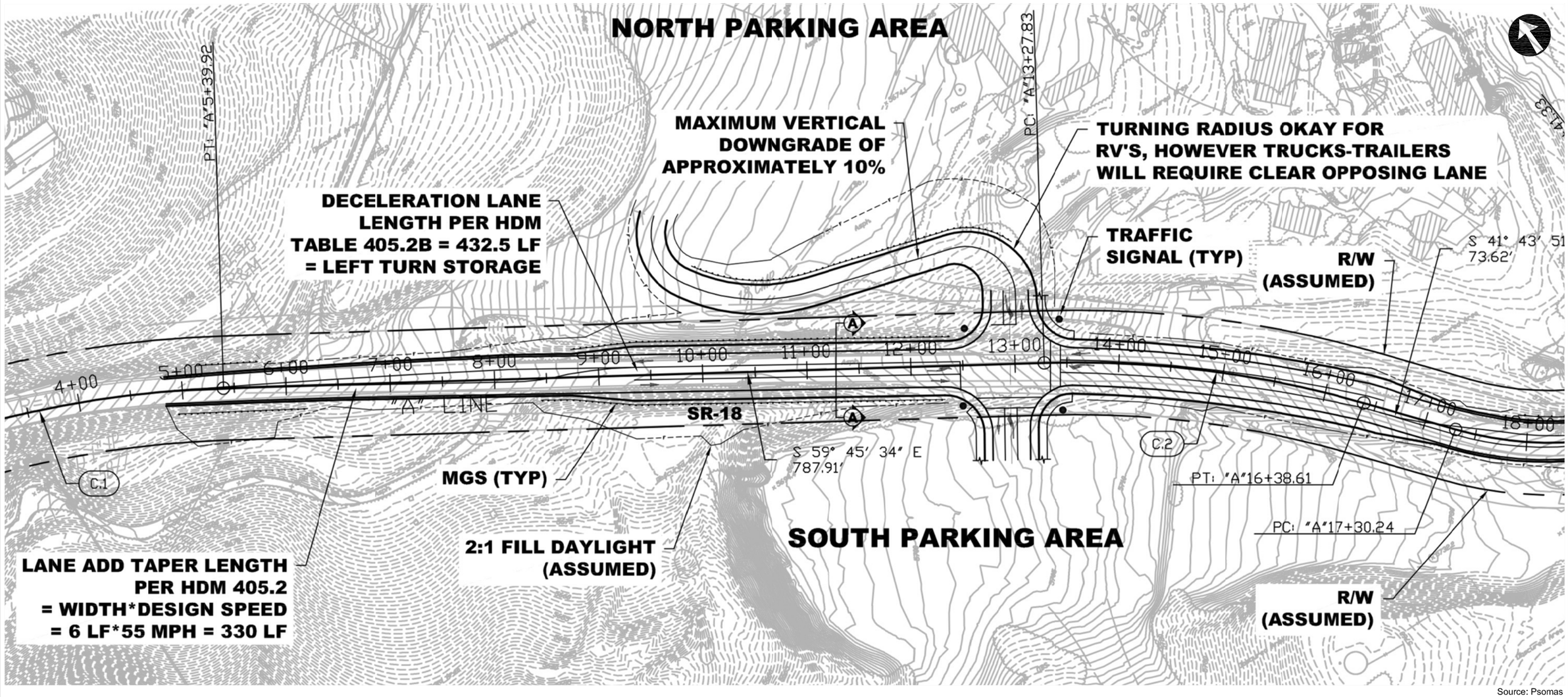
4. Single driveway with traffic signal control
5. Roundabout design at the Project driveway

Of the above choices, the single driveway with traffic signal control was found to be the safest and most cost-effective alternative. Other choices either had shortcomings in the area of pedestrian safety/control, compatibility concerns with the current operations along SR 18, or major construction cost/environmental impact implications due to topography and tree removal.

A signal warrant analysis was conducted for the single driveway with traffic signal control and is contained in Appendix F. The number of pedestrians expected to cross SR 18 once the Project is open and operational was calculated by applying an AVR factor of 3.0 to the number of trips turning into the south parking lot. There are expected to be approximately 192 pedestrians during the morning peak hour and 234 pedestrians during the afternoon peak hour. As such, a traffic signal is warranted based on the number of pedestrians expected to cross SR 18 once the Project is open and operational and will be installed as part of the transportation improvement program.

As illustrated in Figure 12, the proposed improvement would be implemented by widening SR 18 and restriping the section of the highway to provide a left-turn lane for traffic in each direction. The widening and the adding of the left-turn lanes would be designed to meet the requirements set forth by Caltrans. Again, because of the steep topography and the number of trees along the roadway, the design may seek Design Exceptions to eliminate/reduce the shoulders along the section of road to be widened. The resulting design would be consistent with the design of the remainder of the SR 18 corridor.

The signalized Project driveway intersection was analyzed using the methodologies described in Chapter 2. The intersection operating conditions for morning and evening peak hours on a Saturday and Sunday are shown in Table 9 for all of the study scenarios. As shown, with implementation of the recommended left-turn lane and the signal, the intersection operates at an acceptable LOS under all scenarios.



Source: Psomas

PROPOSED INTERSECTION CONFIGURATION

FIGURE 12

TABLE 9
SR 18 & PROJECT DRIVEWAYS WITH IMPROVEMENT CONDITIONS
SATURDAY AND SUNDAY PEAK HOUR LEVELS OF SERVICE

No	Intersection	Scenario	Peak Hour	Saturday		Sunday	
				Delay (sec)	LOS [a]	Delay (sec)	LOS [a]
5.	Project Driveways & State Route 18	Existing Plus Project	A.M.	13.3	B	13.2	B
			P.M.	12.6	B	12.9	B
		Opening Year Plus Project	A.M.	13.3	B	13.2	B
			P.M.	12.6	B	12.9	B
		Future Build-Out Plus Project	A.M.	16.2	B	16.0	B
			P.M.	12.8	B	13.0	B

Notes:

The improvements at this intersection include signalization and left-turn lanes in both directions.

[a] LOS = Level of Service. All locations analyzed using HCM methodology

[b] Significant Impact determined using County of San Bernardino methodology

Chapter 12
Site Access and Circulation

This chapter summarizes the site access and internal circulation for the Project. The access impact analysis relates to the provision of access to and from the Project Site, which may include safety, operational, or capacity impacts.

PROPOSED SITE ACCESS AND CIRCULATION

The Project proposes to consolidate driveways on SR 18 into one location with the driveways servicing the parking lots located on the north and south sides of the highway. The driveways will provide a minimum of 36 feet of street width to accommodate two outbound lanes (one shared through/right turn lane, one left-turn lane) and one inbound lane. This width will also accommodate delivery trucks. As discussed in the previous chapter, there will be one eastbound left-turn lane and one westbound left-turn lane constructed on SR 18 to accommodate the visitors of the Project turning into the driveways off the highway. This intersection will be signalized and striped crosswalks will be provided across one or both legs crossing SR 18 and across both driveways.

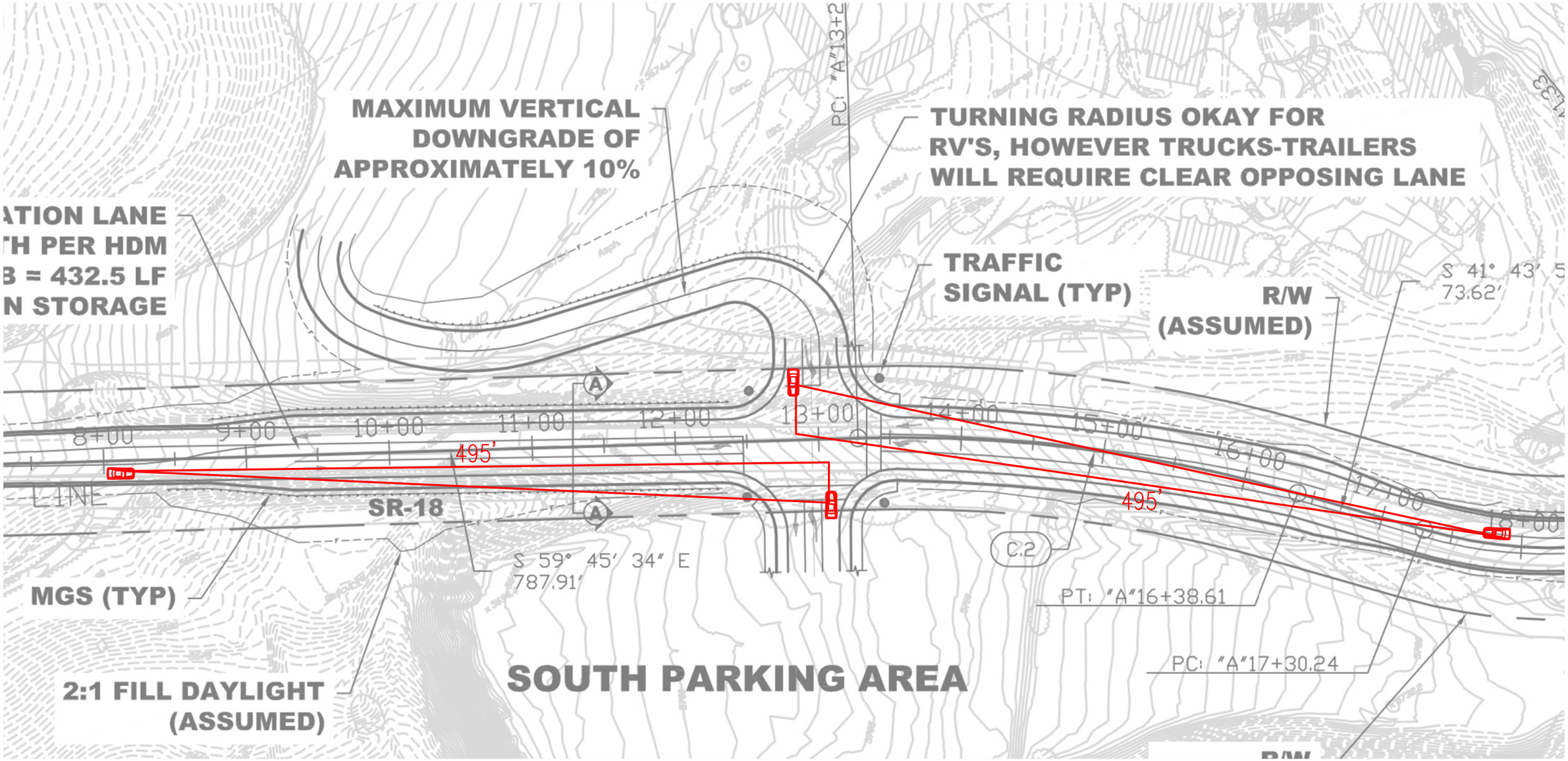
The 95th percentile queue lengths, as determined by the HCM methodology, average less than one car per signal cycle; thus, the proposed storage length for the left-turn lanes, as shown in Figure 12, will be adequate.

Based on the number of parking spaces in both parking lots, about 60% of the visitors will enter through the driveway on the north side of SR 18 and 40% of the visitors will enter the driveway on the south side of SR 18. Most of the recreational and retail facilities will be located on the north side of SR 18, with the campground located on the south side of the highway.

Pedestrian access will be provided by at-grade crosswalks and the traffic signal equipment will include pedestrian push buttons with pedestrian “Walk/Don’t Walk” indicators on all crosswalks.

SIGHT DISTANCE

At the request of the County, a sight distance analysis was conducted for the north and south driveways on SR 18. Sight distances at each of the locations were calculated per *Highway Design Manual, 6th Edition* (Caltrans, June 21, 2013). The sight distance at the driveway on the north side of the highway and the sight distance at the driveway on the south side of the highway are illustrated in Figure 13. Sufficient sight distance is available to meet state design standards.



Source: Psomas

SITE DISTANCE

FIGURE 13

Chapter 13

Summary and Conclusions

This study was undertaken to analyze the potential traffic impacts of the Project on the local street system. The following summarizes the results of this analysis:

- The Project consists of the renovation and reopening of a theme park facility previously known as Santa's Village. The Site contains several recreational and retail facilities along with a 70-space campground totaling approximately 23,389 sf.

- The Project is anticipated to result in 128 trips during the morning peak hour and 155 trips during the afternoon peak hour on a Design Day of the year. These volumes are expected to occur only on the weekends in December and in the summertime. All other days of the year will experience far less Project traffic.

- The Project traffic was added to the existing circulation system to develop the Existing plus Project Conditions. Based on the County's significance criteria, there are no significant impacts at the study intersections under Existing plus Project Conditions during either the morning or afternoon peak hours.

- Opening Year traffic conditions in the Study Area were forecast for the Project opening year of 2016. Based on the County's significance criteria, there are no significant impacts at the study intersections under Opening Year plus Project Conditions during either the morning or afternoon peak hours.

- Full Build-Out Year traffic conditions in the Study Area were forecast for the Project opening year of 2035. Based on the County's significance criteria, there are no significant impacts at the study intersections under Full Build-Out plus Project Conditions during either the morning or afternoon peak hours.

- A signal warrant analysis was conducted on all unsignalized intersections. Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required.

- Roadway improvement measures at the Project driveways were identified to improve pedestrian safety and to minimize the conflict between the vehicles turning into the Project driveways and the vehicles traveling through on SR 18.

- The primary access to the Project Site will be via a signalized intersection servicing the parking lots located on the north and south sides of SR 18. Both driveways should be designed with 36-foot roadways to accommodate two outbound lanes (one shared through/right turn lane, one left-turn lane) and one inbound lane. The signalized intersection will provide pedestrian crosswalks.

References

2000 Highway Capacity Manual, Transportation Research Board*,* 2000.

2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future, Southern California Association of Governments, April 2012.

California Manual on Uniform Traffic Control Devices, California Department of Transportation, 2012.

Highway Design Manual, 6th Edition, California Department of Transportation, June 21, 2013.

Guidelines for Implementation of the California Environmental Quality Act, *Chapter 3, Title 14, California Code of Regulations*, California Natural Resources Agency, amended July 27, 2007.

San Bernardino County Non-Motorized Transportation Plan, San Bernardino Associated Governments, May 2014.

Traffic Impact Study Guidelines, County of San Bernardino Department of Public Works Traffic Division, February 2014.

Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012.

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

Appendix A

County of San Bernardino
Scope for Traffic Study

SCOPE FOR TRAFFIC STUDY

Project Name:	Skypark at Santa's Village

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	Skypark at Santa's Village		
Project Description:	Reopening of the existing Santa's Village Recreational Facility		
City:	Sky Forest, CA		
Project Buildout Year:	2015	**Ambient Growth Rate per Year:**	1%
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Kuffel Canyon Road		
Xtn E/W Street Name:	California State Route 18 (SR 18)		
Thomas Guide Pg+Grid:	--	**County Supervisorial District:**	2nd

	Engineer	**Developer**
Company:	Gibson Transportation Consulting, Inc.	Skypark at Santa's Village
Name:	Patrick Gibson	Bill Johnson
Address:	523 W. 6th Street, Suite 1234	P.O. Box 369
City, State, Zip Code:	Los Angeles, CA 90014	Sky Forest, CA 92385
Phone #:	(213) 683-0088	(951) 288-8762
Fax #:	(213) 683-0033	(909) 337-2618
Email:	pgibson@gibsontrans.com	bill@skyparksantasvillage.com

By: Gibson Transportation Consulting, Inc.

Print Name: Patrick Gibson

Consultant/Developer's Representative **Date** 01/15/15

Reviewed By:

Print Name:

Traffic Divsion Representative **Date**

SCOPE FOR TRAFFIC STUDY

Project Name:	Sky Park at Santa's Village

1. Traffic Distribution: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

Please refer to the trip distribution and trip assignment in Attachment B.

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	Yes/no	--
Existing Active Land Use	Yes/no	--
Previous Land Use	Yes/no	Santa's Village closed on March 1, 1998
Internal Trip Reduction	Yes/no	--
Pass-by Trip Reduction	Yes/no	--

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

Based on consultation with Caltrans, no freeway analysis will be required.

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at:
http://www.sanbag.ca.gov/planning/subr_congestion.html

SCOPE FOR TRAFFIC STUDY

Project Name:	Sky Park at Santa's Village

5. Trip Generation

Trip Generation Rate(s) Source: Previous studies	I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:	Edition:	--

Land Use Code	Land Use	Rate Based on	Qty	*AVTE vs	ADT	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour		
						In	Out	In	Out	In	Out	
--	Amusement Park	O	23,389 sf	0.06 trips/sf	1408	--	--	--	--	113	15	9-10am
--	Amusement Park	O	23,389 sf	0.06 trips/sf	1408	--	--	--	--	65	90	3-4pm

For more information, please refer to the detailed trip generation explanation and tables in Attachment A. The Project will consist of a campground on the site. It has been assumed that the campground will mainly be used by the visitors of the amusement park portion of the Project and thus, these trips have been accounted for in the trip generation numbers above. Based on consultation with Caltrans and the County of San Bernardino, it was determined that the Summer/Christmas Weekend Design Day trip generation will be used as the Design Day. Morning peak hour is 9-10 am and the afternoon peak hour is 3-4 pm. These represent the busiest Project hours of the day.

* - Average Vehicle Trip Ends.
For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

SCOPE FOR TRAFFIC STUDY

Project Name:	Sky Park at Santa's Village

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page+Grid	N⌉S/E/W Street Name	City	Signalized	CMP
1	100%	--	SR 189 & SR 18	County of SB	Yes/no	Yes/no
2	100%	--	Daley Canyon Road & SR 18	County of SB	Yes/no	Yes/no
3	100%	--	SR 173 & SR 18	County of SB	Yes/no	Yes/no
4	100%	--	Kuffel Canyon Road & SR 18	County of SB	Yes/no	Yes/no
5	100%	--	Project Driveways & SR 18	County of SB	Yes/no	Yes/no
6	100%	--	Live Oak Drive & SR 18	County of SB	Yes/no	Yes/no
7					Yes/no	Yes/no
8					Yes/no	Yes/no
9					Yes/no	Yes/no
10					Yes/no	Yes/no

Please refer to the list and map of the study intersections and project distribution in Attachment B.

Cites to be consulted: All intersections are under the jurisdiction of Caltrans and the County of San Bernardino.

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.
- Please note due to the unique nature of the land use of the Project, peak demand is expected to occur on a weekend and not on a weekday. During preliminary scoping meetings with Caltrans and the County of San Bernardino, it was determined that traffic counts should be collected during 9:00 am to 11:00 am for the morning peak hour and 2:30 pm to 4:30 pm for the afternoon peak hour on Saturday and Sunday. **- Corner site distance at the Project driveways will be evaluated.** **- There will be a pedestrian crosswalk at the Project driveways. Please note that all necessary striping and traffic control devices will be installed at the crosswalk.**

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

In accordance with the County's guidelines, the study scenarios are listed on the following page.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3400 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

PROJECT STUDY SCENARIOS

- **Existing** – Existing (2014)
- **Project Opening Year With Ambient Traffic** - Existing plus Ambient Growth (1%) to Opening Year (2015)
- **Project Opening Year With Ambient Traffic Plus Proposed Project Traffic** - Existing plus Ambient Growth (1%) to Opening Year plus proposed Project traffic (2015)
- **Project Opening Year With Ambient Traffic, Related Projects Plus Proposed Project Traffic** - Existing plus Ambient Growth to Opening Year plus Related Projects plus proposed Project traffic (2015)
- **Project Opening Year With Ambient Traffic, Related Projects Plus Proposed Project Traffic and Mitigations** - Existing plus Ambient Growth to Opening Year plus Related Projects plus proposed Project traffic and Mitigations (2015) – *if required*
- **Build-out Year With Ambient Traffic** – Existing Plus Ambient Growth (1% per year = 20%) to Build-out Year (2035)
- **Build-out Year With Ambient Traffic Plus Proposed Project Traffic and Mitigations** – Existing Plus Ambient Growth to Build-out Year plus proposed Project traffic and Mitigations (2035)

9. Contact Information:

Please submit a signed copy of this scope for approval by the Traffic Division. Draft scopes may be sent electronically. Final scope with signature should be submitted in person or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: epetre@dpw.sbcounty.gov (Ed Petre)

ATTACHMENT A

Trip Generation

SANTA'S VILLAGE TRIP GENERATION ESTIMATE

The Institute of Transportation Engineers *Trip Generation Manual, 9th Edition* does not contain a land use category that accurately describes the potential development at Skypark at Santa's Village. Therefore, as described in the ITE *Trip Generation Handbook*, a trip generation estimate was developed from known data about the land use.

The Project trip generation is based on the Peak, Design, and Average Day visitor attendance levels for the Project as supplied by the Project Applicant. These visitor attendance levels were based on historical activity levels at the Project and represent a conservative estimate of the likely usage patterns for the Project.

Southern California theme park/visitor attraction mode split and vehicular average vehicular ridership (AVR) levels were used to convert the daily attendance levels to vehicle trips. Hourly travel patterns from theme parks and major visitor attractions were used to identify the likely peak hours of operation for vehicular traffic entering and leaving the Project.

Weekday vs. weekend activity levels were reviewed with the Project Applicant and compared to theme park/visitor attraction patterns.

The trip generation estimates were based on the above assumptions and developed using a trip generation model that was developed by GTC for use in theme park and visitor attraction land uses. The model has been applied to Disneyland, Universal Studios Hollywood, LEGOland Carlsbad, Arizona Cardinals football Stadium, Dodger Stadium, Angels Stadium, STAPLES Center, Honda Center Anaheim, and dozens of international theme park projects.

Finally, the entire trip generation package was reviewed with San Bernardino County and Caltrans staff to gain their approval prior to commencing with the traffic impact study.

It was determined that the trip generation assumptions and results appeared reasonable and the Design Day estimates were approved for use in the traffic impact study. The Design Day Saturday conditions were selected as the most appropriate time frame for the study as this represent the greatest combination of background and Project traffic levels.

SKYPARK -- SANTA VILLAGE
PRELIMINARYTRIP GENERATION

10/28/2014

CONDITION	# DAYS/YEAR	AM PEAK HOUR 7-8AM			PM PEAK HOUR (5-6PM)		
		IN	OUT	TOTAL	IN	OUT	TOTAL
SUMMER/CHRISTMAS WEEKEND PEAK DAY	6	16	1	17	43	85	128
SUMMER/CHRISTMAS WEEKEND DESIGN DAY	44	13	1	14	34	68	102
PEAK HOUR OF GENERATOR [a]		**113**	**15**	**128**	**65**	**90**	**155**
SUMMER/CHRISTMAS WEEKDAY	100	15	0	16	10	23	33
WINTER WEEKEND DAY	56	15	0	16	10	23	33
WINTER WEEKDAY	140	13	0	13	1	20	21
PARK CLOSED	19	0	0	0	0	0	0
TOTAL	365						
SPECIAL EVENT		1	0	1	44	23	67

Notes:
[a] Peak hours of Generator:
Morning - 9-10 am
Afternoon - 3-4 pm

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SUMMER/CHRISTMAS WEEKEND PEAK DAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	2,500	(Theme Park Guests)
CAST =	82	
SERVICE VEHICLES =	18	

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	1,625	30%	750	5%	125	2,500	Cast:	82	82					
PERSON TRIPS															
Ins		1,625		750		125	2,500	In:	82	82				2,582	
Outs		1,625		750		125	2,500	Out:	82	82				2,582	
MODE															
Drive Alone	3%	49	3%	23	4%	5	76	66%	54	54	66%			130	5%
Carpool	95%	1,544	95%	713	96%	120	2,376	32%	26	26	32%			2,402	93%
Tour Bus	2%	33	2%	15	0%	0	48	0%	0	0	0%			48	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	2	2	2%			2	0%
TOTAL	100%	1,625	100%	750	100%	125	2,500	100%	82	82	100%			2,582	100%
OCCUPANCY															
Drive Alone	1.0	49	1.0	23	1.0	5	76	1.0	54	54				130	
Carpool	3.5	441	3.5	204	3.5	34	679	1.10	24	24				703	
Tour Bus	15.0	2	15.0	1	15.0	0	3	15.0	0	0				3	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		492		227		39	758		77	77		Total =	18	854	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				3.02	
PCE															
Car	1.0	490	1.0	226	1.0	39	755	1.0	77	77	100%			833	95%
Tour Bus	1.0	2	1.0	1	1.0	0	3	1.0	0	0	0%			3	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		492		227		39	758		77	77	100%	2.5	45	880	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	2	2		0.0%	0	2	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	8	8		18.8%	8	16	
8-9 AM	5.0%	25	5.0%	11	5.0%	2	38	25.0%	19	19		18.8%	8	66	
9-10 AM	15.0%	74	15.0%	34	15.0%	6	114	25.0%	19	19		18.8%	8	142	
10-11 AM	15.4%	76	15.4%	35	15.4%	6	117	2.0%	2	2		18.8%	8	127	
11-12 AM	11.7%	58	11.7%	27	11.7%	5	89	2.0%	2	2		3.6%	2	92	
12-1 PM	7.6%	37	7.6%	17	7.6%	3	58	2.0%	2	2		3.6%	2	61	
1-2 PM	5.6%	28	5.6%	13	5.6%	2	42	0.0%	0	0		3.5%	2	44	
2-3 PM	4.2%	21	4.2%	10	4.2%	2	32	0.0%	0	0		3.5%	2	33	
3-4 PM	8.5%	42	8.5%	19	8.5%	3	64	20.3%	16	16		3.5%	2	82	
4-5 PM	4.5%	22	4.5%	10	4.5%	2	34	8.2%	6	6		3.5%	2	42	
5-6 PM	5.4%	27	5.4%	12	5.4%	2	41	0.0%	0	0		3.6%	2	43	
6-7 PM	4.1%	20	4.1%	9	4.1%	2	31	0.0%	0	0		0.0%	0	31	
7-8 PM	4.2%	21	4.2%	10	4.2%	2	32	0.0%	0	0		0.0%	0	32	
8-9 PM	4.1%	20	4.1%	9	4.1%	2	31	0.0%	0	0		0.0%	0	31	
9-10 PM	2.8%	14	2.8%	6	2.8%	1	21	0.0%	0	0		0.0%	0	21	
10-11 PM	1.9%	9	1.9%	4	1.9%	1	14	2.0%	2	2		0.0%	0	16	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1		0.0%	0	1	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	492	100.0%	227	100.0%	39	758	100.0%	77	77		100.0%	45	880	
DEPARTURES															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	1	1		0.0%	0	1	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 AM	1.4%	7	1.4%	3	1.4%	1	11	0.0%	0	0		18.8%	8	19	
10-11 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
11-12 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
12-1 PM	1.9%	9	1.9%	4	1.9%	1	14	0.0%	0	0		18.8%	8	23	
1-2 PM	2.1%	10	2.1%	5	2.1%	1	16	0.0%	0	0		3.6%	2	18	
2-3 PM	12.4%	61	12.4%	28	12.4%	5	94	4.0%	3	3		3.5%	2	99	
3-4 PM	15.4%	76	12.1%	27	12.1%	5	108	4.0%	3	3		3.5%	2	113	
4-5 PM	11.7%	58	13.1%	30	13.1%	5	92	10.0%	8	8		3.5%	2	102	
5-6 PM	7.6%	37	11.6%	26	11.6%	5	68	20.0%	15	15		3.5%	2	85	
6-7 PM	5.6%	28	7.5%	17	7.5%	3	48	4.0%	3	3		3.6%	2	52	
7-8 PM	4.2%	21	6.5%	15	6.5%	3	38	5.4%	4	4		3.6%	2	44	
8-9 PM	8.5%	42	7.5%	17	7.5%	3	62	5.0%	4	4		0.0%	0	66	
9-10 PM	12.2%	60	9.5%	22	9.5%	4	85	5.0%	4	4		0.0%	0	89	
10-11 PM	15.0%	74	12.4%	28	12.4%	5	107	15.0%	12	12		0.0%	0	118	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	15	15		0.0%	0	15	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	4	4		0.0%	0	4	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	492	100.0%	227	100.0%	39	758	100.0%	77	77		100.0%	45	880	

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	7	7
8-9 AM	38	27	65
9-10 AM	141	46	187
10-11 AM	250	48	298
11-12 AM	331	49	381
12-1 PM	375	51	425
1-2 PM	401	51	452
2-3 PM	339	48	387
3-4 PM	295	60	356
4-5 PM	237	59	296
5-6 PM	210	43	253
6-7 PM	193	40	234
7-8 PM	187	36	223
8-9 PM	157	32	189
9-10 PM	92	28	121
10-11 PM	0	18	18
11-12 PM	0	4	4
12-1 AM	0	0	0
1-2 AM	0	0	0

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	8	8		18.8%	8	16	
10-11 AM	15.4%	76	15.4%	35	15.4%	6	117	2.0%	2	2		18.8%	8	127	
5-6 PM	5.4%	27	5.4%	12	5.4%	2	41	0.0%	0	0		3.6%	2	43	
10-11 PM	1.9%	9	1.9%	4	1.9%	1	14	2.0%	2	2		0.0%	0	16	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
DEPARTURES															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
10-11 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
5-6 PM	7.6%	37	11.6%	26	11.6%	5	68	20.0%	15	15		3.5%	2	85	
10-11PM	15.0%	74	12.4%	28	12.4%	5	107	15.0%	12	12		0.0%	0	118	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	4	4		0.0%	0	4	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SUMMER/CHRISTMAS WEEKEND DESIGN DAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	2,000	(Theme Park Guests)
CAST =	65	
SERVICE VEHICLES =	14	

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	1,300	30%	600	5%	100	2,000	Cast:	65	65					
PERSON TRIPS															
Ins		1,300		600		100	2,000	In:	65	65				2,065	
Outs		1,300		600		100	2,000	Out:	65	65				2,065	
MODE															
Drive Alone	3%	39	3%	18	4%	4	61	66%	43	43	66%			104	5%
Carpool	95%	1,235	95%	570	96%	96	1,901	32%	21	21	32%			1,922	93%
Tour Bus	2%	26	2%	12	0%	0	38	0%	0	0	0%			38	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	1,300	100%	600	100%	100	2,000	100%	65	65	100%			2,065	100%
OCCUPANCY															
Drive Alone	1.0	39	1.0	18	1.0	4	61	1.0	43	43				104	
Carpool	3.5	353	3.5	163	3.5	27	543	1.10	19	19				562	
Tour Bus	15.0	2	15.0	1	15.0	0	3	15.0	0	0				3	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		394		182		31	607		62	62		Total =	14	683	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				3.02	
PCE															
Car	1.0	392	1.0	181	1.0	31	604	1.0	62	62	100%			666	95%
Tour Bus	1.0	2	1.0	1	1.0	0	3	1.0	0	0	0%			3	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		394		182		31	607		62	62	100%	2.5	36	704	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1		0.0%	0	1	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	6	6		18.8%	7	13	
8-9 AM	5.0%	20	5.0%	9	5.0%	2	30	25.0%	15	15		18.8%	7	53	
9-10 AM	15.0%	59	15.0%	27	15.0%	5	91	25.0%	15	15		18.8%	7	113	
10-11 AM	15.4%	61	15.4%	28	15.4%	5	93	2.0%	1	1		18.8%	7	101	
11-12 AM	11.7%	46	11.7%	21	11.7%	4	71	2.0%	1	1		3.6%	1	74	
12-1 PM	7.6%	30	7.6%	14	7.6%	2	46	2.0%	1	1		3.6%	1	49	
1-2 PM	5.6%	22	5.6%	10	5.6%	2	34	0.0%	0	0		3.5%	1	35	
2-3 PM	4.2%	17	4.2%	8	4.2%	1	25	0.0%	0	0		3.5%	1	27	
3-4 PM	8.5%	33	8.5%	15	8.5%	3	52	20.3%	13	13		3.5%	1	65	
4-5 PM	4.5%	18	4.5%	8	4.5%	1	27	8.2%	5	5		3.5%	1	34	
5-6 PM	5.4%	21	5.4%	10	5.4%	2	33	0.0%	0	0		3.6%	1	34	
6-7 PM	4.1%	16	4.1%	7	4.1%	1	25	0.0%	0	0		0.0%	0	25	
7-8 PM	4.2%	17	4.2%	8	4.2%	1	25	0.0%	0	0		0.0%	0	25	
8-9 PM	4.1%	16	4.1%	7	4.1%	1	25	0.0%	0	0		0.0%	0	25	
9-10 PM	2.8%	11	2.8%	5	2.8%	1	17	0.0%	0	0		0.0%	0	17	
10-11 PM	1.9%	7	1.9%	3	1.9%	1	12	2.0%	1	1		0.0%	0	13	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1		0.0%	0	1	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	394	100.0%	182	100.0%	31	607	100.0%	62	62		100.0%	36	704	
DEPARTURES															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	1	1		0.0%	0	1	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 AM	1.4%	6	1.4%	3	1.4%	0	8	0.0%	0	0		18.8%	7	15	
10-11 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0		18.8%	7	13	
11-12 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0		18.8%	7	13	
12-1 PM	1.9%	7	1.9%	3	1.9%	1	12	0.0%	0	0		18.8%	7	18	
1-2 PM	2.1%	8	2.1%	4	2.1%	1	13	0.0%	0	0		3.6%	1	14	
2-3 PM	12.4%	49	12.4%	23	12.4%	4	75	4.0%	2	2		3.5%	1	79	
3-4 PM	15.4%	61	12.1%	22	12.1%	4	86	4.0%	2	2		3.5%	1	90	
4-5 PM	11.7%	46	13.1%	24	13.1%	4	74	10.0%	6	6		3.5%	1	81	
5-6 PM	7.6%	30	11.6%	21	11.6%	4	55	20.0%	12	12		3.5%	1	68	
6-7 PM	5.6%	22	7.5%	14	7.5%	2	38	4.0%	2	2		3.6%	1	42	
7-8 PM	4.2%	17	6.5%	12	6.5%	2	30	5.4%	3	3		3.6%	1	35	
8-9 PM	8.5%	33	7.5%	14	7.5%	2	49	5.0%	3	3		0.0%	0	53	
9-10 PM	12.2%	48	9.5%	17	9.5%	3	68	5.0%	3	3		0.0%	0	71	
10-11 PM	15.0%	59	12.4%	23	12.4%	4	85	15.0%	9	9		0.0%	0	95	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	12	12		0.0%	0	12	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	3	3		0.0%	0	3	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	394	100.0%	182	100.0%	31	607	100.0%	62	62		100.0%	36	704	

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	6	6
8-9 AM	30	21	52
9-10 AM	113	37	150
10-11 AM	200	38	238
11-12 AM	265	39	305
12-1 PM	300	41	340
1-2 PM	321	41	362
2-3 PM	271	38	309
3-4 PM	236	48	285
4-5 PM	190	47	237
5-6 PM	168	35	203
6-7 PM	155	32	187
7-8 PM	150	29	179
8-9 PM	125	26	151
9-10 PM	74	23	97
10-11 PM	0	15	15
11-12 PM	0	3	3
12-1 AM	0	0	0
1-2 AM	0	0	0

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	6	6		18.8%	7	13	
10-11 AM	15.4%	61	15.4%	28	15.4%	5	93	2.0%	1	1		18.8%	7	101	
5-6 PM	5.4%	21	5.4%	10	5.4%	2	33	0.0%	0	0		3.6%	1	34	
10-11 PM	1.9%	7	1.9%	3	1.9%	1	12	2.0%	1	1		0.0%	0	13	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
DEPARTURES															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
10-11 AM	1.0%	4	1.0%	2	1.0%	0	6	0.0%	0	0		18.8%	7	13	
5-6 PM	7.6%	30	11.6%	21	11.6%	4	55	20.0%	12	12		3.5%	1	68	
10-11PM	15.0%	59	12.4%	23	12.4%	4	85	15.0%	9	9		0.0%	0	95	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	3	3		0.0%	0	3	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SUMMER WEEKDAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	500	(Theme Park Guests)
CAST =	36	
SERVICE VEHICLES =	26	

	GUESTS							EMPLOYEES				Service			
	Theme Park														
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	325	30%	150	5%	25	500	Cast:	36	36					
PERSON TRIPS															
Ins		325		150		25	500	In:	36	36				536	
Outs		325		150		25	500	Out:	36	36				536	
MODE															
Drive Alone	3%	10	3%	5	4%	1	15	66%	24	24	66%			39	7%
Carpool	95%	309	95%	143	96%	24	475	32%	12	12	32%			487	91%
Tour Bus	2%	7	2%	3	0%	0	10	0%	0	0	0%			10	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	325	100%	150	100%	25	500	100%	36	36	100%			536	100%
OCCUPANCY															
Drive Alone	1.0	10	1.0	5	1.0	1	15	1.0	24	24				39	
Carpool	3.5	88	3.5	41	3.5	7	136	1.10	11	11				146	
Tour Bus	15.0	0	15.0	0	15.0	0	1	15.0	0	0				1	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		98		45		8	152		35	35		Total =	26	212	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				2.53	
PCE															
Car	1.0	98	1.0	45	1.0	8	151	1.0	35	35	100%			186	74%
Tour Bus	1.0	0	1.0	0	1.0	0	1	1.0	0	0	0%			1	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		98		45		8	152		35	35	100%	2.5	64	250	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	18.8%	12	15
8-9 AM	5.0%	5	5.0%	2	5.0%	0	8	25.0%	9	9	18.8%	12	28
9-10 AM	15.0%	15	15.0%	7	15.0%	1	23	25.0%	9	9	18.8%	12	43
10-11 AM	15.4%	15	15.4%	7	15.4%	1	23	2.0%	1	1	18.8%	12	36
11-12 AM	11.7%	12	11.7%	5	11.7%	1	18	2.0%	1	1	3.6%	2	21
12-1 PM	7.6%	7	7.6%	3	7.6%	1	12	2.0%	1	1	3.6%	2	15
1-2 PM	5.6%	6	5.6%	3	5.6%	0	8	0.0%	0	0	3.5%	2	11
2-3 PM	4.2%	4	4.2%	2	4.2%	0	6	0.0%	0	0	3.5%	2	9
3-4 PM	8.5%	8	8.5%	4	8.5%	1	13	20.3%	7	7	3.5%	2	22
4-5 PM	4.5%	4	4.5%	2	4.5%	0	7	8.2%	3	3	3.5%	2	12
5-6 PM	5.4%	5	5.4%	2	5.4%	0	8	0.0%	0	0	3.6%	2	10
6-7 PM	4.1%	4	4.1%	2	4.1%	0	6	0.0%	0	0	0.0%	0	6
7-8 PM	4.2%	4	4.2%	2	4.2%	0	6	0.0%	0	0	0.0%	0	6
8-9 PM	4.1%	4	4.1%	2	4.1%	0	6	0.0%	0	0	0.0%	0	6
9-10 PM	2.8%	3	2.8%	1	2.8%	0	4	0.0%	0	0	0.0%	0	4
10-11 PM	1.9%	2	1.9%	1	1.9%	0	3	2.0%	1	1	0.0%	0	4
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1	0.0%	0	1
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	98	100.0%	45	100.0%	8	152	100.0%	35	35	100.0%	64	250
DEPARTURES													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	0	0	0.0%	0	0
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	0	0	0.0%	0	0
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 AM	1.4%	1	1.4%	1	1.4%	0	2	0.0%	0	0	18.8%	12	14
10-11 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
11-12 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
12-1 PM	1.9%	2	1.9%	1	1.9%	0	3	0.0%	0	0	18.8%	12	15
1-2 PM	2.1%	2	2.1%	1	2.1%	0	3	0.0%	0	0	3.6%	2	5
2-3 PM	12.4%	12	12.4%	6	12.4%	1	19	4.0%	1	1	3.5%	2	22
3-4 PM	15.4%	15	12.1%	5	12.1%	1	22	4.0%	1	1	3.5%	2	25
4-5 PM	11.7%	12	13.1%	6	13.1%	1	18	10.0%	3	3	3.5%	2	24
5-6 PM	7.6%	7	11.6%	5	11.6%	1	14	20.0%	7	7	3.5%	2	23
6-7 PM	5.6%	6	7.5%	3	7.5%	1	10	4.0%	1	1	3.6%	2	13
7-8 PM	4.2%	4	6.5%	3	6.5%	1	8	5.4%	2	2	3.6%	2	12
8-9 PM	8.5%	8	7.5%	3	7.5%	1	12	5.0%	2	2	0.0%	0	14
9-10 PM	12.2%	12	9.5%	4	9.5%	1	17	5.0%	2	2	0.0%	0	19
10-11 PM	15.0%	15	12.4%	6	12.4%	1	21	15.0%	5	5	0.0%	0	27
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	7	7	0.0%	0	7
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	2	2	0.0%	0	2
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	98	100.0%	45	100.0%	8	152	100.0%	35	35	100.0%	64	250

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	3	3
8-9 AM	8	12	20
9-10 AM	28	21	49
10-11 AM	50	21	71
11-12 AM	66	22	88
12-1 PM	75	23	98
1-2 PM	80	23	103
2-3 PM	68	21	89
3-4 PM	59	27	86
4-5 PM	47	26	74
5-6 PM	42	19	61
6-7 PM	39	18	57
7-8 PM	37	16	54
8-9 PM	31	14	46
9-10 PM	18	13	31
10-11 PM	0	8	8
11-12 PM	0	2	2
12-1 AM	0	(0)	(0)
1-2 AM	0	(0)	(0)

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	18.8%	12	15
10-11 AM	15.4%	15	15.4%	7	15.4%	1	23	2.0%	1	1	18.8%	12	36
5-6 PM	5.4%	5	5.4%	2	5.4%	0	8	0.0%	0	0	3.6%	2	10
10-11 PM	1.9%	2	1.9%	1	1.9%	0	3	2.0%	1	1	0.0%	0	4
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
DEPARTURES													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	0	0	0.0%	0	0
10-11 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
5-6 PM	7.6%	7	11.6%	5	11.6%	1	14	20.0%	7	7	3.5%	2	23
10-11PM	15.0%	15	12.4%	6	12.4%	1	21	15.0%	5	5	0.0%	0	27
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	2	2	0.0%	0	2

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: WINTER WEEKDAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	125	(Theme Park Guests)
CAST =	33	
SERVICE VEHICLES =	11	

	GUESTS							EMPLOYEES				Service			
	Theme Park														
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	81	30%	38	5%	6	125	Cast:	33	33					
PERSON TRIPS															
Ins		81		38		6	125	In:	33	33				158	
Outs		81		38		6	125	Out:	33	33				158	
MODE															
Drive Alone	3%	2	3%	1	4%	0	4	66%	21	21	66%			25	16%
Carpool	95%	77	95%	36	96%	6	119	32%	10	10	32%			129	82%
Tour Bus	2%	2	2%	1	0%	0	2	0%	0	0	0%			2	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	81	100%	38	100%	6	125	100%	33	33	100%			158	100%
OCCUPANCY															
Drive Alone	1.0	2	1.0	1	1.0	0	4	1.0	21	21				25	
Carpool	3.5	22	3.5	10	3.5	2	34	1.10	9	9				43	
Tour Bus	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		25		11		2	38		31	31		Total =	11	79	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				1.98	
PCE															
Car	1.0	24	1.0	11	1.0	2	38	1.0	31	31	100%			69	72%
Tour Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		25		11		2	38		31	31	100%	2.5	26	95	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	27.0%	8	8	18.8%	5	13
8-9 AM	5.0%	1	5.0%	1	5.0%	0	2	40.0%	12	12	18.8%	5	19
9-10 AM	25.0%	6	25.0%	3	25.0%	0	9	25.0%	8	8	18.8%	5	22
10-11 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	18.8%	5	15
11-12 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	3.6%	1	11
12-1 PM	7.0%	2	7.0%	1	7.0%	0	3	2.0%	1	1	3.6%	1	4
1-2 PM	5.0%	1	5.0%	1	5.0%	0	2	0.0%	0	0	3.5%	1	3
2-3 PM	4.0%	1	4.0%	0	4.0%	0	2	0.0%	0	0	3.5%	1	2
3-4 PM	4.0%	1	4.0%	0	4.0%	0	2	0.0%	0	0	3.5%	1	2
4-5 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.5%	1	1
5-6 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.6%	1	1
6-7 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	25	100.0%	11	100.0%	2	38	100.0%	31	31	100.0%	26	95
DEPARTURES													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
10-11 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
11-12 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
12-1 PM	1.9%	0	1.9%	0	1.9%	0	1	0.0%	0	0	18.8%	5	6
1-2 PM	2.1%	1	2.1%	0	2.1%	0	1	0.0%	0	0	3.6%	1	2
2-3 PM	15.0%	4	15.0%	2	15.0%	0	6	5.0%	2	2	3.5%	1	8
3-4 PM	20.0%	5	20.0%	2	20.0%	0	8	5.0%	2	2	3.5%	1	10
4-5 PM	25.0%	6	25.0%	3	25.0%	0	9	10.0%	3	3	3.5%	1	13
5-6 PM	25.0%	6	25.0%	3	25.0%	0	9	30.0%	9	9	3.5%	1	20
6-7 PM	8.0%	2	8.0%	1	8.0%	0	3	40.0%	12	12	3.6%	1	16
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	3.6%	1	4
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	25	100.0%	11	100.0%	2	38	100.0%	31	31	100.0%	26	95

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	1	1
7-8 AM	0	9	9
8-9 AM	2	21	23
9-10 AM	11	29	40
10-11 AM	20	30	50
11-12 AM	29	30	59
12-1 PM	31	31	62
1-2 PM	32	31	63
2-3 PM	28	29	57
3-4 PM	22	28	50
4-5 PM	13	25	37
5-6 PM	3	15	18
6-7 PM	(0)	3	3
7-8 PM	(0)	0	(0)
8-9 PM	(0)	0	(0)
9-10 PM	(0)	0	(0)
10-11 PM	(0)	0	(0)
11-12 PM	(0)	0	(0)
12-1 AM	(0)	0	(0)
1-2 AM	(0)	0	(0)

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	27.0%	8	8	18.8%	5	13
10-11 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	18.8%	5	15
5-6 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.6%	1	1
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
DEPARTURES													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
5-6 PM	25.0%	6	25.0%	3	25.0%	0	9	30.0%	9	9	3.5%	1	20
10-11PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SPECIAL EVENT

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	500	(Special Event Guests)
CAST =	24	
SERVICE VEHICLES =	2	

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	325	30%	150	5%	25	500	Cast:	24	24					
PERSON TRIPS															
Ins		325		150		25	500	In:	24	24				524	
Outs		325		150		25	500	Out:	24	24				524	
MODE															
Drive Alone	3%	10	3%	5	4%	1	15	66%	16	16	66%			31	6%
Carpool	95%	309	95%	143	96%	24	475	32%	8	8	32%			483	92%
Tour Bus	2%	7	2%	3	0%	0	10	0%	0	0	0%			10	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	0	0	2%			0	0%
TOTAL	100%	325	100%	150	100%	25	500	100%	24	24	100%			524	100%
OCCUPANCY															
Drive Alone	1.0	10	1.0	5	1.0	1	15	1.0	16	16				31	
Carpool	2.5	124	2.5	57	2.5	10	190	1.10	7	7				197	
Tour Bus	15.0	0	15.0	0	15.0	0	1	15.0	0	0				1	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		134		62		11	206		22	22		Total =	2	231	
AVR		2.43		2.43		2.36	2.43		1.05	1.05				2.27	
PCE															
Car	1.0	133	1.0	62	1.0	11	205	1.0	22	22	100%			228	97%
Tour Bus	1.0	0	1.0	0	1.0	0	1	1.0	0	0	0%			1	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		134		62		11	206		22	22	100%	2.5	5	234	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		18.8%	1	3	
9-10 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		18.8%	1	3	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
11-12 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
12-1 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
1-2 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
2-3 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
3-4 PM	10.0%	13	10.0%	6	10.0%	1	21	20.0%	4	4		3.5%	0	25	
4-5 PM	10.0%	13	10.0%	6	10.0%	1	21	45.0%	10	10		3.5%	0	31	
5-6 PM	20.0%	27	20.0%	12	20.0%	2	41	11.5%	3	3		3.6%	0	44	
6-7 PM	35.0%	47	35.0%	22	35.0%	4	72	0.0%	0	0		0.0%	0	72	
7-8 PM	25.0%	33	25.0%	15	25.0%	3	51	0.0%	0	0		0.0%	0	51	
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	0	0		0.0%	0	0	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	0	0		0.0%	0	0	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	134	100.0%	62	100.0%	11	206	100.0%	22	22		100.0%	5	234	
DEPARTURES															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
11-12 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
12-1 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
1-2 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
2-3 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
3-4 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
4-5 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		3.5%	0	2	
5-6 PM	10.0%	13	10.0%	6	10.0%	1	21	10.0%	2	2		3.5%	0	23	
6-7 PM	10.0%	13	10.0%	6	10.0%	1	21	0.0%	0	0		3.6%	0	21	
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
8-9 PM	20.0%	27	20.0%	12	20.0%	2	41	0.0%	0	0		0.0%	0	41	
9-10 PM	35.0%	47	35.0%	22	35.0%	4	72	20.0%	4	4		0.0%	0	77	
10-11 PM	25.0%	33	25.0%	15	25.0%	3	51	45.0%	10	10		0.0%	0	62	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		0.0%	0	2	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.0%	1	1		0.0%	0	1	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	134	100.0%	62	100.0%	11	206	100.0%	22	22		100.0%	5	234	

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	0	0
8-9 AM	0	2	2
9-10 AM	0	4	4
10-11 AM	0	4	4
11-12 AM	0	4	4
12-1 PM	0	4	4
1-2 PM	0	4	4
2-3 PM	0	4	4
3-4 PM	21	9	30
4-5 PM	41	17	58
5-6 PM	62	17	79
6-7 PM	113	17	130
7-8 PM	165	17	182
8-9 PM	124	17	141
9-10 PM	51	13	64
10-11 PM	0	3	3
11-12 PM	0	1	1
12-1 AM	0	0	0
1-2 AM	0	0	0

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
5-6 PM	20.0%	27	20.0%	12	20.0%	2	41	11.5%	3	3		3.6%	0	44	
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	0	0		0.0%	0	0	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
DEPARTURES															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
5-6 PM	10.0%	13	10.0%	6	10.0%	1	21	10.0%	2	2		3.5%	0	23	
10-11PM	25.0%	33	25.0%	15	25.0%	3	51	45.0%	10	10		0.0%	0	62	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.0%	1	1		0.0%	0	1	

ATTACHMENT B

List of Study Intersections

Map of Study Intersections

Regional Trip Distribution

Project Trip Distribution

Project-Only Traffic Volumes

TABLE 1
LIST OF STUDY INTERSECTIONS

No.	Intersection
1	State Route 189 & State Route 18
2	Daley Canyon Road & State Route 18
3	State Route 173 & State Route 18
4	Kuffel Canyon Road & State Route 18
5	Project Driveways & State Route 18
6	Live Oak Drive & State Route 18

LEGEND

- Project Site
- Signalized Study Intersection
- Unsignalized Study Intersection

N
Not to Scale

STUDY AREA

FIGURE 1

LEGEND

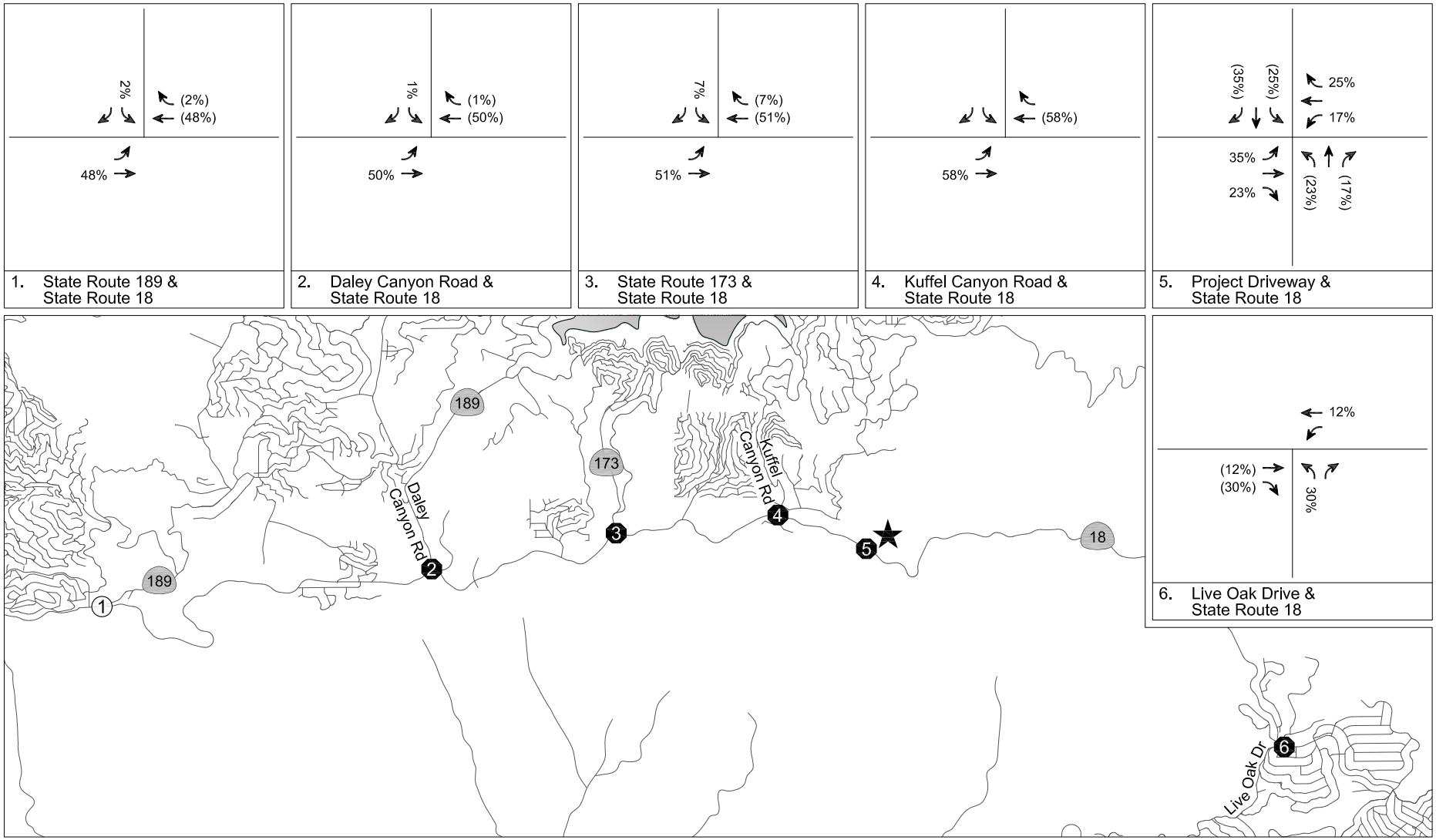
- Project Site
- Signalized Study Intersection
- Unsignalized Study Intersection

N
Not to Scale

REGIONAL TRIP DISTRIBUTION

FIGURE 2

Gibson transportation consulting, inc.



LEGEND

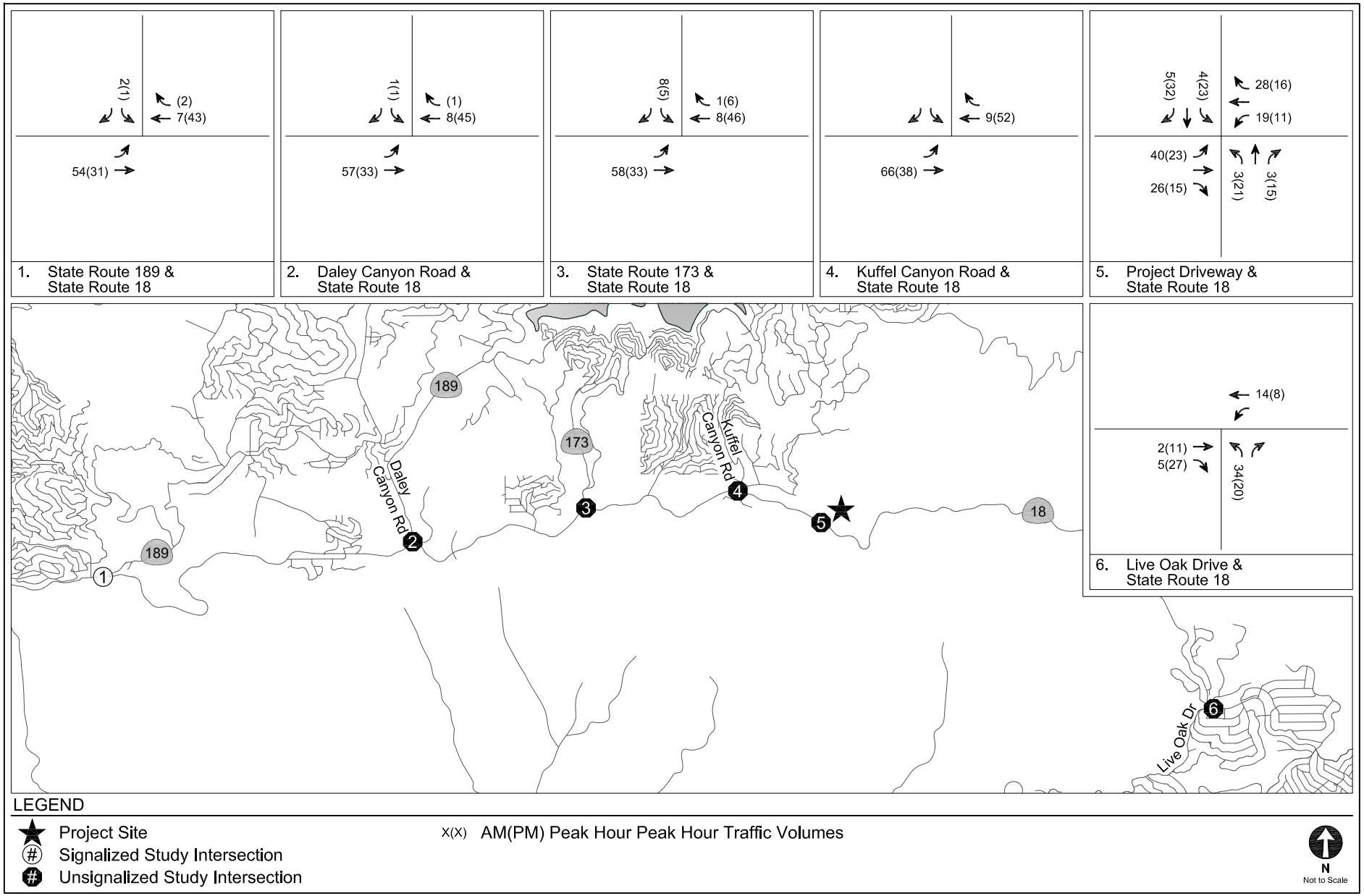
- ★ Project Site
- (#) Signalized Study Intersection
- (#) Unsignalized Study Intersection

X%(X%) Inbound(Outbound) Trip Percentage

N
Not to Scale

PROJECT TRIP DISTRIBUTION

FIGURE 3



PROJECT-ONLY
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

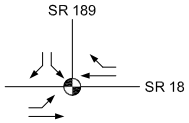
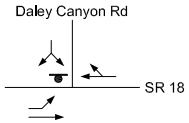
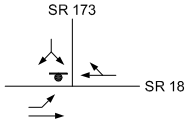
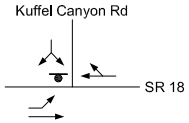
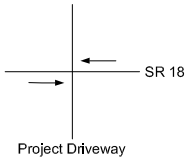
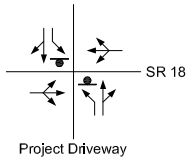
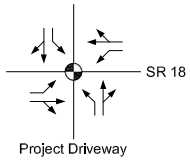
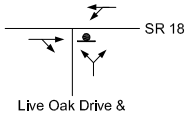
FIGURE
4

Appendix B

Intersection Lane Configurations

Gibson transportation consulting, inc.

LEGEND
- Traffic Signal
- Stop Sign

	EXISTING CONDITIONS (YEAR 2015)	OPENING YEAR CONDITIONS (YEAR 2016)	WITH MITIGATION CONDITIONS
1. State Route 189 & State Route 18		Same as Existing Conditions	Same as Existing Conditions
2. Daley Canyon Road & State Route 18		Same as Existing Conditions	Same as Existing Conditions
3. State Route 173 & State Route 18		Same as Existing Conditions	Same as Existing Conditions
4. Kuffel Canyon Road & State Route 18		Same as Existing Conditions	Same as Existing Conditions
5. Project Driveway & State Route 18			
6. Live Oak Drive & State Route 18		Same as Existing Conditions	Same as Existing Conditions

INTERSECTION LANE CONFIGURATIONS

APPENDIX B

Appendix C

Traffic Counts

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

SR-189 and SR-18 , Lake Arrowhead

Date: 12/13/2014

Day: Saturday

Project #: 14-6218-001

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	230 PM

Peak Hour Summary

Southbound Approach (SR-189)

Lanes	0	1	0		
AM	78	0	132	108	AM
NOON	0	0	0	0	NOON
PM	83	0	119	216	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	321	0	286
1	41	0	88
1	201	0	254
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
1	67	0	128
1	243	0	203
0	0	0	0
	333	0	373

CONTROL: Signalized

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

North Leg		
210	108	AM
0	0	NOON
202	216	PM

West Leg			East Leg		
AM	NOON	PM			
321	0	286	310	0	331
242	0	342	333	0	373
			AM	NOON	PM

South Leg	
0	0
0	0
0	0

Total Volume Per Leg

North Leg
318
0
418

West Leg			East Leg		
AM	NOON	PM			
563	0	628	643	0	704
			AM	NOON	PM

South Leg
0
0
0

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Daley Canyon Rd and SR-18 , Lake Arrowhead

Date: 12/13/2014

Day: Saturday

Project #: 14-6218-002

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	300 PM

Peak Hour Summary

Southbound Approach (Daley Canyon Rd)

Lanes	0	1	0		
AM	211	0	3	160	AM
NOON	0	0	0	0	NOON
PM	178	0	0	202	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	407	0	421
0	158	0	195
2	259	0	246
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
0	2	0	7
2	196	0	243
0	0	0	1
	262	0	246

Northbound Approach

Lanes	0	0	0		
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	1	0	0	0	PM

CONTROL

1-Way Stop (SB)

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

	North Leg		
	214	160	AM
	0	0	NOON
	178	202	PM

West Leg			East Leg		
AM	NOON	PM			
407	0	421	198	0	251
417	0	441	262	0	246
			AM	NOON	PM

South Leg		
AM	0	0
NOON	0	0
PM	1	0

Total Volume Per Leg

North Leg	
374	AM
0	NOON
380	PM

West Leg			East Leg		
AM	NOON	PM			
824	0	862	460	0	497
			AM	NOON	PM

South Leg	
AM	0
NOON	0
PM	1

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

SR-173 and SR-18 , Lake Arrowhead

Date: 12/13/2014

Day: Saturday

Project #: 14-6218-003

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	245 PM

Peak Hour Summary

Southbound Approach (SR-173)

Lanes	0	1	0		
AM	47	0	114	174	AM
NOON	0	0	0	0	NOON
PM	52	0	173	230	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	177	0	179
1	27	0	69
1	103	0	126
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
0	147	0	161
1	130	0	127
0	0	0	0
	217	0	299

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

CONTROL

1-Way Stop (SB)

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

North Leg		
161	174	AM
0	0	NOON
225	230	PM

West Leg			East Leg		
AM	NOON	PM			
177	0	179	277	0	288
130	0	195	217	0	299
			AM	NOON	PM

South Leg	
0	0
0	0
0	0

Total Volume Per Leg

North Leg	
335	AM
0	NOON
455	PM

West Leg			East Leg		
AM	NOON	PM			
307	0	374	494	0	587
			AM	NOON	PM

South Leg
0
0
0

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Kuffle Canyon Rd and SR-18 , Lake Arrowhead

Date: 12/13/2014

Day: Saturday

Project #: 14-6218-004

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	230 PM

Peak Hour Summary

Southbound Approach (Kuffle Canyon Rd)

Lanes	0	1	0		
AM	29	0	31	63	AM
NOON	0	0	0	0	NOON
PM	36	0	39	103	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	126	0	206
0	39	0	39
2	134	0	148
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
0	24	0	64
1	97	0	170
0	0	0	0
	165	0	187

Northbound Approach

Lanes	0	0	0	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

CONTROL

1-Way Stop (SB)

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

	North Leg		
	60	63	AM
	0	0	NOON
	75	103	PM

West Leg AM	West Leg NOON	West Leg PM	East Leg AM	East Leg NOON	East Leg PM
126	0	206	121	0	234
173	0	187	165	0	187

	South Leg	
AM	0	0
NOON	0	0
PM	0	0

Total Volume Per Leg

	North Leg	
	123	AM
	0	NOON
	178	PM

West Leg AM	West Leg NOON	West Leg PM	East Leg AM	East Leg NOON	East Leg PM
299	0	393	286	0	421

	South Leg
AM	0
NOON	0
PM	0

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Live Oak Dr and SR-18 , Lake Arrowhead

Date: 12/13/2014

Day: Saturday

Project #: 14-6218-005

City: Lake Arrowhead

AM Peak Hour	930 AM
NOON Peak Hour	
PM Peak Hour	230 PM

Peak Hour Summary

Southbound Approach (Live Oak Dr)

	Lanes				
	0	0	0		
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	1	PM

Eastbound Approach (SR-18)

	AM	NOON	PM	Lanes
	140	0	218	
	0	0	1	0
	151	0	165	1
	15	0	26	0

Westbound Approach

AM	NOON	PM	Lanes
0	0	0	0
116	0	188	1
17	0	23	0
175	0	182	

CONTROL: 1-Way Stop (NB)

Northbound Approach

AM	32	24	0	24	AM
NOON	0	0	0	0	NOON
PM	49	30	0	17	PM
		0	1	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

	North Leg		
	0	0	AM
	0	0	NOON
	0	1	PM

West Leg	AM	NOON	PM
	140	0	218
	166	0	192

East Leg	AM	NOON	PM
	133	0	211
	175	0	182

South Leg		
AM	32	48
NOON	0	0
PM	49	47

Total Volume Per Leg

	North Leg
AM	0
NOON	0
PM	1

West Leg	AM	NOON	PM
	306	0	410

East Leg	AM	NOON	PM
	308	0	393

South Leg	
AM	80
NOON	0
PM	96

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

SR-189 and SR-18 , Lake Arrowhead

Date: 12/14/2014

Day: Sunday

Project #: 14-6218-001

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	300 PM

Peak Hour Summary

Southbound Approach (SR-189)

Lanes	0	1	0		
AM	135	0	111	134	AM
NOON	0	0	0	0	NOON
PM	90	0	115	204	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	401	0	399
1	50	0	103
1	165	0	206
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
1	84	0	101
1	266	0	309
0	0	0	0
	276	0	321

CONTROL: Signalized

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

North Leg		
246	134	AM
0	0	NOON
205	204	PM

West Leg			East Leg		
AM	NOON	PM			
401	0	399	350	0	410
215	0	309	276	0	321
			AM	NOON	PM

South Leg		
0	0	AM
0	0	NOON
0	0	PM

Total Volume Per Leg

North Leg	
380	AM
0	NOON
409	PM

West Leg			East Leg		
AM	NOON	PM			
616	0	708	626	0	731
			AM	NOON	PM

South Leg	
0	AM
0	NOON
0	PM

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Daley Canyon Rd and SR-18 , Lake Arrowhead

Date: 12/14/2014

Day: Sunday

Project #: 14-6218-002

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	300 PM

Peak Hour Summary

Southbound Approach (Daley Canyon Rd)

	Lanes 0	1	0		
AM	179	0	0	100	AM
NOON	0	0	0	0	NOON
PM	179	0	4	141	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	395	0	408
0	100	0	141
2	212	0	211
0	0	0	0

Westbound Approach

AM	NOON	PM	Lanes
0	0	0	0
216	0	229	2
0	0	1	0
212	0	215	

CONTROL

1-Way Stop (SB)

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	1	0	0	0	PM
		0	0	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

North Leg		
179	100	AM
0	0	NOON
183	141	PM

West Leg			East Leg		
AM	NOON	PM			
395	0	408	216	0	230
312	0	352	212	0	215
			AM	NOON	PM

South Leg		
0	0	AM
0	0	NOON
1	0	PM

Total Volume Per Leg

North Leg
279
0
324

West Leg			East Leg		
AM	NOON	PM			
707	0	760	428	0	445
			AM	NOON	PM

South Leg
0
0
1

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

SR-173 and SR-18 , Lake Arrowhead

Date: 12/14/2014

Day: Sunday

Project #: 14-6218-003

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	230 PM

Peak Hour Summary

Southbound Approach (SR-173)

Lanes	0	1	0		
AM	46	0	116	203	AM
NOON	0	0	0	0	NOON
PM	1	0	125	191	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	141	0	124
1	69	0	54
1	108	0	142
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
0	134	0	137
1	95	0	123
0	0	0	0
	224	0	267

CONTROL

1-Way Stop (SB)

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

North Leg		
162	203	AM
0	0	NOON
126	191	PM

West Leg			East Leg		
AM	NOON	PM			
141	0	124	229	0	260
177	0	196	224	0	267
			AM	NOON	PM

South Leg	
0	0
0	0
0	0

Total Volume Per Leg

North Leg
365
0
317

West Leg			East Leg		
AM	NOON	PM			
318	0	320	453	0	527
			AM	NOON	PM

South Leg
0
0
0

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Kuffle Canyon Rd and SR-18 , Lake Arrowhead

Date: 12/14/2014

Day: Sunday

Project #: 14-6218-004

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	230 PM

Peak Hour Summary

Southbound Approach (Kuffle Canyon Rd)

Lanes	0	1	0		
AM	34	0	47	62	AM
NOON	0	0	0	0	NOON
PM	30	0	50	80	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	133	0	155
0	23	0	33
2	126	0	115
0	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
0	39	0	47
1	99	0	125
0	0	0	0
	173	0	165

CONTROL

1-Way Stop (SB)

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

	North Leg		
	81	62	AM
	0	0	NOON
	80	80	PM

West Leg AM	West Leg NOON	West Leg PM		East Leg AM	East Leg NOON	East Leg PM
133	0	155		138	0	172
149	0	148		173	0	165

	South Leg	
AM	0	0
NOON	0	0
PM	0	0

Total Volume Per Leg

	North Leg
AM	143
NOON	0
PM	160

West Leg AM	West Leg NOON	West Leg PM	East Leg AM	East Leg NOON	East Leg PM
282	0	303	311	0	337

	South Leg
AM	0
NOON	0
PM	0

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Live Oak Dr and SR-18 , Lake Arrowhead

Date: 12/14/2014

Day: Sunday

Project #: 14-6218-005

City: Lake Arrowhead

AM Peak Hour	1000 AM
NOON Peak Hour	
PM Peak Hour	300 PM

Peak Hour Summary

Southbound Approach (Live Oak Dr)

	Lanes 0	0	0		
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

Eastbound Approach (SR-18)

Lanes	AM	NOON	PM
	140	0	176
0	0	0	0
1	159	0	137
0	21	0	16

Westbound Approach

AM	NOON	PM	Lanes
0	0	0	0
118	0	158	1
25	0	18	0
171	0	160	

Northbound Approach

AM	46	22	0	12	AM
NOON	0	0	0	0	NOON
PM	34	18	0	23	PM
		0	1	0	Lanes

CONTROL

1-Way Stop (NB)

Count Periods	Start	End
AM	9:00 AM	11:00 AM
NOON		
PM	2:30 PM	4:30 PM

Total Ins & Outs

	North Leg		
	0	0	AM
	0	0	NOON
	0	0	PM

West Leg AM	NOON	PM	East Leg AM	NOON	PM
140	0	176	143	0	176
180	0	153	171	0	160

	South Leg	
AM	46	34
NOON	0	0
PM	34	41

Total Volume Per Leg

	North Leg
AM	0
NOON	0
PM	0

West Leg AM	NOON	PM	East Leg AM	NOON	PM
320	0	329	314	0	336

	South Leg
AM	80
NOON	0
PM	75

Appendix D

Intersection Level of Service Worksheets

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	274	330	68	133	79
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	45	298	359	74	145	86
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	227	682	447	380	524	495
Arrive On Green	0.00	0.39	0.25	0.25	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	45	298	359	74	145	86
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	5.3	8.1	1.6	2.9	1.7
Cycle Q Clear(g_c), s	0.1	5.3	8.1	1.6	2.9	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	227	682	447	380	524	495
V/C Ratio(X)	0.20	0.44	0.80	0.19	0.28	0.17
Avail Cap(c_a), veh/h	298	999	666	566	524	495
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.7	9.6	14.8	12.4	10.5	10.1
Incr Delay (d2), s/veh	0.4	0.4	4.3	0.2	1.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	2.6	4.4	0.7	1.4	1.8
LnGrp Delay(d),s/veh	19.1	10.0	19.2	12.7	11.8	10.8
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		343	433		231	
Approach Delay, s/veh		11.2	18.0		11.4	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.4		20.0	5.6	16.7
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				7.3		4.9	2.1	10.1
Green Ext Time (p_c), s				4.2		0.5	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	89	345	276	129	120	84
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	97	375	300	140	130	91
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	683	403	343	524	495
Arrive On Green	0.02	0.39	0.23	0.23	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	97	375	300	140	130	91
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.7	7.0	6.7	3.4	2.5	1.8
Cycle Q Clear(g_c), s	0.7	7.0	6.7	3.4	2.5	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	256	683	403	343	524	495
V/C Ratio(X)	0.38	0.55	0.74	0.41	0.25	0.18
Avail Cap(c_a), veh/h	342	999	624	531	524	495
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.9	10.1	15.2	13.9	10.4	10.1
Incr Delay (d2), s/veh	0.9	0.7	2.7	0.8	1.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	3.5	3.6	1.5	1.2	1.9
LnGrp Delay(d),s/veh	17.8	10.8	18.0	14.7	11.5	10.9
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		472	440		221	
Approach Delay, s/veh		12.3	16.9		11.3	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.4		20.0	6.7	15.7
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				9.0		4.5	2.7	8.7
Green Ext Time (p_c), s				4.4		0.5	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	160	354	269	2	3	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	174	385	292	2	3	232

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	295	0	-	0	1026	293
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	733	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1266	-	-	-	260	746
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	475	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	224	746
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	410	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1266	-	-	-	723
HCM Lane V/C Ratio	0.137	-	-	-	0.325
HCM Control Delay (s)	8.3	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.4

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	197	337	330	7	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	214	366	359	8	0	196

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	366	0	-	0	1158	363
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	795	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1193	-	-	-	217	682
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1193	-	-	-	178	682
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	365	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1193	-	-	-	682
HCM Lane V/C Ratio	0.179	-	-	-	0.287
HCM Control Delay (s)	8.7	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	27	139	178	148	115	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	29	151	193	161	125	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	484	274
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	210	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1205	-	-	-	542	765
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1205	-	-	-	529	765
Mov Cap-2 Maneuver	-	-	-	-	529	-
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	805	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1205	-	-	-	581
HCM Lane V/C Ratio	0.024	-	-	-	0.303
HCM Control Delay (s)	8.1	-	-	-	13.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	70	174	175	163	175	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	76	189	190	177	190	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	367	0	-	0	620	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1192	-	-	-	452	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	720	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1192	-	-	-	423	760
Mov Cap-2 Maneuver	-	-	-	-	423	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	674	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1192	-	-	-	472
HCM Lane V/C Ratio	0.064	-	-	-	0.525
HCM Control Delay (s)	8.2	-	-	-	20.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	182	133	24	31	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	198	145	26	34	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	171	0	-	0	441	158
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	283	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1406	-	-	-	574	887
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1406	-	-	-	557	887
Mov Cap-2 Maneuver	-	-	-	-	557	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	742	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1406	-	-	-	679
HCM Lane V/C Ratio	0.03	-	-	-	0.096
HCM Control Delay (s)	7.6	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	203	232	65	39	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	221	252	71	42	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	323	0	-	0	593	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1237	-	-	-	468	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1237	-	-	-	452	751
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	723	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1237	-	-	-	559
HCM Lane V/C Ratio	0.034	-	-	-	0.146
HCM Control Delay (s)	8	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	165	0	0	227	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	179	0	0	247	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	179	0	0	426	426	179	426	426	247
Stage 1	-	-	-	-	-	-	179	179	-	247	247	-
Stage 2	-	-	-	-	-	-	247	247	-	179	179	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1319	-	-	1397	-	-	539	520	864	539	520	792
Stage 1	-	-	-	-	-	-	823	751	-	757	702	-
Stage 2	-	-	-	-	-	-	757	702	-	823	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1319	-	-	1397	-	-	539	520	864	539	520	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	539	520	-	539	520	-
Stage 1	-	-	-	-	-	-	823	751	-	757	702	-
Stage 2	-	-	-	-	-	-	757	702	-	823	751	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1319	-	-	1397	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	318	0	0	257	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	346	0	0	279	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	346	0	0	625	625	346	625	625	279
Stage 1	-	-	-	-	-	-	346	346	-	279	279	-
Stage 2	-	-	-	-	-	-	279	279	-	346	346	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1284	-	-	1213	-	-	397	401	697	397	401	760
Stage 1	-	-	-	-	-	-	670	635	-	728	680	-
Stage 2	-	-	-	-	-	-	728	680	-	670	635	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	1213	-	-	397	401	697	397	401	760
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	401	-	397	401	-
Stage 1	-	-	-	-	-	-	670	635	-	728	680	-
Stage 2	-	-	-	-	-	-	728	680	-	670	635	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1284	-	-	1213	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	206	15	17	160	24	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	224	16	18	174	26	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	240	0	443	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1327	-	572	807
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1327	-	563	807
Mov Cap-2 Maneuver	-	-	-	-	563	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	812	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	663	-	-	1327	-
HCM Lane V/C Ratio	0.079	-	-	0.014	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	227	26	23	258	30	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	247	28	25	280	33	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	275	0	591	261
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1288	-	470	778
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1288	-	459	778
Mov Cap-2 Maneuver	-	-	-	-	459	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	539	-	-	1288	-
HCM Lane V/C Ratio	0.095	-	-	0.019	-
HCM Control Delay (s)	12.4	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	51	227	365	85	112	136
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	55	247	397	92	122	148
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	213	712	472	401	510	482
Arrive On Green	0.00	0.40	0.27	0.27	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	55	247	397	92	122	148
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	4.2	9.3	2.1	2.5	3.2
Cycle Q Clear(g_c), s	0.1	4.2	9.3	2.1	2.5	3.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	213	712	472	401	510	482
V/C Ratio(X)	0.26	0.35	0.84	0.23	0.24	0.31
Avail Cap(c_a), veh/h	282	971	648	550	510	482
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.0	9.0	15.1	12.5	10.9	11.1
Incr Delay (d2), s/veh	0.6	0.3	7.2	0.3	1.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	2.1	5.4	0.9	1.2	3.2
LnGrp Delay(d),s/veh	20.6	9.3	22.3	12.8	12.0	12.8
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		302	489		270	
Approach Delay, s/veh		11.4	20.5		12.4	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.6		20.0	5.9	17.7
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				6.2		5.2	2.1	11.3
Green Ext Time (p_c), s				4.2		0.6	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	104	283	422	102	116	91
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	113	308	459	111	126	99
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	240	814	562	477	475	449
Arrive On Green	0.02	0.46	0.32	0.32	0.30	0.30
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	113	308	459	111	126	99
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.2	5.7	12.0	2.7	3.0	2.5
Cycle Q Clear(g_c), s	1.2	5.7	12.0	2.7	3.0	2.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	240	814	562	477	475	449
V/C Ratio(X)	0.47	0.38	0.82	0.23	0.27	0.22
Avail Cap(c_a), veh/h	329	1162	810	688	475	449
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.0	8.8	15.7	12.6	13.4	13.2
Incr Delay (d2), s/veh	1.4	0.3	4.4	0.2	1.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	2.8	6.4	1.1	1.5	2.5
LnGrp Delay(d),s/veh	19.4	9.1	20.1	12.8	14.7	14.3
LnGrp LOS	B	A	C	B	B	B
Approach Vol, veh/h		421	570		225	
Approach Delay, s/veh		11.9	18.7		14.5	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.1		21.0	7.2	22.0
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				7.7		5.0	3.2	14.0
Green Ext Time (p_c), s				5.7		0.5	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	101	289	296	0	0	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	110	314	322	0	0	197

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	322	0	-	0	856	322
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1238	-	-	-	328	719
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1238	-	-	-	299	719
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	536	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1238	-	-	-	719
HCM Lane V/C Ratio	0.089	-	-	-	0.274
HCM Control Delay (s)	8.2	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	142	288	313	0	4	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	154	313	340	0	4	197

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	340	0	-	0	962	340
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	622	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1219	-	-	-	284	702
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1219	-	-	-	248	702
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1219	-	-	-	675
HCM Lane V/C Ratio	0.127	-	-	-	0.298
HCM Control Delay (s)	8.4	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.2

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	70	148	131	135	117	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	76	161	142	147	127	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	289	0	-	0	529	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1273	-	-	-	510	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	741	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1273	-	-	-	480	824
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	697	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1273	-	-	-	544
HCM Lane V/C Ratio	0.06	-	-	-	0.326
HCM Control Delay (s)	8	-	-	-	14.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	55	193	167	138	126	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	90	-	-	-	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	60	210	182	150	137	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	332	0	-	0	586	257
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1227	-	-	-	473	782
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1227	-	-	-	450	782
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	693	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1227	-	-	-	452
HCM Lane V/C Ratio	0.049	-	-	-	0.305
HCM Control Delay (s)	8.1	-	-	-	16.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.3

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	174	135	39	47	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	25	189	147	42	51	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	189	0	-	0	407	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	239	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1385	-	-	-	600	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1385	-	-	-	589	876
Mov Cap-2 Maneuver	-	-	-	-	589	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1385	-	-	-	683
HCM Lane V/C Ratio	0.018	-	-	-	0.129
HCM Control Delay (s)	7.6	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	33	159	173	47	51	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	36	173	188	51	55	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	239	0	-	0	459	214
Stage 1	-	-	-	-	214	-
Stage 2	-	-	-	-	245	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1328	-	-	-	560	826
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	796	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1328	-	-	-	545	826
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	774	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1328	-	-	-	624
HCM Lane V/C Ratio	0.027	-	-	-	0.141
HCM Control Delay (s)	7.8	-	-	-	11.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	189	0	0	235	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	205	0	0	255	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	205	0	0	460	460	205	460	460	255
Stage 1	-	-	-	-	-	-	205	205	-	255	255	-
Stage 2	-	-	-	-	-	-	255	255	-	205	205	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1310	-	-	1366	-	-	512	498	836	512	498	784
Stage 1	-	-	-	-	-	-	797	732	-	749	696	-
Stage 2	-	-	-	-	-	-	749	696	-	797	732	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1310	-	-	1366	-	-	512	498	836	512	498	784
Mov Cap-2 Maneuver	-	-	-	-	-	-	512	498	-	512	498	-
Stage 1	-	-	-	-	-	-	797	732	-	749	696	-
Stage 2	-	-	-	-	-	-	749	696	-	797	732	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1310	-	-	1366	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	234	0	0	227	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	254	0	0	247	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	254	0	0	501	501	254	501	501	247
Stage 1	-	-	-	-	-	-	254	254	-	247	247	-
Stage 2	-	-	-	-	-	-	247	247	-	254	254	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1319	-	-	1311	-	-	480	472	785	480	472	792
Stage 1	-	-	-	-	-	-	750	697	-	757	702	-
Stage 2	-	-	-	-	-	-	757	702	-	750	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1319	-	-	1311	-	-	480	472	785	480	472	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	480	472	-	480	472	-
Stage 1	-	-	-	-	-	-	750	697	-	757	702	-
Stage 2	-	-	-	-	-	-	757	702	-	750	697	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1319	-	-	1311	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	217	21	25	162	22	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	23	27	176	24	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	259	0	477	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1306	-	547	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	808	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1306	-	534	792
Mov Cap-2 Maneuver	-	-	-	-	534	-
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	603	-	-	1306	-
HCM Lane V/C Ratio	0.061	-	-	0.021	-
HCM Control Delay (s)	11.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	188	16	18	216	18	23
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	204	17	20	235	20	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	222	0	487	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	274	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1347	-	540	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1347	-	531	827
Mov Cap-2 Maneuver	-	-	-	-	531	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	664	-	-	1347	-
HCM Lane V/C Ratio	0.067	-	-	0.015	-
HCM Control Delay (s)	10.8	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	277	333	69	134	80
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	45	301	362	75	146	87
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	226	685	450	383	523	494
Arrive On Green	0.00	0.39	0.26	0.26	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	45	301	362	75	146	87
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	5.3	8.2	1.7	2.9	1.8
Cycle Q Clear(g_c), s	0.1	5.3	8.2	1.7	2.9	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	226	685	450	383	523	494
V/C Ratio(X)	0.20	0.44	0.80	0.20	0.28	0.18
Avail Cap(c_a), veh/h	297	997	665	565	523	494
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.7	9.6	14.8	12.4	10.5	10.1
Incr Delay (d2), s/veh	0.4	0.4	4.5	0.2	1.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	2.7	4.5	0.7	1.5	1.8
LnGrp Delay(d),s/veh	19.1	10.0	19.3	12.7	11.8	10.9
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		346	437		233	
Approach Delay, s/veh		11.2	18.2		11.5	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.5		20.0	5.6	16.8
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				7.3		4.9	2.1	10.2
Green Ext Time (p_c), s				4.2		0.5	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	90	348	279	130	121	85
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	98	378	303	141	132	92
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	686	406	345	523	494
Arrive On Green	0.02	0.39	0.23	0.23	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	98	378	303	141	132	92
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.7	7.1	6.8	3.4	2.6	1.9
Cycle Q Clear(g_c), s	0.7	7.1	6.8	3.4	2.6	1.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	256	686	406	345	523	494
V/C Ratio(X)	0.38	0.55	0.75	0.41	0.25	0.19
Avail Cap(c_a), veh/h	341	996	623	529	523	494
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.9	10.1	15.2	13.9	10.4	10.2
Incr Delay (d2), s/veh	0.9	0.7	2.8	0.8	1.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	3.5	3.6	1.5	1.3	1.9
LnGrp Delay(d),s/veh	17.9	10.8	18.0	14.7	11.6	11.0
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		476	444		224	
Approach Delay, s/veh		12.3	16.9		11.4	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.5		20.0	6.7	15.8
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				9.1		4.6	2.7	8.8
Green Ext Time (p_c), s				4.4		0.5	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	162	358	272	2	3	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	176	389	296	2	3	234

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	298	0	-	0	1038	297
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	741	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1263	-	-	-	256	742
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1263	-	-	-	220	742
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	405	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1263	-	-	-	719
HCM Lane V/C Ratio	0.139	-	-	-	0.33
HCM Control Delay (s)	8.3	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.4

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	199	340	333	7	0	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	216	370	362	8	0	198

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	370	0	-	0	1168	366
Stage 1	-	-	-	-	366	-
Stage 2	-	-	-	-	802	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1189	-	-	-	214	679
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1189	-	-	-	175	679
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	361	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1189	-	-	-	679
HCM Lane V/C Ratio	0.182	-	-	-	0.291
HCM Control Delay (s)	8.7	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	27	140	180	149	116	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	29	152	196	162	126	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	358	0	-	0	488	277
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	211	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1201	-	-	-	539	762
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1201	-	-	-	526	762
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1201	-	-	-	578
HCM Lane V/C Ratio	0.024	-	-	-	0.307
HCM Control Delay (s)	8.1	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	71	176	177	165	177	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	77	191	192	179	192	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	372	0	-	0	628	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	346	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1186	-	-	-	447	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1186	-	-	-	418	757
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	670	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1186	-	-	-	467
HCM Lane V/C Ratio	0.065	-	-	-	0.538
HCM Control Delay (s)	8.2	-	-	-	21.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3.1

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	184	134	24	31	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	200	146	26	34	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	444	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1405	-	-	-	571	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1405	-	-	-	554	886
Mov Cap-2 Maneuver	-	-	-	-	554	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1405	-	-	-	677
HCM Lane V/C Ratio	0.03	-	-	-	0.096
HCM Control Delay (s)	7.6	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	205	234	66	39	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	223	254	72	42	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	598	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1234	-	-	-	465	749
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1234	-	-	-	449	749
Mov Cap-2 Maneuver	-	-	-	-	449	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	720	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1234	-	-	-	556
HCM Lane V/C Ratio	0.034	-	-	-	0.147
HCM Control Delay (s)	8	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	167	0	0	229	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	182	0	0	249	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	182	0	0	431	431	182	431	431	249
Stage 1	-	-	-	-	-	-	182	182	-	249	249	-
Stage 2	-	-	-	-	-	-	249	249	-	182	182	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1317	-	-	1393	-	-	535	517	861	535	517	790
Stage 1	-	-	-	-	-	-	820	749	-	755	701	-
Stage 2	-	-	-	-	-	-	755	701	-	820	749	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1317	-	-	1393	-	-	535	517	861	535	517	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	535	517	-	535	517	-
Stage 1	-	-	-	-	-	-	820	749	-	755	701	-
Stage 2	-	-	-	-	-	-	755	701	-	820	749	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1317	-	-	1393	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	321	0	0	260	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	349	0	0	283	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	283	0	0	349	0	0	632	632	349	632	632	283
Stage 1	-	-	-	-	-	-	349	349	-	283	283	-
Stage 2	-	-	-	-	-	-	283	283	-	349	349	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1279	-	-	1210	-	-	393	398	694	393	398	756
Stage 1	-	-	-	-	-	-	667	633	-	724	677	-
Stage 2	-	-	-	-	-	-	724	677	-	667	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1210	-	-	393	398	694	393	398	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	393	398	-	393	398	-
Stage 1	-	-	-	-	-	-	667	633	-	724	677	-
Stage 2	-	-	-	-	-	-	724	677	-	667	633	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1279	-	-	1210	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	208	15	17	162	24	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	226	16	18	176	26	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	242	0	447	234
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	213	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1324	-	569	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1324	-	560	805
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	661	-	-	1324	-
HCM Lane V/C Ratio	0.079	-	-	0.014	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	229	26	23	261	30	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	249	28	25	284	33	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	277	0	597	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1286	-	466	776
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1286	-	455	776
Mov Cap-2 Maneuver	-	-	-	-	455	-
Stage 1	-	-	-	-	781	-
Stage 2	-	-	-	-	708	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	535	-	-	1286	-
HCM Lane V/C Ratio	0.095	-	-	0.019	-
HCM Control Delay (s)	12.4	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	52	229	369	86	113	137
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	57	249	401	93	123	149
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	212	717	475	404	508	480
Arrive On Green	0.00	0.41	0.27	0.27	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	57	249	401	93	123	149
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	4.3	9.4	2.1	2.5	3.3
Cycle Q Clear(g_c), s	0.1	4.3	9.4	2.1	2.5	3.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	212	717	475	404	508	480
V/C Ratio(X)	0.27	0.35	0.84	0.23	0.24	0.31
Avail Cap(c_a), veh/h	281	967	645	548	508	480
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.1	9.0	15.1	12.5	11.0	11.2
Incr Delay (d2), s/veh	0.7	0.3	7.6	0.3	1.1	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	2.1	5.6	0.9	1.3	3.2
LnGrp Delay(d),s/veh	20.8	9.3	22.7	12.8	12.1	12.9
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		306	494		272	
Approach Delay, s/veh		11.4	20.8		12.6	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.8		20.0	6.0	17.8
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				6.3		5.3	2.1	11.4
Green Ext Time (p_c), s				4.3		0.6	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	105	286	426	103	117	92
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	114	311	463	112	127	100
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	239	817	565	480	473	447
Arrive On Green	0.02	0.46	0.32	0.32	0.30	0.30
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	114	311	463	112	127	100
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.2	5.8	12.2	2.8	3.1	2.5
Cycle Q Clear(g_c), s	1.2	5.8	12.2	2.8	3.1	2.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	239	817	565	480	473	447
V/C Ratio(X)	0.48	0.38	0.82	0.23	0.27	0.22
Avail Cap(c_a), veh/h	328	1158	807	686	473	447
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.0	8.8	15.8	12.6	13.5	13.3
Incr Delay (d2), s/veh	1.5	0.3	4.5	0.2	1.4	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	2.8	6.6	1.2	1.5	2.5
LnGrp Delay(d),s/veh	19.5	9.1	20.3	12.8	14.8	14.4
LnGrp LOS	B	A	C	B	B	B
Approach Vol, veh/h		425	575		227	
Approach Delay, s/veh		11.9	18.8		14.7	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.3		21.0	7.2	22.1
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				7.8		5.1	3.2	14.2
Green Ext Time (p_c), s				5.8		0.5	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	102	292	299	0	0	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	111	317	325	0	0	199

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	325	0	-	0	864	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	539	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1235	-	-	-	325	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1235	-	-	-	296	716
Mov Cap-2 Maneuver	-	-	-	-	296	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	532	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1235	-	-	-	716
HCM Lane V/C Ratio	0.09	-	-	-	0.278
HCM Control Delay (s)	8.2	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	143	291	316	0	4	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	155	316	343	0	4	199

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	343	0	-	0	970	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	627	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1216	-	-	-	281	700
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	532	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1216	-	-	-	245	700
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	464	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1216	-	-	-	673
HCM Lane V/C Ratio	0.128	-	-	-	0.302
HCM Control Delay (s)	8.4	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.3

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	71	149	132	136	118	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	77	162	143	148	128	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	291	0	-	0	533	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	316	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1271	-	-	-	507	823
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1271	-	-	-	476	823
Mov Cap-2 Maneuver	-	-	-	-	476	-
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1271	-	-	-	540
HCM Lane V/C Ratio	0.061	-	-	-	0.33
HCM Control Delay (s)	8	-	-	-	14.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	56	195	169	139	127	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	90	-	-	-	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	61	212	184	151	138	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	335	0	-	0	593	259
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1224	-	-	-	468	780
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1224	-	-	-	445	780
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	689	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1224	-	-	-	446
HCM Lane V/C Ratio	0.05	-	-	-	0.312
HCM Control Delay (s)	8.1	-	-	-	16.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.3

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	176	136	39	47	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	25	191	148	42	51	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	190	0	-	0	410	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1384	-	-	-	598	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	799	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1384	-	-	-	587	875
Mov Cap-2 Maneuver	-	-	-	-	587	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1384	-	-	-	681
HCM Lane V/C Ratio	0.018	-	-	-	0.129
HCM Control Delay (s)	7.6	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	33	161	175	47	52	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	36	175	190	51	57	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	241	0	-	0	463	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	247	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1326	-	-	-	557	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	794	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1326	-	-	-	542	824
Mov Cap-2 Maneuver	-	-	-	-	542	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	772	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1326	-	-	-	620
HCM Lane V/C Ratio	0.027	-	-	-	0.144
HCM Control Delay (s)	7.8	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	191	0	0	237	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	208	0	0	258	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	258	0	0	208	0	0	466	466	208	466	466	258
Stage 1	-	-	-	-	-	-	208	208	-	258	258	-
Stage 2	-	-	-	-	-	-	258	258	-	208	208	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1307	-	-	1363	-	-	507	494	832	507	494	781
Stage 1	-	-	-	-	-	-	794	730	-	747	694	-
Stage 2	-	-	-	-	-	-	747	694	-	794	730	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1307	-	-	1363	-	-	507	494	832	507	494	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	507	494	-	507	494	-
Stage 1	-	-	-	-	-	-	794	730	-	747	694	-
Stage 2	-	-	-	-	-	-	747	694	-	794	730	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1307	-	-	1363	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	236	0	0	229	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
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	257	0	0	249	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	257	0	0	506	506	257	506	506	249
Stage 1	-	-	-	-	-	-	257	257	-	249	249	-
Stage 2	-	-	-	-	-	-	249	249	-	257	257	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1317	-	-	1308	-	-	477	469	782	477	469	790
Stage 1	-	-	-	-	-	-	748	695	-	755	701	-
Stage 2	-	-	-	-	-	-	755	701	-	748	695	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1317	-	-	1308	-	-	477	469	782	477	469	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	477	469	-	477	469	-
Stage 1	-	-	-	-	-	-	748	695	-	755	701	-
Stage 2	-	-	-	-	-	-	755	701	-	748	695	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1317	-	-	1308	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	219	21	25	164	22	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	23	27	178	24	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	261	0	482	249
Stage 1	-	-	-	-	249	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1303	-	543	790
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1303	-	531	790
Mov Cap-2 Maneuver	-	-	-	-	531	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	600	-	-	1303	-
HCM Lane V/C Ratio	0.062	-	-	0.021	-
HCM Control Delay (s)	11.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	190	16	18	218	18	23
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	207	17	20	237	20	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	224	0	491	215
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	276	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1345	-	537	825
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1345	-	528	825
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	758	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	662	-	-	1345	-
HCM Lane V/C Ratio	0.067	-	-	0.015	-
HCM Control Delay (s)	10.8	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	49	329	396	82	160	95
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	49	329	396	82	160	95
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	218	714	479	407	509	481
Arrive On Green	0.00	0.40	0.27	0.27	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	49	329	396	82	160	95
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	6.0	9.2	1.8	3.3	2.0
Cycle Q Clear(g_c), s	0.1	6.0	9.2	1.8	3.3	2.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	218	714	479	407	509	481
V/C Ratio(X)	0.22	0.46	0.83	0.20	0.31	0.20
Avail Cap(c_a), veh/h	287	970	647	550	509	481
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	19.5	9.5	14.9	12.2	11.2	10.8
Incr Delay (d2), s/veh	0.5	0.5	6.5	0.2	1.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	2.9	5.3	0.8	1.7	2.0
LnGrp Delay(d),s/veh	20.0	10.0	21.4	12.5	12.8	11.7
LnGrp LOS	B	A	C	B	B	B
Approach Vol, veh/h		378	478		255	
Approach Delay, s/veh		11.3	19.9		12.4	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.6		20.0	5.8	17.9
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				8.0		5.3	2.1	11.2
Green Ext Time (p_c), s				4.6		0.6	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	107	414	331	155	144	101
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	107	414	331	155	144	101
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	244	693	418	355	536	506
Arrive On Green	0.02	0.39	0.24	0.24	0.34	0.34
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	107	414	331	155	144	101
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.9	8.3	7.8	3.9	2.9	2.1
Cycle Q Clear(g_c), s	0.9	8.3	7.8	3.9	2.9	2.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	244	693	418	355	536	506
V/C Ratio(X)	0.44	0.60	0.79	0.44	0.27	0.20
Avail Cap(c_a), veh/h	318	913	556	472	536	506
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.6	10.7	15.9	14.4	10.7	10.5
Incr Delay (d2), s/veh	1.2	0.8	5.7	0.8	1.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.0	4.1	4.4	1.7	1.5	2.2
LnGrp Delay(d),s/veh	18.8	11.5	21.6	15.3	12.0	11.3
LnGrp LOS	B	B	C	B	B	B
Approach Vol, veh/h		521	486		245	
Approach Delay, s/veh		13.0	19.6		11.7	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.4		21.0	6.9	16.5
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				25.0		17.0	5.0	16.0
Max Q Clear Time (g_c+I1), s				10.3		4.9	2.9	9.8
Green Ext Time (p_c), s				4.6		0.6	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	192	425	323	2	4	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	192	425	323	2	4	256

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	325	0	-	0	1133	324
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	809	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1235	-	-	-	224	717
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1235	-	-	-	189	717
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	370	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1235	-	-	-	687
HCM Lane V/C Ratio	0.155	-	-	-	0.378
HCM Control Delay (s)	8.5	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	1.8

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	236	404	396	8	0	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	404	396	8	0	216

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	404	0	-	0	1276	400
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1155	-	-	-	184	650
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1155	-	-	-	146	650
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	324	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1155	-	-	-	650
HCM Lane V/C Ratio	0.204	-	-	-	0.332
HCM Control Delay (s)	8.9	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	1.5

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	32	167	214	178	138	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	167	214	178	138	56

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	392	0	-	0	534	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1167	-	-	-	507	737
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1167	-	-	-	493	737
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1167	-	-	-	545
HCM Lane V/C Ratio	0.027	-	-	-	0.356
HCM Control Delay (s)	8.2	-	-	-	15.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	84	209	210	196	210	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	209	210	196	210	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	406	0	-	0	685	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1153	-	-	-	414	732
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1153	-	-	-	384	732
Mov Cap-2 Maneuver	-	-	-	-	384	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	26.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1153	-	-	-	432
HCM Lane V/C Ratio	0.073	-	-	-	0.634
HCM Control Delay (s)	8.4	-	-	-	26.7
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	4.3

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	47	218	160	29	37	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	218	160	29	37	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	189	0	-	0	487	175
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	312	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1385	-	-	-	540	868
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	742	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1385	-	-	-	522	868
Mov Cap-2 Maneuver	-	-	-	-	522	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1385	-	-	-	647
HCM Lane V/C Ratio	0.034	-	-	-	0.111
HCM Control Delay (s)	7.7	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	47	244	278	78	47	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	244	278	78	47	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	356	0	-	0	655	317
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	338	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1203	-	-	-	431	724
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1203	-	-	-	414	724
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1203	-	-	-	520
HCM Lane V/C Ratio	0.039	-	-	-	0.173
HCM Control Delay (s)	8.1	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	198	0	0	272	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	198	0	0	272	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	198	0	0	470	470	198	470	470	272
Stage 1	-	-	-	-	-	-	198	198	-	272	272	-
Stage 2	-	-	-	-	-	-	272	272	-	198	198	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1291	-	-	1375	-	-	504	492	843	504	492	767
Stage 1	-	-	-	-	-	-	804	737	-	734	685	-
Stage 2	-	-	-	-	-	-	734	685	-	804	737	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1291	-	-	1375	-	-	504	492	843	504	492	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	492	-	504	492	-
Stage 1	-	-	-	-	-	-	804	737	-	734	685	-
Stage 2	-	-	-	-	-	-	734	685	-	804	737	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1291	-	-	1375	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	382	0	0	308	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	382	0	0	308	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	308	0	0	382	0	0	690	690	382	690	690	308
Stage 1	-	-	-	-	-	-	382	382	-	308	308	-
Stage 2	-	-	-	-	-	-	308	308	-	382	382	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1253	-	-	1176	-	-	359	368	665	359	368	732
Stage 1	-	-	-	-	-	-	640	613	-	702	660	-
Stage 2	-	-	-	-	-	-	702	660	-	640	613	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1253	-	-	1176	-	-	359	368	665	359	368	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	359	368	-	359	368	-
Stage 1	-	-	-	-	-	-	640	613	-	702	660	-
Stage 2	-	-	-	-	-	-	702	660	-	640	613	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1253	-	-	1176	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	247	18	20	192	29	29
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	247	18	20	192	29	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	265	0	488	256
Stage 1	-	-	-	-	256	-
Stage 2	-	-	-	-	232	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1299	-	539	783
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1299	-	530	783
Mov Cap-2 Maneuver	-	-	-	-	530	-
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	632	-	-	1299	-
HCM Lane V/C Ratio	0.092	-	-	0.015	-
HCM Control Delay (s)	11.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	272	31	28	310	36	20
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	31	28	310	36	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	303	0	654	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	366	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1258	-	431	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1258	-	419	751
Mov Cap-2 Maneuver	-	-	-	-	419	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	1258	-
HCM Lane V/C Ratio	0.112	-	-	0.022	-
HCM Control Delay (s)	13.1	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	61	272	438	102	134	163
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	61	272	438	102	134	163
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	207	752	512	436	491	464
Arrive On Green	0.00	0.43	0.29	0.29	0.31	0.31
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	61	272	438	102	134	163
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	4.7	10.6	2.3	2.9	3.8
Cycle Q Clear(g_c), s	0.1	4.7	10.6	2.3	2.9	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	207	752	512	436	491	464
V/C Ratio(X)	0.29	0.36	0.85	0.23	0.27	0.35
Avail Cap(c_a), veh/h	412	1130	662	563	491	464
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.5	8.8	15.2	12.2	11.8	12.1
Incr Delay (d2), s/veh	0.8	0.3	8.6	0.3	1.4	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	2.3	6.3	1.0	1.5	3.7
LnGrp Delay(d),s/veh	21.3	9.1	23.7	12.5	13.2	14.2
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		333	540		297	
Approach Delay, s/veh		11.3	21.6		13.8	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				25.3		20.0	6.1	19.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				31.0		16.0	8.0	19.0
Max Q Clear Time (g_c+I1), s				6.7		5.8	2.1	12.6
Green Ext Time (p_c), s				5.0		0.7	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	125	340	506	122	139	109
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	125	340	506	122	139	109
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	233	850	601	511	457	432
Arrive On Green	0.03	0.48	0.34	0.34	0.29	0.29
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	125	340	506	122	139	109
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.3	6.4	13.8	3.0	3.6	2.9
Cycle Q Clear(g_c), s	1.3	6.4	13.8	3.0	3.6	2.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	233	850	601	511	457	432
V/C Ratio(X)	0.54	0.40	0.84	0.24	0.30	0.25
Avail Cap(c_a), veh/h	314	1119	780	663	457	432
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.5	8.7	15.9	12.3	14.5	14.2
Incr Delay (d2), s/veh	1.9	0.3	6.6	0.2	1.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.3	3.2	7.7	1.3	1.8	2.9
LnGrp Delay(d),s/veh	20.4	9.0	22.5	12.6	16.2	15.6
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		465	628		248	
Approach Delay, s/veh		12.1	20.6		15.9	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				31.1		21.0	7.3	23.7
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				8.4		5.6	3.3	15.8
Green Ext Time (p_c), s				6.4		0.6	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	121	347	355	0	0	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	347	355	0	0	217

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	355	0	-	0	944	355
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1204	-	-	-	291	689
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1204	-	-	-	262	689
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	498	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1204	-	-	-	689
HCM Lane V/C Ratio	0.1	-	-	-	0.315
HCM Control Delay (s)	8.3	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.3

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	170	346	376	0	5	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	170	346	376	0	5	217

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	376	0	-	0	1062	376
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	686	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1182	-	-	-	247	670
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1182	-	-	-	211	670
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	428	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1182	-	-	-	639
HCM Lane V/C Ratio	0.144	-	-	-	0.347
HCM Control Delay (s)	8.6	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.6

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	84	178	157	162	140	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	178	157	162	140	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	319	0	-	0	584	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	346	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1241	-	-	-	474	801
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1241	-	-	-	442	801
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1241	-	-	-	506
HCM Lane V/C Ratio	0.068	-	-	-	0.385
HCM Control Delay (s)	8.1	-	-	-	16.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	66	232	200	166	151	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	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	232	200	166	151	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	366	0	-	0	647	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1193	-	-	-	436	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1193	-	-	-	412	756
Mov Cap-2 Maneuver	-	-	-	-	412	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1193	-	-	-	413
HCM Lane V/C Ratio	0.055	-	-	-	0.368
HCM Control Delay (s)	8.2	-	-	-	18.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	209	162	47	56	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	209	162	47	56	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	209	0	-	0	451	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	265	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1362	-	-	-	566	856
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1362	-	-	-	554	856
Mov Cap-2 Maneuver	-	-	-	-	554	-
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	763	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1362	-	-	-	651
HCM Lane V/C Ratio	0.021	-	-	-	0.149
HCM Control Delay (s)	7.7	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	40	191	208	56	61	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	191	208	56	61	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	264	0	-	0	507	236
Stage 1	-	-	-	-	236	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1300	-	-	-	525	803
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1300	-	-	-	509	803
Mov Cap-2 Maneuver	-	-	-	-	509	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1300	-	-	-	589
HCM Lane V/C Ratio	0.031	-	-	-	0.165
HCM Control Delay (s)	7.9	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	227	0	0	282	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	227	0	0	282	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	227	0	0	509	509	227	509	509	282
Stage 1	-	-	-	-	-	-	227	227	-	282	282	-
Stage 2	-	-	-	-	-	-	282	282	-	227	227	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1280	-	-	1341	-	-	475	467	812	475	467	757
Stage 1	-	-	-	-	-	-	776	716	-	725	678	-
Stage 2	-	-	-	-	-	-	725	678	-	776	716	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1280	-	-	1341	-	-	475	467	812	475	467	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	475	467	-	475	467	-
Stage 1	-	-	-	-	-	-	776	716	-	725	678	-
Stage 2	-	-	-	-	-	-	725	678	-	776	716	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1280	-	-	1341	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	281	0	0	272	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	281	0	0	272	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	281	0	0	553	553	281	553	553	272
Stage 1	-	-	-	-	-	-	281	281	-	272	272	-
Stage 2	-	-	-	-	-	-	272	272	-	281	281	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1291	-	-	1282	-	-	444	441	758	444	441	767
Stage 1	-	-	-	-	-	-	726	678	-	734	685	-
Stage 2	-	-	-	-	-	-	734	685	-	726	678	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1291	-	-	1282	-	-	444	441	758	444	441	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	444	441	-	444	441	-
Stage 1	-	-	-	-	-	-	726	678	-	734	685	-
Stage 2	-	-	-	-	-	-	734	685	-	726	678	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1291	-	-	1282	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	260	25	30	194	26	14
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	260	25	30	194	26	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	285	0	527	273
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	254	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1277	-	512	766
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1277	-	499	766
Mov Cap-2 Maneuver	-	-	-	-	499	-
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	568	-	-	1277	-
HCM Lane V/C Ratio	0.07	-	-	0.023	-
HCM Control Delay (s)	11.8	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	226	19	22	259	22	28
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	226	19	22	259	22	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	245	0	539	236
Stage 1	-	-	-	-	236	-
Stage 2	-	-	-	-	303	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1321	-	503	803
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	749	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1321	-	493	803
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	629	-	-	1321	-
HCM Lane V/C Ratio	0.079	-	-	0.017	-
HCM Control Delay (s)	11.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	328	337	68	135	79
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	45	357	366	74	147	86
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	229	693	460	391	519	490
Arrive On Green	0.00	0.39	0.26	0.26	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	45	357	366	74	147	86
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	6.6	8.3	1.6	2.9	1.8
Cycle Q Clear(g_c), s	0.1	6.6	8.3	1.6	2.9	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	229	693	460	391	519	490
V/C Ratio(X)	0.20	0.52	0.80	0.19	0.28	0.18
Avail Cap(c_a), veh/h	299	989	659	561	519	490
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.7	9.9	14.8	12.3	10.7	10.3
Incr Delay (d2), s/veh	0.4	0.6	4.4	0.2	1.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	3.3	4.5	0.7	1.5	1.8
LnGrp Delay(d),s/veh	19.1	10.5	19.2	12.5	12.1	11.1
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		402	440		233	
Approach Delay, s/veh		11.5	18.1		11.7	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.8		20.0	5.7	17.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				8.6		4.9	2.1	10.3
Green Ext Time (p_c), s				4.5		0.5	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	89	376	319	131	121	84
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	97	409	347	142	132	91
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	247	716	442	376	508	480
Arrive On Green	0.02	0.41	0.25	0.25	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	97	409	347	142	132	91
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.8	7.8	8.0	3.4	2.7	1.9
Cycle Q Clear(g_c), s	0.8	7.8	8.0	3.4	2.7	1.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	247	716	442	376	508	480
V/C Ratio(X)	0.39	0.57	0.78	0.38	0.26	0.19
Avail Cap(c_a), veh/h	328	968	605	514	508	480
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.2	10.1	15.3	13.6	11.0	10.8
Incr Delay (d2), s/veh	1.0	0.7	4.7	0.6	1.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	3.9	4.4	1.5	1.3	2.0
LnGrp Delay(d),s/veh	18.2	10.8	19.9	14.2	12.3	11.6
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		506	489		223	
Approach Delay, s/veh		12.2	18.3		12.0	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.7		20.0	6.8	17.0
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				9.8		4.7	2.8	10.0
Green Ext Time (p_c), s				4.8		0.5	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	160	411	277	2	4	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	174	447	301	2	4	232

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	303	0	-	0	1097	302
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	795	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1258	-	-	-	236	738
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1258	-	-	-	203	738
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	383	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	-	704
HCM Lane V/C Ratio	0.138	-	-	-	0.335
HCM Control Delay (s)	8.3	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.5

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	197	370	375	8	1	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	214	402	408	9	1	196

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	416	0	-	0	1242	412
Stage 1	-	-	-	-	412	-
Stage 2	-	-	-	-	830	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1143	-	-	-	193	640
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	428	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1143	-	-	-	157	640
Mov Cap-2 Maneuver	-	-	-	-	157	-
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	348	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1143	-	-	-	629
HCM Lane V/C Ratio	0.187	-	-	-	0.313
HCM Control Delay (s)	8.9	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.3

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	27	197	186	149	123	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	29	214	202	162	134	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	364	0	-	0	556	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1195	-	-	-	492	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	480	756
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1195	-	-	-	534
HCM Lane V/C Ratio	0.025	-	-	-	0.346
HCM Control Delay (s)	8.1	-	-	-	15.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.5

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	70	207	221	169	180	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	76	225	240	184	196	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	424	0	-	0	709	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1135	-	-	-	401	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1135	-	-	-	374	710
Mov Cap-2 Maneuver	-	-	-	-	374	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	648	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	25.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1135	-	-	-	419
HCM Lane V/C Ratio	0.067	-	-	-	0.604
HCM Control Delay (s)	8.4	-	-	-	25.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	3.9

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	248	142	24	31	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	270	154	26	34	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	180	0	-	0	521	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1396	-	-	-	516	877
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1396	-	-	-	500	877
Mov Cap-2 Maneuver	-	-	-	-	500	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	689	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1396	-	-	-	631
HCM Lane V/C Ratio	0.03	-	-	-	0.103
HCM Control Delay (s)	7.7	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	241	284	65	39	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	262	309	71	42	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	379	0	-	0	691	344
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1179	-	-	-	410	699
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	395	699
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	690	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	499
HCM Lane V/C Ratio	0.036	-	-	-	0.163
HCM Control Delay (s)	8.2	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	165	26	19	227	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
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	43	179	28	21	247	30	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	277	0	0	208	0	0	586	598	193	585	598	262
Stage 1	-	-	-	-	-	-	280	280	-	303	303	-
Stage 2	-	-	-	-	-	-	306	318	-	282	295	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1286	-	-	1363	-	-	422	416	849	422	416	777
Stage 1	-	-	-	-	-	-	727	679	-	706	664	-
Stage 2	-	-	-	-	-	-	704	654	-	725	669	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1286	-	-	1363	-	-	401	393	849	403	393	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	401	393	-	403	393	-
Stage 1	-	-	-	-	-	-	699	653	-	679	652	-
Stage 2	-	-	-	-	-	-	686	642	-	695	644	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.5	11.7	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	401	849	1286	-	-	1363	-	-	403	777
HCM Lane V/C Ratio	0.008	0.004	0.034	-	-	0.015	-	-	0.011	0.007
HCM Control Delay (s)	14.1	9.3	7.9	0	-	7.7	0	-	14	9.7
HCM Lane LOS	B	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	318	15	11	257	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
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	25	346	16	12	279	17	23	0	16	25	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	297	0	0	362	0	0	733	725	354	724	724	288
Stage 1	-	-	-	-	-	-	404	404	-	312	312	-
Stage 2	-	-	-	-	-	-	329	321	-	412	412	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1264	-	-	1197	-	-	336	352	690	341	352	751
Stage 1	-	-	-	-	-	-	623	599	-	699	658	-
Stage 2	-	-	-	-	-	-	684	652	-	617	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1264	-	-	1197	-	-	311	339	690	324	339	751
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	339	-	324	339	-
Stage 1	-	-	-	-	-	-	607	584	-	682	650	-
Stage 2	-	-	-	-	-	-	644	644	-	587	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.3	14.5	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	311	690	1264	-	-	1197	-	-	324	751
HCM Lane V/C Ratio	0.073	0.024	0.02	-	-	0.01	-	-	0.077	0.046
HCM Control Delay (s)	17.5	10.3	7.9	0	-	8	0	-	17	10
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	208	20	17	174	58	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	226	22	18	189	63	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	248	0	463	237
Stage 1	-	-	-	-	237	-
Stage 2	-	-	-	-	226	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1318	-	557	802
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1318	-	549	802
Mov Cap-2 Maneuver	-	-	-	-	549	-
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	800	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	605	-	-	1318	-
HCM Lane V/C Ratio	0.147	-	-	0.014	-
HCM Control Delay (s)	12	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	238	53	23	266	50	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	259	58	25	289	54	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	316	0	627	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	339	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1244	-	447	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1244	-	436	751
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	488	-	-	1244	-
HCM Lane V/C Ratio	0.149	-	-	0.02	-
HCM Control Delay (s)	13.7	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	51	281	372	85	114	136
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	55	305	404	92	124	148
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	210	714	474	403	509	481
Arrive On Green	0.00	0.40	0.27	0.27	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	55	305	404	92	124	148
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	5.4	9.5	2.1	2.5	3.2
Cycle Q Clear(g_c), s	0.1	5.4	9.5	2.1	2.5	3.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	210	714	474	403	509	481
V/C Ratio(X)	0.26	0.43	0.85	0.23	0.24	0.31
Avail Cap(c_a), veh/h	315	970	606	515	509	481
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.1	9.4	15.2	12.4	10.9	11.2
Incr Delay (d2), s/veh	0.7	0.4	9.2	0.3	1.1	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	2.7	5.8	0.9	1.3	3.2
LnGrp Delay(d),s/veh	20.8	9.8	24.3	12.7	12.1	12.8
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		360	496		272	
Approach Delay, s/veh		11.4	22.2		12.5	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.7		20.0	5.9	17.7
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				7.4		5.2	2.1	11.5
Green Ext Time (p_c), s				4.6		0.6	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	104	314	465	104	117	91
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	113	341	505	113	127	99
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	230	846	600	510	459	434
Arrive On Green	0.02	0.48	0.34	0.34	0.29	0.29
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	113	341	505	113	127	99
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.2	6.5	13.7	2.8	3.2	2.6
Cycle Q Clear(g_c), s	1.2	6.5	13.7	2.8	3.2	2.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	230	846	600	510	459	434
V/C Ratio(X)	0.49	0.40	0.84	0.22	0.28	0.23
Avail Cap(c_a), veh/h	316	1123	783	665	459	434
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.3	8.7	15.8	12.2	14.2	14.0
Incr Delay (d2), s/veh	1.6	0.3	6.5	0.2	1.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	3.2	7.7	1.2	1.6	2.6
LnGrp Delay(d),s/veh	19.9	9.0	22.3	12.4	15.7	15.2
LnGrp LOS	B	A	C	B	B	B
Approach Vol, veh/h		454	618		226	
Approach Delay, s/veh		11.7	20.5		15.5	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				30.8		21.0	7.2	23.6
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				8.5		5.2	3.2	15.7
Green Ext Time (p_c), s				6.4		0.5	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	101	346	304	0	1	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	110	376	330	0	1	197

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	330	0	-	0	926	330
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	596	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1229	-	-	-	298	712
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1229	-	-	-	271	712
Mov Cap-2 Maneuver	-	-	-	-	271	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	501	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1229	-	-	-	706
HCM Lane V/C Ratio	0.089	-	-	-	0.28
HCM Control Delay (s)	8.2	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	142	321	358	1	5	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	154	349	389	1	5	197

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	390	0	-	0	1048	390
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	658	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1169	-	-	-	252	658
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	515	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1169	-	-	-	219	658
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1169	-	-	-	624
HCM Lane V/C Ratio	0.132	-	-	-	0.324
HCM Control Delay (s)	8.5	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.4

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	70	206	139	136	125	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	76	224	151	148	136	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	299	0	-	0	601	225
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	376	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1262	-	-	-	463	814
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1262	-	-	-	435	814
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	652	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1262	-	-	-	497
HCM Lane V/C Ratio	0.06	-	-	-	0.374
HCM Control Delay (s)	8	-	-	-	16.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	55	226	213	144	131	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	90	-	-	-	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	60	246	232	157	142	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	388	0	-	0	675	310
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1170	-	-	-	419	730
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1170	-	-	-	398	730
Mov Cap-2 Maneuver	-	-	-	-	398	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	666	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1170	-	-	-	399
HCM Lane V/C Ratio	0.051	-	-	-	0.36
HCM Control Delay (s)	8.2	-	-	-	19
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.6

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	240	144	39	47	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	25	261	157	42	51	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	199	0	-	0	489	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1373	-	-	-	538	865
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1373	-	-	-	528	865
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1373	-	-	-	631
HCM Lane V/C Ratio	0.018	-	-	-	0.14
HCM Control Delay (s)	7.7	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	33	197	225	47	51	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	36	214	245	51	55	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	296	0	-	0	556	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1265	-	-	-	492	769
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1265	-	-	-	478	769
Mov Cap-2 Maneuver	-	-	-	-	478	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	741	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1265	-	-	-	556
HCM Lane V/C Ratio	0.028	-	-	-	0.158
HCM Control Delay (s)	7.9	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	189	26	19	235	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
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	43	205	28	21	255	30	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	286	0	0	234	0	0	622	634	220	620	633	271
Stage 1	-	-	-	-	-	-	307	307	-	312	312	-
Stage 2	-	-	-	-	-	-	315	327	-	308	321	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1276	-	-	1333	-	-	399	397	820	400	397	768
Stage 1	-	-	-	-	-	-	703	661	-	699	658	-
Stage 2	-	-	-	-	-	-	696	648	-	702	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1276	-	-	1333	-	-	379	374	820	381	374	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	374	-	381	374	-
Stage 1	-	-	-	-	-	-	676	635	-	672	645	-
Stage 2	-	-	-	-	-	-	678	636	-	672	627	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.5	12	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	379	820	1276	-	-	1333	-	-	381	768
HCM Lane V/C Ratio	0.009	0.004	0.034	-	-	0.015	-	-	0.011	0.007
HCM Control Delay (s)	14.6	9.4	7.9	0	-	7.7	0	-	14.6	9.7
HCM Lane LOS	B	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	234	15	11	227	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
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	25	254	16	12	247	17	23	0	16	25	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	264	0	0	271	0	0	610	601	263	600	600	255
Stage 1	-	-	-	-	-	-	313	313	-	279	279	-
Stage 2	-	-	-	-	-	-	297	288	-	321	321	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1300	-	-	1292	-	-	407	414	776	413	415	784
Stage 1	-	-	-	-	-	-	698	657	-	728	680	-
Stage 2	-	-	-	-	-	-	712	674	-	691	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1300	-	-	1292	-	-	379	400	776	394	401	784
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	400	-	394	401	-
Stage 1	-	-	-	-	-	-	682	642	-	711	673	-
Stage 2	-	-	-	-	-	-	673	667	-	661	637	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.3	12.9	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	379	776	1300	-	-	1292	-	-	394	784
HCM Lane V/C Ratio	0.06	0.021	0.019	-	-	0.009	-	-	0.063	0.044
HCM Control Delay (s)	15.1	9.7	7.8	0	-	7.8	0	-	14.8	9.8
HCM Lane LOS	C	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	219	26	25	176	56	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	28	27	191	61	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	266	0	498	252
Stage 1	-	-	-	-	252	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1298	-	532	787
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1298	-	520	787
Mov Cap-2 Maneuver	-	-	-	-	520	-
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	777	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	553	-	-	1298	-
HCM Lane V/C Ratio	0.134	-	-	0.021	-
HCM Control Delay (s)	12.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	199	43	18	224	38	23
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	216	47	20	243	41	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	263	0	523	240
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	283	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1301	-	514	799
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1301	-	505	799
Mov Cap-2 Maneuver	-	-	-	-	505	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	586	-	-	1301	-
HCM Lane V/C Ratio	0.113	-	-	0.015	-
HCM Control Delay (s)	11.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	41	331	340	69	136	80
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	45	360	370	75	148	87
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	228	696	463	394	518	489
Arrive On Green	0.00	0.39	0.26	0.26	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	45	360	370	75	148	87
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	6.7	8.4	1.7	3.0	1.8
Cycle Q Clear(g_c), s	0.1	6.7	8.4	1.7	3.0	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	228	696	463	394	518	489
V/C Ratio(X)	0.20	0.52	0.80	0.19	0.29	0.18
Avail Cap(c_a), veh/h	298	986	658	559	518	489
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.7	9.9	14.8	12.3	10.8	10.4
Incr Delay (d2), s/veh	0.4	0.6	4.6	0.2	1.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	3.3	4.6	0.7	1.5	1.8
LnGrp Delay(d),s/veh	19.1	10.5	19.4	12.5	12.1	11.1
LnGrp LOS	B	B	B	B	B	B
Approach Vol, veh/h		405	445		235	
Approach Delay, s/veh		11.4	18.2		11.8	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.9		20.0	5.7	17.3
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				8.7		5.0	2.1	10.4
Green Ext Time (p_c), s				4.5		0.5	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	90	379	322	132	122	85
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	98	412	350	143	133	92
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	247	718	445	378	507	479
Arrive On Green	0.02	0.41	0.25	0.25	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	98	412	350	143	133	92
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.8	7.9	8.1	3.5	2.7	1.9
Cycle Q Clear(g_c), s	0.8	7.9	8.1	3.5	2.7	1.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	247	718	445	378	507	479
V/C Ratio(X)	0.40	0.57	0.79	0.38	0.26	0.19
Avail Cap(c_a), veh/h	327	966	604	513	507	479
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.2	10.1	15.3	13.6	11.1	10.8
Incr Delay (d2), s/veh	1.0	0.7	4.8	0.6	1.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	3.9	4.5	1.5	1.4	2.0
LnGrp Delay(d),s/veh	18.2	10.8	20.1	14.2	12.3	11.7
LnGrp LOS	B	B	C	B	B	B
Approach Vol, veh/h		510	493		225	
Approach Delay, s/veh		12.2	18.4		12.1	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.8		20.0	6.8	17.1
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				9.9		4.7	2.8	10.1
Green Ext Time (p_c), s				4.8		0.5	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	162	415	280	2	4	215
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	176	451	304	2	4	234

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	307	0	-	0	1108	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	803	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1254	-	-	-	232	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1254	-	-	-	199	735
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	379	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1254	-	-	-	701
HCM Lane V/C Ratio	0.14	-	-	-	0.34
HCM Control Delay (s)	8.3	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.5

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	199	373	378	8	1	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	216	405	411	9	1	198

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	420	0	-	0	1253	415
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	838	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1139	-	-	-	190	637
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	424	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1139	-	-	-	154	637
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	344	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1139	-	-	-	626
HCM Lane V/C Ratio	0.19	-	-	-	0.318
HCM Control Delay (s)	8.9	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1.4

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	27	198	188	150	124	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	29	215	204	163	135	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	367	0	-	0	560	286
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	274	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1192	-	-	-	489	753
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1192	-	-	-	477	753
Mov Cap-2 Maneuver	-	-	-	-	477	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	753	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1192	-	-	-	530
HCM Lane V/C Ratio	0.025	-	-	-	0.351
HCM Control Delay (s)	8.1	-	-	-	15.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	71	209	223	171	182	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	77	227	242	186	198	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	428	0	-	0	717	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1131	-	-	-	396	707
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1131	-	-	-	369	707
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	26.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1131	-	-	-	414
HCM Lane V/C Ratio	0.068	-	-	-	0.62
HCM Control Delay (s)	8.4	-	-	-	26.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	4.1

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	250	143	24	31	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	272	155	26	34	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	182	0	-	0	525	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1393	-	-	-	513	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	708	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1393	-	-	-	498	876
Mov Cap-2 Maneuver	-	-	-	-	498	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	687	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1393	-	-	-	629
HCM Lane V/C Ratio	0.03	-	-	-	0.104
HCM Control Delay (s)	7.7	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	243	286	66	39	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	42	264	311	72	42	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	383	0	-	0	696	347
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1175	-	-	-	408	696
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1175	-	-	-	393	696
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1175	-	-	-	497
HCM Lane V/C Ratio	0.036	-	-	-	0.164
HCM Control Delay (s)	8.2	-	-	-	13.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	167	26	19	229	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
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	43	182	28	21	249	30	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	210	0	0	591	604	196	589	602	264
Stage 1	-	-	-	-	-	-	283	283	-	305	305	-
Stage 2	-	-	-	-	-	-	308	321	-	284	297	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1284	-	-	1361	-	-	419	412	845	420	414	775
Stage 1	-	-	-	-	-	-	724	677	-	705	662	-
Stage 2	-	-	-	-	-	-	702	652	-	723	668	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	1361	-	-	398	389	845	401	391	775
Mov Cap-2 Maneuver	-	-	-	-	-	-	398	389	-	401	391	-
Stage 1	-	-	-	-	-	-	696	651	-	678	650	-
Stage 2	-	-	-	-	-	-	685	640	-	693	643	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.5	11.7	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	398	845	1284	-	-	1361	-	-	401	775
HCM Lane V/C Ratio	0.008	0.004	0.034	-	-	0.015	-	-	0.011	0.007
HCM Control Delay (s)	14.1	9.3	7.9	0	-	7.7	0	-	14.1	9.7
HCM Lane LOS	B	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	321	15	11	260	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
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	25	349	16	12	283	17	23	0	16	25	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	365	0	0	740	731	357	730	730	291
Stage 1	-	-	-	-	-	-	407	407	-	315	315	-
Stage 2	-	-	-	-	-	-	333	324	-	415	415	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1261	-	-	1194	-	-	333	349	687	338	349	748
Stage 1	-	-	-	-	-	-	621	597	-	696	656	-
Stage 2	-	-	-	-	-	-	681	650	-	615	592	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	1194	-	-	309	336	687	321	336	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	336	-	321	336	-
Stage 1	-	-	-	-	-	-	605	582	-	679	648	-
Stage 2	-	-	-	-	-	-	642	642	-	585	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.3	14.6	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	309	687	1261	-	-	1194	-	-	321	748
HCM Lane V/C Ratio	0.074	0.024	0.02	-	-	0.01	-	-	0.078	0.047
HCM Control Delay (s)	17.6	10.4	7.9	0	-	8	0	-	17.2	10
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	210	20	17	176	58	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	228	22	18	191	63	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	250	0	467	239
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1316	-	554	800
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1316	-	546	800
Mov Cap-2 Maneuver	-	-	-	-	546	-
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	798	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	602	-	-	1316	-
HCM Lane V/C Ratio	0.148	-	-	0.014	-
HCM Control Delay (s)	12	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	240	53	23	269	50	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	261	58	25	292	54	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	318	0	632	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1242	-	444	749
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	719	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1242	-	433	749
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	485	-	-	1242	-
HCM Lane V/C Ratio	0.15	-	-	0.02	-
HCM Control Delay (s)	13.7	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	52	283	376	86	115	137
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	57	308	409	93	125	149
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	208	719	478	406	506	479
Arrive On Green	0.00	0.41	0.27	0.27	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	57	308	409	93	125	149
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	5.5	9.7	2.1	2.6	3.3
Cycle Q Clear(g_c), s	0.1	5.5	9.7	2.1	2.6	3.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	208	719	478	406	506	479
V/C Ratio(X)	0.27	0.43	0.86	0.23	0.25	0.31
Avail Cap(c_a), veh/h	313	965	603	513	506	479
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.3	9.3	15.2	12.4	11.0	11.3
Incr Delay (d2), s/veh	0.7	0.4	9.7	0.3	1.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	2.7	5.9	0.9	1.3	3.2
LnGrp Delay(d),s/veh	21.0	9.7	24.9	12.7	12.2	13.0
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		365	502		274	
Approach Delay, s/veh		11.5	22.6		12.6	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				23.9		20.0	6.0	17.9
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	5.0	17.0
Max Q Clear Time (g_c+I1), s				7.5		5.3	2.1	11.7
Green Ext Time (p_c), s				4.6		0.6	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	105	317	469	105	118	92
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	114	345	510	114	128	100
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	229	849	604	514	457	432
Arrive On Green	0.02	0.48	0.34	0.34	0.29	0.29
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	114	345	510	114	128	100
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.2	6.6	13.9	2.8	3.2	2.6
Cycle Q Clear(g_c), s	1.2	6.6	13.9	2.8	3.2	2.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	229	849	604	514	457	432
V/C Ratio(X)	0.50	0.41	0.84	0.22	0.28	0.23
Avail Cap(c_a), veh/h	314	1119	780	663	457	432
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.4	8.7	15.8	12.2	14.3	14.1
Incr Delay (d2), s/veh	1.7	0.3	6.7	0.2	1.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	3.2	7.8	1.2	1.6	0.1
LnGrp Delay(d),s/veh	20.0	9.0	22.6	12.4	15.9	15.4
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		459	624		228	
Approach Delay, s/veh		11.8	20.7		15.7	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				31.0		21.0	7.2	23.8
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				8.6		5.2	3.2	15.9
Green Ext Time (p_c), s				6.5		0.5	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	102	349	307	0	1	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	111	379	334	0	1	199

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	334	0	-	0	935	334
Stage 1	-	-	-	-	334	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1225	-	-	-	295	708
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	547	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1225	-	-	-	268	708
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1225	-	-	-	702
HCM Lane V/C Ratio	0.091	-	-	-	0.285
HCM Control Delay (s)	8.2	-	-	-	12.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	143	324	361	1	5	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	155	352	392	1	5	199

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	1056	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1166	-	-	-	250	656
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	512	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	217	656
Mov Cap-2 Maneuver	-	-	-	-	217	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	444	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	623
HCM Lane V/C Ratio	0.133	-	-	-	0.328
HCM Control Delay (s)	8.6	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.4

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	71	207	140	137	126	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	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	77	225	152	149	137	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	301	0	-	0	606	227
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	379	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1260	-	-	-	460	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1260	-	-	-	432	812
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1260	-	-	-	494
HCM Lane V/C Ratio	0.061	-	-	-	0.378
HCM Control Delay (s)	8	-	-	-	16.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	56	228	215	145	132	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	90	-	-	-	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	61	248	234	158	143	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	683	313
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	370	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1168	-	-	-	415	727
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1168	-	-	-	393	727
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	662	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	394
HCM Lane V/C Ratio	0.052	-	-	-	0.367
HCM Control Delay (s)	8.3	-	-	-	19.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	242	145	39	47	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	25	263	158	42	51	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	200	0	-	0	492	179
Stage 1	-	-	-	-	179	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1372	-	-	-	536	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	741	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1372	-	-	-	526	864
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1372	-	-	-	629
HCM Lane V/C Ratio	0.018	-	-	-	0.14
HCM Control Delay (s)	7.7	-	-	-	11.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	33	199	227	47	52	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	36	216	247	51	57	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	298	0	-	0	560	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1263	-	-	-	489	767
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	761	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1263	-	-	-	475	767
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1263	-	-	-	552
HCM Lane V/C Ratio	0.028	-	-	-	0.161
HCM Control Delay (s)	7.9	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	191	26	19	237	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
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	43	208	28	21	258	30	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	288	0	0	236	0	0	626	638	222	624	637	273
Stage 1	-	-	-	-	-	-	309	309	-	314	314	-
Stage 2	-	-	-	-	-	-	317	329	-	310	323	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1274	-	-	1331	-	-	397	394	818	398	395	766
Stage 1	-	-	-	-	-	-	701	660	-	697	656	-
Stage 2	-	-	-	-	-	-	694	646	-	700	650	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1274	-	-	1331	-	-	377	371	818	379	372	766
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	371	-	379	372	-
Stage 1	-	-	-	-	-	-	674	634	-	670	644	-
Stage 2	-	-	-	-	-	-	676	634	-	670	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.5	12	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	377	818	1274	-	-	1331	-	-	379	766
HCM Lane V/C Ratio	0.009	0.004	0.034	-	-	0.016	-	-	0.011	0.007
HCM Control Delay (s)	14.6	9.4	7.9	0	-	7.7	0	-	14.6	9.7
HCM Lane LOS	B	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	236	15	11	229	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
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	25	257	16	12	249	17	23	0	16	25	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	273	0	0	614	605	265	605	605	258
Stage 1	-	-	-	-	-	-	315	315	-	282	282	-
Stage 2	-	-	-	-	-	-	299	290	-	323	323	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1298	-	-	1290	-	-	404	412	774	410	412	781
Stage 1	-	-	-	-	-	-	696	656	-	725	678	-
Stage 2	-	-	-	-	-	-	710	672	-	689	650	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1298	-	-	1290	-	-	376	398	774	391	398	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	376	398	-	391	398	-
Stage 1	-	-	-	-	-	-	680	641	-	708	671	-
Stage 2	-	-	-	-	-	-	671	665	-	659	635	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.3	13	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	376	774	1298	-	-	1290	-	-	391	781
HCM Lane V/C Ratio	0.061	0.021	0.019	-	-	0.009	-	-	0.064	0.045
HCM Control Delay (s)	15.2	9.8	7.8	0	-	7.8	0	-	14.8	9.8
HCM Lane LOS	C	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	221	26	25	178	56	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	240	28	27	193	61	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	268	0	502	254
Stage 1	-	-	-	-	254	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1296	-	529	785
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1296	-	517	785
Mov Cap-2 Maneuver	-	-	-	-	517	-
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	550	-	-	1296	-
HCM Lane V/C Ratio	0.134	-	-	0.021	-
HCM Control Delay (s)	12.6	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	201	43	18	226	38	23
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	218	47	20	246	41	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	265	0	527	242
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1299	-	512	797
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1299	-	503	797
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	749	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	584	-	-	1299	-
HCM Lane V/C Ratio	0.114	-	-	0.015	-
HCM Control Delay (s)	12	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	49	383	403	82	162	95
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	49	383	403	82	162	95
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	219	722	490	416	505	477
Arrive On Green	0.00	0.41	0.28	0.28	0.32	0.32
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	49	383	403	82	162	95
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	7.2	9.4	1.8	3.4	2.0
Cycle Q Clear(g_c), s	0.1	7.2	9.4	1.8	3.4	2.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	219	722	490	416	505	477
V/C Ratio(X)	0.22	0.53	0.82	0.20	0.32	0.20
Avail Cap(c_a), veh/h	287	962	641	545	505	477
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	19.5	9.8	14.9	12.2	11.4	10.9
Incr Delay (d2), s/veh	0.5	0.6	6.6	0.2	1.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	3.5	5.5	0.8	1.7	0.1
LnGrp Delay(d),s/veh	20.0	10.4	21.5	12.4	13.1	11.9
LnGrp LOS	C	B	C	B	B	B
Approach Vol, veh/h		432	485		257	
Approach Delay, s/veh		11.5	19.9		12.6	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				24.0		20.0	5.8	18.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	4.0	18.0
Max Q Clear Time (g_c+I1), s				9.2		5.4	2.1	11.4
Green Ext Time (p_c), s				4.9		0.6	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	107	445	374	157	145	101
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	107	445	374	157	145	101
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	233	718	448	381	523	494
Arrive On Green	0.02	0.41	0.25	0.25	0.33	0.33
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	107	445	374	157	145	101
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.0	9.1	9.1	4.0	3.1	2.2
Cycle Q Clear(g_c), s	1.0	9.1	9.1	4.0	3.1	2.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	233	718	448	381	523	494
V/C Ratio(X)	0.46	0.62	0.83	0.41	0.28	0.20
Avail Cap(c_a), veh/h	304	892	543	461	523	494
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.9	10.7	16.1	14.2	11.3	11.0
Incr Delay (d2), s/veh	1.4	0.9	9.2	0.7	1.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.0	4.5	5.5	1.7	1.5	2.2
LnGrp Delay(d),s/veh	19.3	11.6	25.3	14.9	12.6	11.9
LnGrp LOS	B	B	C	B	B	B
Approach Vol, veh/h		552	531		246	
Approach Delay, s/veh		13.1	22.2		12.3	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				24.5		21.0	7.0	17.6
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				25.0		17.0	5.0	16.0
Max Q Clear Time (g_c+I1), s				11.1		5.1	3.0	11.1
Green Ext Time (p_c), s				4.9		0.6	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	192	482	331	2	5	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	192	482	331	2	5	256

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	333	0	-	0	1198	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	866	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1226	-	-	-	205	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	412	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1226	-	-	-	173	710
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	347	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1226	-	-	-	670
HCM Lane V/C Ratio	0.157	-	-	-	0.39
HCM Control Delay (s)	8.5	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	1.8

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	236	437	441	9	1	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	437	441	9	1	216

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	450	0	-	0	1355	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	909	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1110	-	-	-	165	612
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	393	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1110	-	-	-	130	612
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	309	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1110	-	-	-	602
HCM Lane V/C Ratio	0.213	-	-	-	0.36
HCM Control Delay (s)	9.1	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	1.6

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	32	225	222	179	146	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	225	222	179	146	56

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	401	0	-	0	601	312
Stage 1	-	-	-	-	312	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1158	-	-	-	463	728
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1158	-	-	-	450	728
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1158	-	-	-	503
HCM Lane V/C Ratio	0.028	-	-	-	0.402
HCM Control Delay (s)	8.2	-	-	-	16.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.9

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	84	242	256	202	215	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	242	256	202	215	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	458	0	-	0	767	357
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	410	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1103	-	-	-	370	687
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	670	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1103	-	-	-	342	687
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	619	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	34.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1103	-	-	-	387
HCM Lane V/C Ratio	0.076	-	-	-	0.721
HCM Control Delay (s)	8.5	-	-	-	34.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	5.5

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	47	284	169	29	37	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	284	169	29	37	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	198	0	-	0	562	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	378	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1375	-	-	-	488	858
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1375	-	-	-	471	858
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	603
HCM Lane V/C Ratio	0.034	-	-	-	0.119
HCM Control Delay (s)	7.7	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	47	282	330	78	47	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	282	330	78	47	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	408	0	-	0	745	369
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	376	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1151	-	-	-	382	677
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1151	-	-	-	366	677
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	666	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1151	-	-	-	469
HCM Lane V/C Ratio	0.041	-	-	-	0.192
HCM Control Delay (s)	8.3	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	198	26	19	272	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	198	26	19	272	28	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	224	0	0	618	629	211	617	628	286
Stage 1	-	-	-	-	-	-	291	291	-	324	324	-
Stage 2	-	-	-	-	-	-	327	338	-	293	304	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1261	-	-	1345	-	-	402	399	829	402	400	753
Stage 1	-	-	-	-	-	-	717	672	-	688	650	-
Stage 2	-	-	-	-	-	-	686	641	-	715	663	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	1345	-	-	383	378	829	385	379	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	383	378	-	385	379	-
Stage 1	-	-	-	-	-	-	691	648	-	663	639	-
Stage 2	-	-	-	-	-	-	670	630	-	687	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.5	12	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	383	829	1261	-	-	1345	-	-	385	753
HCM Lane V/C Ratio	0.008	0.004	0.032	-	-	0.014	-	-	0.01	0.007
HCM Control Delay (s)	14.5	9.4	7.9	0	-	7.7	0	-	14.4	9.8
HCM Lane LOS	B	A	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	382	15	11	308	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	382	15	11	308	16	21	0	15	23	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	324	0	0	397	0	0	790	782	390	781	781	316
Stage 1	-	-	-	-	-	-	436	436	-	338	338	-
Stage 2	-	-	-	-	-	-	354	346	-	443	443	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1236	-	-	1162	-	-	308	326	658	312	326	724
Stage 1	-	-	-	-	-	-	599	580	-	676	641	-
Stage 2	-	-	-	-	-	-	663	635	-	594	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1236	-	-	1162	-	-	286	314	658	297	314	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	286	314	-	297	314	-
Stage 1	-	-	-	-	-	-	585	566	-	660	633	-
Stage 2	-	-	-	-	-	-	626	627	-	567	562	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	15.3	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	286	658	1236	-	-	1162	-	-	297	724
HCM Lane V/C Ratio	0.073	0.023	0.019	-	-	0.009	-	-	0.077	0.044
HCM Control Delay (s)	18.6	10.6	8	0	-	8.1	0	-	18.1	10.2
HCM Lane LOS	C	B	A	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	249	23	20	206	63	29
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	249	23	20	206	63	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	272	0	507	261
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1291	-	525	778
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1291	-	516	778
Mov Cap-2 Maneuver	-	-	-	-	516	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	577	-	-	1291	-
HCM Lane V/C Ratio	0.159	-	-	0.015	-
HCM Control Delay (s)	12.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	283	58	28	318	56	20
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	58	28	318	56	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	341	0	686	312
Stage 1	-	-	-	-	312	-
Stage 2	-	-	-	-	374	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1218	-	413	728
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	696	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1218	-	401	728
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	455	-	-	1218	-
HCM Lane V/C Ratio	0.167	-	-	0.023	-
HCM Control Delay (s)	14.5	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	61	326	445	102	136	163
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	61	326	445	102	136	163
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	203	752	513	436	490	463
Arrive On Green	0.00	0.43	0.29	0.29	0.31	0.31
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	61	326	445	102	136	163
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	0.1	5.9	10.8	2.3	2.9	3.8
Cycle Q Clear(g_c), s	0.1	5.9	10.8	2.3	2.9	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	203	752	513	436	490	463
V/C Ratio(X)	0.30	0.43	0.87	0.23	0.28	0.35
Avail Cap(c_a), veh/h	444	1129	623	530	490	463
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	20.6	9.1	15.2	12.2	11.8	12.1
Incr Delay (d2), s/veh	0.8	0.4	10.8	0.3	1.4	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	2.9	6.7	1.0	1.5	3.7
LnGrp Delay(d),s/veh	21.5	9.5	26.0	12.5	13.2	14.2
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		387	547		299	
Approach Delay, s/veh		11.4	23.5		13.8	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				25.3		20.0	6.1	19.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				31.0		16.0	9.0	18.0
Max Q Clear Time (g_c+I1), s				7.9		5.8	2.1	12.8
Green Ext Time (p_c), s				5.5		0.7	0.1	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	125	371	549	124	140	109
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1765	1667	1765
Adj Flow Rate, veh/h	125	371	549	124	140	109
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	222	875	632	538	444	420
Arrive On Green	0.03	0.50	0.36	0.36	0.28	0.28
Sat Flow, veh/h	1587	1765	1765	1500	1587	1500
Grp Volume(v), veh/h	125	371	549	124	140	109
Grp Sat Flow(s),veh/h/ln	1587	1765	1765	1500	1587	1500
Q Serve(g_s), s	1.4	7.2	15.5	3.1	3.7	3.0
Cycle Q Clear(g_c), s	1.4	7.2	15.5	3.1	3.7	3.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	222	875	632	538	444	420
V/C Ratio(X)	0.56	0.42	0.87	0.23	0.32	0.26
Avail Cap(c_a), veh/h	300	1087	758	644	444	420
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	19.0	8.6	16.0	12.0	15.2	15.0
Incr Delay (d2), s/veh	2.2	0.3	9.2	0.2	1.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.4	3.5	9.1	1.3	1.9	2.9
LnGrp Delay(d),s/veh	21.2	8.9	25.2	12.2	17.1	16.5
LnGrp LOS	C	A	C	B	B	B
Approach Vol, veh/h		496	673		249	
Approach Delay, s/veh		12.0	22.8		16.8	
Approach LOS		B	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				32.6		21.0	7.4	25.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				35.0		17.0	6.0	25.0
Max Q Clear Time (g_c+I1), s				9.2		5.7	3.4	17.5
Green Ext Time (p_c), s				7.1		0.6	0.1	3.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	121	404	363	0	1	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	121	404	363	0	1	217

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	363	0	-	0	1009	363
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1196	-	-	-	266	682
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	522	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1196	-	-	-	239	682
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1196	-	-	-	676
HCM Lane V/C Ratio	0.101	-	-	-	0.322
HCM Control Delay (s)	8.3	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.4

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	170	379	421	1	6	217
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	170	379	421	1	6	217

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	422	0	-	0	1141	422
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	719	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1137	-	-	-	222	632
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1137	-	-	-	189	632
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1137	-	-	-	595
HCM Lane V/C Ratio	0.15	-	-	-	0.375
HCM Control Delay (s)	8.7	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	84	236	165	163	148	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	236	165	163	148	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	328	0	-	0	651	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1232	-	-	-	433	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1232	-	-	-	403	792
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	465
HCM Lane V/C Ratio	0.068	-	-	-	0.437
HCM Control Delay (s)	8.1	-	-	-	18.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.2

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	66	265	246	172	156	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	90	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	265	246	172	156	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	729	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1141	-	-	-	390	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1141	-	-	-	367	710
Mov Cap-2 Maneuver	-	-	-	-	367	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1141	-	-	-	368
HCM Lane V/C Ratio	0.058	-	-	-	0.427
HCM Control Delay (s)	8.3	-	-	-	21.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	275	171	47	56	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	275	171	47	56	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	526	195
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	331	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1352	-	-	-	512	846
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1352	-	-	-	501	846
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1352	-	-	-	605
HCM Lane V/C Ratio	0.021	-	-	-	0.16
HCM Control Delay (s)	7.7	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	40	229	260	56	61	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	229	260	56	61	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	316	0	-	0	597	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	309	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1244	-	-	-	466	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1244	-	-	-	451	751
Mov Cap-2 Maneuver	-	-	-	-	451	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	721	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1244	-	-	-	530
HCM Lane V/C Ratio	0.032	-	-	-	0.183
HCM Control Delay (s)	8	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	227	26	19	282	28	3	0	3	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	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	227	26	19	282	28	3	0	3	4	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	310	0	0	253	0	0	657	668	240	656	667	296
Stage 1	-	-	-	-	-	-	320	320	-	334	334	-
Stage 2	-	-	-	-	-	-	337	348	-	322	333	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1250	-	-	1312	-	-	378	379	799	379	380	743
Stage 1	-	-	-	-	-	-	692	652	-	680	643	-
Stage 2	-	-	-	-	-	-	677	634	-	690	644	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1250	-	-	1312	-	-	360	358	799	362	359	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	360	358	-	362	359	-
Stage 1	-	-	-	-	-	-	666	628	-	655	631	-
Stage 2	-	-	-	-	-	-	660	623	-	662	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.4	12.3	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	360	799	1250	-	-	1312	-	-	362	743
HCM Lane V/C Ratio	0.008	0.004	0.032	-	-	0.014	-	-	0.011	0.007
HCM Control Delay (s)	15.1	9.5	8	0	-	7.8	0	-	15.1	9.9
HCM Lane LOS	C	A	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	281	15	11	272	16	21	0	15	23	0	32
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	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	281	15	11	272	16	21	0	15	23	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	288	0	0	296	0	0	653	645	289	644	644	280
Stage 1	-	-	-	-	-	-	335	335	-	302	302	-
Stage 2	-	-	-	-	-	-	318	310	-	342	342	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1274	-	-	1265	-	-	380	391	750	386	391	759
Stage 1	-	-	-	-	-	-	679	643	-	707	664	-
Stage 2	-	-	-	-	-	-	693	659	-	673	638	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1274	-	-	1265	-	-	355	379	750	369	379	759
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	379	-	369	379	-
Stage 1	-	-	-	-	-	-	664	629	-	691	657	-
Stage 2	-	-	-	-	-	-	657	652	-	645	624	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.3	13.3	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	355	750	1274	-	-	1265	-	-	369	759
HCM Lane V/C Ratio	0.059	0.02	0.018	-	-	0.009	-	-	0.062	0.042
HCM Control Delay (s)	15.8	9.9	7.9	0	-	7.9	0	-	15.4	10
HCM Lane LOS	C	A	A	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	0.2	0.1	0.1	-	-	0	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	262	30	30	208	60	14
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	262	30	30	208	60	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	292	0	545	277
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1270	-	499	762
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1270	-	486	762
Mov Cap-2 Maneuver	-	-	-	-	486	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	756	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	522	-	-	1270	-
HCM Lane V/C Ratio	0.142	-	-	0.024	-
HCM Control Delay (s)	13	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	237	46	22	267	42	28
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	237	46	22	267	42	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	283	0	571	260
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1279	-	482	779
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1279	-	472	779
Mov Cap-2 Maneuver	-	-	-	-	472	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	560	-	-	1279	-
HCM Lane V/C Ratio	0.125	-	-	0.017	-
HCM Control Delay (s)	12.3	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	165	26	19	227	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	179	28	21	247	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	312	407	64	362	421	51	841	0	791	843	0	791
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	982	1490	233	1047	1544	188	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	207	21	0	277	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	982	0	1724	1047	0	1732	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.0	0.7	0.0	5.5	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.1	0.0	4.0	4.6	0.0	5.5	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.14	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	470	362	0	473	841	0	791	843	0	791
V/C Ratio(X)	0.14	0.00	0.44	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	437	0	689	495	0	693	841	0	791	843	0	791
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	12.0	13.9	0.0	12.6	4.5	0.0	4.5	4.5	0.0	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	1.9	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.9	0.0	12.7	14.0	0.0	13.7	4.5	0.0	4.5	4.5	0.0	4.5
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		250			298			6			9	
Approach Delay, s/veh		13.2			13.8			4.5			4.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.1		14.9		25.1		14.9
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.1		2.1		7.5
Green Ext Time (p_c), s		0.0		1.8		0.0		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	318	15	11	257	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	346	16	12	279	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	331	502	23	286	493	30	778	0	750	796	0	750
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.00	0.50	0.50	0.00	0.50
Sat Flow, veh/h	965	1674	77	909	1647	100	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	362	12	0	296	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	965	0	1751	909	0	1747	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	7.3	0.5	0.0	5.7	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	6.6	0.0	7.3	7.8	0.0	5.7	0.9	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	525	286	0	524	778	0	750	796	0	750
V/C Ratio(X)	0.08	0.00	0.69	0.04	0.00	0.57	0.03	0.00	0.02	0.03	0.00	0.05
Avail Cap(c_a), veh/h	428	0	700	378	0	699	778	0	750	796	0	750
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	12.4	15.8	0.0	11.8	5.3	0.0	5.0	5.2	0.0	5.1
Incr Delay (d2), s/veh	0.1	0.0	1.8	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.8	0.1	0.0	2.9	0.1	0.0	0.1	0.2	0.0	0.2
LnGrp Delay(d),s/veh	14.7	0.0	14.2	15.9	0.0	12.8	5.4	0.0	5.1	5.3	0.0	5.2
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		387			308			39			60	
Approach Delay, s/veh		14.2			12.9			5.3			5.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		16.0		24.0		16.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.9		9.3		2.6		9.8
Green Ext Time (p_c), s		0.3		2.3		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	189	26	19	235	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	205	28	21	255	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	314	425	58	351	433	51	833	0	781	835	0	781
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.52	0.00	0.52	0.52	0.00	0.52
Sat Flow, veh/h	975	1520	208	1022	1550	182	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	233	21	0	285	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	975	0	1728	1022	0	1733	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.5	0.7	0.0	5.7	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.3	0.0	4.5	5.2	0.0	5.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	482	351	0	484	833	0	781	835	0	781
V/C Ratio(X)	0.14	0.00	0.48	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	432	0	691	474	0	693	833	0	781	835	0	781
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.0	14.2	0.0	12.4	4.6	0.0	4.6	4.6	0.0	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.2	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.8	0.0	12.8	14.2	0.0	13.6	4.6	0.0	4.6	4.6	0.0	4.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		276			306			6			9	
Approach Delay, s/veh		13.2			13.6			4.6			4.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.8		15.2		24.8		15.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.3		2.1		7.7
Green Ext Time (p_c), s		0.0		1.9		0.0		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	234	15	11	227	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	254	16	12	247	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	304	422	27	299	419	29	831	0	815	850	0	815
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.54	0.00	0.54	0.54	0.00	0.54
Sat Flow, veh/h	994	1643	103	988	1633	112	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	270	12	0	264	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	994	0	1746	988	0	1745	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	5.4	0.4	0.0	5.3	0.4	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.2	0.0	5.4	5.9	0.0	5.3	0.8	0.0	0.2	0.6	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	448	299	0	448	831	0	815	850	0	815
V/C Ratio(X)	0.08	0.00	0.60	0.04	0.00	0.59	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	446	0	699	441	0	698	831	0	815	850	0	815
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	13.1	15.6	0.0	13.0	4.5	0.0	4.2	4.4	0.0	4.3
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.1	0.0	1.2	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.3	0.0	2.8	0.1	0.0	2.6	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.4	15.7	0.0	14.3	4.5	0.0	4.3	4.4	0.0	4.4
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		295			276			39			60	
Approach Delay, s/veh		14.5			14.3			4.4			4.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.7		14.3		25.7		14.3
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		8.2		2.6		7.9
Green Ext Time (p_c), s		0.3		2.1		0.3		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	167	26	19	229	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	182	28	21	249	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	312	410	63	361	424	51	839	0	789	841	0	789
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	980	1494	230	1044	1546	186	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	210	21	0	279	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	980	0	1724	1044	0	1732	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.0	0.7	0.0	5.6	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.2	0.0	4.0	4.7	0.0	5.6	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.13	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	473	361	0	475	839	0	789	841	0	789
V/C Ratio(X)	0.14	0.00	0.44	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	436	0	690	493	0	693	839	0	789	841	0	789
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	12.0	13.9	0.0	12.6	4.5	0.0	4.5	4.5	0.0	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.0	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.9	0.0	12.7	14.0	0.0	13.7	4.5	0.0	4.5	4.5	0.0	4.5
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		253			300			6			9	
Approach Delay, s/veh		13.2			13.7			4.5			4.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		15.0		25.0		15.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.2		2.1		7.6
Green Ext Time (p_c), s		0.0		1.8		0.0		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	321	15	11	260	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	349	16	12	283	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	331	505	23	286	497	30	776	0	748	794	0	748
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.00	0.50	0.50	0.00	0.50
Sat Flow, veh/h	962	1674	77	906	1648	99	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	365	12	0	300	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	962	0	1751	906	0	1747	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	7.4	0.5	0.0	5.8	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	6.7	0.0	7.4	7.8	0.0	5.8	0.9	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	528	286	0	527	776	0	748	794	0	748
V/C Ratio(X)	0.08	0.00	0.69	0.04	0.00	0.57	0.03	0.00	0.02	0.03	0.00	0.05
Avail Cap(c_a), veh/h	425	0	700	376	0	699	776	0	748	794	0	748
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	12.3	15.8	0.0	11.8	5.4	0.0	5.1	5.2	0.0	5.1
Incr Delay (d2), s/veh	0.1	0.0	1.9	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.8	0.1	0.0	2.9	0.1	0.0	0.1	0.2	0.0	0.2
LnGrp Delay(d),s/veh	14.7	0.0	14.2	15.8	0.0	12.8	5.4	0.0	5.1	5.3	0.0	5.3
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		390			312			39			60	
Approach Delay, s/veh		14.2			12.9			5.3			5.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.9		16.1		23.9		16.1
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.9		9.4		2.6		9.8
Green Ext Time (p_c), s		0.3		2.4		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	191	26	19	237	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	208	28	21	258	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	314	428	58	351	436	51	831	0	779	833	0	779
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.52	0.00	0.52	0.52	0.00	0.52
Sat Flow, veh/h	972	1523	205	1020	1552	181	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	236	21	0	288	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	972	0	1729	1020	0	1733	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.5	0.7	0.0	5.7	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.3	0.0	4.5	5.2	0.0	5.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	486	351	0	487	831	0	779	833	0	779
V/C Ratio(X)	0.14	0.00	0.49	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	430	0	691	472	0	693	831	0	779	833	0	779
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.0	14.2	0.0	12.4	4.7	0.0	4.6	4.7	0.0	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.3	0.2	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.8	0.0	12.7	14.2	0.0	13.5	4.7	0.0	4.6	4.7	0.0	4.7
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		279			309			6			9	
Approach Delay, s/veh		13.2			13.6			4.7			4.7	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.8		15.2		24.8		15.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.3		2.1		7.7
Green Ext Time (p_c), s		0.0		1.9		0.0		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	236	15	11	229	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	257	16	12	249	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	304	424	26	299	422	29	830	0	813	849	0	813
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.54	0.00	0.54	0.54	0.00	0.54
Sat Flow, veh/h	992	1644	102	986	1634	112	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	273	12	0	266	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	992	0	1747	986	0	1745	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	5.5	0.4	0.0	5.3	0.4	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.2	0.0	5.5	5.9	0.0	5.3	0.8	0.0	0.2	0.6	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	451	299	0	450	830	0	813	849	0	813
V/C Ratio(X)	0.08	0.00	0.61	0.04	0.00	0.59	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	444	0	699	439	0	698	830	0	813	849	0	813
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	13.0	15.7	0.0	13.0	4.5	0.0	4.2	4.4	0.0	4.3
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.1	0.0	1.2	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.3	0.0	2.8	0.1	0.0	2.7	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.4	15.7	0.0	14.2	4.5	0.0	4.3	4.4	0.0	4.4
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		298			278			39			60	
Approach Delay, s/veh		14.5			14.3			4.4			4.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.7		14.3		25.7		14.3
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		8.2		2.6		7.9
Green Ext Time (p_c), s		0.3		2.1		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	198	26	19	272	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	40	198	26	19	272	28	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	434	57	326	446	46	842	0	835	844	0	835
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.56	0.00	0.56	0.56	0.00	0.56
Sat Flow, veh/h	962	1529	201	1031	1574	162	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	40	0	224	19	0	300	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	962	0	1729	1031	0	1736	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.9	0.0	5.3	0.8	0.0	7.5	0.1	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	9.4	0.0	5.3	6.1	0.0	7.5	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	490	326	0	492	842	0	835	844	0	835
V/C Ratio(X)	0.15	0.00	0.46	0.06	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	462	0	830	529	0	833	842	0	835	844	0	835
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	14.7	17.3	0.0	15.5	5.0	0.0	4.9	5.0	0.0	4.9
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	0.0	2.6	0.2	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	19.8	0.0	15.4	17.3	0.0	16.7	5.0	0.0	4.9	5.0	0.0	5.0
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		264			319			6			9	
Approach Delay, s/veh		16.1			16.8			5.0			5.0	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.8		18.2		31.8		18.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		18.0		24.0		18.0		24.0
Max Q Clear Time (g_c+I1), s		2.1		11.4		2.1		9.5
Green Ext Time (p_c), s		0.0		2.8		0.0		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	382	15	11	308	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	23	382	15	11	308	16	21	0	15	23	0	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	534	21	283	527	27	759	0	725	776	0	725
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	941	1687	66	880	1663	86	1227	0	1500	1246	0	1500
Grp Volume(v), veh/h	23	0	397	11	0	324	21	0	15	23	0	32
Grp Sat Flow(s),veh/h/ln	941	0	1753	880	0	1749	1227	0	1500	1246	0	1500
Q Serve(g_s), s	0.8	0.0	8.0	0.4	0.0	6.2	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	7.1	0.0	8.0	8.4	0.0	6.2	0.8	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	332	0	555	283	0	554	759	0	725	776	0	725
V/C Ratio(X)	0.07	0.00	0.71	0.04	0.00	0.58	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	410	0	701	356	0	700	759	0	725	776	0	725
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	12.1	15.8	0.0	11.5	5.7	0.0	5.4	5.6	0.0	5.5
Incr Delay (d2), s/veh	0.1	0.0	2.5	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	4.3	0.1	0.0	3.1	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	14.5	0.0	14.6	15.9	0.0	12.4	5.7	0.0	5.4	5.6	0.0	5.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		420			335			36			55	
Approach Delay, s/veh		14.6			12.6			5.6			5.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.3		16.7		23.3		16.7
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		10.0		2.6		10.4
Green Ext Time (p_c), s		0.2		2.4		0.2		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	227	26	19	282	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	40	227	26	19	282	28	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	454	52	316	461	46	831	0	822	833	0	822
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.55	0.00	0.55	0.55	0.00	0.55
Sat Flow, veh/h	953	1555	178	1004	1580	157	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	40	0	253	19	0	310	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	953	0	1733	1004	0	1737	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.9	0.0	6.1	0.8	0.0	7.7	0.1	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	9.6	0.0	6.1	6.9	0.0	7.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.10	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	506	316	0	507	831	0	822	833	0	822
V/C Ratio(X)	0.15	0.00	0.50	0.06	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	455	0	832	504	0	834	831	0	822	833	0	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	14.7	17.5	0.0	15.3	5.2	0.0	5.1	5.1	0.0	5.1
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	0.0	3.0	0.2	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	19.6	0.0	15.4	17.6	0.0	16.5	5.2	0.0	5.1	5.2	0.0	5.1
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		293			329			6			9	
Approach Delay, s/veh		16.0			16.5			5.1			5.1	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.4		18.6		31.4		18.6
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		18.0		24.0		18.0		24.0
Max Q Clear Time (g_c+I1), s		2.1		11.6		2.1		9.7
Green Ext Time (p_c), s		0.0		3.0		0.0		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	281	15	11	272	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	23	281	15	11	272	16	21	0	15	23	0	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	448	24	297	446	26	818	0	795	835	0	795
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	972	1660	89	965	1650	97	1227	0	1500	1246	0	1500
Grp Volume(v), veh/h	23	0	296	11	0	288	21	0	15	23	0	32
Grp Sat Flow(s),veh/h/ln	972	0	1749	965	0	1748	1227	0	1500	1246	0	1500
Q Serve(g_s), s	0.8	0.0	5.9	0.4	0.0	5.8	0.3	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.6	0.0	5.9	6.4	0.0	5.8	0.7	0.0	0.2	0.5	0.0	0.4
Prop In Lane	1.00		0.05	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	0	472	297	0	472	818	0	795	835	0	795
V/C Ratio(X)	0.08	0.00	0.63	0.04	0.00	0.61	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	429	0	700	423	0	699	818	0	795	835	0	795
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.8	15.6	0.0	12.8	4.7	0.0	4.5	4.6	0.0	4.5
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.1	0.0	1.3	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.1	0.1	0.0	2.9	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.2	15.7	0.0	14.0	4.8	0.0	4.5	4.7	0.0	4.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		319			299			36			55	
Approach Delay, s/veh		14.3			14.1			4.6			4.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.2		14.8		25.2		14.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.7		8.6		2.5		8.4
Green Ext Time (p_c), s		0.2		2.2		0.3		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Appendix E

Detailed Trip Generation Breakdown

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SUMMER/CHRISTMAS WEEKEND PEAK DAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	2,500	(Theme Park Guests)
CAST =	82	
SERVICE VEHICLES =	18	

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	1,625	30%	750	5%	125	2,500	Cast:	82	82					
PERSON TRIPS															
Ins		1,625		750		125	2,500	In:	82	82				2,582	
Outs		1,625		750		125	2,500	Out:	82	82				2,582	
MODE															
Drive Alone	3%	49	3%	23	4%	5	76	66%	54	54	66%			130	5%
Carpool	95%	1,544	95%	713	96%	120	2,376	32%	26	26	32%			2,402	93%
Tour Bus	2%	33	2%	15	0%	0	48	0%	0	0	0%			48	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	2	2	2%			2	0%
TOTAL	100%	1,625	100%	750	100%	125	2,500	100%	82	82	100%			2,582	100%
OCCUPANCY															
Drive Alone	1.0	49	1.0	23	1.0	5	76	1.0	54	54				130	
Carpool	3.5	441	3.5	204	3.5	34	679	1.10	24	24				703	
Tour Bus	15.0	2	15.0	1	15.0	0	3	15.0	0	0				3	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		492		227		39	758		77	77		Total =	18	854	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				3.02	
PCE															
Car	1.0	490	1.0	226	1.0	39	755	1.0	77	77	100%			833	95%
Tour Bus	1.0	2	1.0	1	1.0	0	3	1.0	0	0	0%			3	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		492		227		39	758		77	77	100%	2.5	45	880	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	2	2		0.0%	0	2	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	8	8		18.8%	8	16	
8-9 AM	5.0%	25	5.0%	11	5.0%	2	38	25.0%	19	19		18.8%	8	66	
9-10 AM	15.0%	74	15.0%	34	15.0%	6	114	25.0%	19	19		18.8%	8	142	
10-11 AM	15.4%	76	15.4%	35	15.4%	6	117	2.0%	2	2		18.8%	8	127	
11-12 AM	11.7%	58	11.7%	27	11.7%	5	89	2.0%	2	2		3.6%	2	92	
12-1 PM	7.6%	37	7.6%	17	7.6%	3	58	2.0%	2	2		3.6%	2	61	
1-2 PM	5.6%	28	5.6%	13	5.6%	2	42	0.0%	0	0		3.5%	2	44	
2-3 PM	4.2%	21	4.2%	10	4.2%	2	32	0.0%	0	0		3.5%	2	33	
3-4 PM	8.5%	42	8.5%	19	8.5%	3	64	20.3%	16	16		3.5%	2	82	
4-5 PM	4.5%	22	4.5%	10	4.5%	2	34	8.2%	6	6		3.5%	2	42	
5-6 PM	5.4%	27	5.4%	12	5.4%	2	41	0.0%	0	0		3.6%	2	43	
6-7 PM	4.1%	20	4.1%	9	4.1%	2	31	0.0%	0	0		0.0%	0	31	
7-8 PM	4.2%	21	4.2%	10	4.2%	2	32	0.0%	0	0		0.0%	0	32	
8-9 PM	4.1%	20	4.1%	9	4.1%	2	31	0.0%	0	0		0.0%	0	31	
9-10 PM	2.8%	14	2.8%	6	2.8%	1	21	0.0%	0	0		0.0%	0	21	
10-11 PM	1.9%	9	1.9%	4	1.9%	1	14	2.0%	2	2		0.0%	0	16	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1		0.0%	0	1	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	492	100.0%	227	100.0%	39	758	100.0%	77	77		100.0%	45	880	
DEPARTURES															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	1	1		0.0%	0	1	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 AM	1.4%	7	1.4%	3	1.4%	1	11	0.0%	0	0		18.8%	8	19	
10-11 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
11-12 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
12-1 PM	1.9%	9	1.9%	4	1.9%	1	14	0.0%	0	0		18.8%	8	23	
1-2 PM	2.1%	10	2.1%	5	2.1%	1	16	0.0%	0	0		3.6%	2	18	
2-3 PM	12.4%	61	12.4%	28	12.4%	5	94	4.0%	3	3		3.5%	2	99	
3-4 PM	15.4%	76	12.1%	27	12.1%	5	108	4.0%	3	3		3.5%	2	113	
4-5 PM	11.7%	58	13.1%	30	13.1%	5	92	10.0%	8	8		3.5%	2	102	
5-6 PM	7.6%	37	11.6%	26	11.6%	5	68	20.0%	15	15		3.5%	2	85	
6-7 PM	5.6%	28	7.5%	17	7.5%	3	48	4.0%	3	3		3.6%	2	52	
7-8 PM	4.2%	21	6.5%	15	6.5%	3	38	5.4%	4	4		3.6%	2	44	
8-9 PM	8.5%	42	7.5%	17	7.5%	3	62	5.0%	4	4		0.0%	0	66	
9-10 PM	12.2%	60	9.5%	22	9.5%	4	85	5.0%	4	4		0.0%	0	89	
10-11 PM	15.0%	74	12.4%	28	12.4%	5	107	15.0%	12	12		0.0%	0	118	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	15	15		0.0%	0	15	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	4	4		0.0%	0	4	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	492	100.0%	227	100.0%	39	758	100.0%	77	77		100.0%	45	880	

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	7	7
8-9 AM	38	27	65
9-10 AM	141	46	187
10-11 AM	250	48	298
11-12 AM	331	49	381
12-1 PM	375	51	425
1-2 PM	401	51	452
2-3 PM	339	48	387
3-4 PM	295	60	356
4-5 PM	237	59	296
5-6 PM	210	43	253
6-7 PM	193	40	234
7-8 PM	187	36	223
8-9 PM	157	32	189
9-10 PM	92	28	121
10-11 PM	0	18	18
11-12 PM	0	4	4
12-1 AM	0	0	0
1-2 AM	0	0	0

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS														
	Theme Park							EMPLOYEES				Service			
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	8	8		18.8%	8	16	
10-11 AM	15.4%	76	15.4%	35	15.4%	6	117	2.0%	2	2		18.8%	8	127	
5-6 PM	5.4%	27	5.4%	12	5.4%	2	41	0.0%	0	0		3.6%	2	43	
10-11 PM	1.9%	9	1.9%	4	1.9%	1	14	2.0%	2	2		0.0%	0	16	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
DEPARTURES															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	1	1		0.0%	0	1	
10-11 AM	1.0%	5	1.0%	2	1.0%	0	8	0.0%	0	0		18.8%	8	16	
5-6 PM	7.6%	37	11.6%	26	11.6%	5	68	20.0%	15	15		3.5%	2	85	
10-11PM	15.0%	74	12.4%	28	12.4%	5	107	15.0%	12	12		0.0%	0	118	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	4	4		0.0%	0	4	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SUMMER WEEKDAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	500	(Theme Park Guests)
CAST =	36	
SERVICE VEHICLES =	26	

	GUESTS							EMPLOYEES				Service			
	Theme Park														
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	325	30%	150	5%	25	500	Cast:	36	36					
PERSON TRIPS															
Ins		325		150		25	500	In:	36	36				536	
Outs		325		150		25	500	Out:	36	36				536	
MODE															
Drive Alone	3%	10	3%	5	4%	1	15	66%	24	24	66%			39	7%
Carpool	95%	309	95%	143	96%	24	475	32%	12	12	32%			487	91%
Tour Bus	2%	7	2%	3	0%	0	10	0%	0	0	0%			10	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	325	100%	150	100%	25	500	100%	36	36	100%			536	100%
OCCUPANCY															
Drive Alone	1.0	10	1.0	5	1.0	1	15	1.0	24	24				39	
Carpool	3.5	88	3.5	41	3.5	7	136	1.10	11	11				146	
Tour Bus	15.0	0	15.0	0	15.0	0	1	15.0	0	0				1	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		98		45		8	152		35	35		Total =	26	212	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				2.53	
PCE															
Car	1.0	98	1.0	45	1.0	8	151	1.0	35	35	100%			186	74%
Tour Bus	1.0	0	1.0	0	1.0	0	1	1.0	0	0	0%			1	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		98		45		8	152		35	35	100%	2.5	64	250	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	18.8%	12	15
8-9 AM	5.0%	5	5.0%	2	5.0%	0	8	25.0%	9	9	18.8%	12	28
9-10 AM	15.0%	15	15.0%	7	15.0%	1	23	25.0%	9	9	18.8%	12	43
10-11 AM	15.4%	15	15.4%	7	15.4%	1	23	2.0%	1	1	18.8%	12	36
11-12 AM	11.7%	12	11.7%	5	11.7%	1	18	2.0%	1	1	3.6%	2	21
12-1 PM	7.6%	7	7.6%	3	7.6%	1	12	2.0%	1	1	3.6%	2	15
1-2 PM	5.6%	6	5.6%	3	5.6%	0	8	0.0%	0	0	3.5%	2	11
2-3 PM	4.2%	4	4.2%	2	4.2%	0	6	0.0%	0	0	3.5%	2	9
3-4 PM	8.5%	8	8.5%	4	8.5%	1	13	20.3%	7	7	3.5%	2	22
4-5 PM	4.5%	4	4.5%	2	4.5%	0	7	8.2%	3	3	3.5%	2	12
5-6 PM	5.4%	5	5.4%	2	5.4%	0	8	0.0%	0	0	3.6%	2	10
6-7 PM	4.1%	4	4.1%	2	4.1%	0	6	0.0%	0	0	0.0%	0	6
7-8 PM	4.2%	4	4.2%	2	4.2%	0	6	0.0%	0	0	0.0%	0	6
8-9 PM	4.1%	4	4.1%	2	4.1%	0	6	0.0%	0	0	0.0%	0	6
9-10 PM	2.8%	3	2.8%	1	2.8%	0	4	0.0%	0	0	0.0%	0	4
10-11 PM	1.9%	2	1.9%	1	1.9%	0	3	2.0%	1	1	0.0%	0	4
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	1	1	0.0%	0	1
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	98	100.0%	45	100.0%	8	152	100.0%	35	35	100.0%	64	250
DEPARTURES													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	1.4%	0	0	0.0%	0	0
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	0	0	0.0%	0	0
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 AM	1.4%	1	1.4%	1	1.4%	0	2	0.0%	0	0	18.8%	12	14
10-11 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
11-12 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
12-1 PM	1.9%	2	1.9%	1	1.9%	0	3	0.0%	0	0	18.8%	12	15
1-2 PM	2.1%	2	2.1%	1	2.1%	0	3	0.0%	0	0	3.6%	2	5
2-3 PM	12.4%	12	12.4%	6	12.4%	1	19	4.0%	1	1	3.5%	2	22
3-4 PM	15.4%	15	12.1%	5	12.1%	1	22	4.0%	1	1	3.5%	2	25
4-5 PM	11.7%	12	13.1%	6	13.1%	1	18	10.0%	3	3	3.5%	2	24
5-6 PM	7.6%	7	11.6%	5	11.6%	1	14	20.0%	7	7	3.5%	2	23
6-7 PM	5.6%	6	7.5%	3	7.5%	1	10	4.0%	1	1	3.6%	2	13
7-8 PM	4.2%	4	6.5%	3	6.5%	1	8	5.4%	2	2	3.6%	2	12
8-9 PM	8.5%	8	7.5%	3	7.5%	1	12	5.0%	2	2	0.0%	0	14
9-10 PM	12.2%	12	9.5%	4	9.5%	1	17	5.0%	2	2	0.0%	0	19
10-11 PM	15.0%	15	12.4%	6	12.4%	1	21	15.0%	5	5	0.0%	0	27
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	20.0%	7	7	0.0%	0	7
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	2	2	0.0%	0	2
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	98	100.0%	45	100.0%	8	152	100.0%	35	35	100.0%	64	250

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	3	3
8-9 AM	8	12	20
9-10 AM	28	21	49
10-11 AM	50	21	71
11-12 AM	66	22	88
12-1 PM	75	23	98
1-2 PM	80	23	103
2-3 PM	68	21	89
3-4 PM	59	27	86
4-5 PM	47	26	74
5-6 PM	42	19	61
6-7 PM	39	18	57
7-8 PM	37	16	54
8-9 PM	31	14	46
9-10 PM	18	13	31
10-11 PM	0	8	8
11-12 PM	0	2	2
12-1 AM	0	(0)	(0)
1-2 AM	0	(0)	(0)

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	18.8%	12	15
10-11 AM	15.4%	15	15.4%	7	15.4%	1	23	2.0%	1	1	18.8%	12	36
5-6 PM	5.4%	5	5.4%	2	5.4%	0	8	0.0%	0	0	3.6%	2	10
10-11 PM	1.9%	2	1.9%	1	1.9%	0	3	2.0%	1	1	0.0%	0	4
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
DEPARTURES													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	1.0%	0	0	0.0%	0	0
10-11 AM	1.0%	1	1.0%	0	1.0%	0	2	0.0%	0	0	18.8%	12	14
5-6 PM	7.6%	7	11.6%	5	11.6%	1	14	20.0%	7	7	3.5%	2	23
10-11PM	15.0%	15	12.4%	6	12.4%	1	21	15.0%	5	5	0.0%	0	27
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.2%	2	2	0.0%	0	2

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: WINTER WEEKDAY

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	125	(Theme Park Guests)
CAST =	33	
SERVICE VEHICLES =	11	

	GUESTS							EMPLOYEES				Service			
	Theme Park														
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	81	30%	38	5%	6	125	Cast:	33	33					
PERSON TRIPS															
Ins		81		38		6	125	In:	33	33				158	
Outs		81		38		6	125	Out:	33	33				158	
MODE															
Drive Alone	3%	2	3%	1	4%	0	4	66%	21	21	66%			25	16%
Carpool	95%	77	95%	36	96%	6	119	32%	10	10	32%			129	82%
Tour Bus	2%	2	2%	1	0%	0	2	0%	0	0	0%			2	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	1	1	2%			1	0%
TOTAL	100%	81	100%	38	100%	6	125	100%	33	33	100%			158	100%
OCCUPANCY															
Drive Alone	1.0	2	1.0	1	1.0	0	4	1.0	21	21				25	
Carpool	3.5	22	3.5	10	3.5	2	34	1.10	9	9				43	
Tour Bus	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		25		11		2	38		31	31		Total =	11	79	
AVR		3.30		3.30		3.18	3.30		1.05	1.05				1.98	
PCE															
Car	1.0	24	1.0	11	1.0	2	38	1.0	31	31	100%			69	72%
Tour Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		25		11		2	38		31	31	100%	2.5	26	95	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	1	1	0.0%	0	1
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	27.0%	8	8	18.8%	5	13
8-9 AM	5.0%	1	5.0%	1	5.0%	0	2	40.0%	12	12	18.8%	5	19
9-10 AM	25.0%	6	25.0%	3	25.0%	0	9	25.0%	8	8	18.8%	5	22
10-11 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	18.8%	5	15
11-12 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	3.6%	1	11
12-1 PM	7.0%	2	7.0%	1	7.0%	0	3	2.0%	1	1	3.6%	1	4
1-2 PM	5.0%	1	5.0%	1	5.0%	0	2	0.0%	0	0	3.5%	1	3
2-3 PM	4.0%	1	4.0%	0	4.0%	0	2	0.0%	0	0	3.5%	1	2
3-4 PM	4.0%	1	4.0%	0	4.0%	0	2	0.0%	0	0	3.5%	1	2
4-5 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.5%	1	1
5-6 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.6%	1	1
6-7 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	25	100.0%	11	100.0%	2	38	100.0%	31	31	100.0%	26	95
DEPARTURES													
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
10-11 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
11-12 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
12-1 PM	1.9%	0	1.9%	0	1.9%	0	1	0.0%	0	0	18.8%	5	6
1-2 PM	2.1%	1	2.1%	0	2.1%	0	1	0.0%	0	0	3.6%	1	2
2-3 PM	15.0%	4	15.0%	2	15.0%	0	6	5.0%	2	2	3.5%	1	8
3-4 PM	20.0%	5	20.0%	2	20.0%	0	8	5.0%	2	2	3.5%	1	10
4-5 PM	25.0%	6	25.0%	3	25.0%	0	9	10.0%	3	3	3.5%	1	13
5-6 PM	25.0%	6	25.0%	3	25.0%	0	9	30.0%	9	9	3.5%	1	20
6-7 PM	8.0%	2	8.0%	1	8.0%	0	3	40.0%	12	12	3.6%	1	16
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	3	3	3.6%	1	4
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
TOTAL	100.0%	25	100.0%	11	100.0%	2	38	100.0%	31	31	100.0%	26	95

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	1	1
7-8 AM	0	9	9
8-9 AM	2	21	23
9-10 AM	11	29	40
10-11 AM	20	30	50
11-12 AM	29	30	59
12-1 PM	31	31	62
1-2 PM	32	31	63
2-3 PM	28	29	57
3-4 PM	22	28	50
4-5 PM	13	25	37
5-6 PM	3	15	18
6-7 PM	(0)	3	3
7-8 PM	(0)	0	(0)
8-9 PM	(0)	0	(0)
9-10 PM	(0)	0	(0)
10-11 PM	(0)	0	(0)
11-12 PM	(0)	0	(0)
12-1 AM	(0)	0	(0)
1-2 AM	(0)	0	(0)

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS							EMPLOYEES			Service		
	Theme Park												
	Valley		Mountains		Local		TP Total	Theme Park		Total	Vehicles		TOTAL
ARRIVALS													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	27.0%	8	8	18.8%	5	13
10-11 AM	25.0%	6	25.0%	3	25.0%	0	9	2.0%	1	1	18.8%	5	15
5-6 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	3.6%	1	1
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
DEPARTURES													
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
10-11 AM	1.0%	0	1.0%	0	1.0%	0	0	0.0%	0	0	18.8%	5	5
5-6 PM	25.0%	6	25.0%	3	25.0%	0	9	30.0%	9	9	3.5%	1	20
10-11PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0	0.0%	0	0

SKYPARK SANTAS VILLAGE SAN BERNARDINO
TRIP GENERATION
SCENARIO: SPECIAL EVENT

GUEST ATTENDANCE:

ANNUAL =	200.0	THOUSAND
DAILY =	500	(Special Event Guests)
CAST =	24	
SERVICE VEHICLES =	2	

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
TOTAL ATT.	65%	325	30%	150	5%	25	500	Cast:	24	24					
PERSON TRIPS															
Ins		325		150		25	500	In:	24	24				524	
Outs		325		150		25	500	Out:	24	24				524	
MODE															
Drive Alone	3%	10	3%	5	4%	1	15	66%	16	16	66%			31	6%
Carpool	95%	309	95%	143	96%	24	475	32%	8	8	32%			483	92%
Tour Bus	2%	7	2%	3	0%	0	10	0%	0	0	0%			10	2%
Shuttle	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Bus	0%	0	0%	0	0%	0	0	0%	0	0	0%			0	0%
Other/Walk	0%	0	0%	0	0%	0	0	2%	0	0	2%			0	0%
TOTAL	100%	325	100%	150	100%	25	500	100%	24	24	100%			524	100%
OCCUPANCY															
Drive Alone	1.0	10	1.0	5	1.0	1	15	1.0	16	16				31	
Carpool	2.5	124	2.5	57	2.5	10	190	1.10	7	7				197	
Tour Bus	15.0	0	15.0	0	15.0	0	1	15.0	0	0				1	
Shuttle	15.0	0	15.0	0	15.0	0	0	15.0	0	0				0	
Bus	0.0	0	0.0	0	0.0	0	0	0.0	0	0				0	
Other/Walk	0.0	0	0.0	0	0.0	0	0	0.0	0	0		Service Vehicle		0	
Total Vehicles		134		62		11	206		22	22		Total =	2	231	
AVR		2.43		2.43		2.36	2.43		1.05	1.05				2.27	
PCE															
Car	1.0	133	1.0	62	1.0	11	205	1.0	22	22	100%			228	97%
Tour Bus	1.0	0	1.0	0	1.0	0	1	1.0	0	0	0%			1	0%
Shuttle	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
Bus	1.0	0	1.0	0	1.0	0	0	1.0	0	0	0%			0	0%
DAILY PCE		134		62		11	206		22	22	100%	2.5	5	234	

SKYPARK SANTAS VILLAGE SAN BERNARDINO
PEAK DAY TRIP GENERATION (CONTINUED)

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		18.8%	1	3	
9-10 AM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		18.8%	1	3	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
11-12 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
12-1 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
1-2 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
2-3 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
3-4 PM	10.0%	13	10.0%	6	10.0%	1	21	20.0%	4	4		3.5%	0	25	
4-5 PM	10.0%	13	10.0%	6	10.0%	1	21	45.0%	10	10		3.5%	0	31	
5-6 PM	20.0%	27	20.0%	12	20.0%	2	41	11.5%	3	3		3.6%	0	44	
6-7 PM	35.0%	47	35.0%	22	35.0%	4	72	0.0%	0	0		0.0%	0	72	
7-8 PM	25.0%	33	25.0%	15	25.0%	3	51	0.0%	0	0		0.0%	0	51	
8-9 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	0	0		0.0%	0	0	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	1.5%	0	0		0.0%	0	0	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	134	100.0%	62	100.0%	11	206	100.0%	22	22		100.0%	5	234	
DEPARTURES															
6-7 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
8-9 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
9-10 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
11-12 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
12-1 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
1-2 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
2-3 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
3-4 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.5%	0	0	
4-5 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		3.5%	0	2	
5-6 PM	10.0%	13	10.0%	6	10.0%	1	21	10.0%	2	2		3.5%	0	23	
6-7 PM	10.0%	13	10.0%	6	10.0%	1	21	0.0%	0	0		3.6%	0	21	
7-8 PM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		3.6%	0	0	
8-9 PM	20.0%	27	20.0%	12	20.0%	2	41	0.0%	0	0		0.0%	0	41	
9-10 PM	35.0%	47	35.0%	22	35.0%	4	72	20.0%	4	4		0.0%	0	77	
10-11 PM	25.0%	33	25.0%	15	25.0%	3	51	45.0%	10	10		0.0%	0	62	
11-12 PM	0.0%	0	0.0%	0	0.0%	0	0	10.0%	2	2		0.0%	0	2	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.0%	1	1		0.0%	0	1	
1-2 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
TOTAL	100.0%	134	100.0%	62	100.0%	11	206	100.0%	22	22		100.0%	5	234	

	PKG GUEST	ACCUM EMPLOYEE	TOTAL
6-7 AM	0	0	0
7-8 AM	0	0	0
8-9 AM	0	2	2
9-10 AM	0	4	4
10-11 AM	0	4	4
11-12 AM	0	4	4
12-1 PM	0	4	4
1-2 PM	0	4	4
2-3 PM	0	4	4
3-4 PM	21	9	30
4-5 PM	41	17	58
5-6 PM	62	17	79
6-7 PM	113	17	130
7-8 PM	165	17	182
8-9 PM	124	17	141
9-10 PM	51	13	64
10-11 PM	0	3	3
11-12 PM	0	1	1
12-1 AM	0	0	0
1-2 AM	0	0	0

PEAK DAY TRIP GENERATION (CONTINUED)

TIME PERIOD
7 TO 8AM ---- MORNING BACKGROUND PEAK
10 TO 11AM -- MORNING THEME PARK PEAK
5 TO 6PM ---- EVENING BACKGROUND PEAK
12 TO 1AM --- EVENING THEME PARK PEAK

	GUESTS														
	Theme Park							EMPLOYEES				Service		
	Valley		Mountains		Local		TP Total	Theme Park		Total		Vehicles		TOTAL	
ARRIVALS															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
5-6 PM	20.0%	27	20.0%	12	20.0%	2	41	11.5%	3	3		3.6%	0	44	
10-11 PM	0.0%	0	0.0%	0	0.0%	0	0	2.0%	0	0		0.0%	0	0	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
DEPARTURES															
7-8 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		0.0%	0	0	
10-11 AM	0.0%	0	0.0%	0	0.0%	0	0	0.0%	0	0		18.8%	1	1	
5-6 PM	10.0%	13	10.0%	6	10.0%	1	21	10.0%	2	2		3.5%	0	23	
10-11PM	25.0%	33	25.0%	15	25.0%	3	51	45.0%	10	10		0.0%	0	62	
12-1 AM	0.0%	0	0.0%	0	0.0%	0	0	5.0%	1	1		0.0%	0	1	

Appendix F

Signal Warrant Analysis

Appendix F
Signal Warrant Analysis

The analysis presented in this Appendix summarizes the results of the signal warrant analysis conducted for the following unsignalized intersections for Project analysis scenarios:

- Daley Canyon Road & State Route 18 (SR 18)
- SR 173 & SR 18
- Kuffel Canyon Road & SR 18
- Project Driveways & SR 18
- Live Oak Drive & SR 18

The traffic volumes and lane configurations assumed in this analysis are consistent with those presented in the Traffic Impact Study.

SIGNAL WARRANT METHODOLOGY

California Manual on Uniform Traffic Control Devices (California Department of Transportation [Caltrans], 2012) (California MUTCD) includes methodologies for eight vehicle signal warrants. To have a traffic signal installed, at least one of these warrants should be met and an engineering study should be performed indicating that the installation of a traffic signal would improve the overall safety and/or operation of the intersection.

For this analysis, we evaluated Warrant 1: Eight-Hour Vehicular Volume, Warrant 2: Four-Hour Vehicular Volume, Warrant 3: Peak-Hour Vehicular Volume, and Warrant 4: Pedestrian Volume. The following methodologies, as quoted from the California MUTCD, were used to evaluate signal warrants at the intersection:

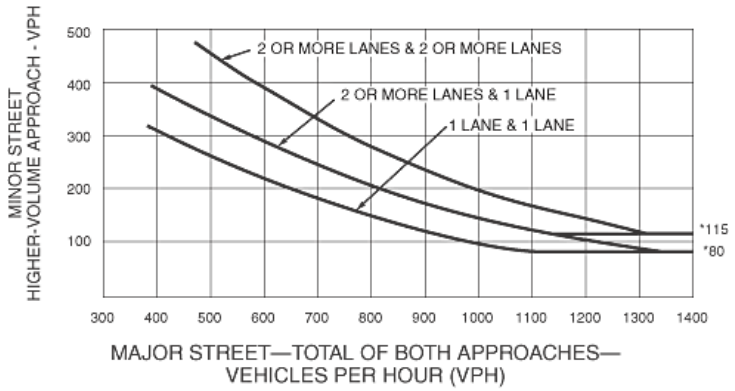
Warrant 1, Eight-Hour Vehicular Volume

Warrant 1, Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. Warrant 1, Condition B is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersections street suffers excessive delay or conflict in entering or crossing the major street. It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then the criteria for Warrant 1 is satisfied and Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then the criteria for Warrant 1 is satisfied and the combination of Conditions A and B is not needed.

Warrant 2, Four-Hour Vehicular Volume Warrant

Signal Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal. Combined volumes for both approaches of the major street are included while only the volume from the higher minor street approach is included. At an intersection with a high volume of left-turn traffic from the major street, the analysis may include the major street left-turn volumes plus the minor street approach volume as the total "minor street" volume. The warrant is satisfied if traffic volumes for any four hours of an average day exceed the plotted lines shown in the following figure.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

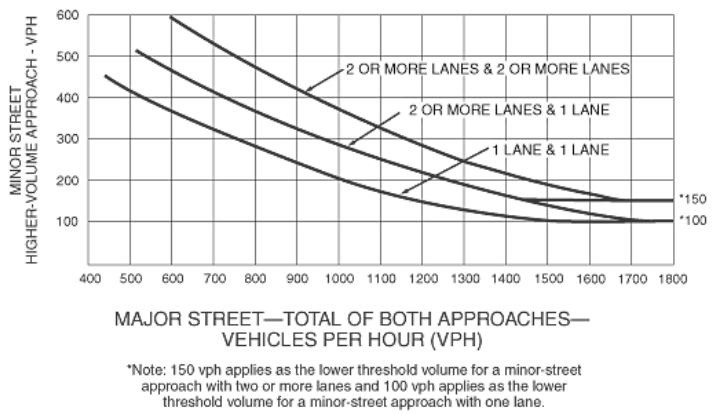


*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3, Peak-Hour Vehicular Volume Warrant

Signal Warrant 3 is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. Combined volumes for both approaches of the major street are included while only the volume from the higher minor street approach is included. At an intersection with a high volume of left-turn traffic from the major street, the analysis may include the major street left-turn volumes plus the minor street approach volume as the total "minor street" volume. The warrant is satisfied if traffic volumes for any one hour of an average day exceed the plotted lines shown in the following figure.

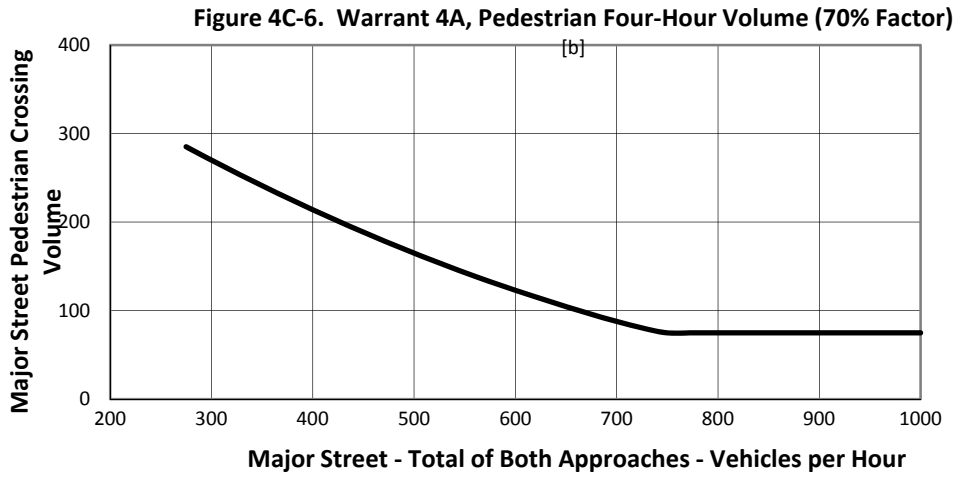
Figure 4C-3. Warrant 3, Peak Hour

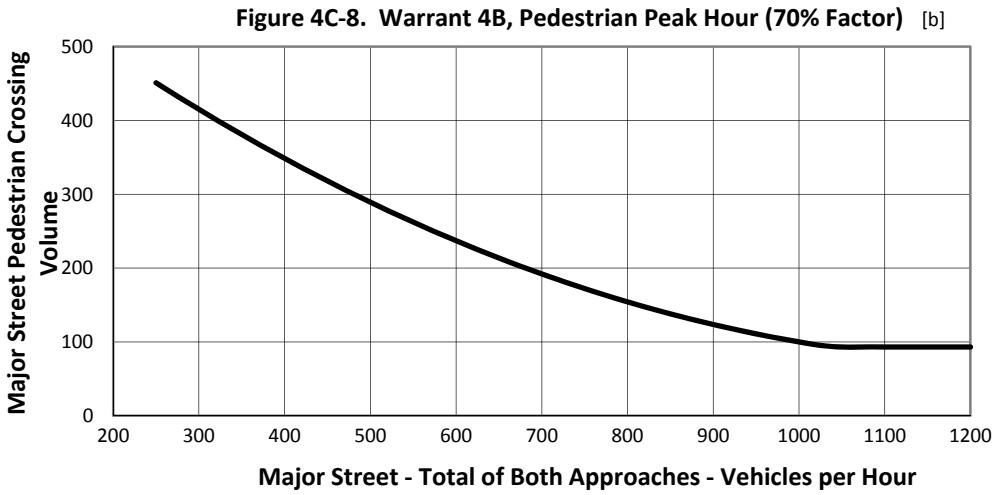


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 4, Pedestrian Volume Warrant

Signal Warrant 4 is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. The warrant is satisfied if the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hours crossing the major street (total of all crossings) all fall above the curves in the following figures.





ANALYSIS

A signal warrant analysis was conducted at the unsignalized study intersections for all Project scenarios. Based on this analysis, a signal is warranted at the Project Driveways & SR 18 for all with-Project scenarios based on pedestrian volumes and at the following study intersections:

Signal warrants are met under Existing Conditions without Project:

- Daley Canyon Road & SR 18
- SR 173 & SR 18

Signal warrants are met under the Full Build-Out (Year 2035) plus Project Conditions only

- Kuffel Canyon Road & State Route 18
- Live Oak Drive & State Route 18

The detailed signal warrant sheets are provided in Attachment 2.

CONCLUSION

Based on the County's guidelines, the determination that an unsignalized intersection meets the criteria of a traffic signal warrant does not result in a significant impact if the intersection is not operating at LOS E or F. Furthermore, an unsignalized intersection meeting the criteria of a traffic signal warrant does not in itself require the installation of a signal. Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required.

Attachment 1

Average Daily Traffic
Weekend

Attachment 2

Signal Warrant Worksheets

Attachment 1

Average Daily Traffic
Weekend

Prepared by City Count, LLC (www.citycount.com)

ADT Volume Report

HWY 18 east of Kuffel Canyon Road

Day: Saturday, November 1, 2014 **City:** Lake Arrowhead, CA

ID: 1

Daily Totals	NB	SB	EB	WB	Total
	0	0	1408	1429	2837

AM	NB	SB	EB		WB		Total		PM	NB	SB	EB		WB		Total	
00:00			2		2		4		12:00			23		37		60	
00:15			2		5		7		12:15			32		25		57	
00:30			7		2		9		12:30			31		35		66	
00:45			3	14	2	11	5	25	12:45			35	121	41	138	76	259
01:00			2		0		2		13:00			27		26		53	
01:15			3		4		7		13:15			47		32		79	
01:30			1		1		2		13:30			31		36		67	
01:45			3	9	2	7	5	16	13:45			29	134	44	138	73	272
02:00			2		4		6		14:00			20		14		34	
02:15			2		0		2		14:15			20		40		60	
02:30			1		0		1		14:30			30		31		61	
02:45			1	6	0	4	1	10	14:45			29	99	33	118	62	217
03:00			0		1		1		15:00			38		19		57	
03:15			0		0		0		15:15			39		30		69	
03:30			2		1		3		15:30			28		36		64	
03:45			2	4	2	4	4	8	15:45			29	134	27	112	56	246
04:00			2		6		8		16:00			22		28		50	
04:15			1		2		3		16:15			30		30		60	
04:30			2		2		4		16:30			23		16		39	
04:45			1	6	1	11	2	17	16:45			13	88	34	108	47	196
05:00			2		0		2		17:00			21		14		35	
05:15			1		5		6		17:15			20		31		51	
05:30			3		7		10		17:30			15		18		33	
05:45			0	6	4	16	4	22	17:45			12	68	26	89	38	157
06:00			4		2		6		18:00			28		14		42	
06:15			3		8		11		18:15			11		14		25	
06:30			5		7		12		18:30			9		9		18	
06:45			8	20	13	30	21	50	18:45			9	57	15	52	24	109
07:00			11		4		15		19:00			10		10		20	
07:15			16		11		27		19:15			6		14		20	
07:30			18		12		30		19:30			8		9		17	
07:45			12	57	19	46	31	103	19:45			15	39	7	40	22	79
08:00			20		14		34		20:00			6		7		13	
08:15			23		15		38		20:15			13		10		23	
08:30			32		19		51		20:30			9		8		17	
08:45			19	94	25	73	44	167	20:45			6	34	7	32	13	66
09:00			30		19		49		21:00			17		6		23	
09:15			16		28		44		21:15			9		5		14	
09:30			26		24		50		21:30			11		3		14	
09:45			19	91	35	106	54	197	21:45			6	43	6	20	12	63
10:00			28		27		55		22:00			7		4		11	
10:15			17		31		48		22:15			7		3		10	
10:30			39		34		73		22:30			4		5		9	
10:45			25	109	38	130	63	239	22:45			6	24	4	16	10	40
11:00			35		29		64		23:00			5		3		8	
11:15			36		28		64		23:15			3		3		6	
11:30			32		28		60		23:30			3		1		4	
11:45			36	139	34	119	70	258	23:45			1	12	2	9	3	21
Totals				555		557	1112		Totals				853		872	1725	
Split %				49.9%		50.1%	39.2%		Split %				49.4%		50.6%	60.8%	

Daily Totals	NB	SB	EB	WB	Total
	0	0	1408	1429	2837

AM Peak Hour	11:00	10:15	10:30	PM Peak Hour	12:45	13:00	12:45
AM Peak Hr Volume	139	132	264	PM Peak Hr Volume	140	138	275
AM Pk Hr Factor	0.965	0.868	0.904	PM Pk Hr Factor	0.745	0.784	0.870

Prepared by City Count, LLC (www.citycount.com)

ADT Volume Report

HWY 18 east of Kuffel Canyon Road

Day: Sunday, November 2, 2014 **City:** Lake Arrowhead, CA

ID: 1

Daily Totals	NB	SB	EB	WB	Total
	0	0	1494	1531	3025

AM	NB	SB	EB		WB		Total		PM	NB	SB	EB		WB		Total	
00:00			4		4		8		12:00			40		37		77	
00:15			3		3		6		12:15			29		30		59	
00:30			1		0		1		12:30			48		30		78	
00:45			1	9	1	8	2	17	12:45			31	148	39	136	70	284
01:00			1		1		2		13:00			36		26		62	
01:15			1		2		3		13:15			67		40		107	
01:30			0		1		1		13:30			38		34		72	
01:45			0	2	2	6	2	8	13:45			34	175	36	136	70	311
02:00			1		0		1		14:00			36		39		75	
02:15			1		0		1		14:15			44		39		83	
02:30			0		2		2		14:30			46		27		73	
02:45			4	6	1	3	5	9	14:45			41	167	27	132	68	299
03:00			2		0		2		15:00			38		33		71	
03:15			1		0		1		15:15			42		24		66	
03:30			1		1		2		15:30			34		41		75	
03:45			0	4	6	7	6	11	15:45			41	155	34	132	75	287
04:00			0		0		0		16:00			36		31		67	
04:15			0		0		0		16:15			32		39		71	
04:30			0		1		1		16:30			35		29		64	
04:45			1	1	1	2	2	3	16:45			22	125	26	125	48	250
05:00			1		1		2		17:00			19		36		55	
05:15			0		0		0		17:15			29		27		56	
05:30			1		3		4		17:30			28		41		69	
05:45			3	5	1	5	4	10	17:45			23	99	27	131	50	230
06:00			4		2		6		18:00			23		29		52	
06:15			1		2		3		18:15			24		19		43	
06:30			3		8		11		18:30			24		29		53	
06:45			2	10	4	16	6	26	18:45			17	88	24	101	41	189
07:00			3		5		8		19:00			21		15		36	
07:15			3		3		6		19:15			17		10		27	
07:30			3		11		14		19:30			19		11		30	
07:45			5	14	4	23	9	37	19:45			15	72	6	42	21	114
08:00			8		7		15		20:00			20		9		29	
08:15			4		13		17		20:15			12		10		22	
08:30			9		17		26		20:30			15		13		28	
08:45			10	31	26	63	36	94	20:45			8	55	7	39	15	94
09:00			9		10		19		21:00			10		8		18	
09:15			5		17		22		21:15			9		12		21	
09:30			18		30		48		21:30			8		6		14	
09:45			21	53	44	101	65	154	21:45			5	32	4	30	9	62
10:00			18		19		37		22:00			5		8		13	
10:15			25		32		57		22:15			8		7		15	
10:30			25		34		59		22:30			7		4		11	
10:45			25	93	33	118	58	211	22:45			5	25	4	23	9	48
11:00			26		25		51		23:00			5		5		10	
11:15			30		35		65		23:15			8		4		12	
11:30			26		29		55		23:30			4		6		10	
11:45			25	107	46	135	71	242	23:45			1	18	2	17	3	35
Totals				335		487	822		Totals				1159		1044	2203	
Split %				40.8%		59.2%	27.2%		Split %				52.6%		47.4%	72.8%	

Daily Totals	NB	SB	EB	WB	Total
	0	0	1494	1531	3025

AM Peak Hour	11:00	11:00	11:00	PM Peak Hour	12:30	13:15	13:15
AM Peak Hr Volume	107	135	242	PM Peak Hr Volume	182	149	324
AM Pk Hr Factor	0.892	0.734	0.852	PM Pk Hr Factor	0.679	0.931	0.757

Attachment 2

Signal Warrant Worksheets

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-AM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	514	463	370
Major Street (Approach 2):	271	244	195
[b] Major Street Left-Turns:	160	144	115
Minor Street (Higher Volume):	216	194	156

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	370
Major Street (Approach 2):	195
[a] Major Street Left-Turns:	115
Minor Street (Higher Volume):	156

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **565** Minor: **271**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **565** Minor: **271**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

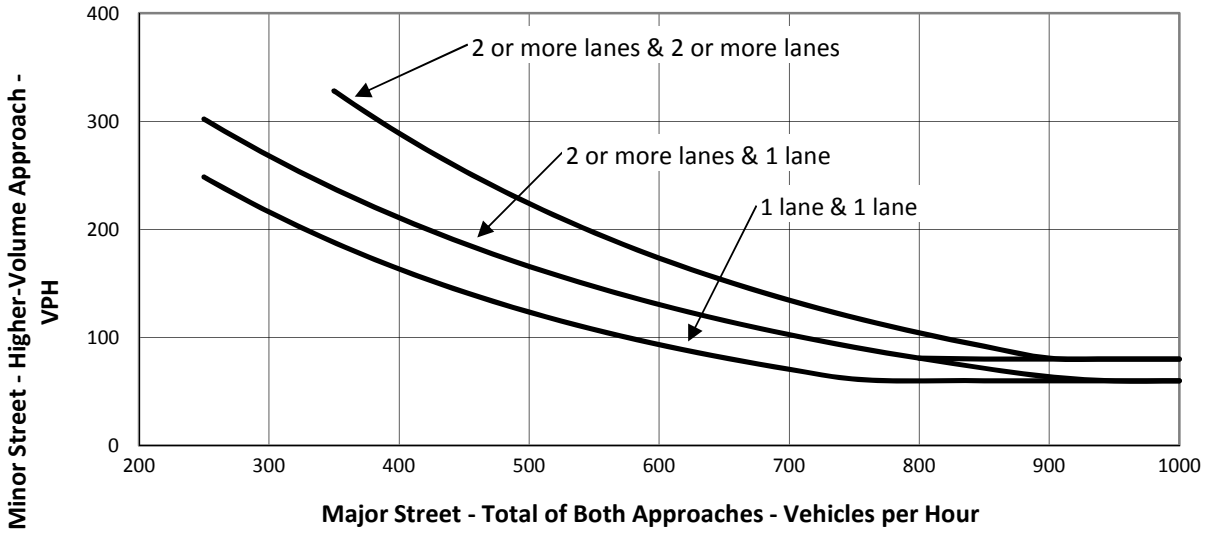
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	463
		Major Street (Approach 2):	244
Major Street Lanes:	2	[a] Major Street Left-Turns:	144
Minor Street Lanes:	1	Minor Street (Higher Volume):	194
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	463	Minimum Major Street Volume:	280
Major Street (Approach 2):	244	Satisfied?	YES
Total Major Street Volume:	707		
		Minimum Minor Street Volume:	101
Major Street Left Turns:	144	Satisfied?	YES
Minor Street (Higher Volume):	194		
Total Minor Street Volume:	338	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

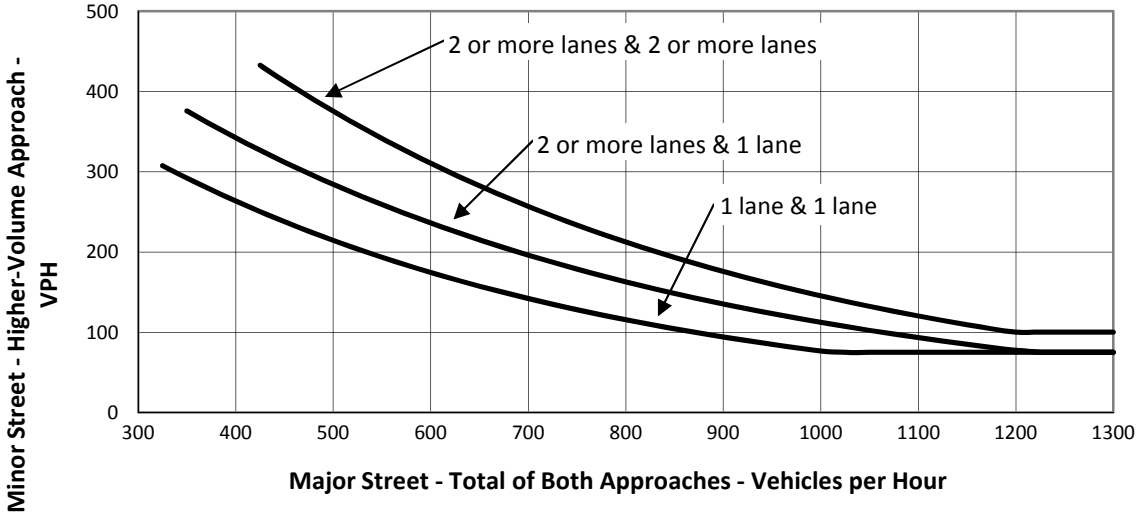
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	514
		Major Street (Approach 2):	271
Major Street Lanes:	2	[a] Major Street Left-Turns:	160
Minor Street Lanes:	1	Minor Street (Higher Volume):	216
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	514	Minimum Major Street Volume:	350
Major Street (Approach 2):	271	Satisfied?	YES
Total Major Street Volume:	785		
		Minimum Minor Street Volume:	167
Major Street Left Turns:	160	Satisfied?	YES
Minor Street (Higher Volume):	216		
Total Minor Street Volume:	376	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-AM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-PM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	534	481	384
Major Street (Approach 2):	337	303	243
[b] Major Street Left-Turns:	197	177	142
Minor Street (Higher Volume):	180	162	130

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	384
Major Street (Approach 2):	243
[a] Major Street Left-Turns:	142
Minor Street (Higher Volume):	130

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **627** Minor: **272**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **627** Minor: **272**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

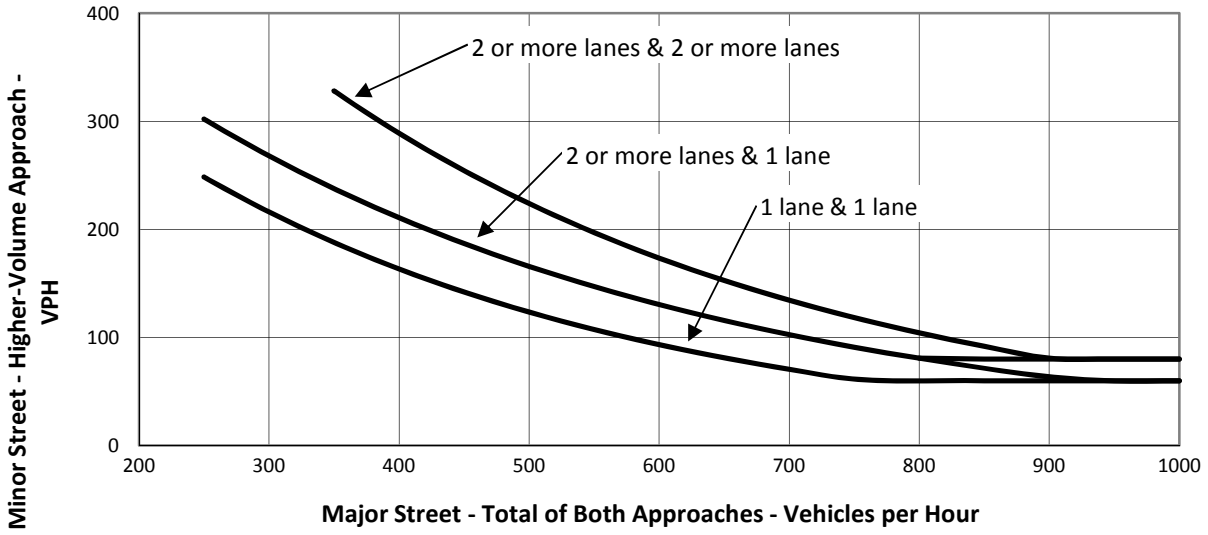
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	481
		Major Street (Approach 2):	303
Major Street Lanes:	2	[a] Major Street Left-Turns:	177
Minor Street Lanes:	1	Minor Street (Higher Volume):	162
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	481	Minimum Major Street Volume:	280
Major Street (Approach 2):	303	Satisfied?	YES
Total Major Street Volume:	784		
		Minimum Minor Street Volume:	84
Major Street Left Turns:	177	Satisfied?	YES
Minor Street (Higher Volume):	162		
Total Minor Street Volume:	339	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

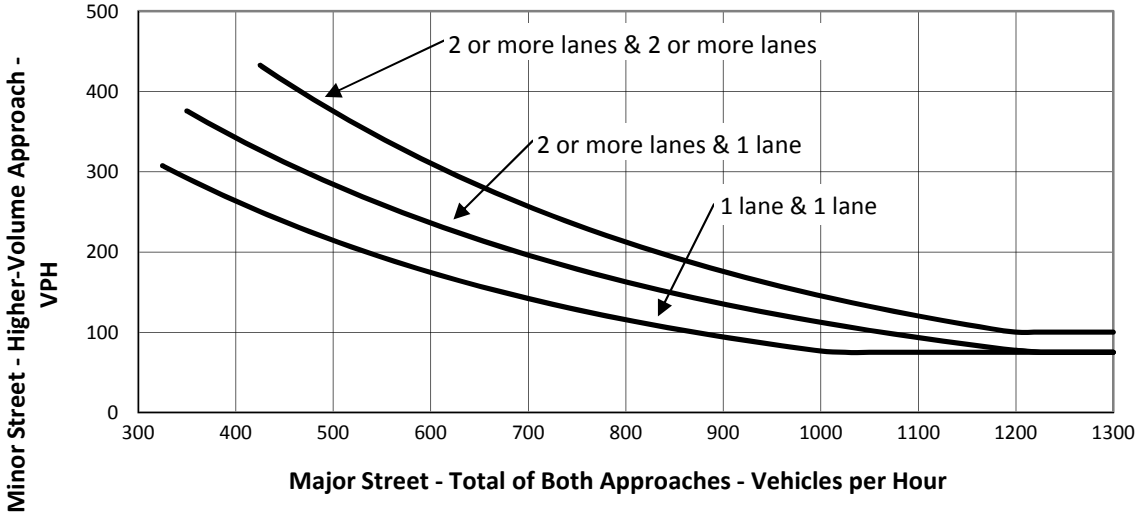
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	534
		Major Street (Approach 2):	337
Major Street Lanes:	2	[a] Major Street Left-Turns:	197
Minor Street Lanes:	1	Minor Street (Higher Volume):	180
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	534	Minimum Major Street Volume:	350
Major Street (Approach 2):	337	Satisfied?	YES
Total Major Street Volume:	871		
		Minimum Minor Street Volume:	143
Major Street Left Turns:	197	Satisfied?	YES
Minor Street (Higher Volume):	180		
Total Minor Street Volume:	377	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-PM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-AM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	390	355	265
Major Street (Approach 2):	296	269	201
[b] Major Street Left-Turns:	101	92	69
Minor Street (Higher Volume):	181	165	123

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	265
Major Street (Approach 2):	201
[a] Major Street Left-Turns:	69
Minor Street (Higher Volume):	123

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **466** Minor: **192**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **466** Minor: **192**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

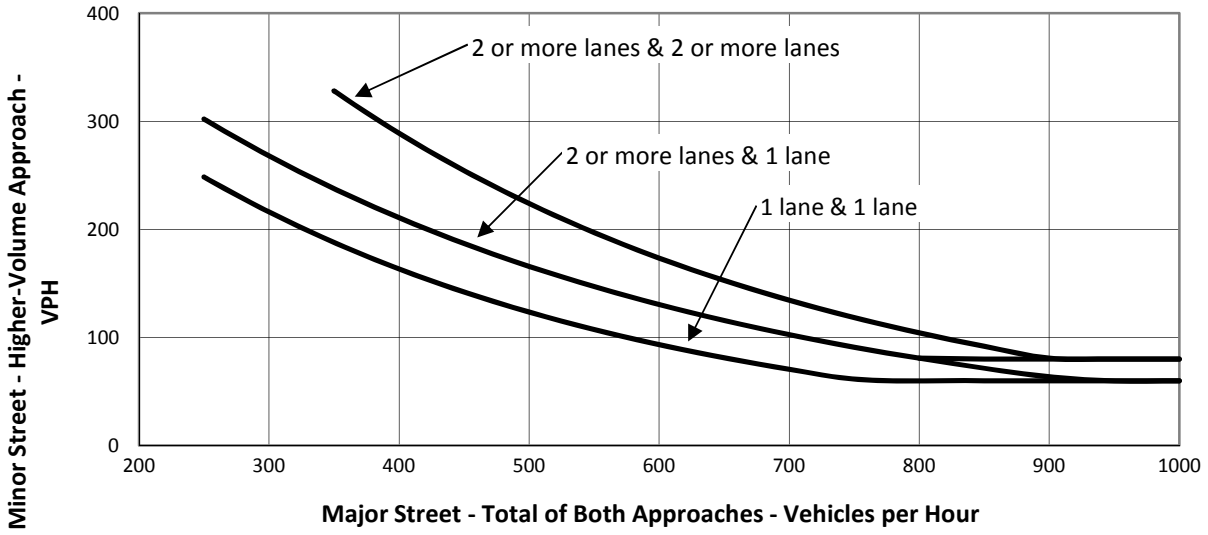
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	355
		Major Street (Approach 2):	269
Major Street Lanes:	2	[a] Major Street Left-Turns:	92
Minor Street Lanes:	1	Minor Street (Higher Volume):	165
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	355	Minimum Major Street Volume:	280
Major Street (Approach 2):	269	Satisfied?	YES
Total Major Street Volume:	624		
		Minimum Minor Street Volume:	123
Major Street Left Turns:	92	Satisfied?	YES
Minor Street (Higher Volume):	165		
Total Minor Street Volume:	257	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

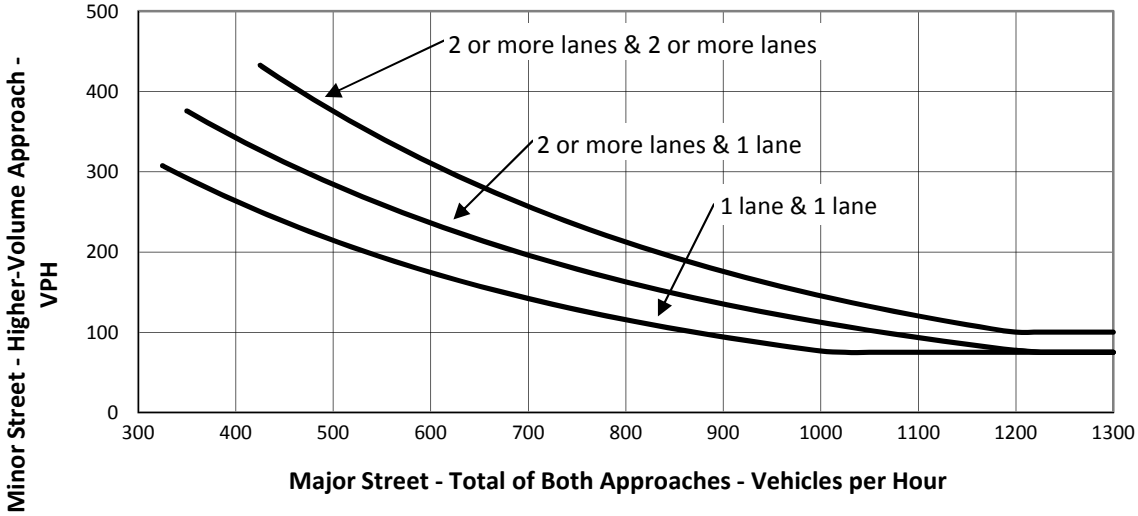
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	390
		Major Street (Approach 2):	296
Major Street Lanes:	2	[a] Major Street Left-Turns:	101
Minor Street Lanes:	1	Minor Street (Higher Volume):	181

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	390	Minimum Major Street Volume:	350
Major Street (Approach 2):	296	Satisfied?	YES
Total Major Street Volume:	686		
		Minimum Minor Street Volume:	201
Major Street Left Turns:	101	Satisfied?	YES
Minor Street (Higher Volume):	181		
Total Minor Street Volume:	282	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-AM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-PM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	430	391	292
Major Street (Approach 2):	313	285	213
[b] Major Street Left-Turns:	142	129	97
Minor Street (Higher Volume):	185	168	126

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	292
Major Street (Approach 2):	213
[a] Major Street Left-Turns:	97
Minor Street (Higher Volume):	126

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **505** Minor: **223**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **505** Minor: **223**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

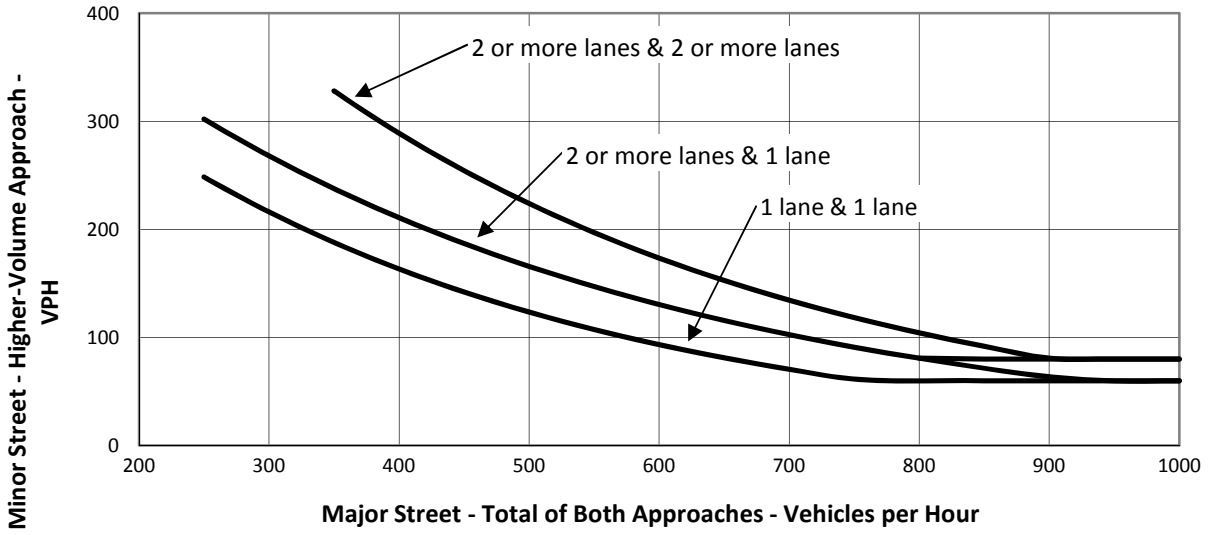
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	391
		Major Street (Approach 2):	285
Major Street Lanes:	2	[a] Major Street Left-Turns:	129
Minor Street Lanes:	1	Minor Street (Higher Volume):	168
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	391	Minimum Major Street Volume:	280
Major Street (Approach 2):	285	Satisfied?	YES
Total Major Street Volume:	676		
		Minimum Minor Street Volume:	109
Major Street Left Turns:	129	Satisfied?	YES
Minor Street (Higher Volume):	168		
Total Minor Street Volume:	297	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

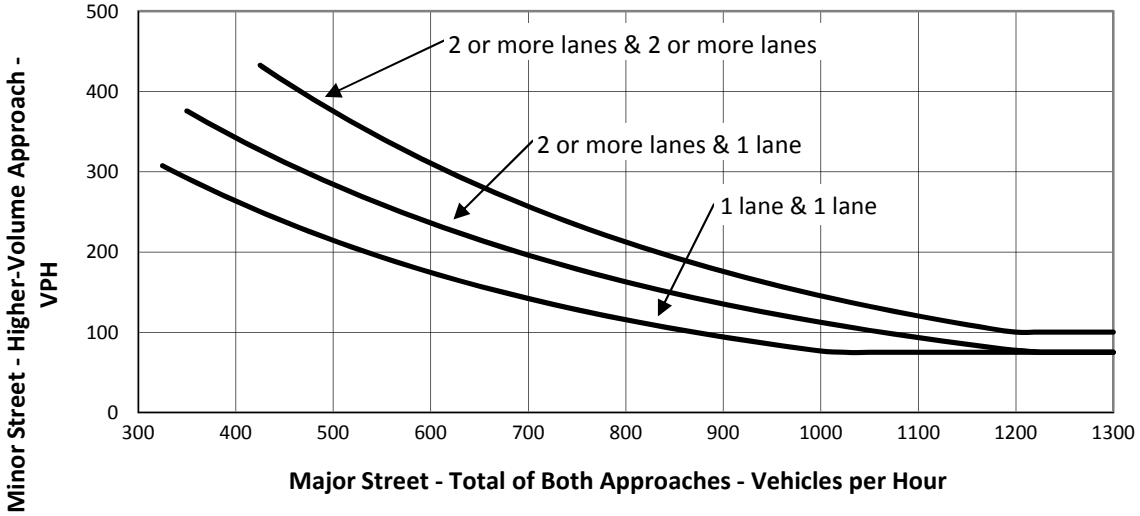
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	430
		Major Street (Approach 2):	313
Major Street Lanes:	2	[a] Major Street Left-Turns:	142
Minor Street Lanes:	1	Minor Street (Higher Volume):	185
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	430	Minimum Major Street Volume:	350
Major Street (Approach 2):	313	Satisfied?	YES
Total Major Street Volume:	743		
		Minimum Minor Street Volume:	181
Major Street Left Turns:	142	Satisfied?	YES
Minor Street (Higher Volume):	185		
Total Minor Street Volume:	327	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-PM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-AM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	520	468	374
Major Street (Approach 2):	274	247	197
[b] Major Street Left-Turns:	162	146	117
Minor Street (Higher Volume):	218	196	157

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	374
Major Street (Approach 2):	197
[a] Major Street Left-Turns:	117
Minor Street (Higher Volume):	157

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **571** Minor: **274**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **571** Minor: **274**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

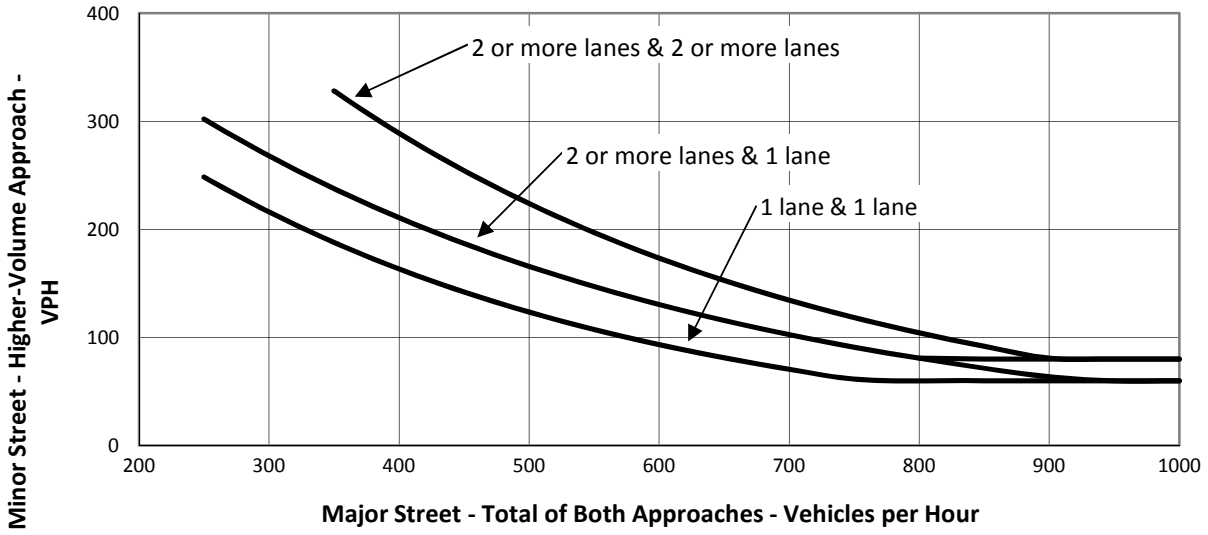
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	468
		Major Street (Approach 2):	247
Major Street Lanes:	2	[a] Major Street Left-Turns:	146
Minor Street Lanes:	1	Minor Street (Higher Volume):	196
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	468	Minimum Major Street Volume:	280
Major Street (Approach 2):	247	Satisfied?	YES
Total Major Street Volume:	715		
		Minimum Minor Street Volume:	99
Major Street Left Turns:	146	Satisfied?	YES
Minor Street (Higher Volume):	196		
Total Minor Street Volume:	342	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

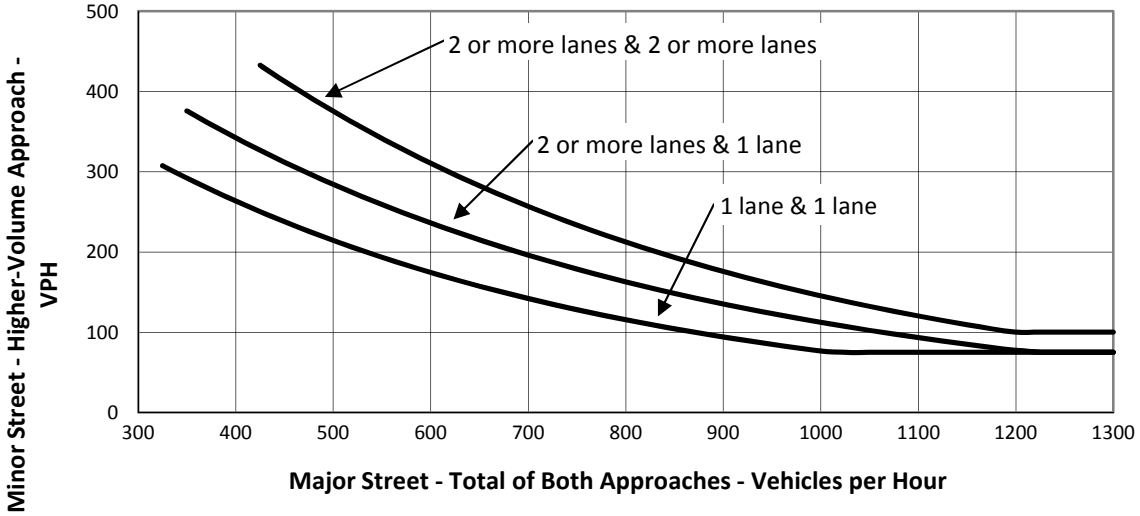
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	520
		Major Street (Approach 2):	274
Major Street Lanes:	2	[a] Major Street Left-Turns:	162
Minor Street Lanes:	1	Minor Street (Higher Volume):	218
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	520	Minimum Major Street Volume:	350
Major Street (Approach 2):	274	Satisfied?	YES
Total Major Street Volume:	794		
		Minimum Minor Street Volume:	165
Major Street Left Turns:	162	Satisfied?	YES
Minor Street (Higher Volume):	218		
Total Minor Street Volume:	380	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-AM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-PM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	539	485	388
Major Street (Approach 2):	340	306	245
[b] Major Street Left-Turns:	199	179	143
Minor Street (Higher Volume):	182	164	131

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	388
Major Street (Approach 2):	245
[a] Major Street Left-Turns:	143
Minor Street (Higher Volume):	131

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **633** Minor: **274**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **633** Minor: **274**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

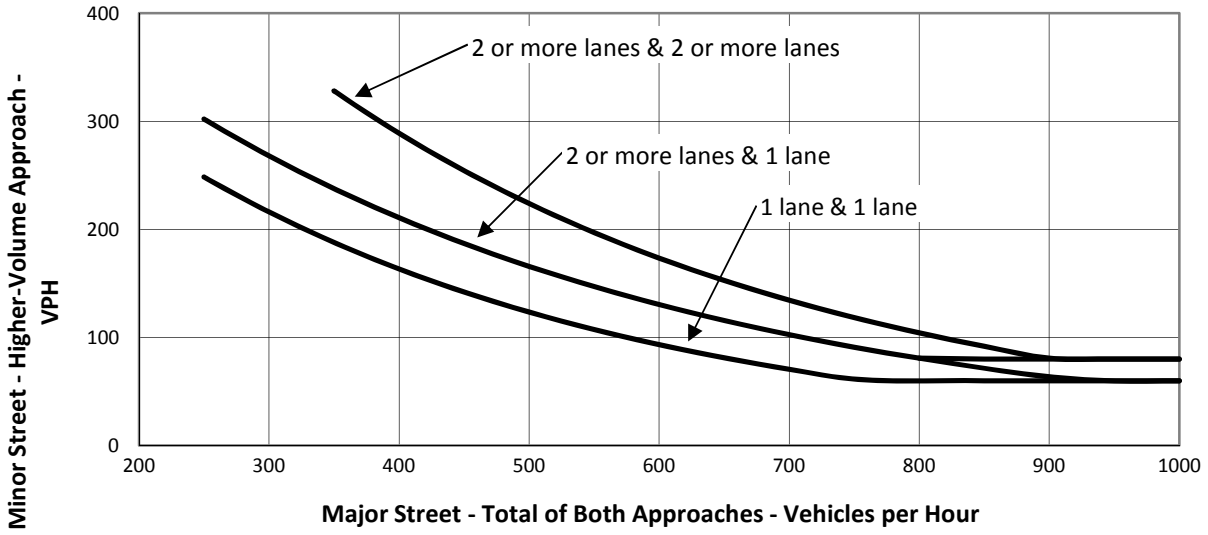
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	485
		Major Street (Approach 2):	306
Major Street Lanes:	2	[a] Major Street Left-Turns:	179
Minor Street Lanes:	1	Minor Street (Higher Volume):	164
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	485	Minimum Major Street Volume:	280
Major Street (Approach 2):	306	Satisfied?	YES
Total Major Street Volume:	791		
		Minimum Minor Street Volume:	83
Major Street Left Turns:	179	Satisfied?	YES
Minor Street (Higher Volume):	164		
Total Minor Street Volume:	343	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

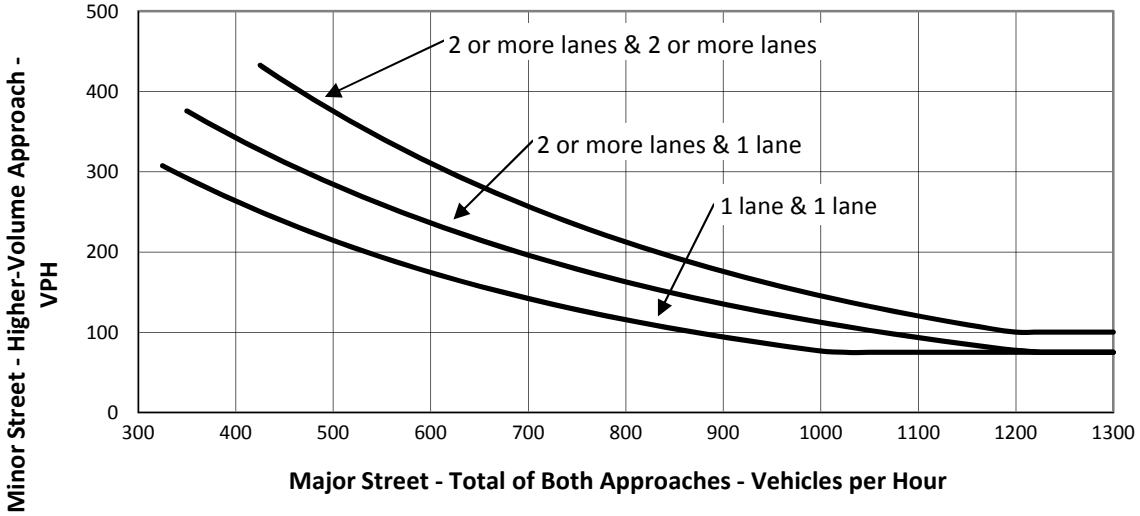
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	539
		Major Street (Approach 2):	340
Major Street Lanes:	2	[a] Major Street Left-Turns:	199
Minor Street Lanes:	1	Minor Street (Higher Volume):	182
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	539	Minimum Major Street Volume:	350
Major Street (Approach 2):	340	Satisfied?	YES
Total Major Street Volume:	879		
		Minimum Minor Street Volume:	141
Major Street Left Turns:	199	Satisfied?	YES
Minor Street (Higher Volume):	182		
Total Minor Street Volume:	381	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-PM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-AM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	394	359	268
Major Street (Approach 2):	299	272	203
[b] Major Street Left-Turns:	102	93	69
Minor Street (Higher Volume):	183	167	124

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	268
Major Street (Approach 2):	203
[a] Major Street Left-Turns:	69
Minor Street (Higher Volume):	124

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **471** Minor: **193**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **471** Minor: **193**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

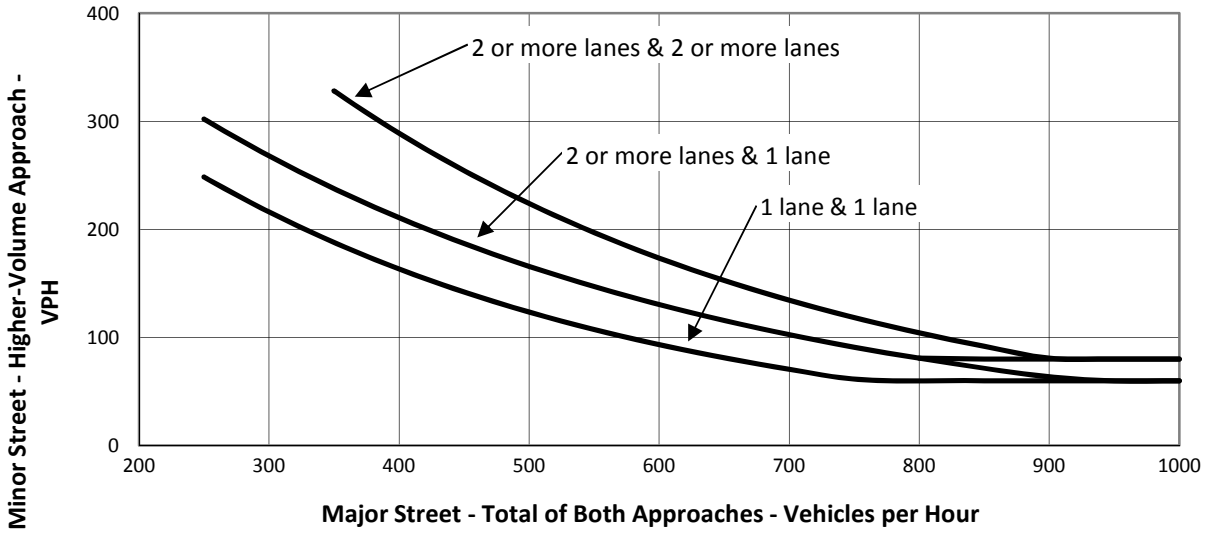
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	359
		Major Street (Approach 2):	272
Major Street Lanes:	2	[a] Major Street Left-Turns:	93
Minor Street Lanes:	1	Minor Street (Higher Volume):	167
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	359	Minimum Major Street Volume:	280
Major Street (Approach 2):	272	Satisfied?	YES
Total Major Street Volume:	631		
		Minimum Minor Street Volume:	121
Major Street Left Turns:	93	Satisfied?	YES
Minor Street (Higher Volume):	167		
Total Minor Street Volume:	260	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

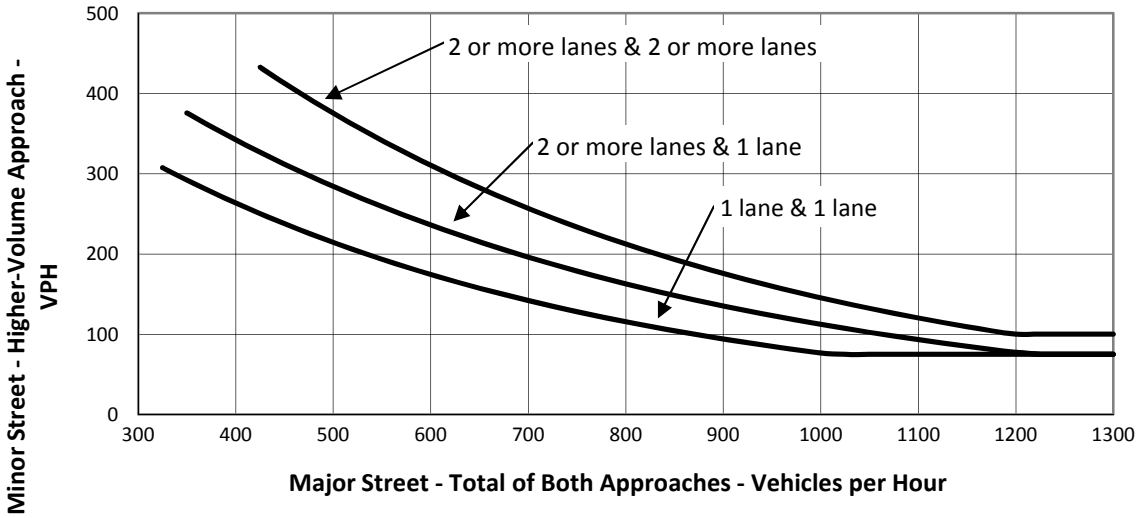
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	394
		Major Street (Approach 2):	299
Major Street Lanes:	2	[a] Major Street Left-Turns:	102
Minor Street Lanes:	1	Minor Street (Higher Volume):	183
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	394	Minimum Major Street Volume:	350
Major Street (Approach 2):	299	Satisfied?	YES
Total Major Street Volume:	693		
		Minimum Minor Street Volume:	199
Major Street Left Turns:	102	Satisfied?	YES
Minor Street (Higher Volume):	183		
Total Minor Street Volume:	285	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-AM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-PM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	434	395	295
Major Street (Approach 2):	316	288	215
[b] Major Street Left-Turns:	143	130	97
Minor Street (Higher Volume):	187	170	127

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	295
Major Street (Approach 2):	215
[a] Major Street Left-Turns:	97
Minor Street (Higher Volume):	127

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **510** Minor: **224**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **510** Minor: **224**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

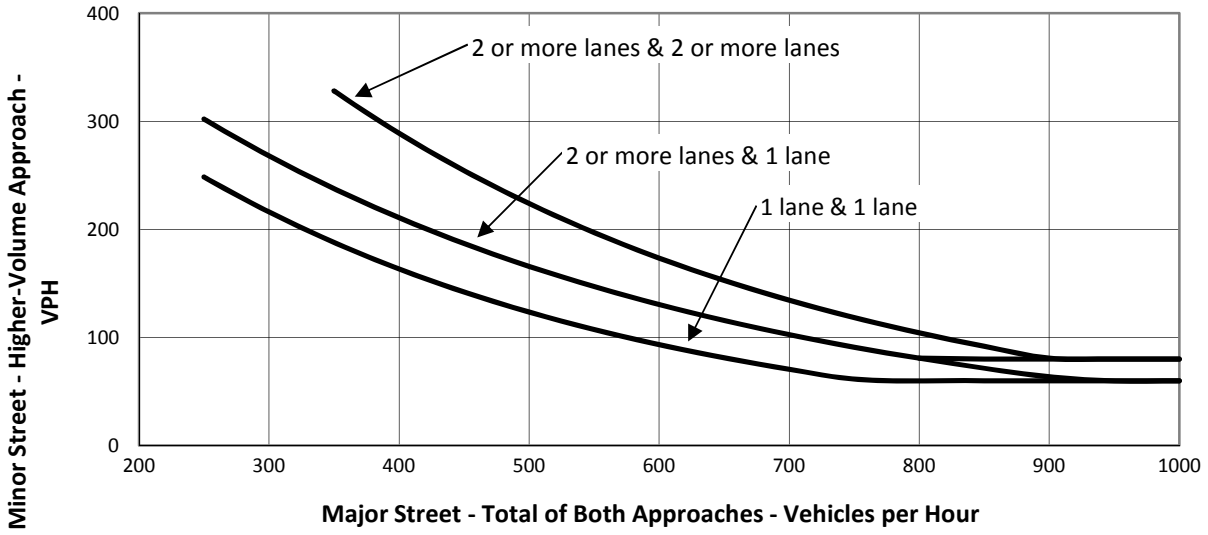
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	395
		Major Street (Approach 2):	288
Major Street Lanes:	2	[a] Major Street Left-Turns:	130
Minor Street Lanes:	1	Minor Street (Higher Volume):	170
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	395	Minimum Major Street Volume:	280
Major Street (Approach 2):	288	Satisfied?	YES
Total Major Street Volume:	683		
		Minimum Minor Street Volume:	107
Major Street Left Turns:	130	Satisfied?	YES
Minor Street (Higher Volume):	170		
Total Minor Street Volume:	300	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

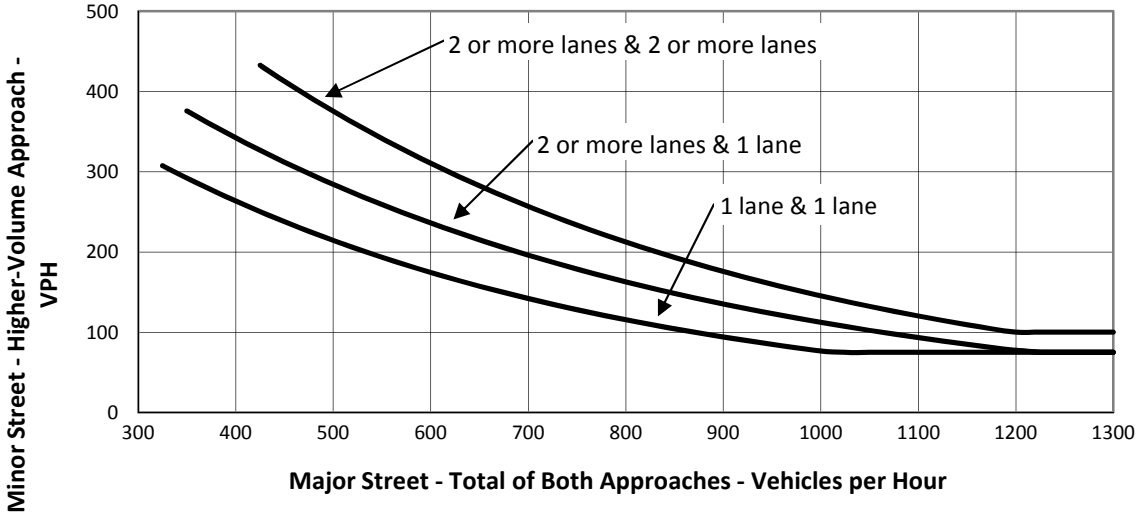
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	434
		Major Street (Approach 2):	316
Major Street Lanes:	2	[a] Major Street Left-Turns:	143
Minor Street Lanes:	1	Minor Street (Higher Volume):	187
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	434	Minimum Major Street Volume:	350
Major Street (Approach 2):	316	Satisfied?	YES
Total Major Street Volume:	750		
		Minimum Minor Street Volume:	179
Major Street Left Turns:	143	Satisfied?	YES
Minor Street (Higher Volume):	187		
Total Minor Street Volume:	330	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-PM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-AM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	617	555	444
Major Street (Approach 2):	325	293	234
[b] Major Street Left-Turns:	192	173	138
Minor Street (Higher Volume):	260	234	187

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	444
Major Street (Approach 2):	234
[a] Major Street Left-Turns:	138
Minor Street (Higher Volume):	187

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **678** Minor: **325**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **678** Minor: **325**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

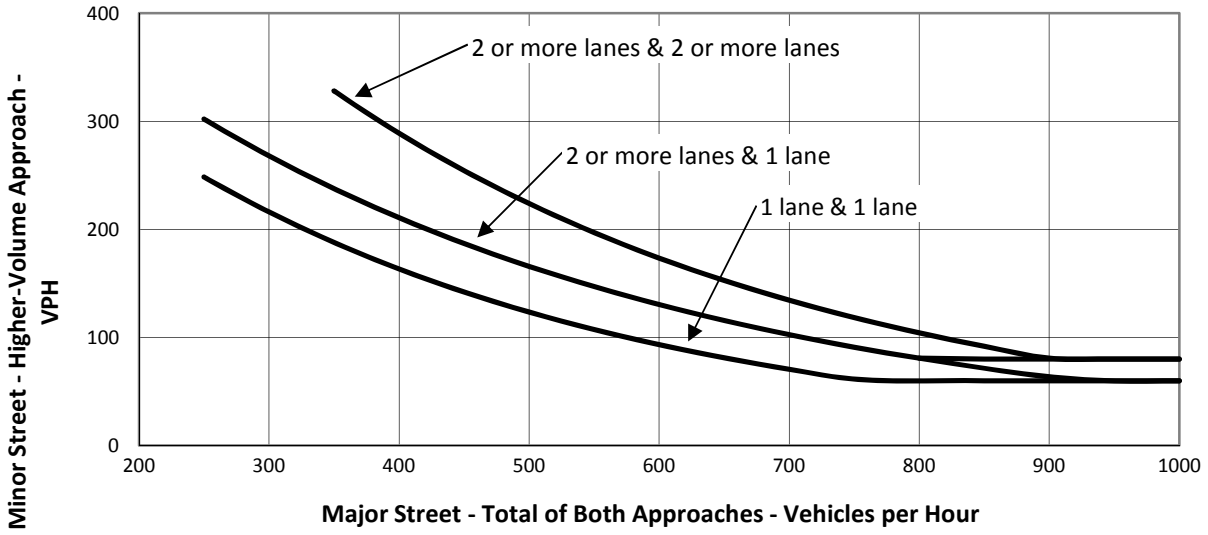
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	555
		Major Street (Approach 2):	293
Major Street Lanes:	2	[a] Major Street Left-Turns:	173
Minor Street Lanes:	1	Minor Street (Higher Volume):	234
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	555	Minimum Major Street Volume:	280
Major Street (Approach 2):	293	Satisfied?	YES
Total Major Street Volume:	848		
		Minimum Minor Street Volume:	72
Major Street Left Turns:	173	Satisfied?	YES
Minor Street (Higher Volume):	234		
Total Minor Street Volume:	407	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

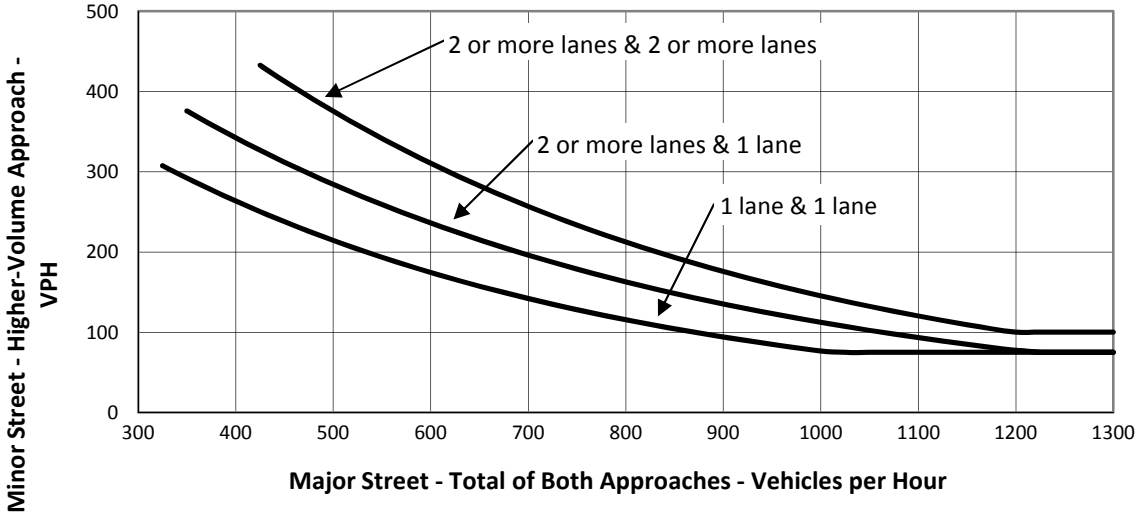
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	617
		Major Street (Approach 2):	325
Major Street Lanes:	2	[a] Major Street Left-Turns:	192
Minor Street Lanes:	1	Minor Street (Higher Volume):	260
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	617	Minimum Major Street Volume:	350
Major Street (Approach 2):	325	Satisfied?	YES
Total Major Street Volume:	942		
		Minimum Minor Street Volume:	125
Major Street Left Turns:	192	Satisfied?	YES
Minor Street (Higher Volume):	260		
Total Minor Street Volume:	452	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-AM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-PM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	640	576	461
Major Street (Approach 2):	404	364	291
[b] Major Street Left-Turns:	236	212	170
Minor Street (Higher Volume):	216	194	156

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	461
Major Street (Approach 2):	291
[a] Major Street Left-Turns:	170
Minor Street (Higher Volume):	156

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **752** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **752** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

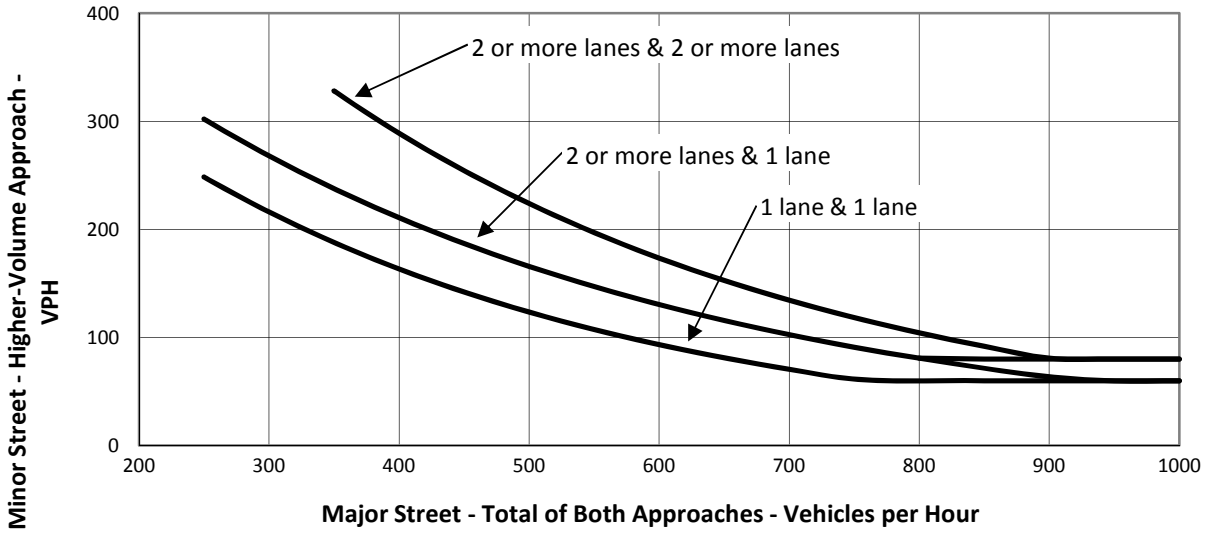
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	576
		Major Street (Approach 2):	364
Major Street Lanes:	2	[a] Major Street Left-Turns:	212
Minor Street Lanes:	1	Minor Street (Higher Volume):	194
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	576	Minimum Major Street Volume:	280
Major Street (Approach 2):	364	Satisfied?	YES
Total Major Street Volume:	940		
		Minimum Minor Street Volume:	60
Major Street Left Turns:	212	Satisfied?	YES
Minor Street (Higher Volume):	194		
Total Minor Street Volume:	406	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

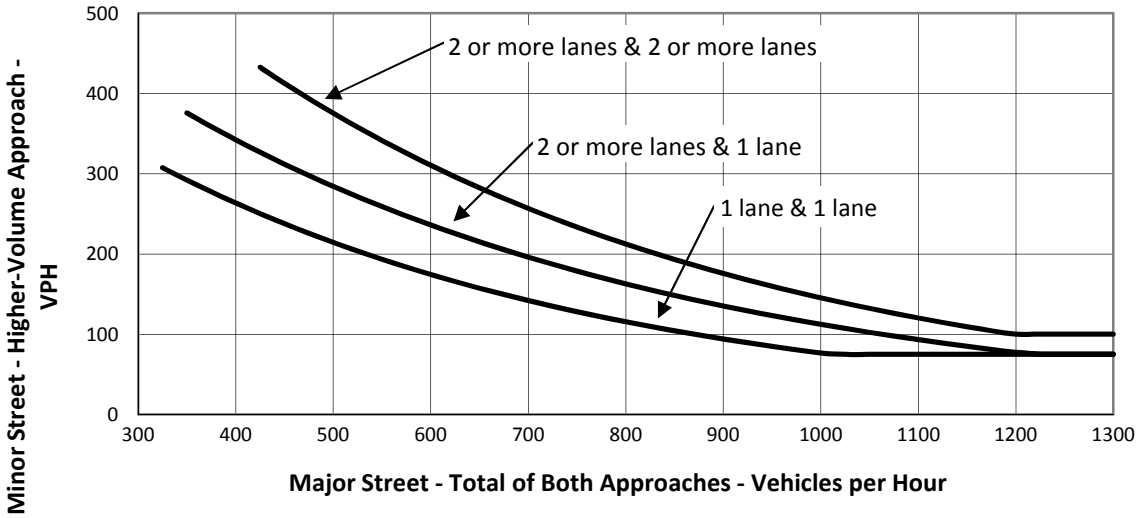
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	640
		Major Street (Approach 2):	404
Major Street Lanes:	2	[a] Major Street Left-Turns:	236
Minor Street Lanes:	1	Minor Street (Higher Volume):	216
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	640	Minimum Major Street Volume:	350
Major Street (Approach 2):	404	Satisfied?	YES
Total Major Street Volume:	1,044		
		Minimum Minor Street Volume:	103
Major Street Left Turns:	236	Satisfied?	YES
Minor Street (Higher Volume):	216		
Total Minor Street Volume:	452	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-PM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-AM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	460	419	313
Major Street (Approach 2):	355	323	241
[b] Major Street Left-Turns:	121	110	82
Minor Street (Higher Volume):	217	197	148

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	313
Major Street (Approach 2):	241
[a] Major Street Left-Turns:	82
Minor Street (Higher Volume):	148

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **554** Minor: **230**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **554** Minor: **230**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

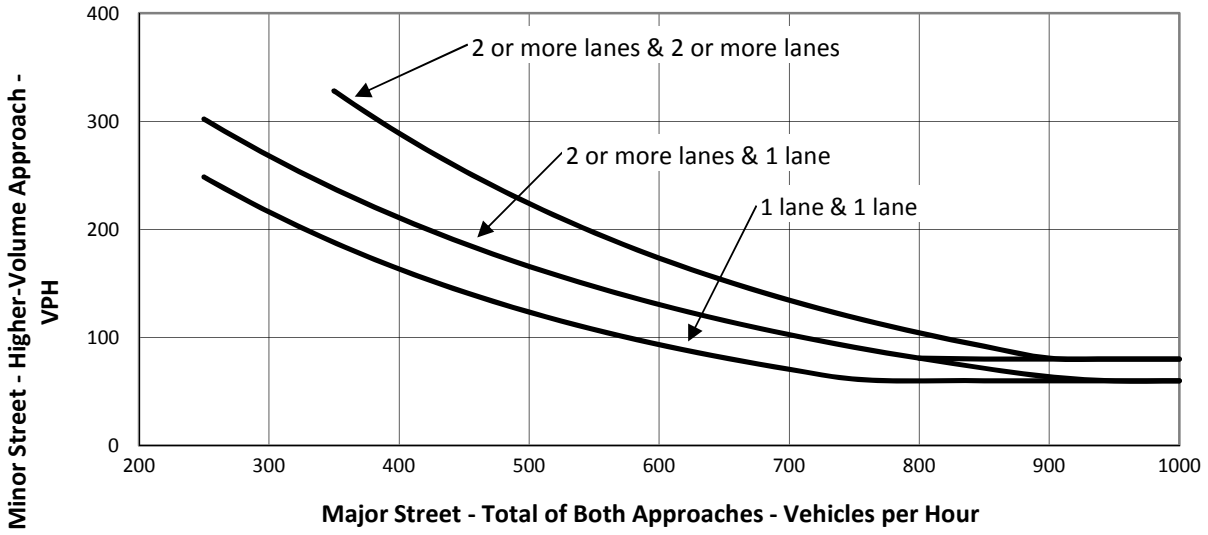
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	419
		Major Street (Approach 2):	323
Major Street Lanes:	2	[a] Major Street Left-Turns:	110
Minor Street Lanes:	1	Minor Street (Higher Volume):	197
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	419	Minimum Major Street Volume:	280
Major Street (Approach 2):	323	Satisfied?	YES
Total Major Street Volume:	742		
		Minimum Minor Street Volume:	93
Major Street Left Turns:	110	Satisfied?	YES
Minor Street (Higher Volume):	197		
Total Minor Street Volume:	307	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

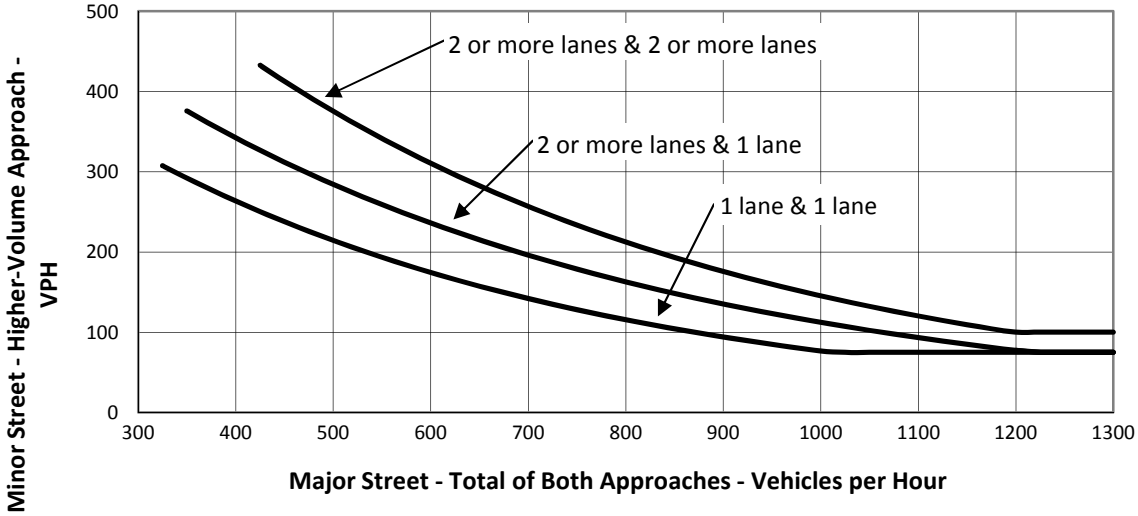
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	460
		Major Street (Approach 2):	355
Major Street Lanes:	2	[a] Major Street Left-Turns:	121
Minor Street Lanes:	1	Minor Street (Higher Volume):	217
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	460	Minimum Major Street Volume:	350
Major Street (Approach 2):	355	Satisfied?	YES
Total Major Street Volume:	815		
		Minimum Minor Street Volume:	158
Major Street Left Turns:	121	Satisfied?	YES
Minor Street (Higher Volume):	217		
Total Minor Street Volume:	338	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-AM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-PM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	516	470	351
Major Street (Approach 2):	376	342	256
[b] Major Street Left-Turns:	170	155	116
Minor Street (Higher Volume):	222	202	151

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	351
Major Street (Approach 2):	256
[a] Major Street Left-Turns:	116
Minor Street (Higher Volume):	151

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **607** Minor: **267**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **607** Minor: **267**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

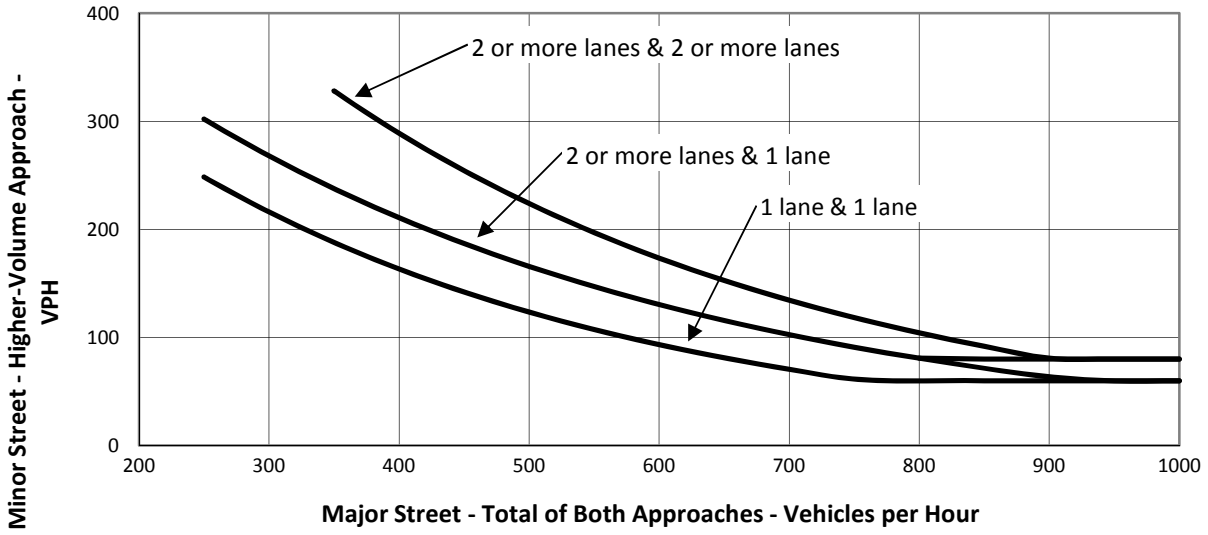
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	470
		Major Street (Approach 2):	342
Major Street Lanes:	2	[a] Major Street Left-Turns:	155
Minor Street Lanes:	1	Minor Street (Higher Volume):	202
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	470	Minimum Major Street Volume:	280
Major Street (Approach 2):	342	Satisfied?	YES
Total Major Street Volume:	812		
		Minimum Minor Street Volume:	79
Major Street Left Turns:	155	Satisfied?	YES
Minor Street (Higher Volume):	202		
Total Minor Street Volume:	357	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

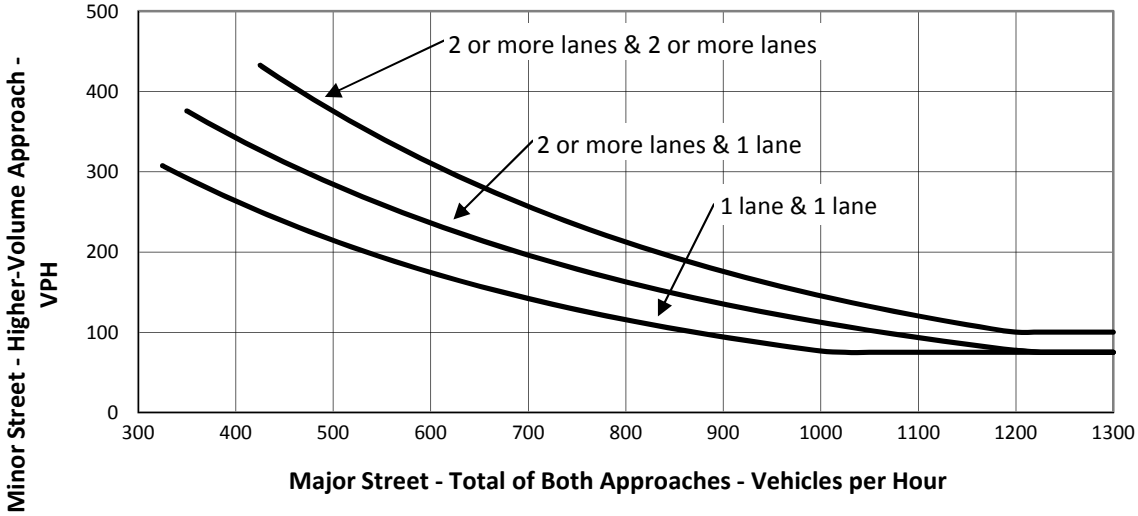
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	516
		Major Street (Approach 2):	376
Major Street Lanes:	2	[a] Major Street Left-Turns:	170
Minor Street Lanes:	1	Minor Street (Higher Volume):	222
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	516	Minimum Major Street Volume:	350
Major Street (Approach 2):	376	Satisfied?	YES
Total Major Street Volume:	892		
		Minimum Minor Street Volume:	137
Major Street Left Turns:	170	Satisfied?	YES
Minor Street (Higher Volume):	222		
Total Minor Street Volume:	392	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-PM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-AM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	571	514	411
Major Street (Approach 2):	279	251	201
[b] Major Street Left-Turns:	160	144	115
Minor Street (Higher Volume):	217	195	156

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	411
Major Street (Approach 2):	201
[a] Major Street Left-Turns:	115
Minor Street (Higher Volume):	156

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **612** Minor: **271**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **612** Minor: **271**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

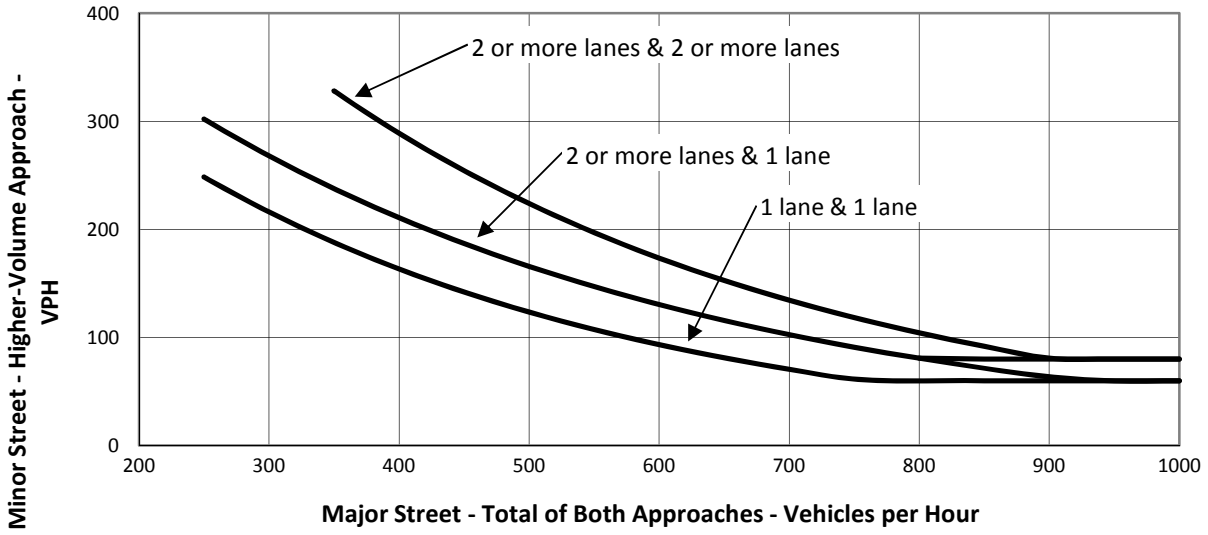
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	514
		Major Street (Approach 2):	251
Major Street Lanes:	2	[a] Major Street Left-Turns:	144
Minor Street Lanes:	1	Minor Street (Higher Volume):	195
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	514	Minimum Major Street Volume:	280
Major Street (Approach 2):	251	Satisfied?	YES
Total Major Street Volume:	765		
		Minimum Minor Street Volume:	88
Major Street Left Turns:	144	Satisfied?	YES
Minor Street (Higher Volume):	195		
Total Minor Street Volume:	339	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

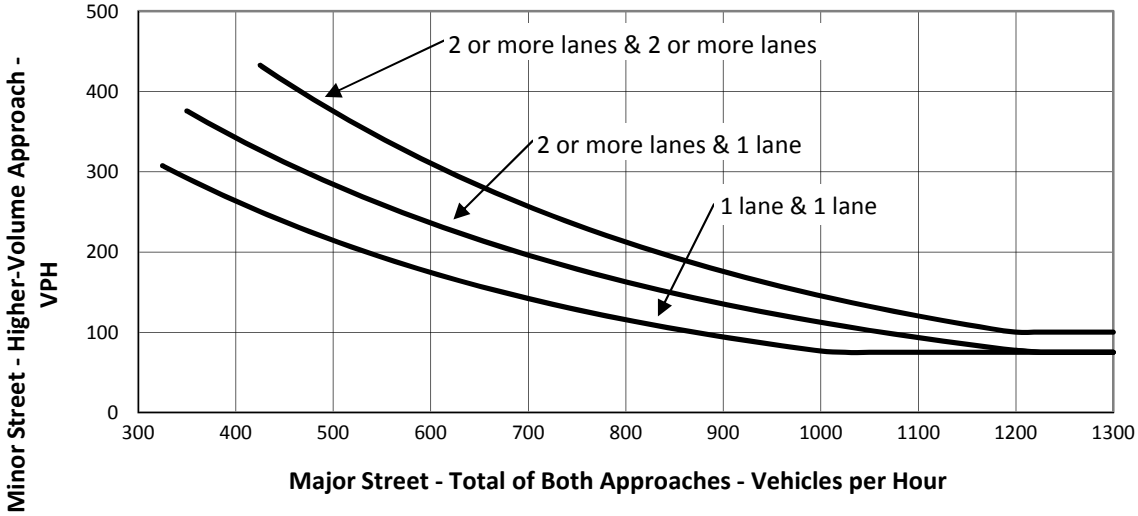
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	571
		Major Street (Approach 2):	279
Major Street Lanes:	2	[a] Major Street Left-Turns:	160
Minor Street Lanes:	1	Minor Street (Higher Volume):	217
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	571	Minimum Major Street Volume:	350
Major Street (Approach 2):	279	Satisfied?	YES
Total Major Street Volume:	850		
		Minimum Minor Street Volume:	148
Major Street Left Turns:	160	Satisfied?	YES
Minor Street (Higher Volume):	217		
Total Minor Street Volume:	377	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-AM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-PM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	567	510	408
Major Street (Approach 2):	383	345	276
[b] Major Street Left-Turns:	197	177	142
Minor Street (Higher Volume):	181	163	130

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	408
Major Street (Approach 2):	276
[a] Major Street Left-Turns:	142
Minor Street (Higher Volume):	130

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **684** Minor: **272**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **684** Minor: **272**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

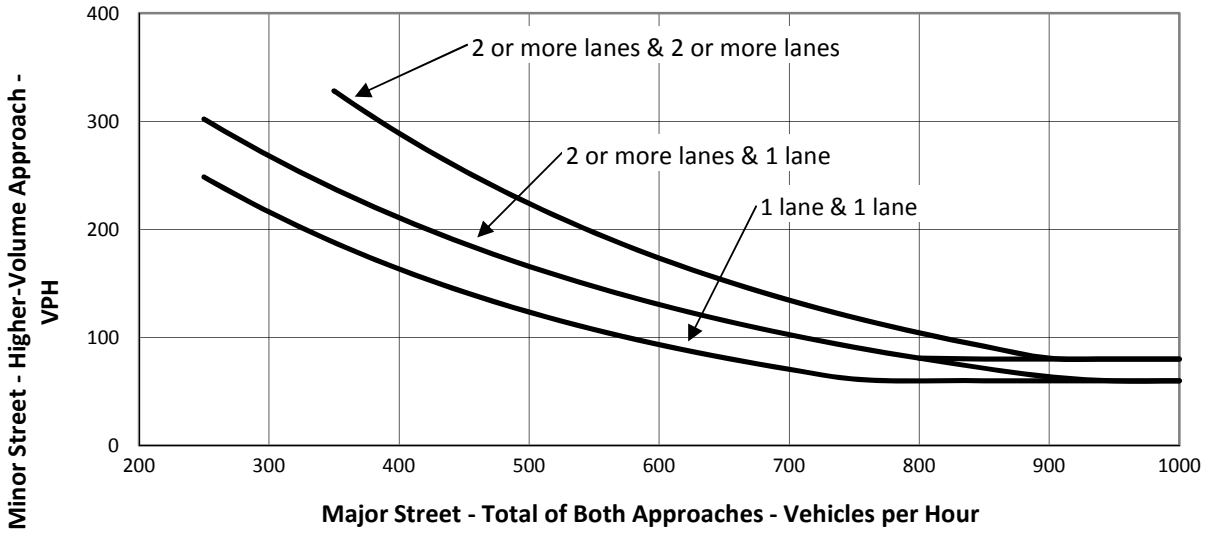
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	510
		Major Street (Approach 2):	345
Major Street Lanes:	2	[a] Major Street Left-Turns:	177
Minor Street Lanes:	1	Minor Street (Higher Volume):	163
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	510	Minimum Major Street Volume:	280
Major Street (Approach 2):	345	Satisfied?	YES
Total Major Street Volume:	855		
		Minimum Minor Street Volume:	71
Major Street Left Turns:	177	Satisfied?	YES
Minor Street (Higher Volume):	163		
Total Minor Street Volume:	340	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

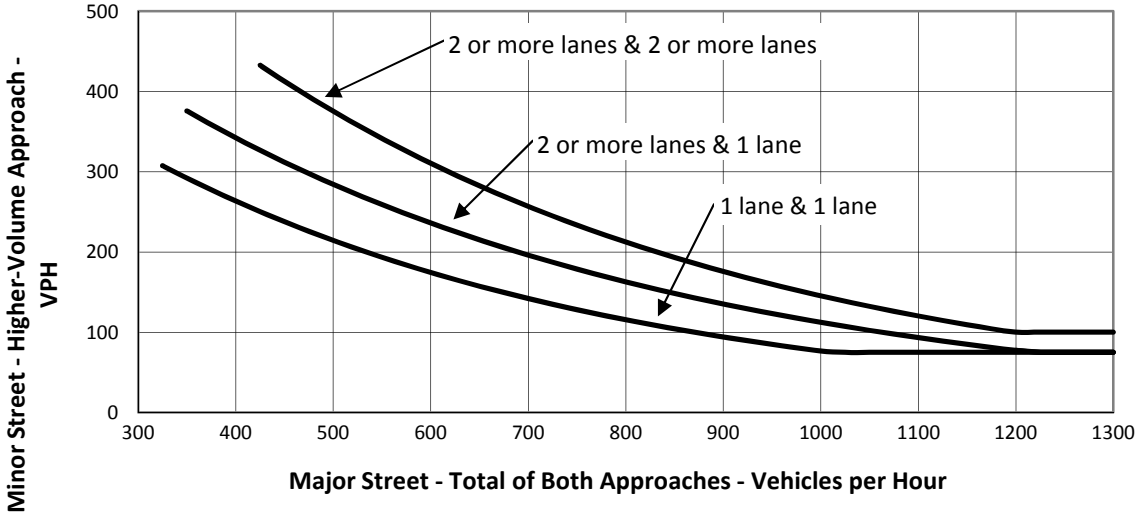
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	567
		Major Street (Approach 2):	383
Major Street Lanes:	2	[a] Major Street Left-Turns:	197
Minor Street Lanes:	1	Minor Street (Higher Volume):	181
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	567	Minimum Major Street Volume:	350
Major Street (Approach 2):	383	Satisfied?	YES
Total Major Street Volume:	950		
		Minimum Minor Street Volume:	123
Major Street Left Turns:	197	Satisfied?	YES
Minor Street (Higher Volume):	181		
Total Minor Street Volume:	378	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-PM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-AM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	447	407	304
Major Street (Approach 2):	304	277	207
[b] Major Street Left-Turns:	101	92	69
Minor Street (Higher Volume):	182	166	124

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	304
Major Street (Approach 2):	207
[a] Major Street Left-Turns:	69
Minor Street (Higher Volume):	124

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **511** Minor: **193**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **511** Minor: **193**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

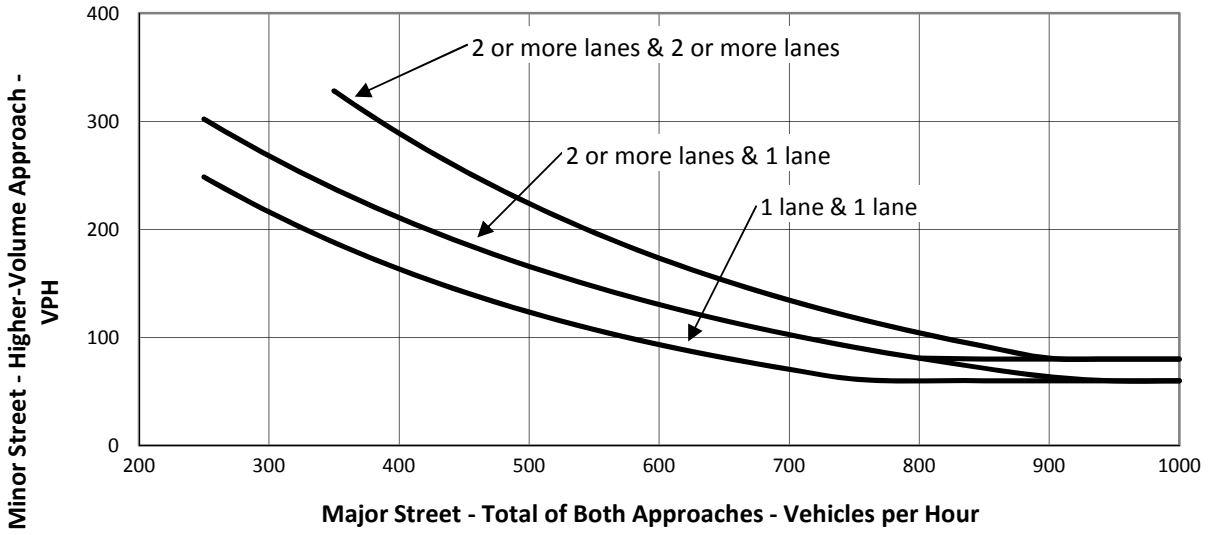
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	407
		Major Street (Approach 2):	277
Major Street Lanes:	2	[a] Major Street Left-Turns:	92
Minor Street Lanes:	1	Minor Street (Higher Volume):	166
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	407	Minimum Major Street Volume:	280
Major Street (Approach 2):	277	Satisfied?	YES
Total Major Street Volume:	684		
		Minimum Minor Street Volume:	107
Major Street Left Turns:	92	Satisfied?	YES
Minor Street (Higher Volume):	166		
Total Minor Street Volume:	258	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

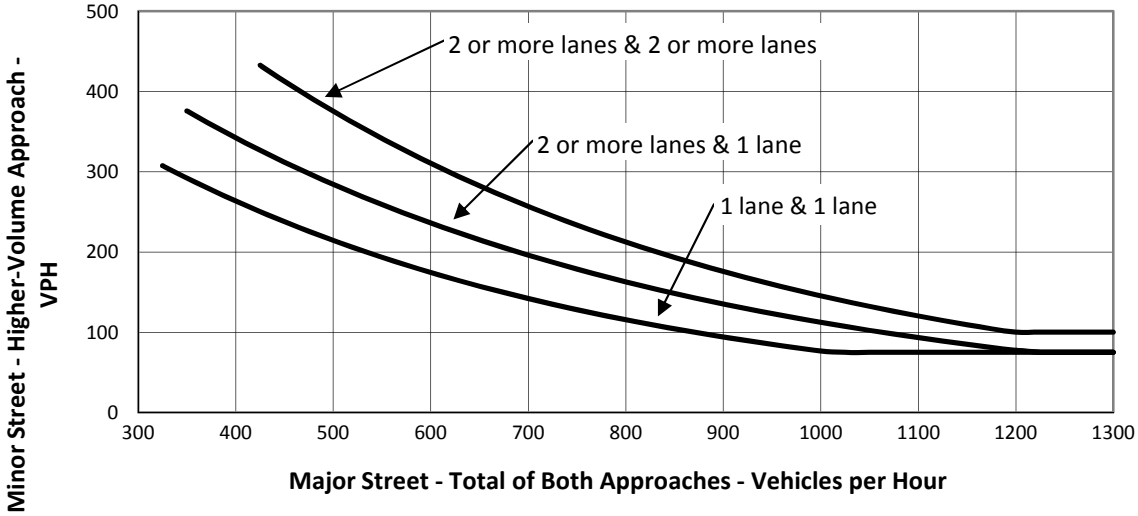
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	447
		Major Street (Approach 2):	304
Major Street Lanes:	2	[a] Major Street Left-Turns:	101
Minor Street Lanes:	1	Minor Street (Higher Volume):	182
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	447	Minimum Major Street Volume:	350
Major Street (Approach 2):	304	Satisfied?	YES
Total Major Street Volume:	751		
		Minimum Minor Street Volume:	178
Major Street Left Turns:	101	Satisfied?	YES
Minor Street (Higher Volume):	182		
Total Minor Street Volume:	283	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-AM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-PM) - Year 2015
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	463	421	315
Major Street (Approach 2):	359	327	244
[b] Major Street Left-Turns:	142	129	97
Minor Street (Higher Volume):	186	169	126

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	315
Major Street (Approach 2):	244
[a] Major Street Left-Turns:	97
Minor Street (Higher Volume):	126

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **559** Minor: **223**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **559** Minor: **223**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

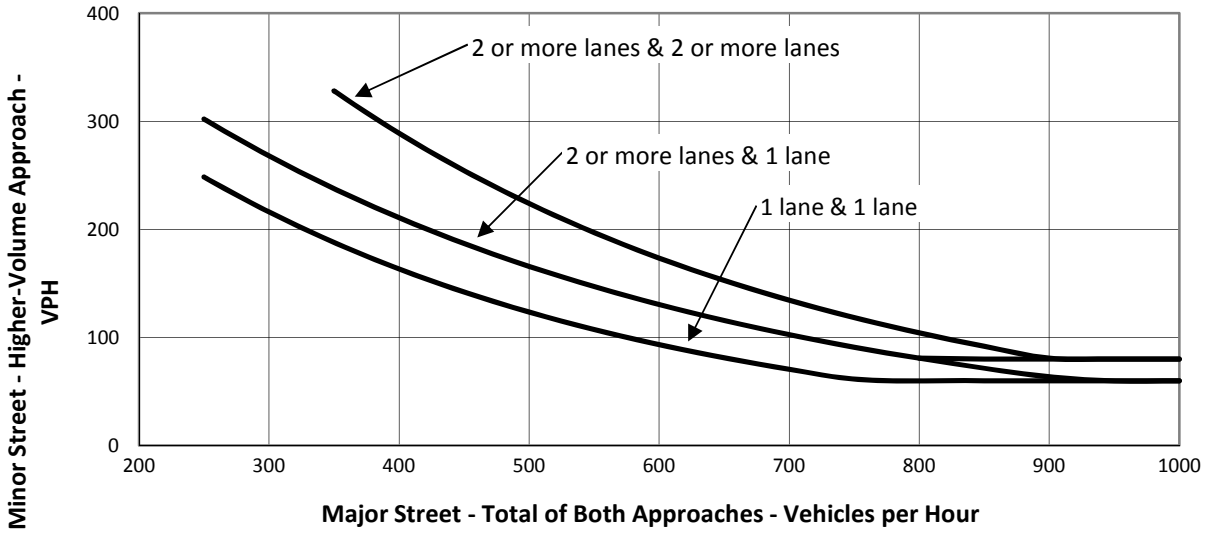
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	421
		Major Street (Approach 2):	327
Major Street Lanes:	2	[a] Major Street Left-Turns:	129
Minor Street Lanes:	1	Minor Street (Higher Volume):	169
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	421	Minimum Major Street Volume:	280
Major Street (Approach 2):	327	Satisfied?	YES
Total Major Street Volume:	748		
		Minimum Minor Street Volume:	92
Major Street Left Turns:	129	Satisfied?	YES
Minor Street (Higher Volume):	169		
Total Minor Street Volume:	298	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

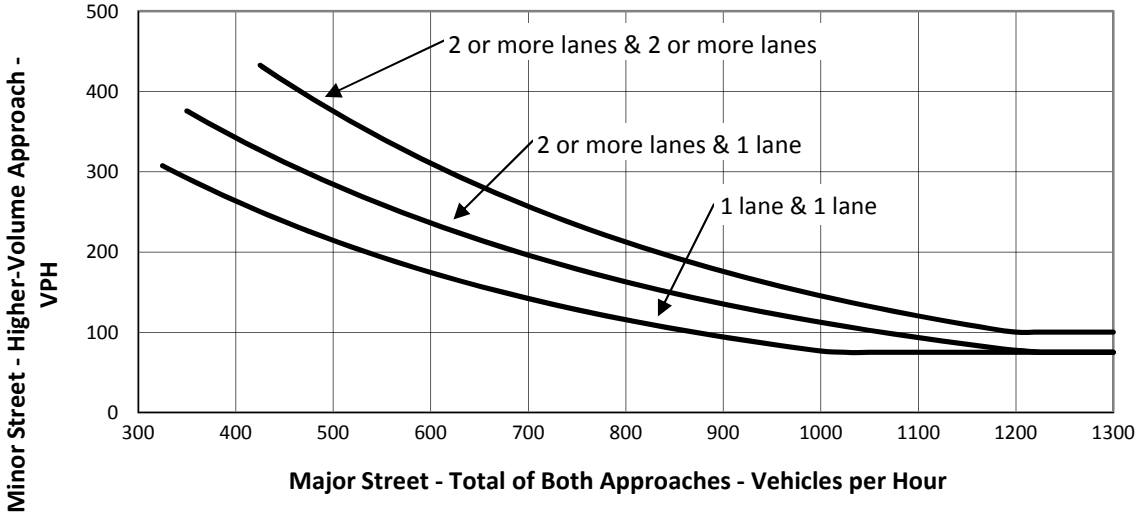
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	463
		Major Street (Approach 2):	359
Major Street Lanes:	2	[a] Major Street Left-Turns:	142
Minor Street Lanes:	1	Minor Street (Higher Volume):	186

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	463	Minimum Major Street Volume:	350
Major Street (Approach 2):	359	Satisfied?	YES
Total Major Street Volume:	822		
		Minimum Minor Street Volume:	156
Major Street Left Turns:	142	Satisfied?	YES
Minor Street (Higher Volume):	186		
Total Minor Street Volume:	328	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-PM) - Year 2015**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-AM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	577	519	415
Major Street (Approach 2):	282	254	203
[b] Major Street Left-Turns:	162	146	117
Minor Street (Higher Volume):	219	197	158

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	415
Major Street (Approach 2):	203
[a] Major Street Left-Turns:	117
Minor Street (Higher Volume):	158

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **618** Minor: **275**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **618** Minor: **275**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

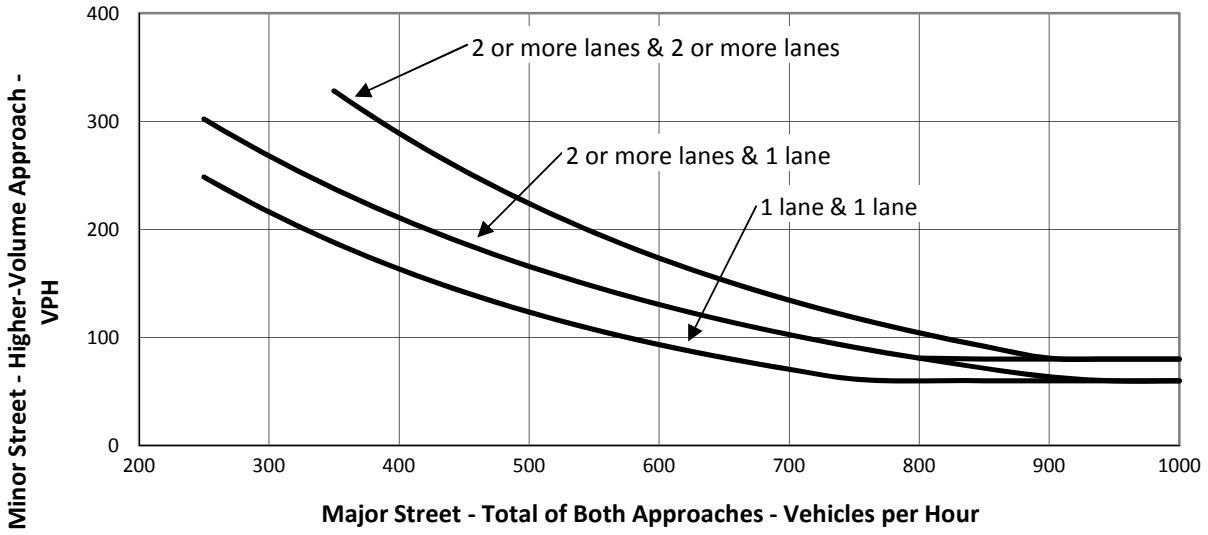
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	519
		Major Street (Approach 2):	254
Major Street Lanes:	2	[a] Major Street Left-Turns:	146
Minor Street Lanes:	1	Minor Street (Higher Volume):	197
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	519	Minimum Major Street Volume:	280
Major Street (Approach 2):	254	Satisfied?	YES
Total Major Street Volume:	773		
		Minimum Minor Street Volume:	86
Major Street Left Turns:	146	Satisfied?	YES
Minor Street (Higher Volume):	197		
Total Minor Street Volume:	343	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

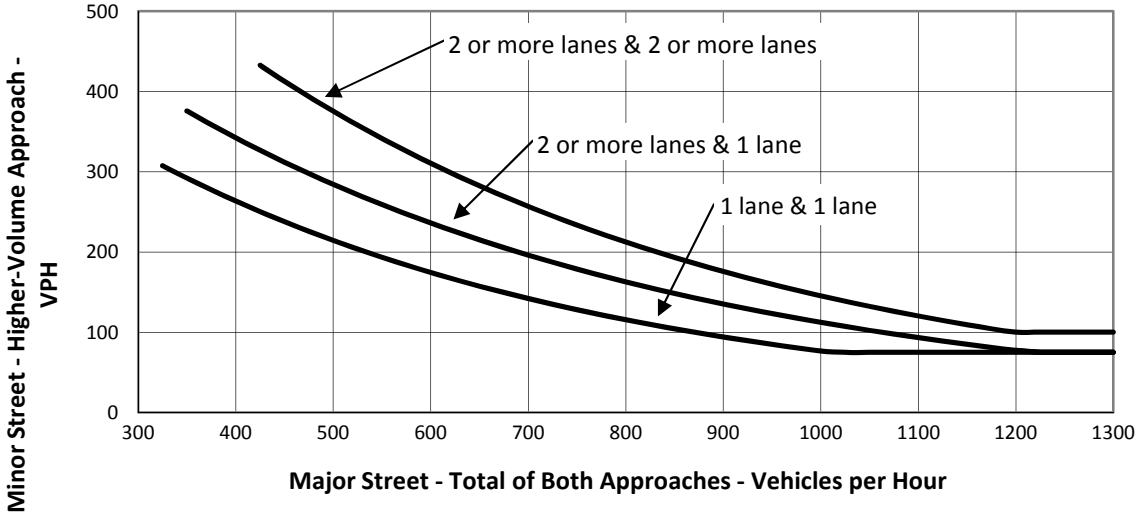
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	577
		Major Street (Approach 2):	282
Major Street Lanes:	2	[a] Major Street Left-Turns:	162
Minor Street Lanes:	1	Minor Street (Higher Volume):	219
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	577	Minimum Major Street Volume:	350
Major Street (Approach 2):	282	Satisfied?	YES
Total Major Street Volume:	859		
		Minimum Minor Street Volume:	146
Major Street Left Turns:	162	Satisfied?	YES
Minor Street (Higher Volume):	219		
Total Minor Street Volume:	381	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-AM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-PM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	572	515	412
Major Street (Approach 2):	386	347	278
[b] Major Street Left-Turns:	199	179	143
Minor Street (Higher Volume):	183	165	132

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	412
Major Street (Approach 2):	278
[a] Major Street Left-Turns:	143
Minor Street (Higher Volume):	132

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **690** Minor: **275**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **690** Minor: **275**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

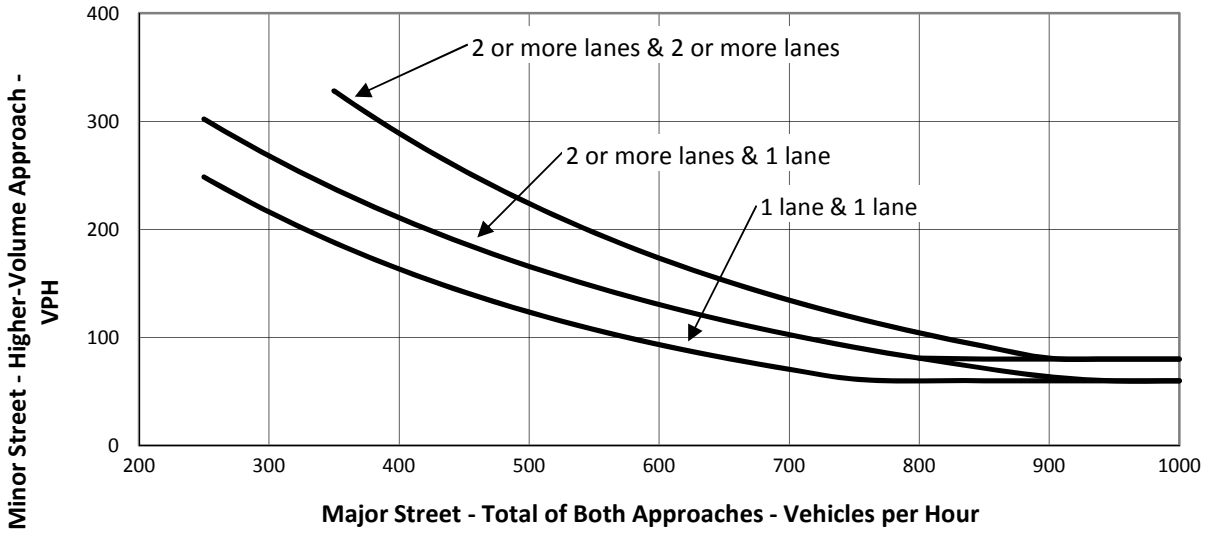
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	515
		Major Street (Approach 2):	347
Major Street Lanes:	2	[a] Major Street Left-Turns:	179
Minor Street Lanes:	1	Minor Street (Higher Volume):	165

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	515	Minimum Major Street Volume:	280
Major Street (Approach 2):	347	Satisfied?	YES
Total Major Street Volume:	862		
		Minimum Minor Street Volume:	70
Major Street Left Turns:	179	Satisfied?	YES
Minor Street (Higher Volume):	165		
Total Minor Street Volume:	344	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

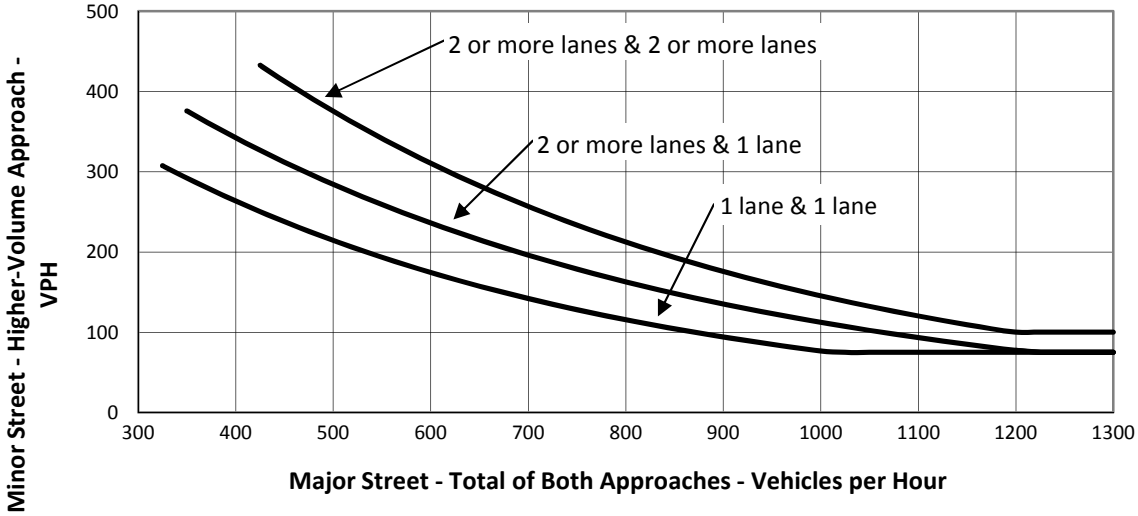
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	572
		Major Street (Approach 2):	386
Major Street Lanes:	2	[a] Major Street Left-Turns:	199
Minor Street Lanes:	1	Minor Street (Higher Volume):	183
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	572	Minimum Major Street Volume:	350
Major Street (Approach 2):	386	Satisfied?	YES
Total Major Street Volume:	958		
		Minimum Minor Street Volume:	121
Major Street Left Turns:	199	Satisfied?	YES
Minor Street (Higher Volume):	183		
Total Minor Street Volume:	382	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-PM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-AM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	451	410	307
Major Street (Approach 2):	307	279	209
[b] Major Street Left-Turns:	102	93	69
Minor Street (Higher Volume):	184	167	125

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	307
Major Street (Approach 2):	209
[a] Major Street Left-Turns:	69
Minor Street (Higher Volume):	125

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **516** Minor: **194**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **516** Minor: **194**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

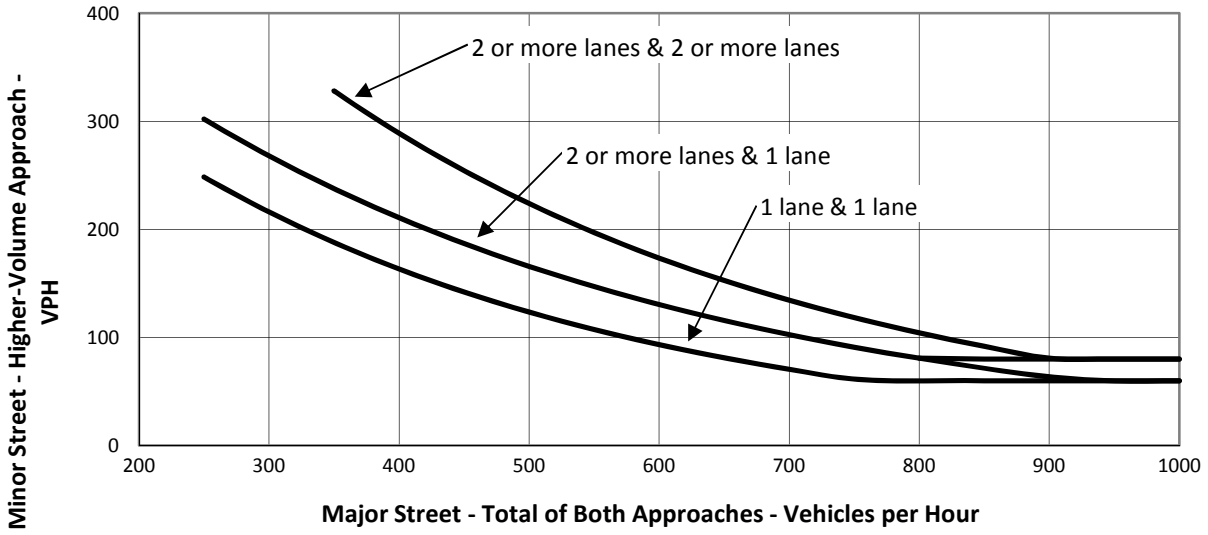
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	410
		Major Street (Approach 2):	279
Major Street Lanes:	2	[a] Major Street Left-Turns:	93
Minor Street Lanes:	1	Minor Street (Higher Volume):	167
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	410	Minimum Major Street Volume:	280
Major Street (Approach 2):	279	Satisfied?	YES
Total Major Street Volume:	689		
		Minimum Minor Street Volume:	105
Major Street Left Turns:	93	Satisfied?	YES
Minor Street (Higher Volume):	167		
Total Minor Street Volume:	260	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

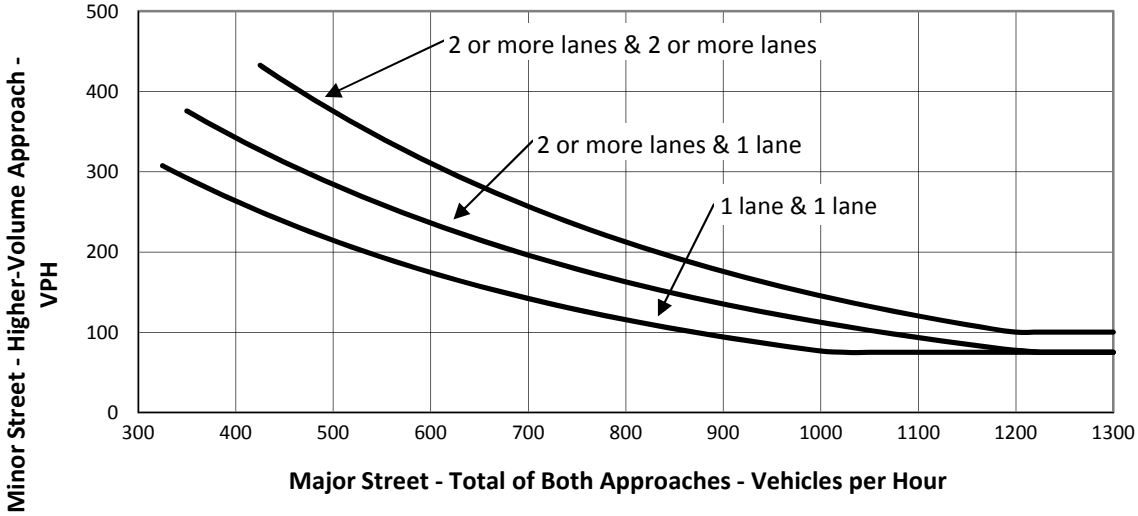
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	451
		Major Street (Approach 2):	307
Major Street Lanes:	2	[a] Major Street Left-Turns:	102
Minor Street Lanes:	1	Minor Street (Higher Volume):	184
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	451	Minimum Major Street Volume:	350
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	758		
		Minimum Minor Street Volume:	176
Major Street Left Turns:	102	Satisfied?	YES
Minor Street (Higher Volume):	184		
Total Minor Street Volume:	286	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-AM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-PM) - Year 2016
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	467	425	318
Major Street (Approach 2):	362	329	246
[b] Major Street Left-Turns:	143	130	97
Minor Street (Higher Volume):	188	171	128

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	318
Major Street (Approach 2):	246
[a] Major Street Left-Turns:	97
Minor Street (Higher Volume):	128

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **564** Minor: **225**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **564** Minor: **225**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

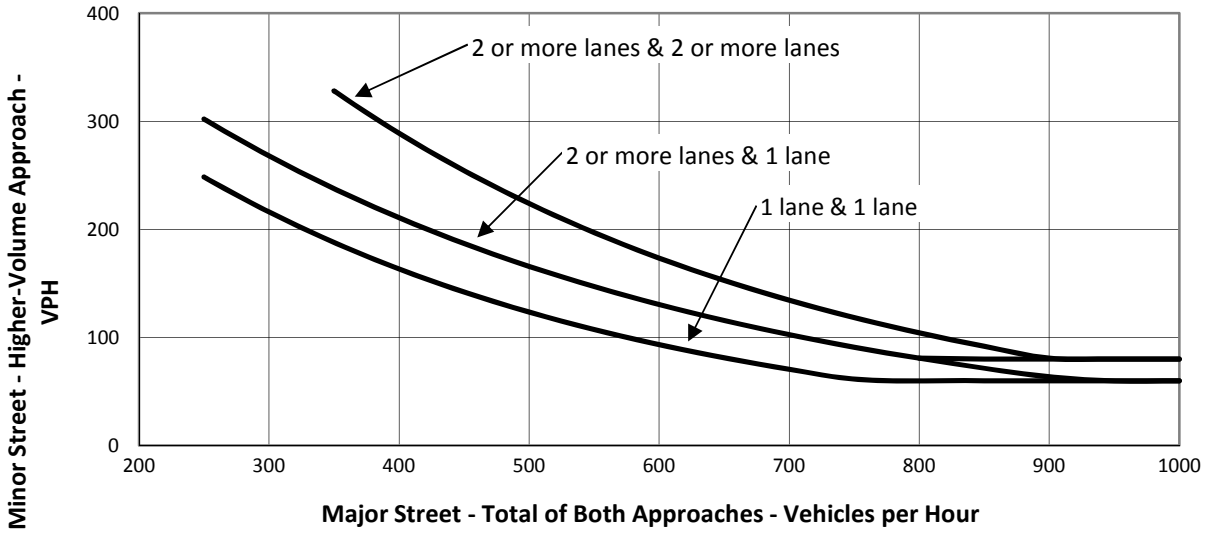
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	425
		Major Street (Approach 2):	329
Major Street Lanes:	2	[a] Major Street Left-Turns:	130
Minor Street Lanes:	1	Minor Street (Higher Volume):	171
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	425	Minimum Major Street Volume:	280
Major Street (Approach 2):	329	Satisfied?	YES
Total Major Street Volume:	754		
		Minimum Minor Street Volume:	90
Major Street Left Turns:	130	Satisfied?	YES
Minor Street (Higher Volume):	171		
Total Minor Street Volume:	301	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

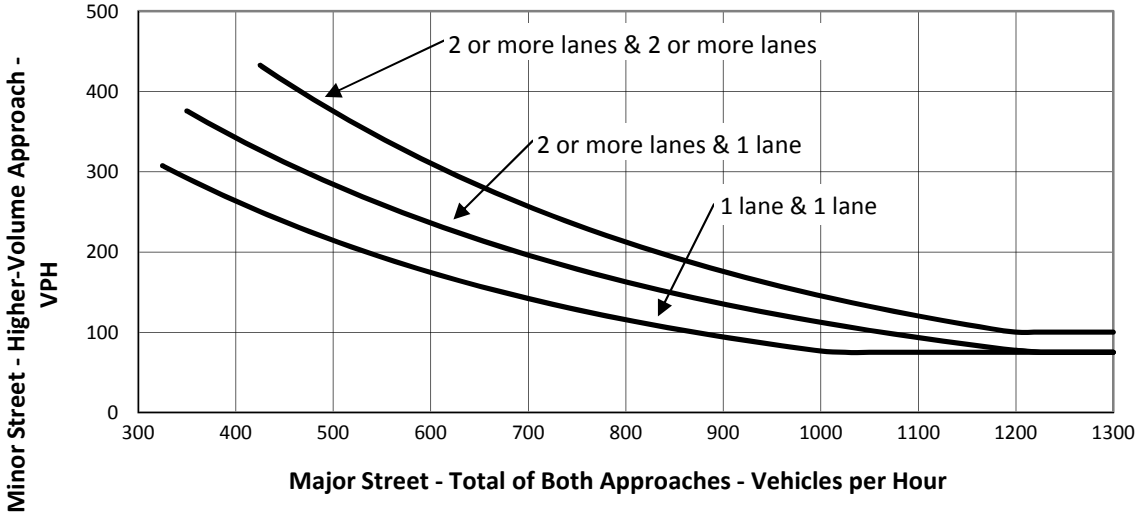
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	467
		Major Street (Approach 2):	362
Major Street Lanes:	2	[a] Major Street Left-Turns:	143
Minor Street Lanes:	1	Minor Street (Higher Volume):	188
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	467	Minimum Major Street Volume:	350
Major Street (Approach 2):	362	Satisfied?	YES
Total Major Street Volume:	829		
		Minimum Minor Street Volume:	154
Major Street Left Turns:	143	Satisfied?	YES
Minor Street (Higher Volume):	188		
Total Minor Street Volume:	331	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-PM) - Year 2016**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	674	607	485
Major Street (Approach 2):	333	300	240
[b] Major Street Left-Turns:	192	173	138
Minor Street (Higher Volume):	261	235	188

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	485
Major Street (Approach 2):	240
[a] Major Street Left-Turns:	138
Minor Street (Higher Volume):	188

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **725** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **725** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

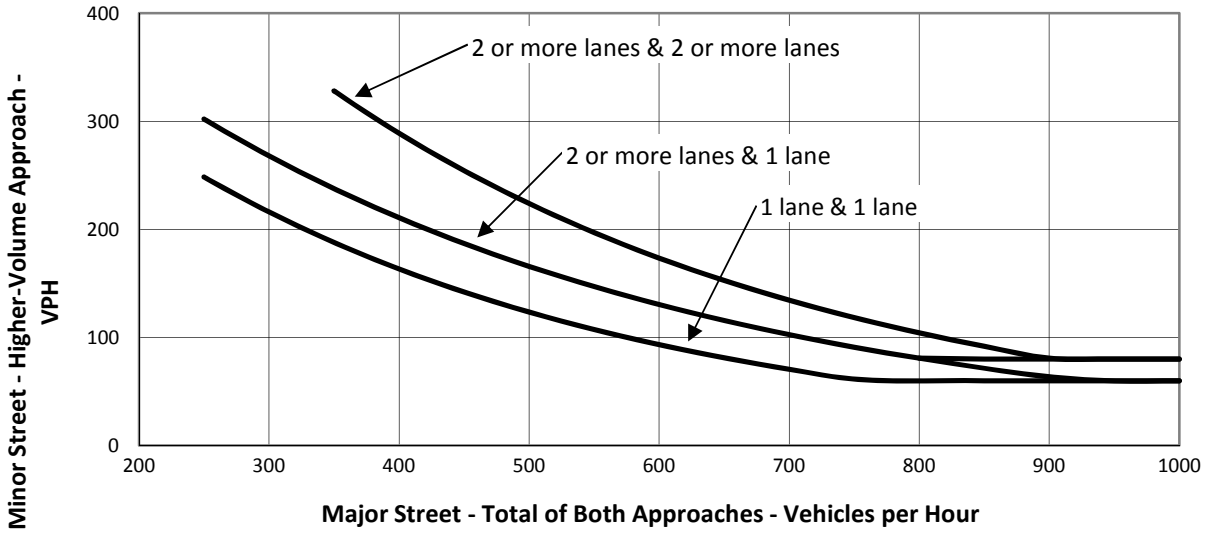
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	607
		Major Street (Approach 2):	300
Major Street Lanes:	2	[a] Major Street Left-Turns:	173
Minor Street Lanes:	1	Minor Street (Higher Volume):	235
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	607	Minimum Major Street Volume:	280
Major Street (Approach 2):	300	Satisfied?	YES
Total Major Street Volume:	907		
		Minimum Minor Street Volume:	63
Major Street Left Turns:	173	Satisfied?	YES
Minor Street (Higher Volume):	235		
Total Minor Street Volume:	408	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

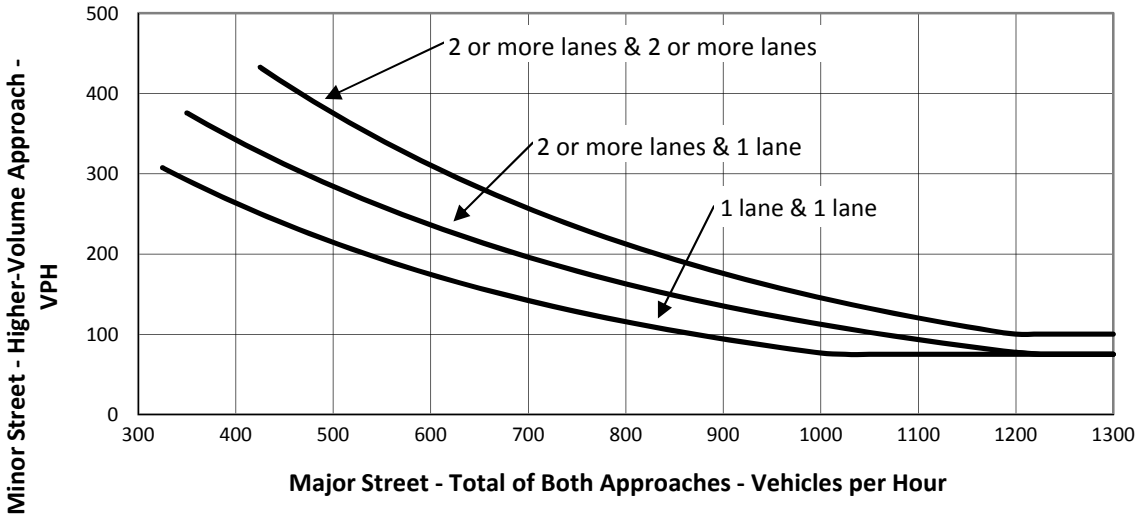
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	674
		Major Street (Approach 2):	333
Major Street Lanes:	2	[a] Major Street Left-Turns:	192
Minor Street Lanes:	1	Minor Street (Higher Volume):	261
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	674	Minimum Major Street Volume:	350
Major Street (Approach 2):	333	Satisfied?	YES
Total Major Street Volume:	1,007		
		Minimum Minor Street Volume:	111
Major Street Left Turns:	192	Satisfied?	YES
Minor Street (Higher Volume):	261		
Total Minor Street Volume:	453	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	673	606	485
Major Street (Approach 2):	450	405	324
[b] Major Street Left-Turns:	236	212	170
Minor Street (Higher Volume):	217	195	156

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	485
Major Street (Approach 2):	324
[a] Major Street Left-Turns:	170
Minor Street (Higher Volume):	156

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **809** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **809** Minor: **326**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

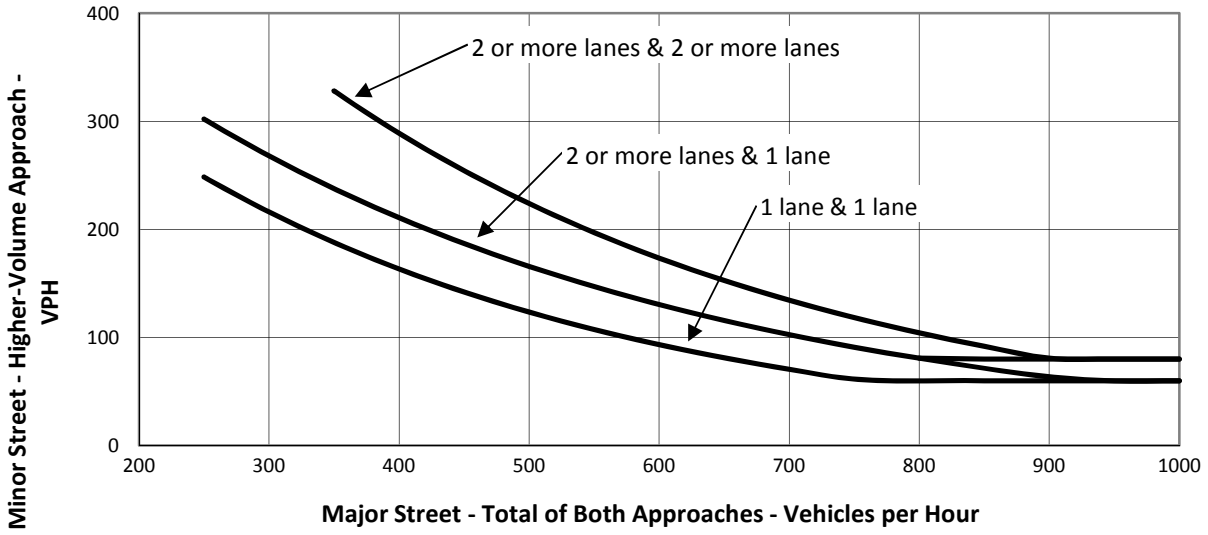
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	606
		Major Street (Approach 2):	405
Major Street Lanes:	2	[a] Major Street Left-Turns:	212
Minor Street Lanes:	1	Minor Street (Higher Volume):	195
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	606	Minimum Major Street Volume:	280
Major Street (Approach 2):	405	Satisfied?	YES
Total Major Street Volume:	1,011		
		Minimum Minor Street Volume:	60
Major Street Left Turns:	212	Satisfied?	YES
Minor Street (Higher Volume):	195		
Total Minor Street Volume:	407	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

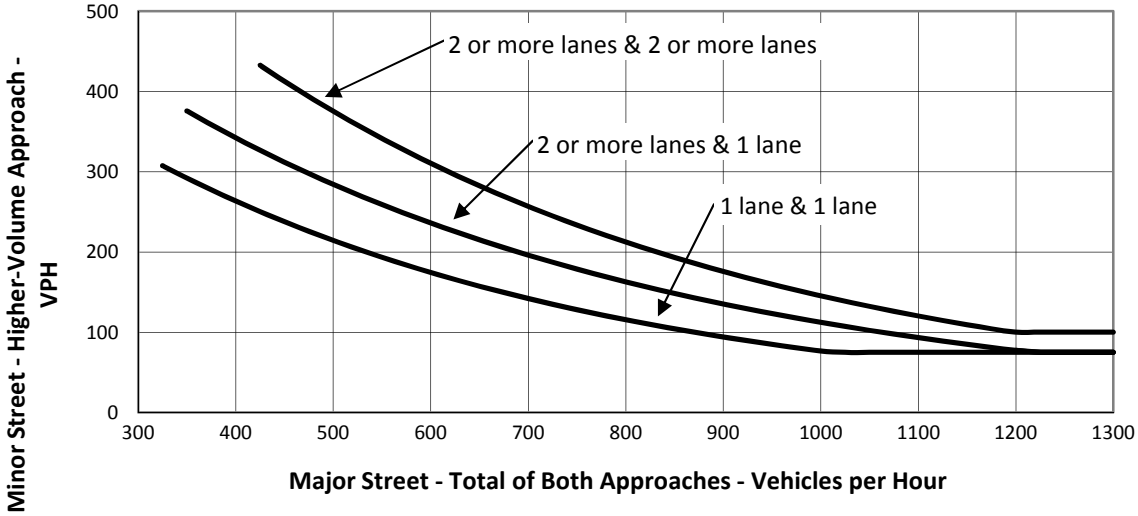
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	673
		Major Street (Approach 2):	450
Major Street Lanes:	2	[a] Major Street Left-Turns:	236
Minor Street Lanes:	1	Minor Street (Higher Volume):	217
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	673	Minimum Major Street Volume:	350
Major Street (Approach 2):	450	Satisfied?	YES
Total Major Street Volume:	1,123		
		Minimum Minor Street Volume:	89
Major Street Left Turns:	236	Satisfied?	YES
Minor Street (Higher Volume):	217		
Total Minor Street Volume:	453	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	525	478	357
Major Street (Approach 2):	363	330	247
[b] Major Street Left-Turns:	121	110	82
Minor Street (Higher Volume):	218	198	148

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	357
Major Street (Approach 2):	247
[a] Major Street Left-Turns:	82
Minor Street (Higher Volume):	148

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **604** Minor: **230**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **604** Minor: **230**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

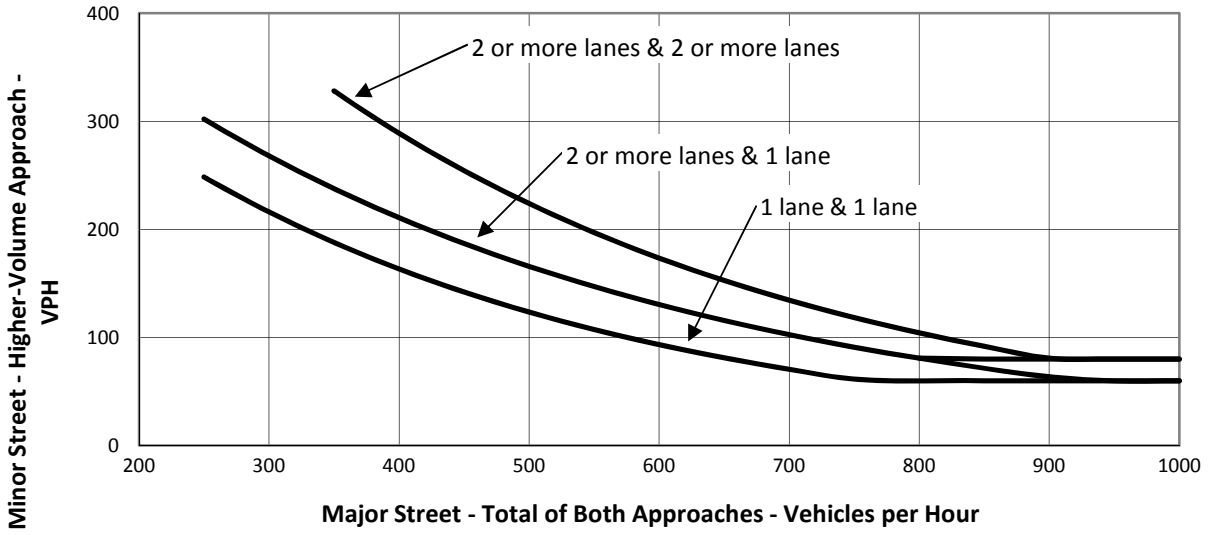
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	478
		Major Street (Approach 2):	330
Major Street Lanes:	2	[a] Major Street Left-Turns:	110
Minor Street Lanes:	1	Minor Street (Higher Volume):	198
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	478	Minimum Major Street Volume:	280
Major Street (Approach 2):	330	Satisfied?	YES
Total Major Street Volume:	808		
		Minimum Minor Street Volume:	79
Major Street Left Turns:	110	Satisfied?	YES
Minor Street (Higher Volume):	198		
Total Minor Street Volume:	308	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

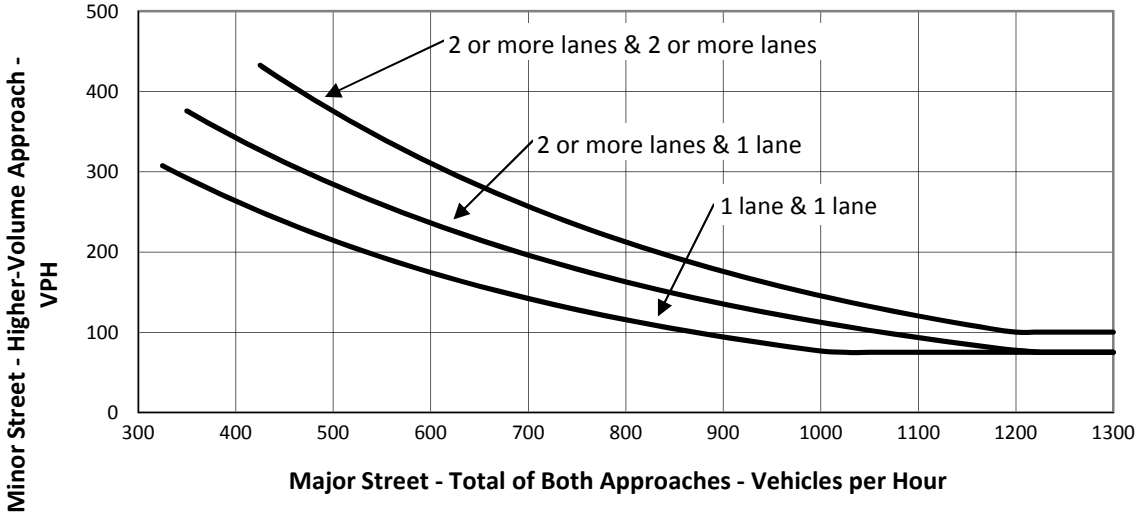
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	525
		Major Street (Approach 2):	363
Major Street Lanes:	2	[a] Major Street Left-Turns:	121
Minor Street Lanes:	1	Minor Street (Higher Volume):	218
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	525	Minimum Major Street Volume:	350
Major Street (Approach 2):	363	Satisfied?	YES
Total Major Street Volume:	888		
		Minimum Minor Street Volume:	138
Major Street Left Turns:	121	Satisfied?	YES
Minor Street (Higher Volume):	218		
Total Minor Street Volume:	339	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035
Intersection Number:	2
Major Street Name:	State Route 18
Minor Street Name:	Daley Canyon Road

Intersection Number & Name as Displayed

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	549	500	373
Major Street (Approach 2):	422	384	287
[b] Major Street Left-Turns:	170	155	116
Minor Street (Higher Volume):	223	203	152

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Daley Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	373
Major Street (Approach 2):	287
[a] Major Street Left-Turns:	116
Minor Street (Higher Volume):	152

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **660** Minor: **268**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **660** Minor: **268**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**YES**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

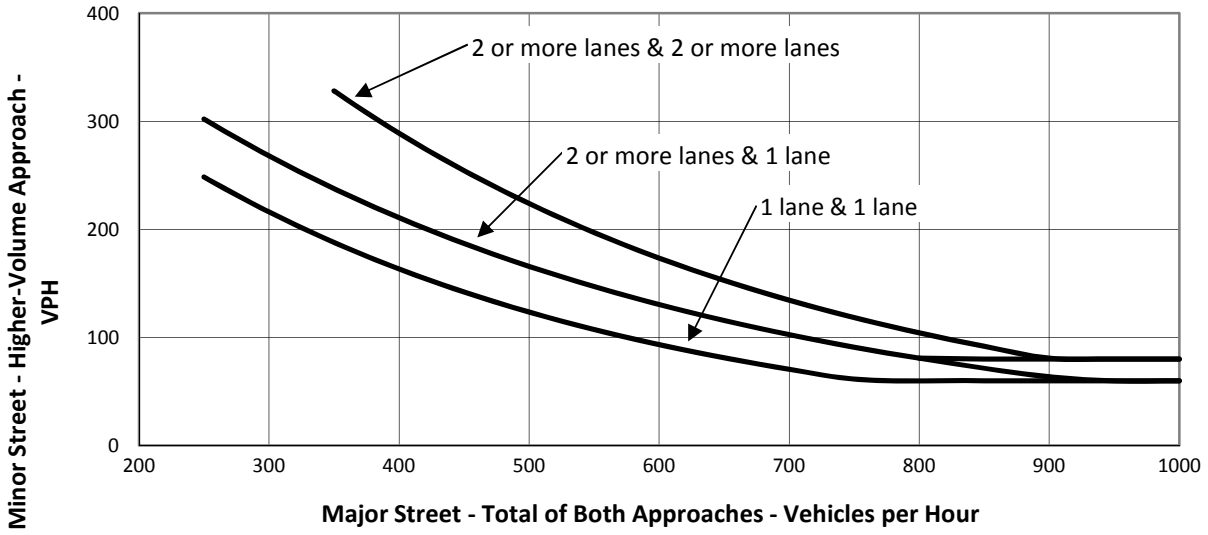
2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	500
		Major Street (Approach 2):	384
Major Street Lanes:	2	[a] Major Street Left-Turns:	155
Minor Street Lanes:	1	Minor Street (Higher Volume):	203
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	500	Minimum Major Street Volume:	280
Major Street (Approach 2):	384	Satisfied?	YES
Total Major Street Volume:	884		
		Minimum Minor Street Volume:	66
Major Street Left Turns:	155	Satisfied?	YES
Minor Street (Higher Volume):	203		
Total Minor Street Volume:	358	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

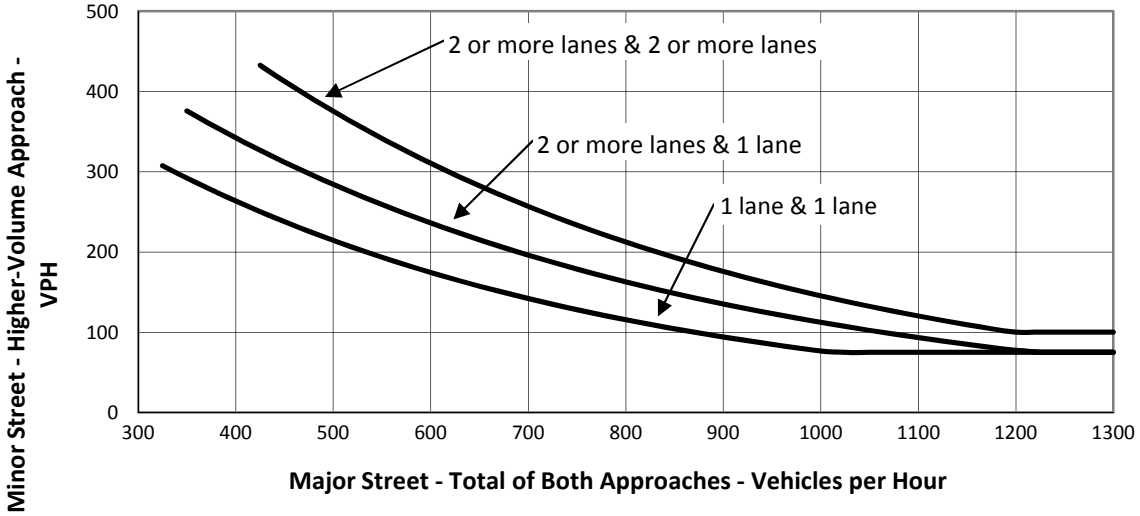
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

2. STATE ROUTE 18 & DALEY CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Daley Canyon Road	Major Street (Approach 1):	549
		Major Street (Approach 2):	422
Major Street Lanes:	2	[a] Major Street Left-Turns:	170
Minor Street Lanes:	1	Minor Street (Higher Volume):	223
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	549	Minimum Major Street Volume:	350
Major Street (Approach 2):	422	Satisfied?	YES
Total Major Street Volume:	971		
		Minimum Minor Street Volume:	118
Major Street Left Turns:	170	Satisfied?	YES
Minor Street (Higher Volume):	223		
Total Minor Street Volume:	393	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035**

Intersection Number: **2**
Major Street Name: **State Route 18**
Minor Street Name: **Daley Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	YES
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-AM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	326	293	235
Major Street (Approach 2):	166	149	120
[b] Major Street Left-Turns:	27	24	19
Minor Street (Higher Volume):	162	146	117

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	235
Major Street (Approach 2):	120
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	117

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **355** Minor: **136**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **355** Minor: **136**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

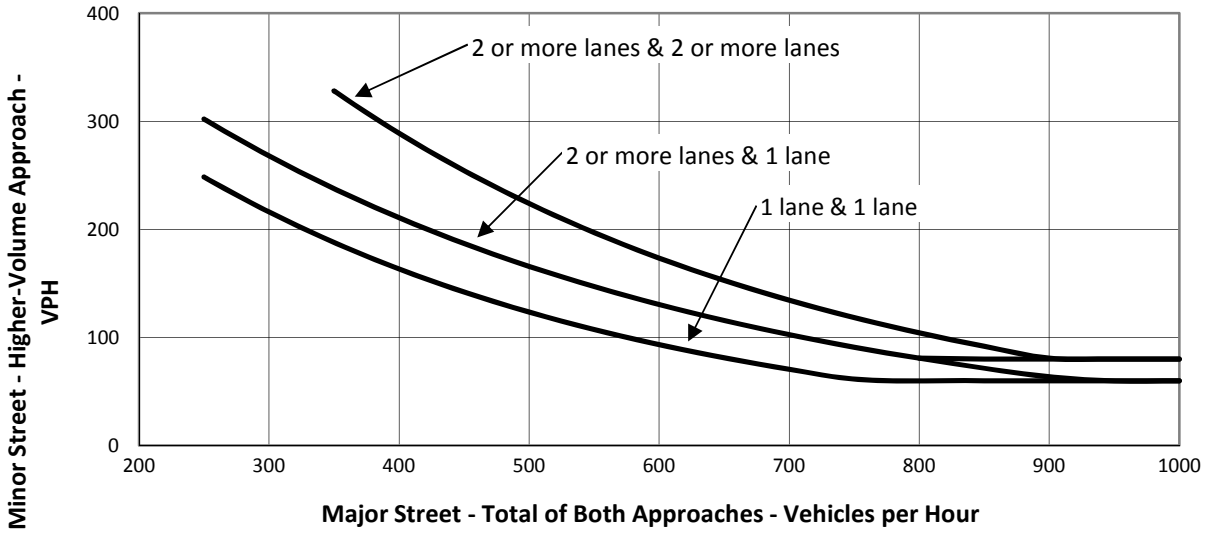
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	293
		Major Street (Approach 2):	149
Major Street Lanes:	2	[a] Major Street Left-Turns:	24
Minor Street Lanes:	1	Minor Street (Higher Volume):	146
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	293	Minimum Major Street Volume:	280
Major Street (Approach 2):	149	Satisfied?	YES
Total Major Street Volume:	442		
		Minimum Minor Street Volume:	191
Major Street Left Turns:	24	Satisfied?	NO
Minor Street (Higher Volume):	146		
Total Minor Street Volume:	170	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

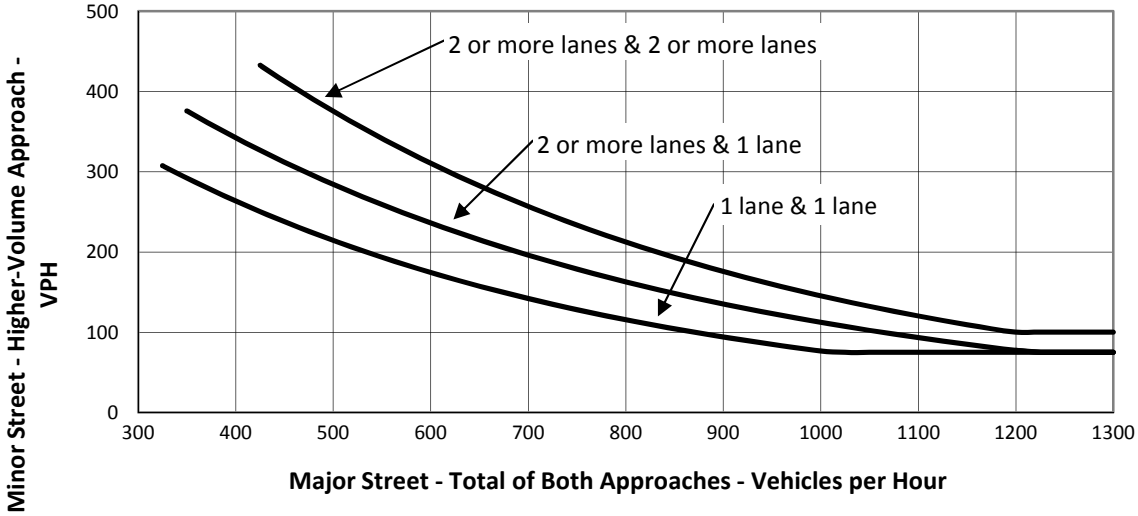
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	326
		Major Street (Approach 2):	166
Major Street Lanes:	2	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	162
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	326	Minimum Major Street Volume:	350
Major Street (Approach 2):	166	Satisfied?	YES
Total Major Street Volume:	492		
		Minimum Minor Street Volume:	289
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	162		
Total Minor Street Volume:	189	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-AM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-PM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	338	304	243
Major Street (Approach 2):	244	220	176
[b] Major Street Left-Turns:	70	63	50
Minor Street (Higher Volume):	228	205	164

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	243
Major Street (Approach 2):	176
[a] Major Street Left-Turns:	50
Minor Street (Higher Volume):	164

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **419** Minor: **214**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **419** Minor: **214**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

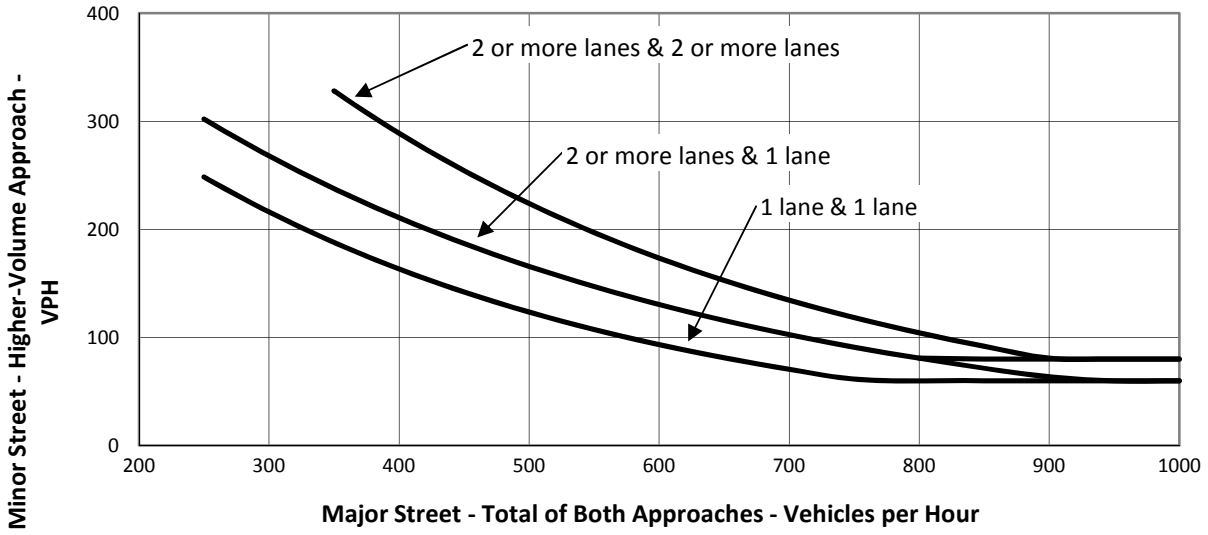
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	304
		Major Street (Approach 2):	220
Major Street Lanes:	2	[a] Major Street Left-Turns:	63
Minor Street Lanes:	1	Minor Street (Higher Volume):	205
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	304	Minimum Major Street Volume:	280
Major Street (Approach 2):	220	Satisfied?	YES
Total Major Street Volume:	524		
		Minimum Minor Street Volume:	157
Major Street Left Turns:	63	Satisfied?	YES
Minor Street (Higher Volume):	205		
Total Minor Street Volume:	268	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

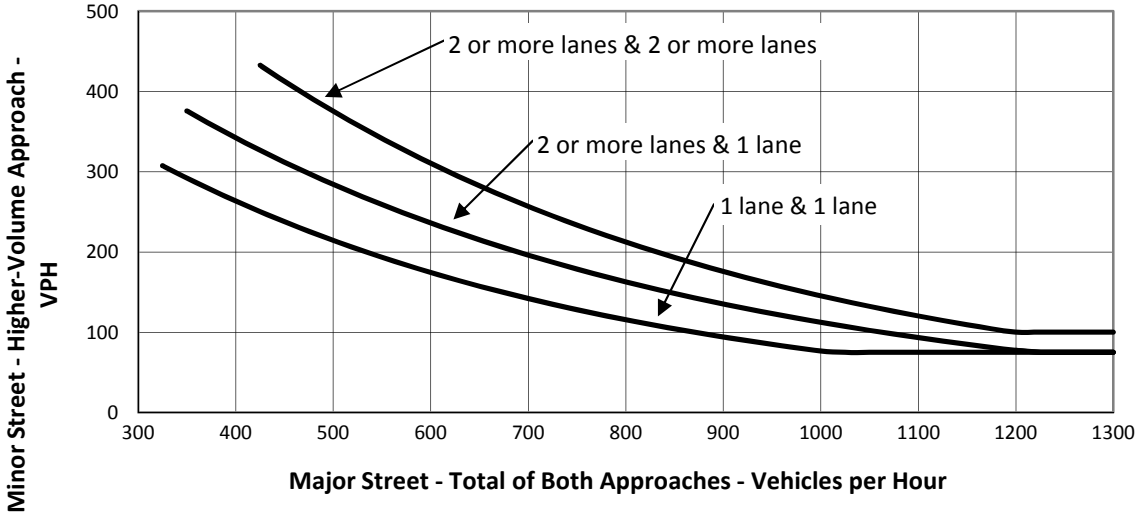
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	338
		Major Street (Approach 2):	244
Major Street Lanes:	2	[a] Major Street Left-Turns:	70
Minor Street Lanes:	1	Minor Street (Higher Volume):	228

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	338	Minimum Major Street Volume:	350
Major Street (Approach 2):	244	Satisfied?	YES
Total Major Street Volume:	582		
		Minimum Minor Street Volume:	244
Major Street Left Turns:	70	Satisfied?	YES
Minor Street (Higher Volume):	228		
Total Minor Street Volume:	298	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-PM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-AM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	266	242	181
Major Street (Approach 2):	218	198	148
[b] Major Street Left-Turns:	70	64	48
Minor Street (Higher Volume):	163	148	111

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	181
Major Street (Approach 2):	148
[a] Major Street Left-Turns:	48
Minor Street (Higher Volume):	111

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **329** Minor: **159**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **329** Minor: **159**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

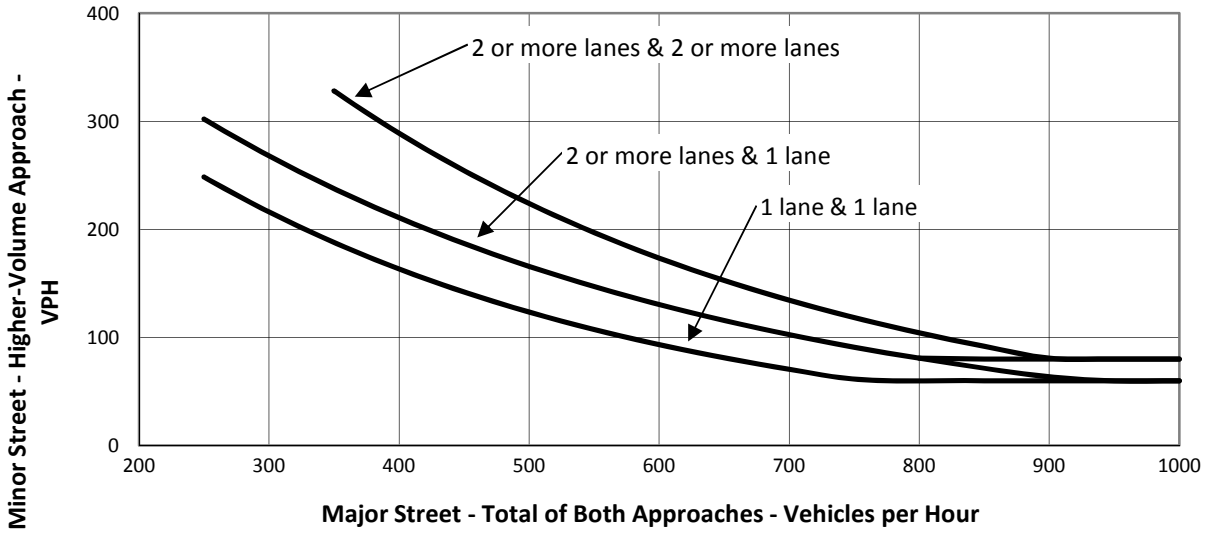
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	242
		Major Street (Approach 2):	198
Major Street Lanes:	2	[a] Major Street Left-Turns:	64
Minor Street Lanes:	1	Minor Street (Higher Volume):	148
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	242	Minimum Major Street Volume:	280
Major Street (Approach 2):	198	Satisfied?	YES
Total Major Street Volume:	440		
		Minimum Minor Street Volume:	192
Major Street Left Turns:	64	Satisfied?	YES
Minor Street (Higher Volume):	148		
Total Minor Street Volume:	212	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

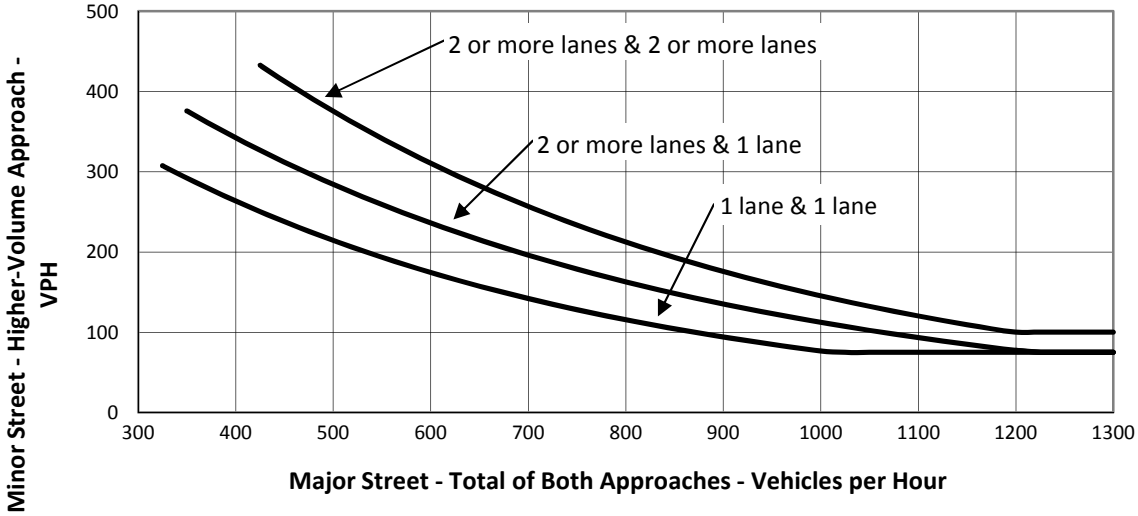
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	266
		Major Street (Approach 2):	218
Major Street Lanes:	2	[a] Major Street Left-Turns:	70
Minor Street Lanes:	1	Minor Street (Higher Volume):	163

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	266	Minimum Major Street Volume:	350
Major Street (Approach 2):	218	Satisfied?	YES
Total Major Street Volume:	484		
		Minimum Minor Street Volume:	293
Major Street Left Turns:	70	Satisfied?	NO
Minor Street (Higher Volume):	163		
Total Minor Street Volume:	233	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-AM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-PM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	305	278	207
Major Street (Approach 2):	248	226	169
[b] Major Street Left-Turns:	55	50	37
Minor Street (Higher Volume):	127	116	86

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	207
Major Street (Approach 2):	169
[a] Major Street Left-Turns:	37
Minor Street (Higher Volume):	86

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **376** Minor: **123**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **376** Minor: **123**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

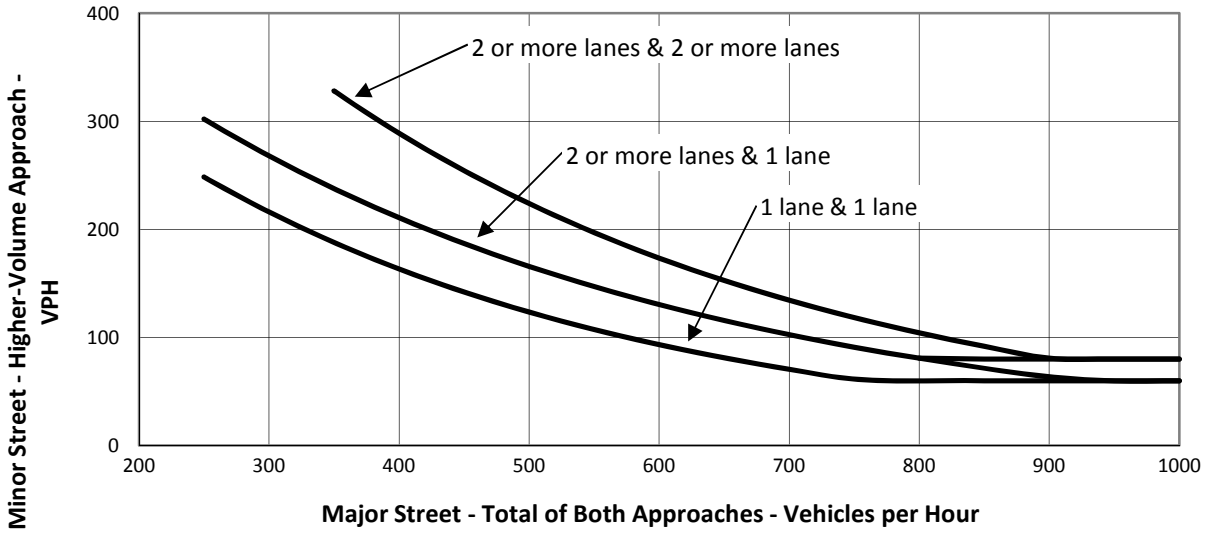
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	278
		Major Street (Approach 2):	226
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	1	Minor Street (Higher Volume):	116
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	278	Minimum Major Street Volume:	280
Major Street (Approach 2):	226	Satisfied?	YES
Total Major Street Volume:	504		
		Minimum Minor Street Volume:	164
Major Street Left Turns:	50	Satisfied?	YES
Minor Street (Higher Volume):	116		
Total Minor Street Volume:	166	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

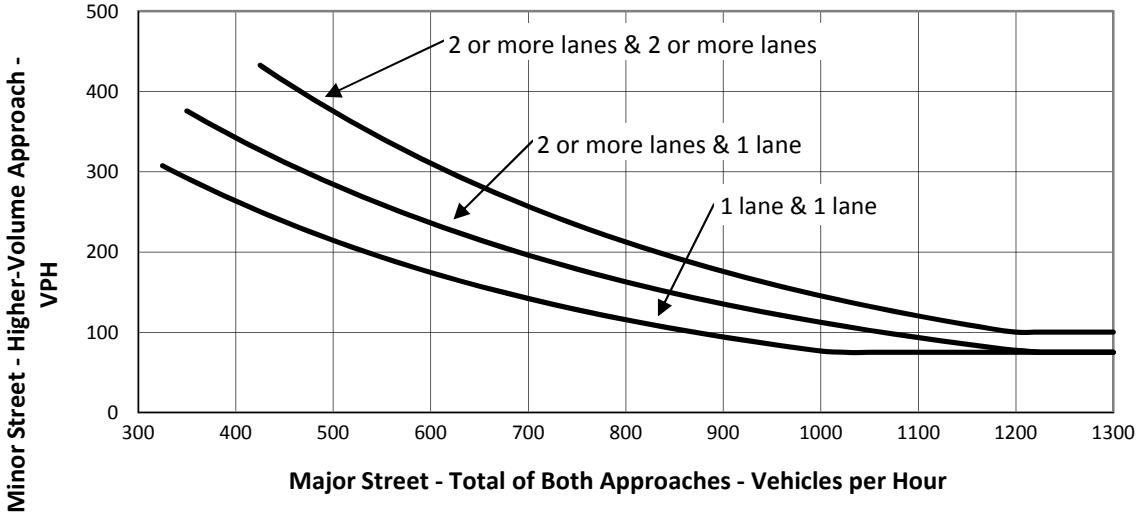
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	305
		Major Street (Approach 2):	248
Major Street Lanes:	2	[a] Major Street Left-Turns:	55
Minor Street Lanes:	1	Minor Street (Higher Volume):	127
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	305	Minimum Major Street Volume:	350
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	553		
		Minimum Minor Street Volume:	258
Major Street Left Turns:	55	Satisfied?	NO
Minor Street (Higher Volume):	127		
Total Minor Street Volume:	182	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-PM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-AM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	329	296	237
Major Street (Approach 2):	167	150	120
[b] Major Street Left-Turns:	27	24	19
Minor Street (Higher Volume):	163	147	117

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	237
Major Street (Approach 2):	120
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	117

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **357** Minor: **136**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **357** Minor: **136**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

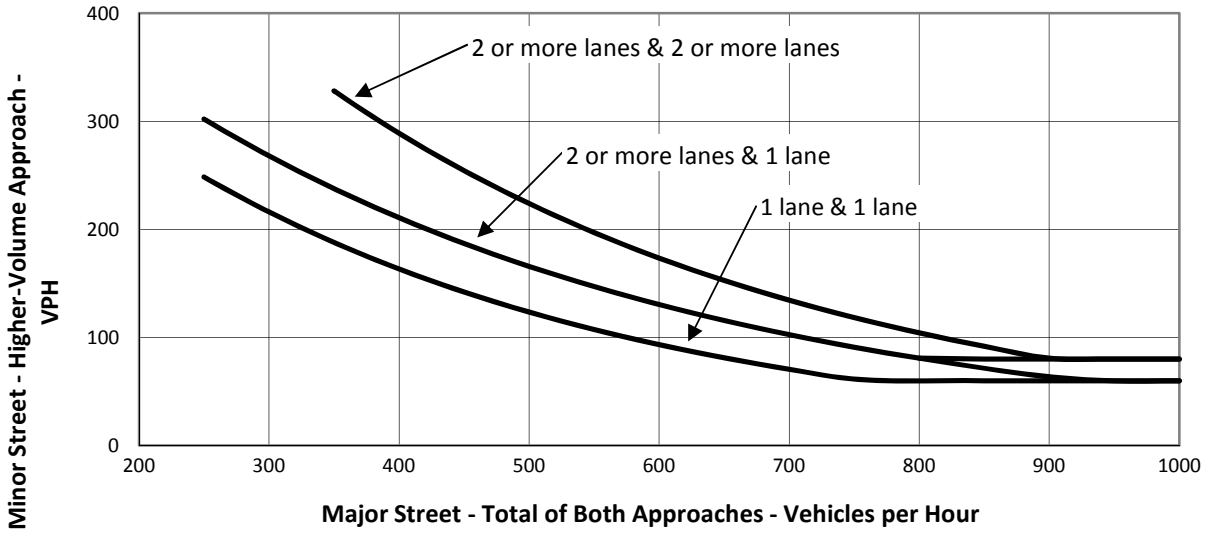
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	296
		Major Street (Approach 2):	150
Major Street Lanes:	2	[a] Major Street Left-Turns:	24
Minor Street Lanes:	1	Minor Street (Higher Volume):	147
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	296	Minimum Major Street Volume:	280
Major Street (Approach 2):	150	Satisfied?	YES
Total Major Street Volume:	446		
		Minimum Minor Street Volume:	189
Major Street Left Turns:	24	Satisfied?	NO
Minor Street (Higher Volume):	147		
Total Minor Street Volume:	171	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

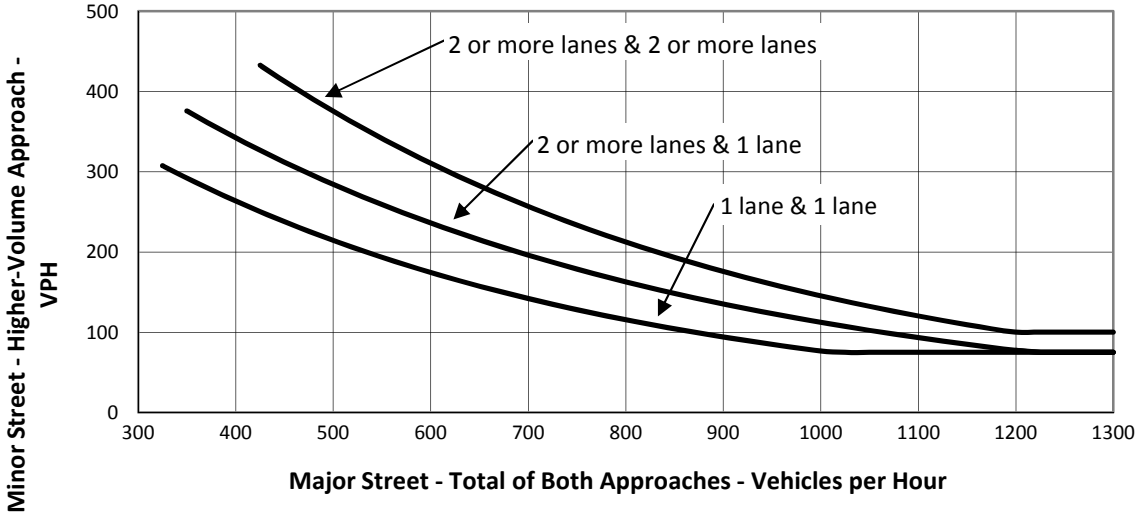
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	329
		Major Street (Approach 2):	167
Major Street Lanes:	2	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	163
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	329	Minimum Major Street Volume:	350
Major Street (Approach 2):	167	Satisfied?	YES
Total Major Street Volume:	496		
		Minimum Minor Street Volume:	286
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	163		
Total Minor Street Volume:	190	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-AM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-PM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	342	308	246
Major Street (Approach 2):	247	222	178
[b] Major Street Left-Turns:	71	64	51
Minor Street (Higher Volume):	231	208	166

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	246
Major Street (Approach 2):	178
[a] Major Street Left-Turns:	51
Minor Street (Higher Volume):	166

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **424** Minor: **217**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **424** Minor: **217**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

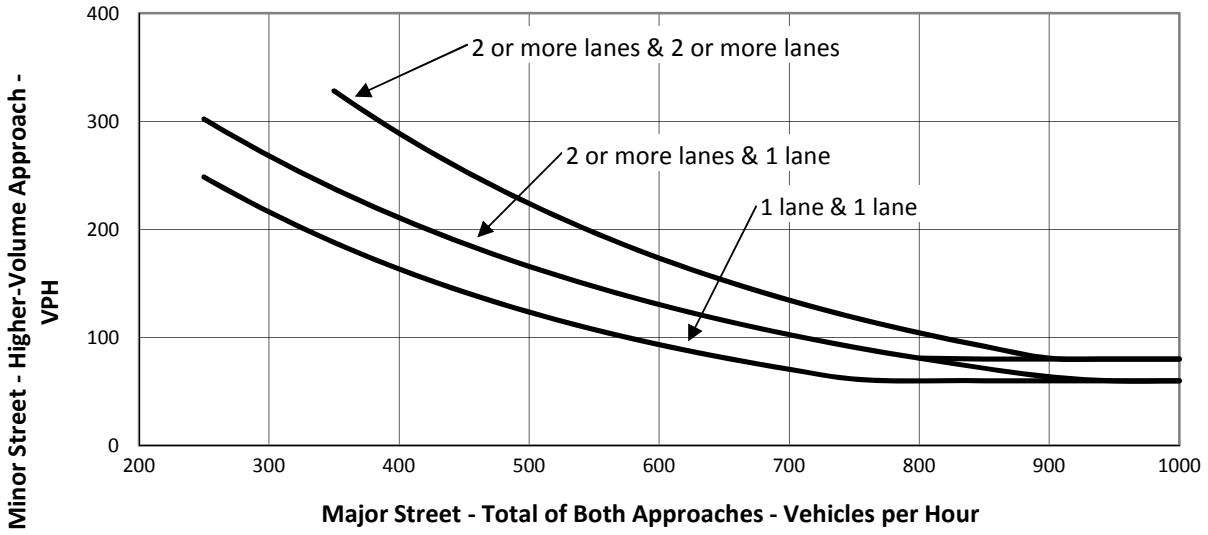
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	308
		Major Street (Approach 2):	222
Major Street Lanes:	2	[a] Major Street Left-Turns:	64
Minor Street Lanes:	1	Minor Street (Higher Volume):	208
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	308	Minimum Major Street Volume:	280
Major Street (Approach 2):	222	Satisfied?	YES
Total Major Street Volume:	530		
		Minimum Minor Street Volume:	154
Major Street Left Turns:	64	Satisfied?	YES
Minor Street (Higher Volume):	208		
Total Minor Street Volume:	272	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

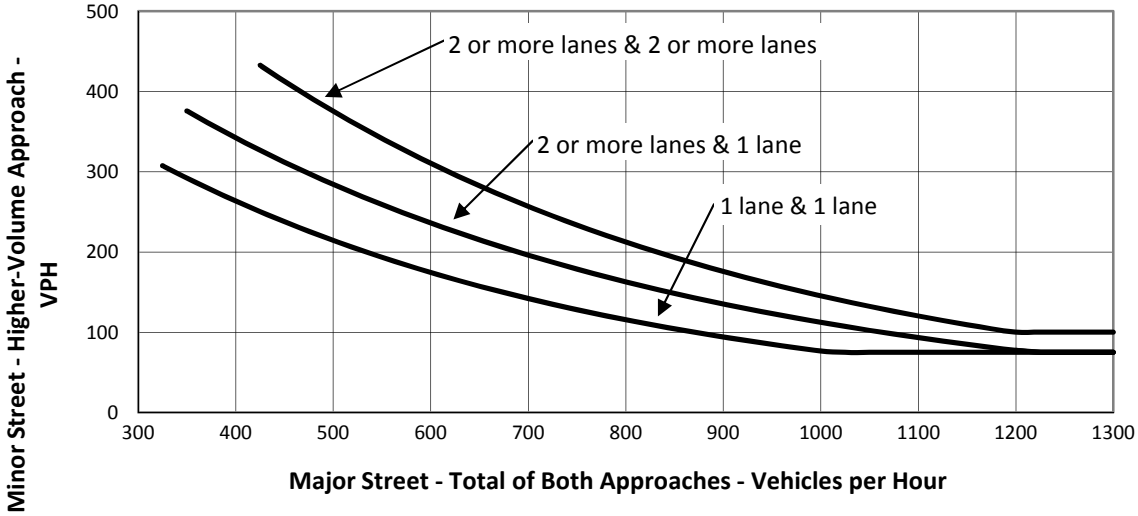
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	342
		Major Street (Approach 2):	247
Major Street Lanes:	2	[a] Major Street Left-Turns:	71
Minor Street Lanes:	1	Minor Street (Higher Volume):	231
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	342	Minimum Major Street Volume:	350
Major Street (Approach 2):	247	Satisfied?	YES
Total Major Street Volume:	589		
		Minimum Minor Street Volume:	241
Major Street Left Turns:	71	Satisfied?	YES
Minor Street (Higher Volume):	231		
Total Minor Street Volume:	302	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-PM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-AM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	268	244	182
Major Street (Approach 2):	220	200	150
[b] Major Street Left-Turns:	71	65	48
Minor Street (Higher Volume):	164	149	112

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	182
Major Street (Approach 2):	150
[a] Major Street Left-Turns:	48
Minor Street (Higher Volume):	112

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **332** Minor: **160**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **332** Minor: **160**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

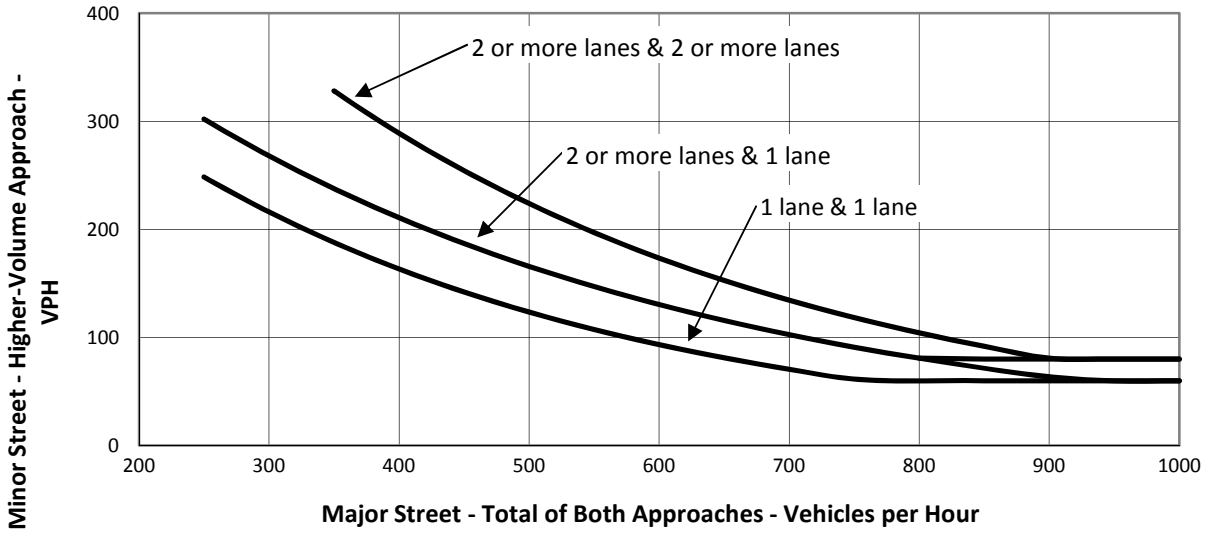
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	244
		Major Street (Approach 2):	200
Major Street Lanes:	2	[a] Major Street Left-Turns:	65
Minor Street Lanes:	1	Minor Street (Higher Volume):	149
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	244	Minimum Major Street Volume:	280
Major Street (Approach 2):	200	Satisfied?	YES
Total Major Street Volume:	444		
		Minimum Minor Street Volume:	190
Major Street Left Turns:	65	Satisfied?	YES
Minor Street (Higher Volume):	149		
Total Minor Street Volume:	214	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

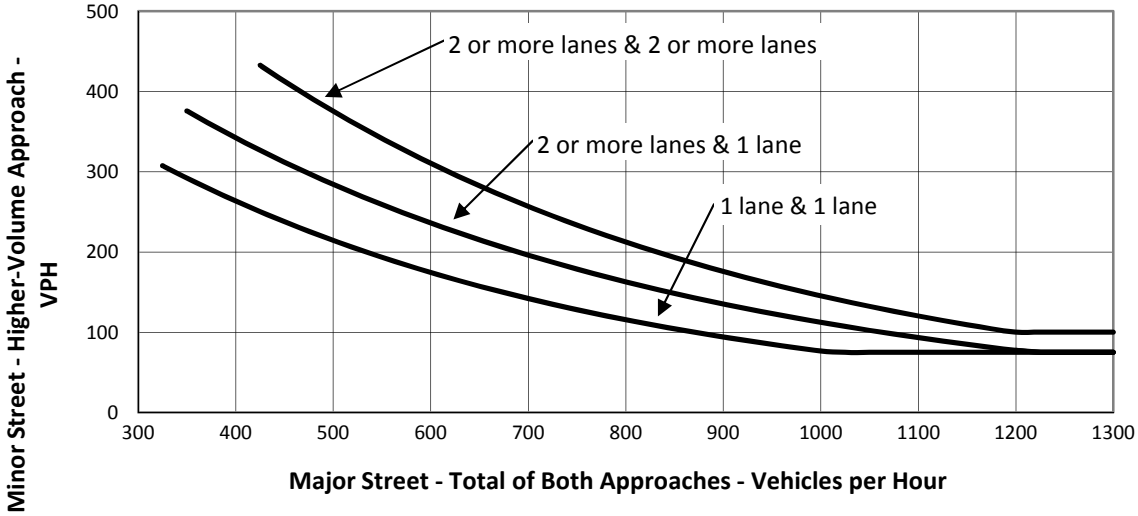
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	268
		Major Street (Approach 2):	220
Major Street Lanes:	2	[a] Major Street Left-Turns:	71
Minor Street Lanes:	1	Minor Street (Higher Volume):	164
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	268	Minimum Major Street Volume:	350
Major Street (Approach 2):	220	Satisfied?	YES
Total Major Street Volume:	488		
		Minimum Minor Street Volume:	291
Major Street Left Turns:	71	Satisfied?	NO
Minor Street (Higher Volume):	164		
Total Minor Street Volume:	235	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-AM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-PM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	308	280	209
Major Street (Approach 2):	251	228	171
[b] Major Street Left-Turns:	56	51	38
Minor Street (Higher Volume):	128	116	87

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	209
Major Street (Approach 2):	171
[a] Major Street Left-Turns:	38
Minor Street (Higher Volume):	87

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **380** Minor: **125**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **380** Minor: **125**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

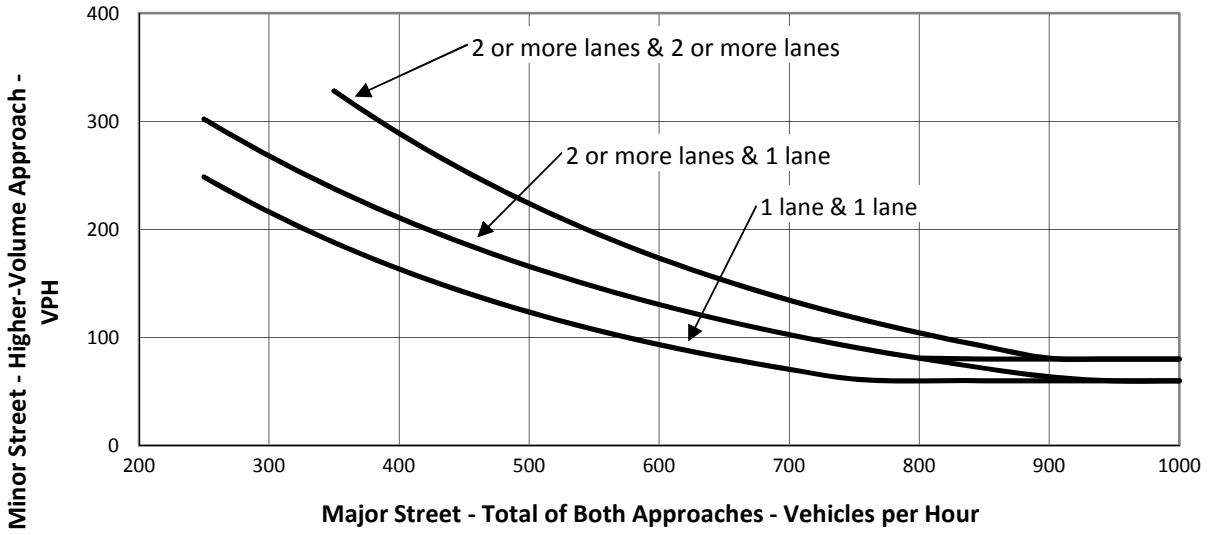
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	280
		Major Street (Approach 2):	228
Major Street Lanes:	2	[a] Major Street Left-Turns:	51
Minor Street Lanes:	1	Minor Street (Higher Volume):	116
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	280	Minimum Major Street Volume:	280
Major Street (Approach 2):	228	Satisfied?	YES
Total Major Street Volume:	508		
		Minimum Minor Street Volume:	163
Major Street Left Turns:	51	Satisfied?	YES
Minor Street (Higher Volume):	116		
Total Minor Street Volume:	167	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

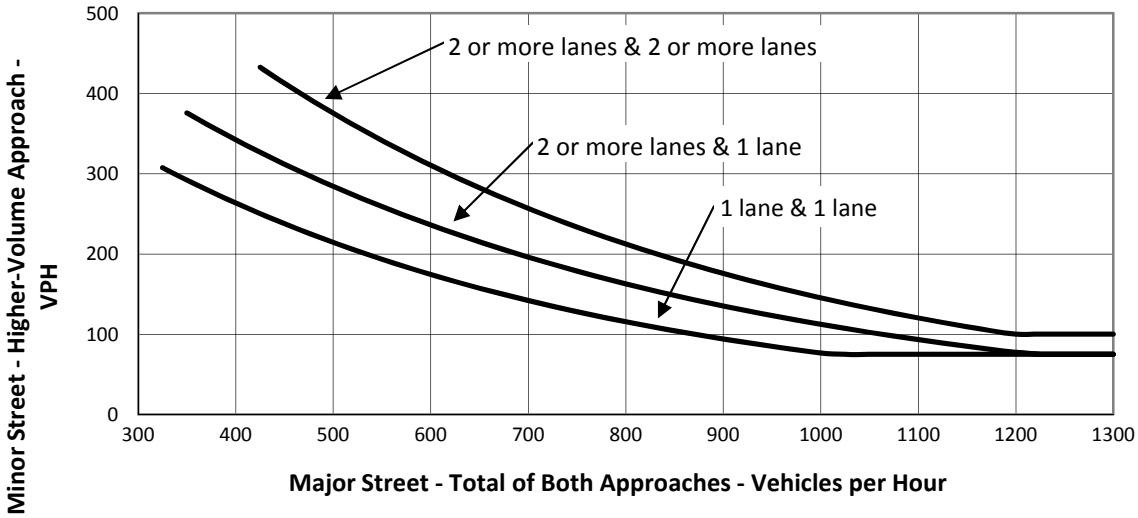
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	308
		Major Street (Approach 2):	251
Major Street Lanes:	2	[a] Major Street Left-Turns:	56
Minor Street Lanes:	1	Minor Street (Higher Volume):	128

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	308	Minimum Major Street Volume:	350
Major Street (Approach 2):	251	Satisfied?	YES
Total Major Street Volume:	559		
		Minimum Minor Street Volume:	255
Major Street Left Turns:	56	Satisfied?	NO
Minor Street (Higher Volume):	128		
Total Minor Street Volume:	184	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-PM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-AM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	392	353	282
Major Street (Approach 2):	199	179	143
[b] Major Street Left-Turns:	32	29	23
Minor Street (Higher Volume):	194	175	140

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	282
Major Street (Approach 2):	143
[a] Major Street Left-Turns:	23
Minor Street (Higher Volume):	140

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **425** Minor: **163**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **425** Minor: **163**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

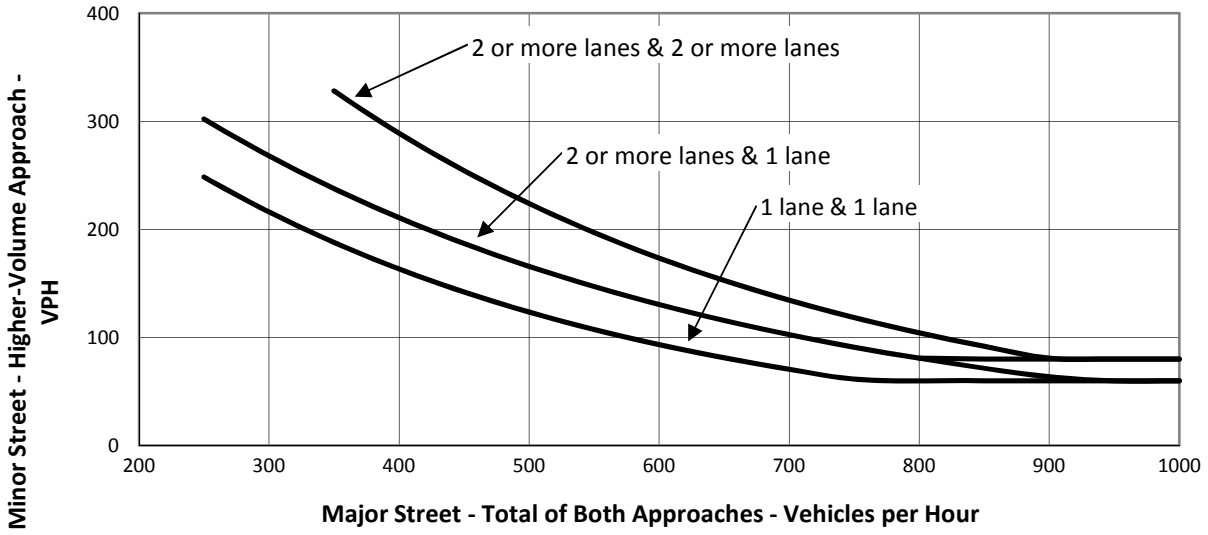
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	353
		Major Street (Approach 2):	179
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	1	Minor Street (Higher Volume):	175
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	353	Minimum Major Street Volume:	280
Major Street (Approach 2):	179	Satisfied?	YES
Total Major Street Volume:	532		
		Minimum Minor Street Volume:	154
Major Street Left Turns:	29	Satisfied?	YES
Minor Street (Higher Volume):	175		
Total Minor Street Volume:	204	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

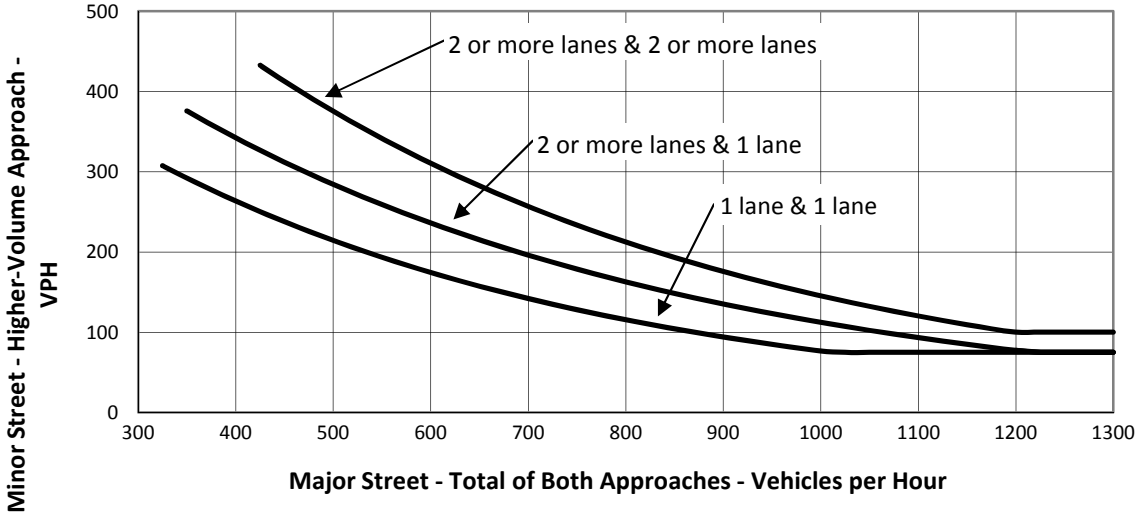
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	392
		Major Street (Approach 2):	199
Major Street Lanes:	2	[a] Major Street Left-Turns:	32
Minor Street Lanes:	1	Minor Street (Higher Volume):	194
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	392	Minimum Major Street Volume:	350
Major Street (Approach 2):	199	Satisfied?	YES
Total Major Street Volume:	591		
		Minimum Minor Street Volume:	240
Major Street Left Turns:	32	Satisfied?	NO
Minor Street (Higher Volume):	194		
Total Minor Street Volume:	226	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-AM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-PM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	406	365	292
Major Street (Approach 2):	293	264	211
[b] Major Street Left-Turns:	84	76	60
Minor Street (Higher Volume):	274	247	197

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	292
Major Street (Approach 2):	211
[a] Major Street Left-Turns:	60
Minor Street (Higher Volume):	197

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **503** Minor: **257**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **503** Minor: **257**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

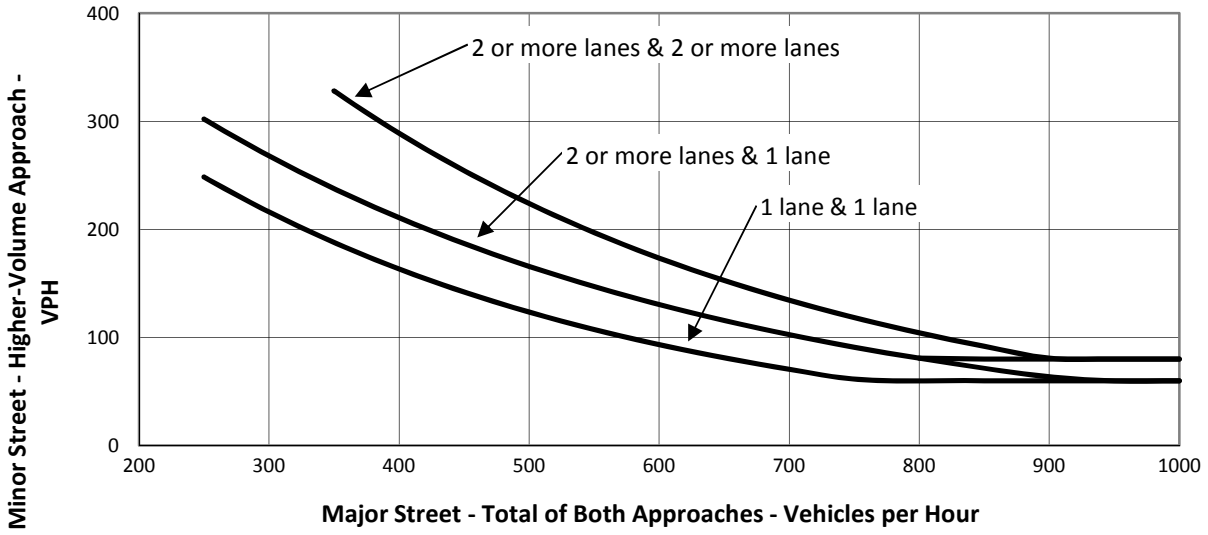
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	365
		Major Street (Approach 2):	264
Major Street Lanes:	2	[a] Major Street Left-Turns:	76
Minor Street Lanes:	1	Minor Street (Higher Volume):	247
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	365	Minimum Major Street Volume:	280
Major Street (Approach 2):	264	Satisfied?	YES
Total Major Street Volume:	629		
		Minimum Minor Street Volume:	122
Major Street Left Turns:	76	Satisfied?	YES
Minor Street (Higher Volume):	247		
Total Minor Street Volume:	323	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

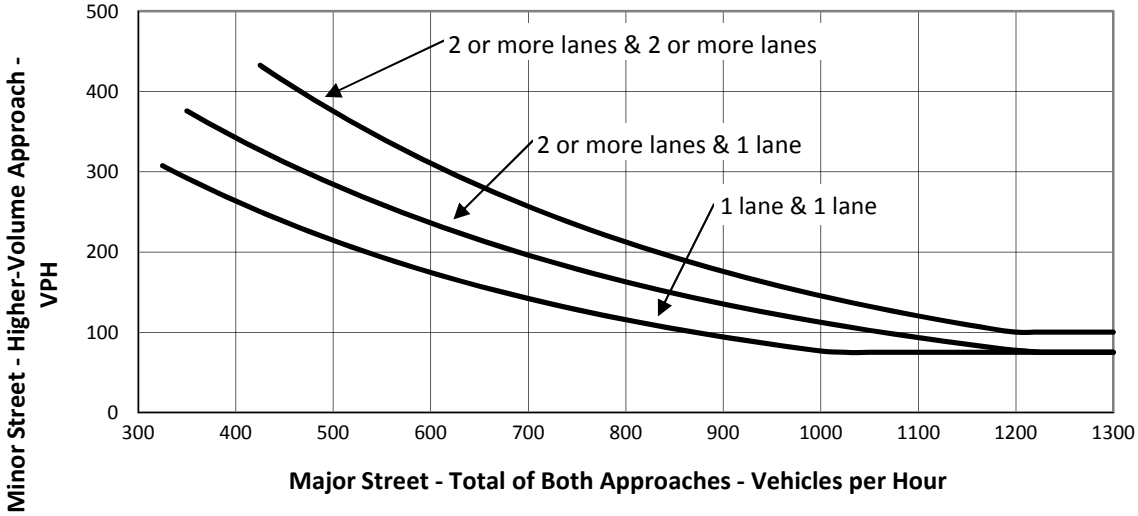
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	406
		Major Street (Approach 2):	293
Major Street Lanes:	2	[a] Major Street Left-Turns:	84
Minor Street Lanes:	1	Minor Street (Higher Volume):	274
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	406	Minimum Major Street Volume:	350
Major Street (Approach 2):	293	Satisfied?	YES
Total Major Street Volume:	699		
		Minimum Minor Street Volume:	196
Major Street Left Turns:	84	Satisfied?	YES
Minor Street (Higher Volume):	274		
Total Minor Street Volume:	358	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-PM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-AM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	319	290	217
Major Street (Approach 2):	262	238	178
[b] Major Street Left-Turns:	84	76	57
Minor Street (Higher Volume):	195	177	133

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	217
Major Street (Approach 2):	178
[a] Major Street Left-Turns:	57
Minor Street (Higher Volume):	133

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **395** Minor: **190**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **395** Minor: **190**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

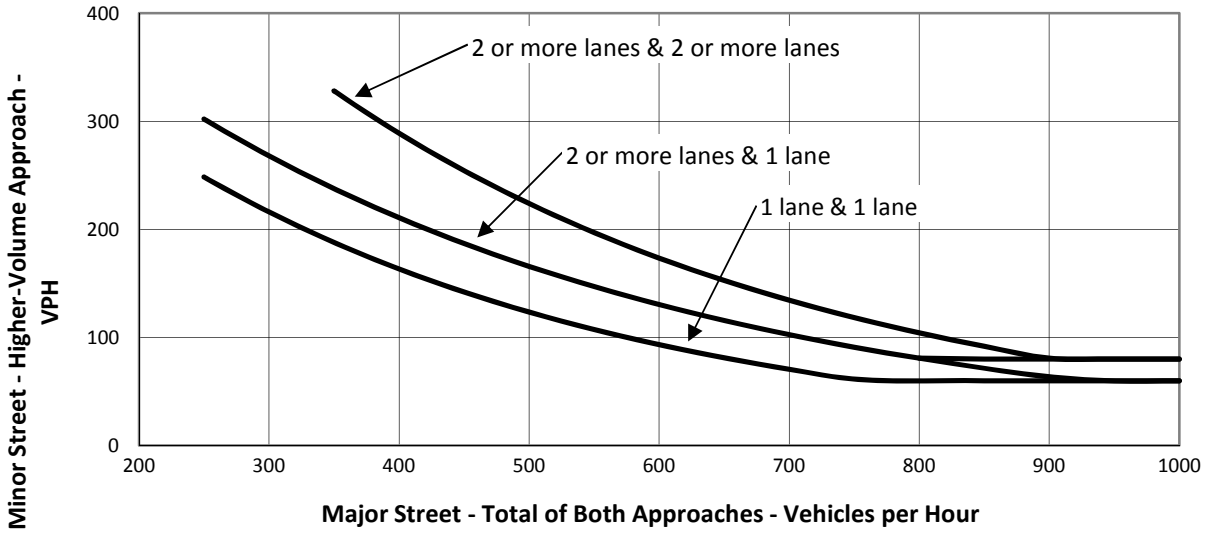
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	290
		Major Street (Approach 2):	238
Major Street Lanes:	2	[a] Major Street Left-Turns:	76
Minor Street Lanes:	1	Minor Street (Higher Volume):	177
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	290	Minimum Major Street Volume:	280
Major Street (Approach 2):	238	Satisfied?	YES
Total Major Street Volume:	528		
		Minimum Minor Street Volume:	155
Major Street Left Turns:	76	Satisfied?	YES
Minor Street (Higher Volume):	177		
Total Minor Street Volume:	253	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

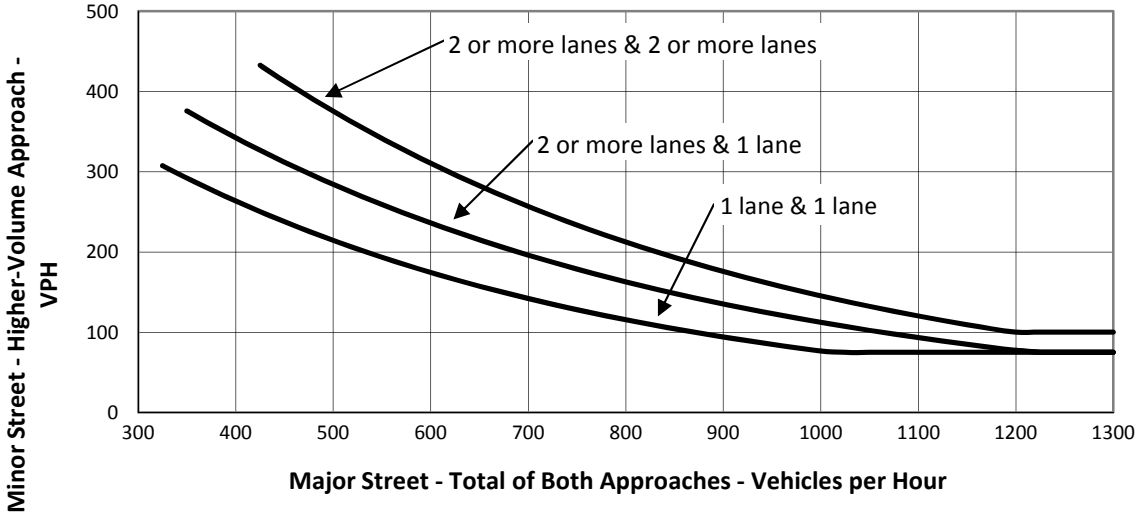
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	319
		Major Street (Approach 2):	262
Major Street Lanes:	2	[a] Major Street Left-Turns:	84
Minor Street Lanes:	1	Minor Street (Higher Volume):	195
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	319	Minimum Major Street Volume:	350
Major Street (Approach 2):	262	Satisfied?	YES
Total Major Street Volume:	581		
		Minimum Minor Street Volume:	245
Major Street Left Turns:	84	Satisfied?	YES
Minor Street (Higher Volume):	195		
Total Minor Street Volume:	279	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-AM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-PM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	366	333	249
Major Street (Approach 2):	304	277	207
[b] Major Street Left-Turns:	66	60	45
Minor Street (Higher Volume):	152	138	103

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	249
Major Street (Approach 2):	207
[a] Major Street Left-Turns:	45
Minor Street (Higher Volume):	103

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **456** Minor: **148**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **456** Minor: **148**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

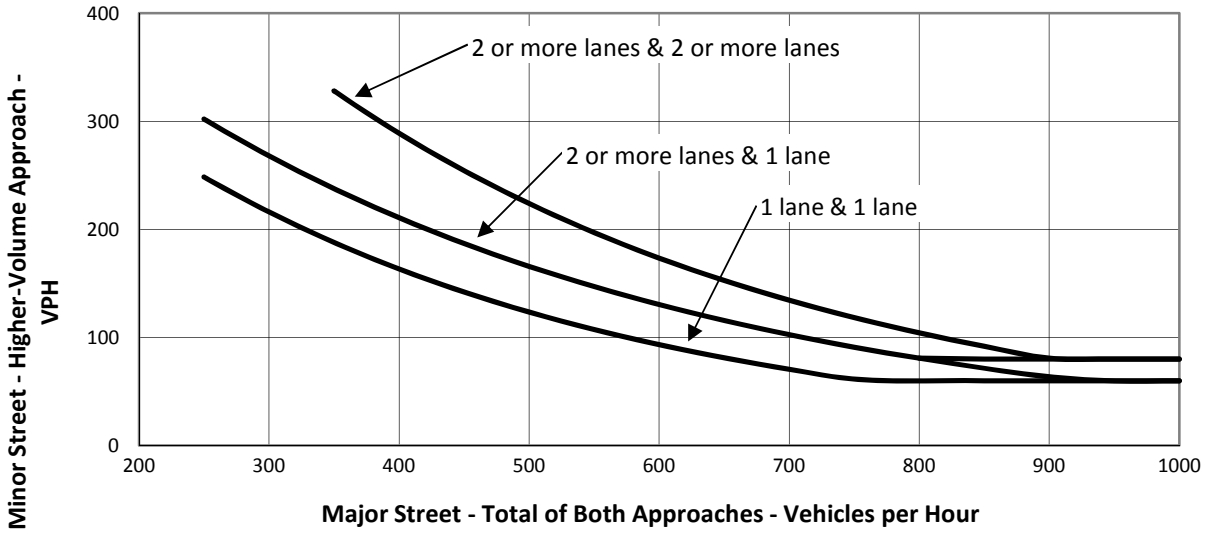
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	333
		Major Street (Approach 2):	277
Major Street Lanes:	2	[a] Major Street Left-Turns:	60
Minor Street Lanes:	1	Minor Street (Higher Volume):	138
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	333	Minimum Major Street Volume:	280
Major Street (Approach 2):	277	Satisfied?	YES
Total Major Street Volume:	610		
		Minimum Minor Street Volume:	127
Major Street Left Turns:	60	Satisfied?	YES
Minor Street (Higher Volume):	138		
Total Minor Street Volume:	198	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

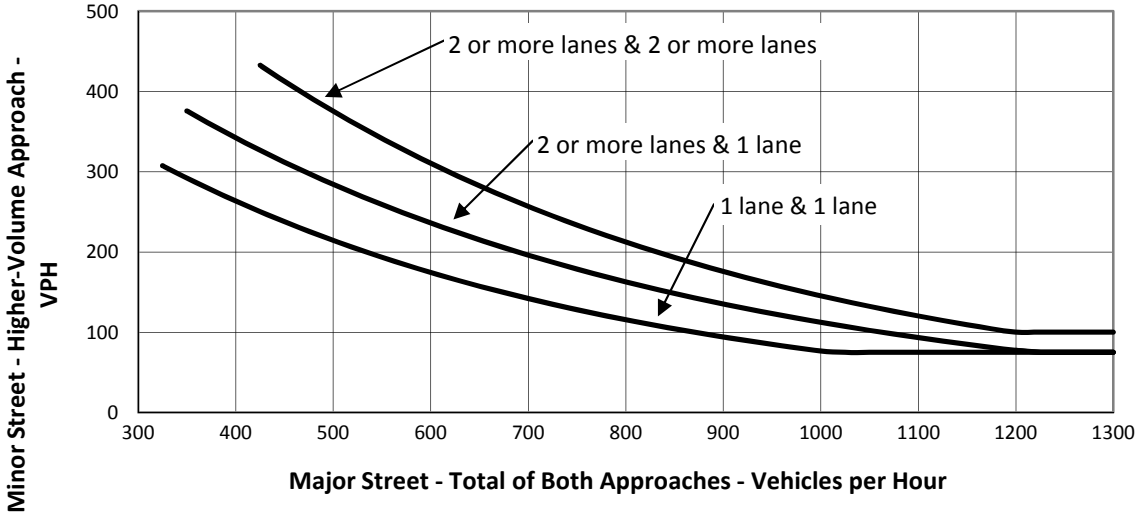
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	366
		Major Street (Approach 2):	304
Major Street Lanes:	2	[a] Major Street Left-Turns:	66
Minor Street Lanes:	1	Minor Street (Higher Volume):	152
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	366	Minimum Major Street Volume:	350
Major Street (Approach 2):	304	Satisfied?	YES
Total Major Street Volume:	670		
		Minimum Minor Street Volume:	207
Major Street Left Turns:	66	Satisfied?	YES
Minor Street (Higher Volume):	152		
Total Minor Street Volume:	218	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-PM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-AM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	335	302	241
Major Street (Approach 2):	224	202	161
[b] Major Street Left-Turns:	27	24	19
Minor Street (Higher Volume):	170	153	122

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	241
Major Street (Approach 2):	161
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	122

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **402** Minor: **141**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **402** Minor: **141**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

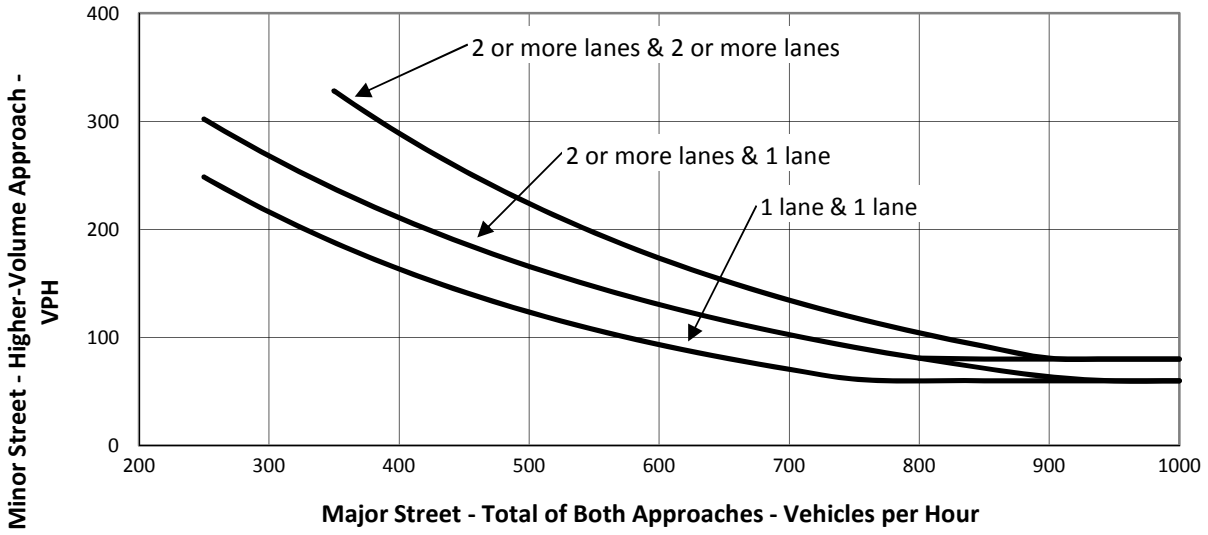
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	302
		Major Street (Approach 2):	202
Major Street Lanes:	2	[a] Major Street Left-Turns:	24
Minor Street Lanes:	1	Minor Street (Higher Volume):	153
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	302	Minimum Major Street Volume:	280
Major Street (Approach 2):	202	Satisfied?	YES
Total Major Street Volume:	504		
		Minimum Minor Street Volume:	164
Major Street Left Turns:	24	Satisfied?	YES
Minor Street (Higher Volume):	153		
Total Minor Street Volume:	177	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

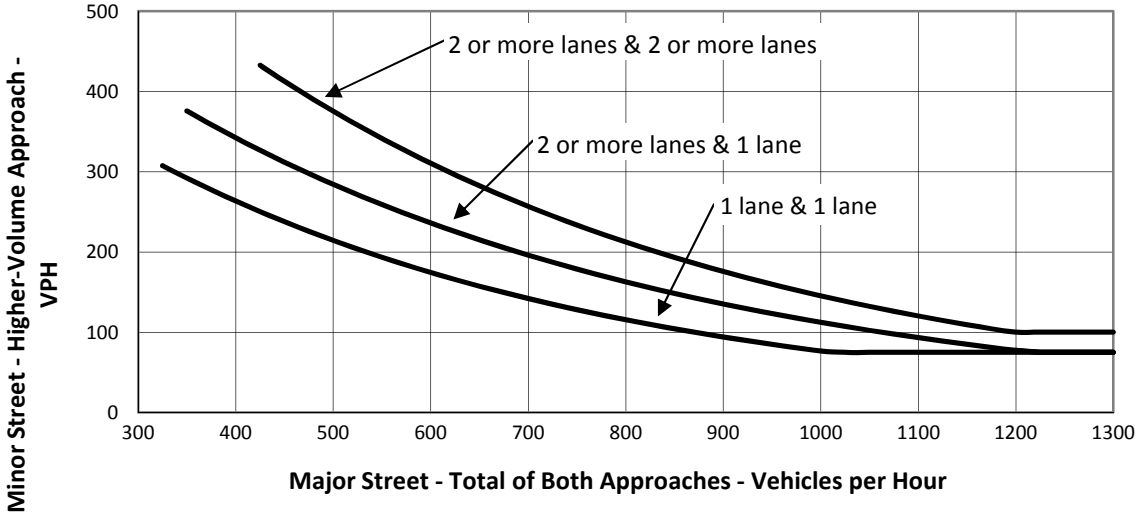
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	335
		Major Street (Approach 2):	224
Major Street Lanes:	2	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	170

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	335	Minimum Major Street Volume:	350
Major Street (Approach 2):	224	Satisfied?	YES
Total Major Street Volume:	559		
		Minimum Minor Street Volume:	255
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	170		
Total Minor Street Volume:	197	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-AM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-PM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	390	351	281
Major Street (Approach 2):	277	249	199
[b] Major Street Left-Turns:	70	63	50
Minor Street (Higher Volume):	233	210	168

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	281
Major Street (Approach 2):	199
[a] Major Street Left-Turns:	50
Minor Street (Higher Volume):	168

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **480** Minor: **218**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **480** Minor: **218**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

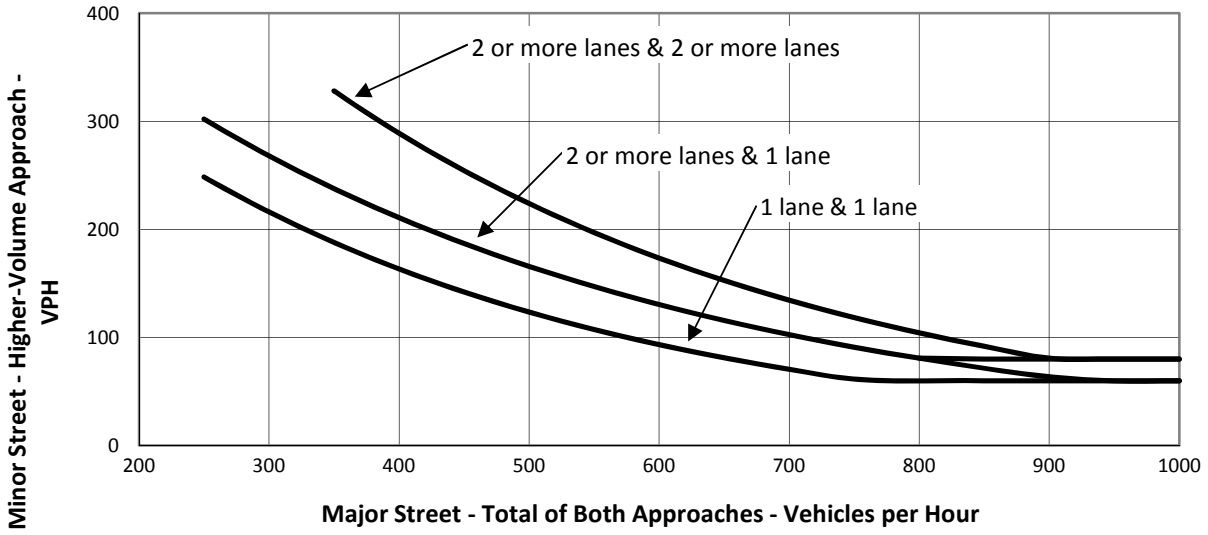
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	351
		Major Street (Approach 2):	249
Major Street Lanes:	2	[a] Major Street Left-Turns:	63
Minor Street Lanes:	1	Minor Street (Higher Volume):	210
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	351	Minimum Major Street Volume:	280
Major Street (Approach 2):	249	Satisfied?	YES
Total Major Street Volume:	600		
		Minimum Minor Street Volume:	131
Major Street Left Turns:	63	Satisfied?	YES
Minor Street (Higher Volume):	210		
Total Minor Street Volume:	273	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

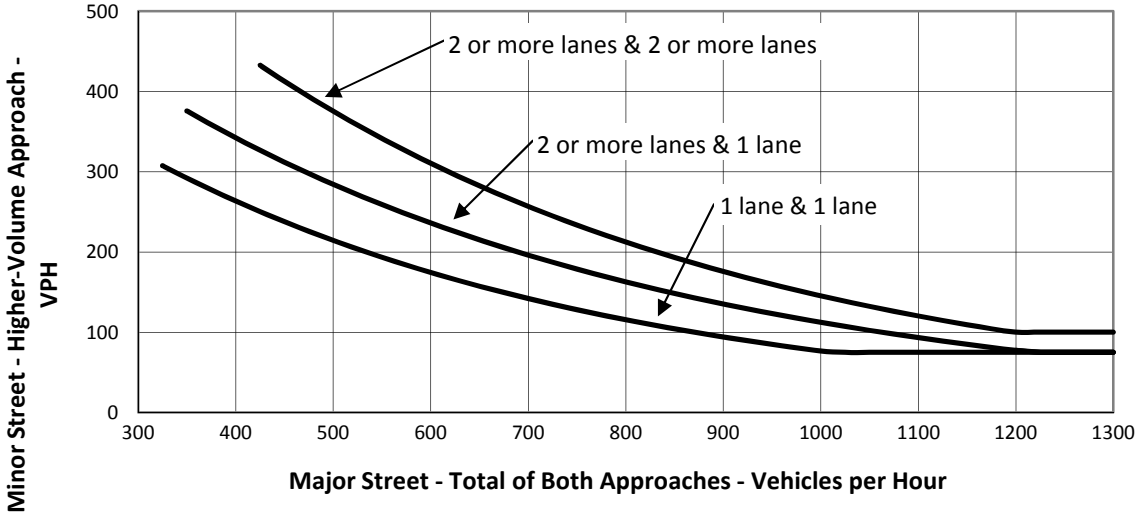
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	390
		Major Street (Approach 2):	277
Major Street Lanes:	2	[a] Major Street Left-Turns:	70
Minor Street Lanes:	1	Minor Street (Higher Volume):	233

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	390	Minimum Major Street Volume:	350
Major Street (Approach 2):	277	Satisfied?	YES
Total Major Street Volume:	667		
		Minimum Minor Street Volume:	208
Major Street Left Turns:	70	Satisfied?	YES
Minor Street (Higher Volume):	233		
Total Minor Street Volume:	303	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-PM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-AM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	275	250	187
Major Street (Approach 2):	276	251	188
[b] Major Street Left-Turns:	70	64	48
Minor Street (Higher Volume):	171	156	116

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	187
Major Street (Approach 2):	188
[a] Major Street Left-Turns:	48
Minor Street (Higher Volume):	116

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **375** Minor: **164**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **375** Minor: **164**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

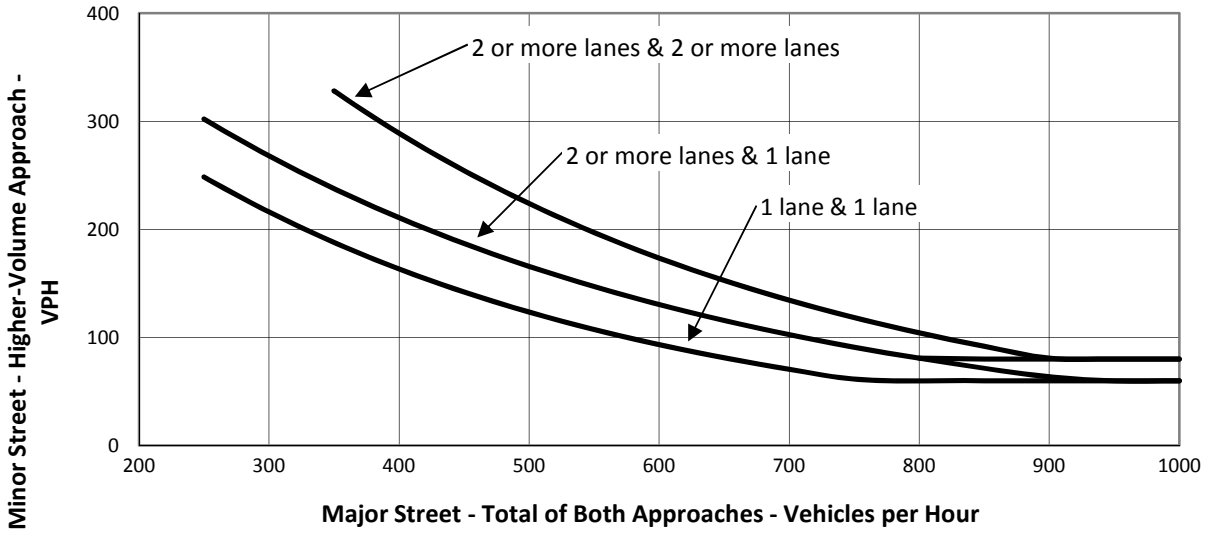
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	250
		Major Street (Approach 2):	251
Major Street Lanes:	2	[a] Major Street Left-Turns:	64
Minor Street Lanes:	1	Minor Street (Higher Volume):	156
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	250	Minimum Major Street Volume:	280
Major Street (Approach 2):	251	Satisfied?	YES
Total Major Street Volume:	501		
		Minimum Minor Street Volume:	165
Major Street Left Turns:	64	Satisfied?	YES
Minor Street (Higher Volume):	156		
Total Minor Street Volume:	220	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

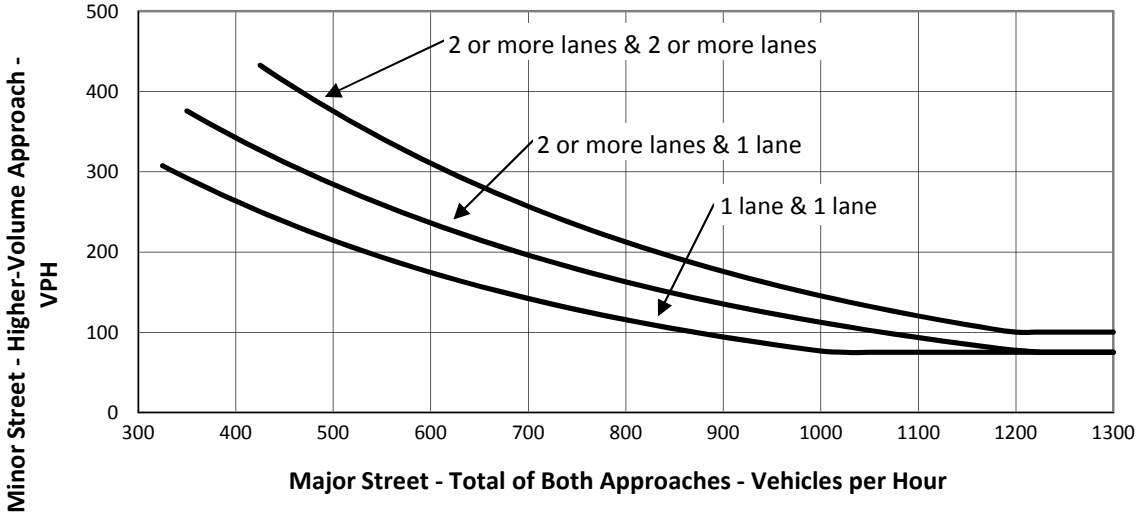
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	275
		Major Street (Approach 2):	276
Major Street Lanes:	2	[a] Major Street Left-Turns:	70
Minor Street Lanes:	1	Minor Street (Higher Volume):	171

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	275	Minimum Major Street Volume:	350
Major Street (Approach 2):	276	Satisfied?	YES
Total Major Street Volume:	551		
		Minimum Minor Street Volume:	259
Major Street Left Turns:	70	Satisfied?	NO
Minor Street (Higher Volume):	171		
Total Minor Street Volume:	241	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-AM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-PM) - Year 2015
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	357	325	243
Major Street (Approach 2):	281	256	191
[b] Major Street Left-Turns:	55	50	37
Minor Street (Higher Volume):	132	120	90

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	243
Major Street (Approach 2):	191
[a] Major Street Left-Turns:	37
Minor Street (Higher Volume):	90

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **434** Minor: **127**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **434** Minor: **127**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

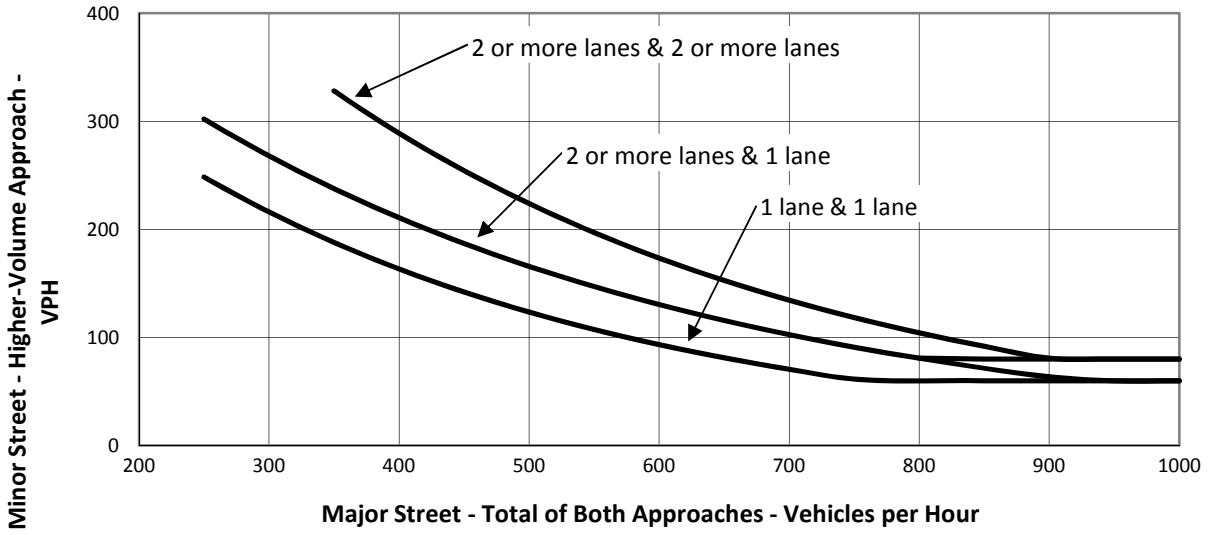
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	325
		Major Street (Approach 2):	256
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	1	Minor Street (Higher Volume):	120
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	325	Minimum Major Street Volume:	280
Major Street (Approach 2):	256	Satisfied?	YES
Total Major Street Volume:	581		
		Minimum Minor Street Volume:	137
Major Street Left Turns:	50	Satisfied?	YES
Minor Street (Higher Volume):	120		
Total Minor Street Volume:	170	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

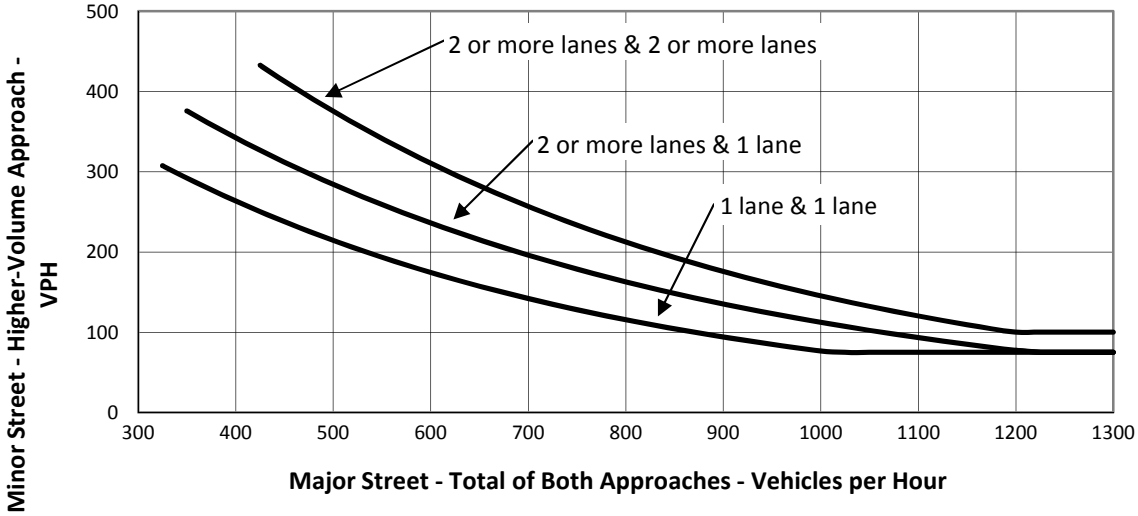
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	357
		Major Street (Approach 2):	281
Major Street Lanes:	2	[a] Major Street Left-Turns:	55
Minor Street Lanes:	1	Minor Street (Higher Volume):	132
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	357	Minimum Major Street Volume:	350
Major Street (Approach 2):	281	Satisfied?	YES
Total Major Street Volume:	638		
		Minimum Minor Street Volume:	220
Major Street Left Turns:	55	Satisfied?	NO
Minor Street (Higher Volume):	132		
Total Minor Street Volume:	187	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-PM) - Year 2015**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	401	361	289
Major Street (Approach 2):	257	231	185
[b] Major Street Left-Turns:	32	29	23
Minor Street (Higher Volume):	202	182	145

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	289
Major Street (Approach 2):	185
[a] Major Street Left-Turns:	23
Minor Street (Higher Volume):	145

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **168**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **168**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

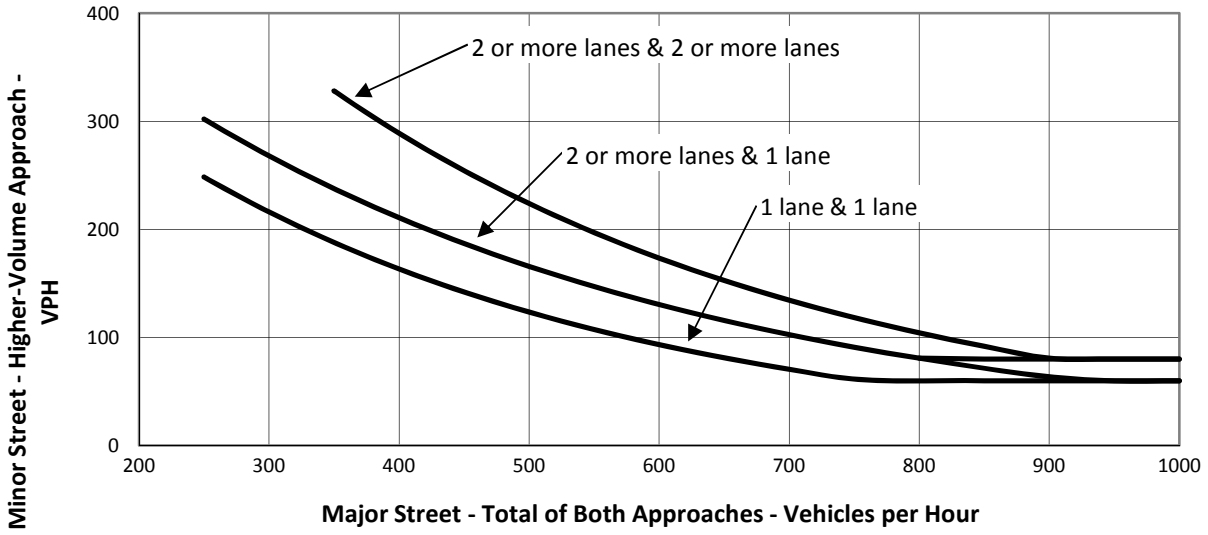
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	361
		Major Street (Approach 2):	231
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	1	Minor Street (Higher Volume):	182
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	361	Minimum Major Street Volume:	280
Major Street (Approach 2):	231	Satisfied?	YES
Total Major Street Volume:	592		
		Minimum Minor Street Volume:	133
Major Street Left Turns:	29	Satisfied?	YES
Minor Street (Higher Volume):	182		
Total Minor Street Volume:	211	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

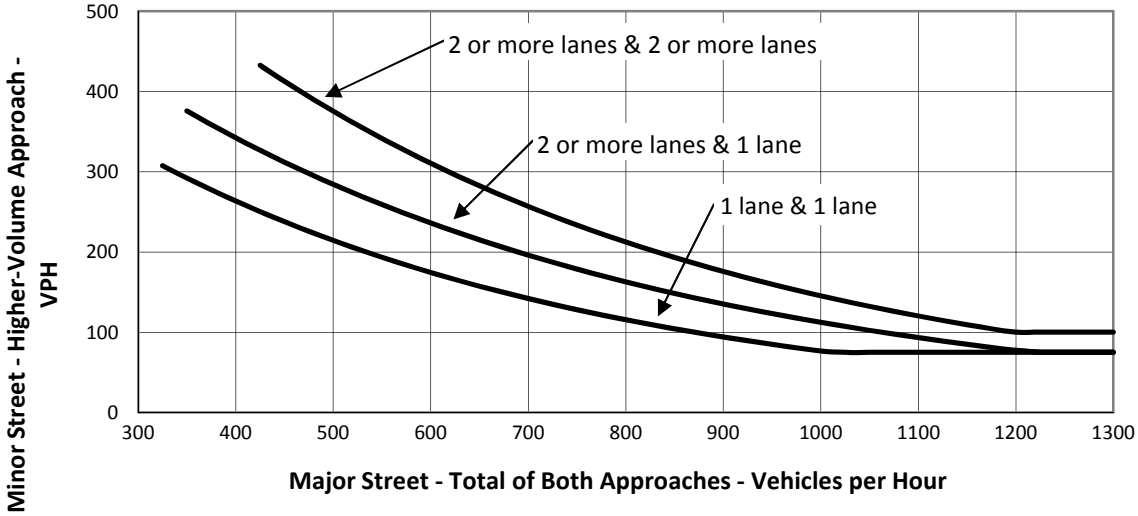
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	401
		Major Street (Approach 2):	257
Major Street Lanes:	2	[a] Major Street Left-Turns:	32
Minor Street Lanes:	1	Minor Street (Higher Volume):	202
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	401	Minimum Major Street Volume:	350
Major Street (Approach 2):	257	Satisfied?	YES
Total Major Street Volume:	658		
		Minimum Minor Street Volume:	212
Major Street Left Turns:	32	Satisfied?	YES
Minor Street (Higher Volume):	202		
Total Minor Street Volume:	234	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	458	412	330
Major Street (Approach 2):	326	293	235
[b] Major Street Left-Turns:	84	76	60
Minor Street (Higher Volume):	279	251	201

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	330
Major Street (Approach 2):	235
[a] Major Street Left-Turns:	60
Minor Street (Higher Volume):	201

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **565** Minor: **261**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **565** Minor: **261**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

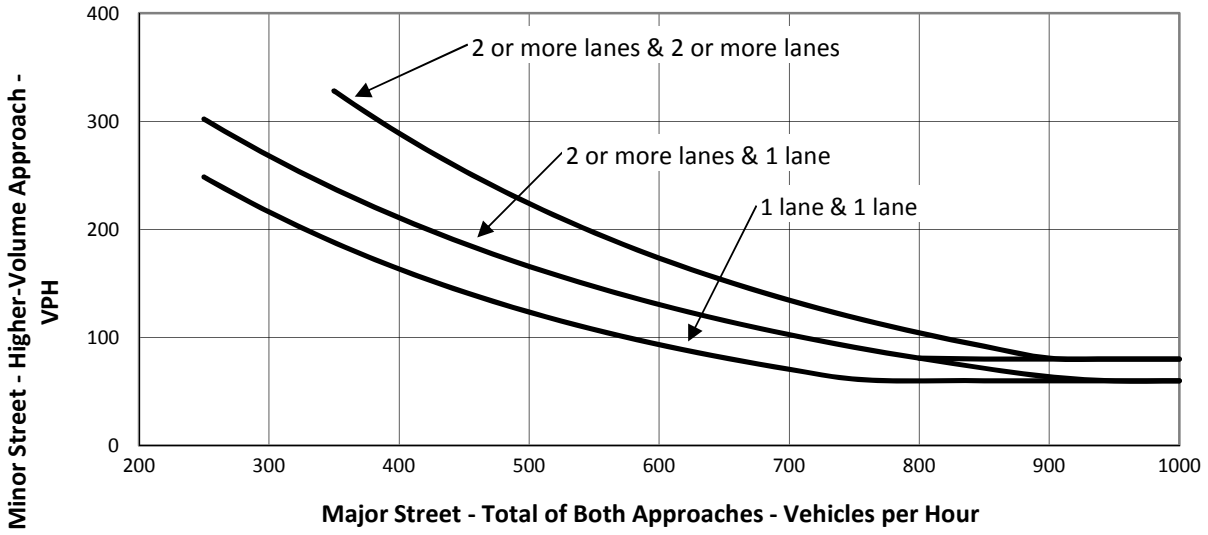
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	412
		Major Street (Approach 2):	293
Major Street Lanes:	2	[a] Major Street Left-Turns:	76
Minor Street Lanes:	1	Minor Street (Higher Volume):	251
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	412	Minimum Major Street Volume:	280
Major Street (Approach 2):	293	Satisfied?	YES
Total Major Street Volume:	705		
		Minimum Minor Street Volume:	101
Major Street Left Turns:	76	Satisfied?	YES
Minor Street (Higher Volume):	251		
Total Minor Street Volume:	327	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

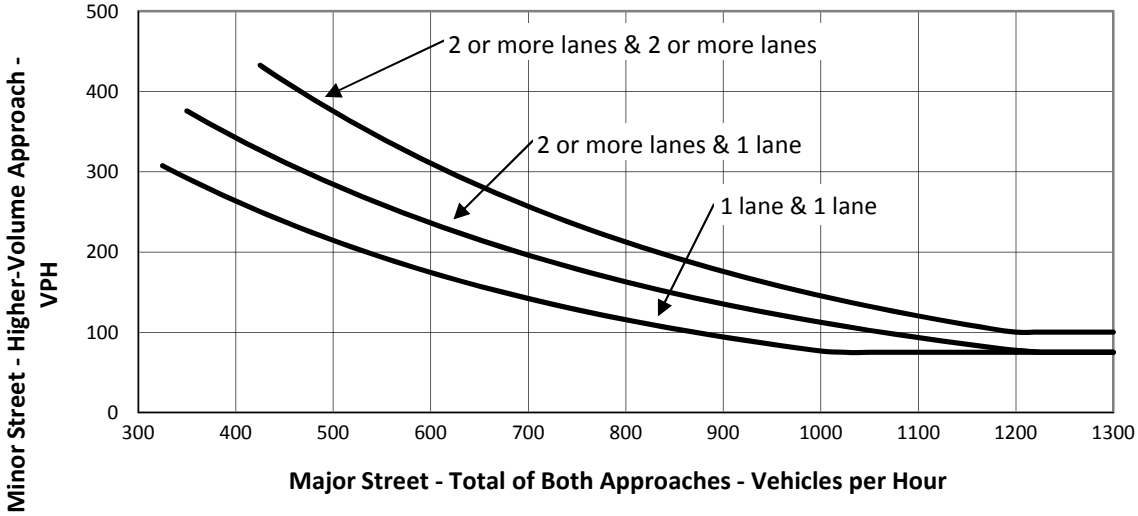
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	458
		Major Street (Approach 2):	326
Major Street Lanes:	2	[a] Major Street Left-Turns:	84
Minor Street Lanes:	1	Minor Street (Higher Volume):	279
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	458	Minimum Major Street Volume:	350
Major Street (Approach 2):	326	Satisfied?	YES
Total Major Street Volume:	784		
		Minimum Minor Street Volume:	168
Major Street Left Turns:	84	Satisfied?	YES
Minor Street (Higher Volume):	279		
Total Minor Street Volume:	363	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	328	298	223
Major Street (Approach 2):	320	291	218
[b] Major Street Left-Turns:	84	76	57
Minor Street (Higher Volume):	203	185	138

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	223
Major Street (Approach 2):	218
[a] Major Street Left-Turns:	57
Minor Street (Higher Volume):	138

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **441** Minor: **195**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **441** Minor: **195**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

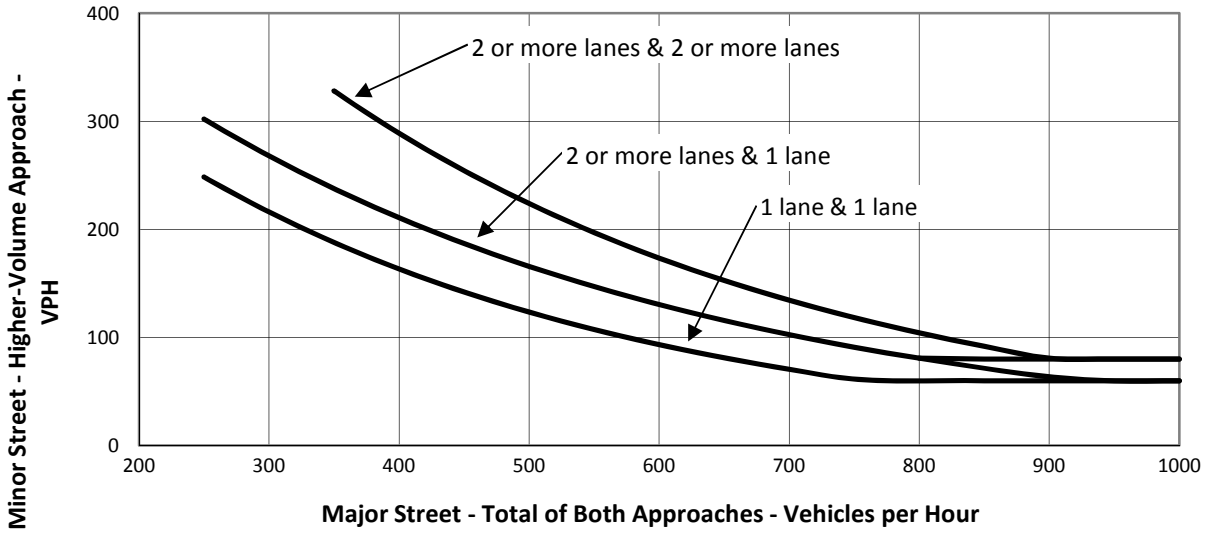
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	298
		Major Street (Approach 2):	291
Major Street Lanes:	2	[a] Major Street Left-Turns:	76
Minor Street Lanes:	1	Minor Street (Higher Volume):	185
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	298	Minimum Major Street Volume:	280
Major Street (Approach 2):	291	Satisfied?	YES
Total Major Street Volume:	589		
		Minimum Minor Street Volume:	134
Major Street Left Turns:	76	Satisfied?	YES
Minor Street (Higher Volume):	185		
Total Minor Street Volume:	261	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

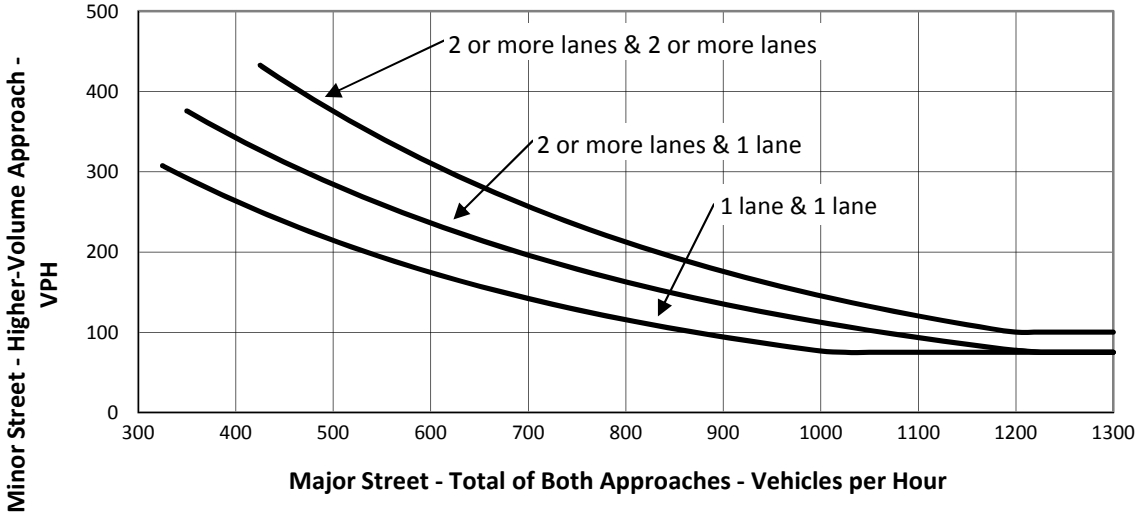
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	328
		Major Street (Approach 2):	320
Major Street Lanes:	2	[a] Major Street Left-Turns:	84
Minor Street Lanes:	1	Minor Street (Higher Volume):	203
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	328	Minimum Major Street Volume:	350
Major Street (Approach 2):	320	Satisfied?	YES
Total Major Street Volume:	648		
		Minimum Minor Street Volume:	216
Major Street Left Turns:	84	Satisfied?	YES
Minor Street (Higher Volume):	203		
Total Minor Street Volume:	287	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	418	380	284
Major Street (Approach 2):	331	301	225
[b] Major Street Left-Turns:	66	60	45
Minor Street (Higher Volume):	157	143	107

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	284
Major Street (Approach 2):	225
[a] Major Street Left-Turns:	45
Minor Street (Higher Volume):	107

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **509** Minor: **152**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **509** Minor: **152**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

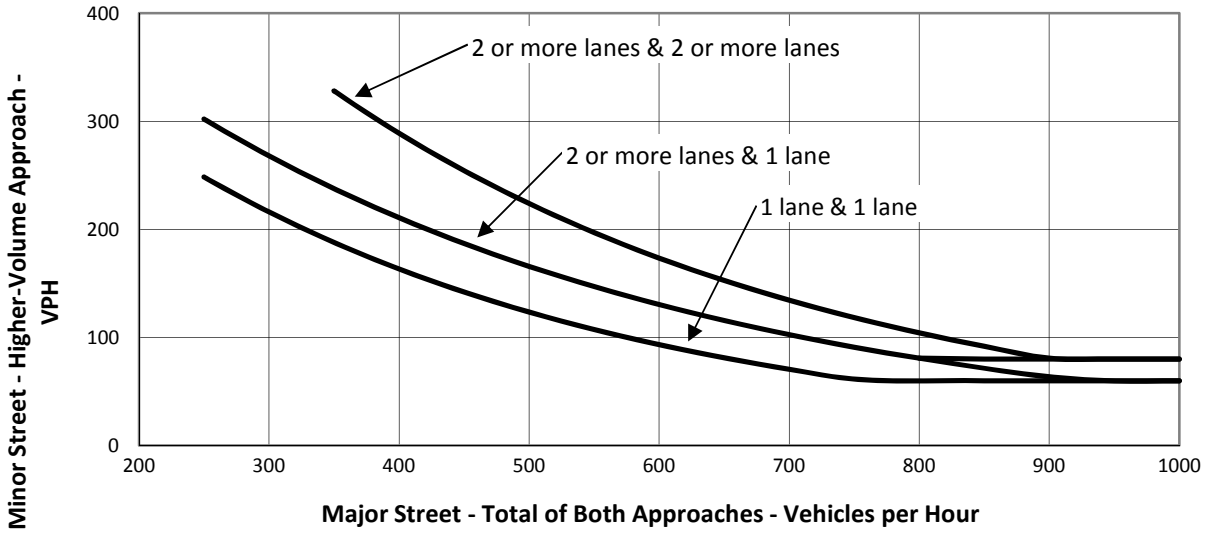
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	380
		Major Street (Approach 2):	301
Major Street Lanes:	2	[a] Major Street Left-Turns:	60
Minor Street Lanes:	1	Minor Street (Higher Volume):	143
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	380	Minimum Major Street Volume:	280
Major Street (Approach 2):	301	Satisfied?	YES
Total Major Street Volume:	681		
		Minimum Minor Street Volume:	107
Major Street Left Turns:	60	Satisfied?	YES
Minor Street (Higher Volume):	143		
Total Minor Street Volume:	203	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

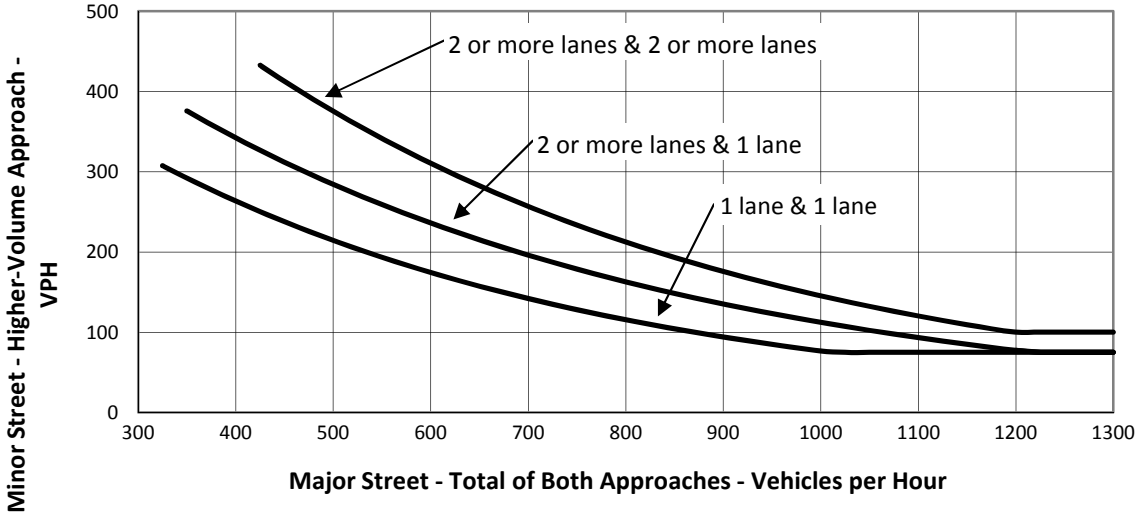
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	418
		Major Street (Approach 2):	331
Major Street Lanes:	2	[a] Major Street Left-Turns:	66
Minor Street Lanes:	1	Minor Street (Higher Volume):	157
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	418	Minimum Major Street Volume:	350
Major Street (Approach 2):	331	Satisfied?	YES
Total Major Street Volume:	749		
		Minimum Minor Street Volume:	179
Major Street Left Turns:	66	Satisfied?	YES
Minor Street (Higher Volume):	157		
Total Minor Street Volume:	223	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-AM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	338	304	243
Major Street (Approach 2):	225	203	162
[b] Major Street Left-Turns:	27	24	19
Minor Street (Higher Volume):	171	154	123

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	243
Major Street (Approach 2):	162
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	123

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **405** Minor: **142**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **405** Minor: **142**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

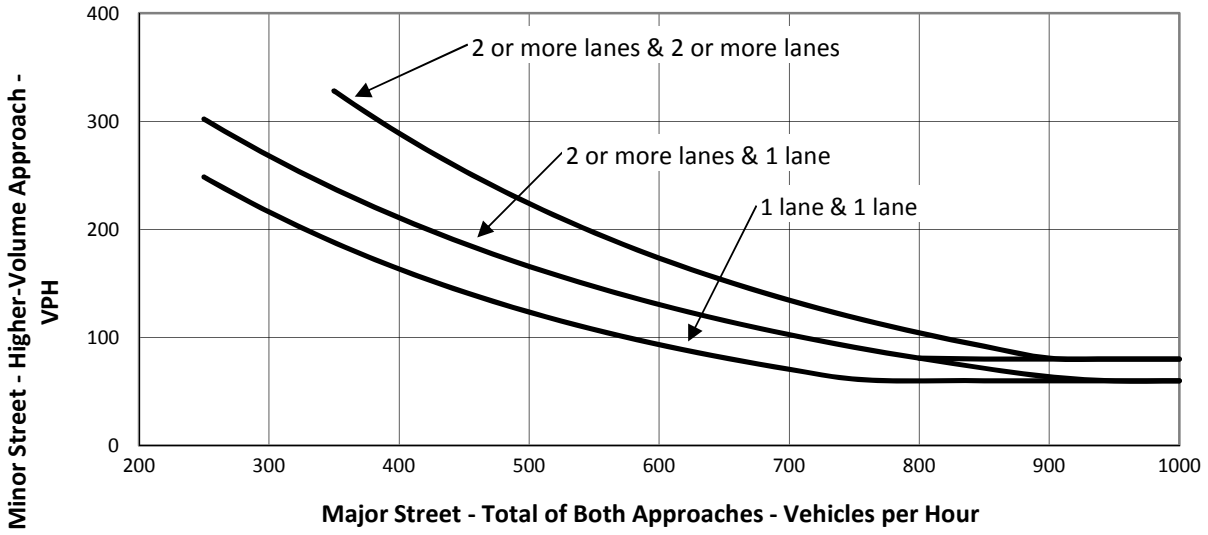
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	304
		Major Street (Approach 2):	203
Major Street Lanes:	2	[a] Major Street Left-Turns:	24
Minor Street Lanes:	1	Minor Street (Higher Volume):	154
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	304	Minimum Major Street Volume:	280
Major Street (Approach 2):	203	Satisfied?	YES
Total Major Street Volume:	507		
		Minimum Minor Street Volume:	163
Major Street Left Turns:	24	Satisfied?	YES
Minor Street (Higher Volume):	154		
Total Minor Street Volume:	178	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

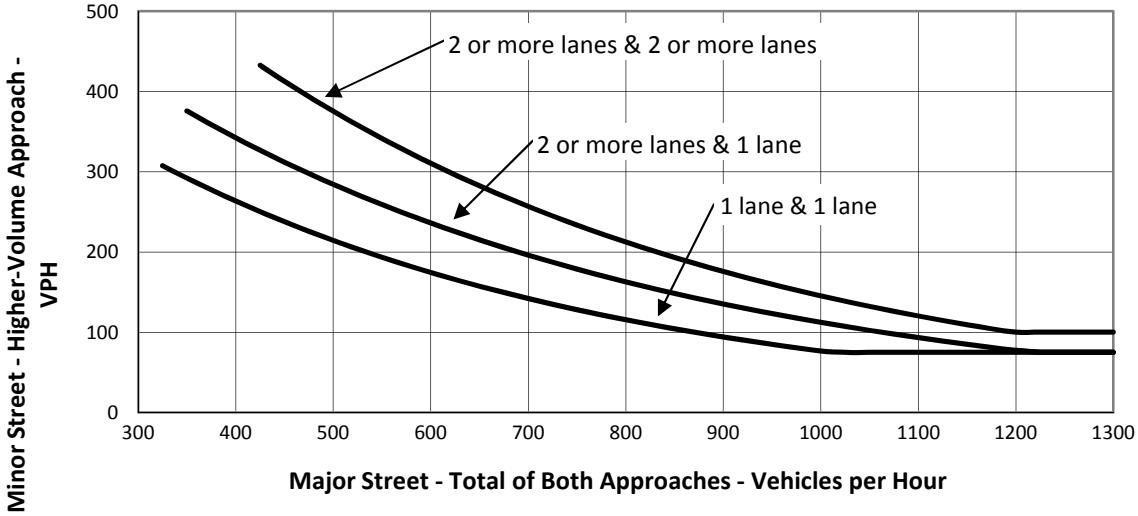
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	338
		Major Street (Approach 2):	225
Major Street Lanes:	2	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	171
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	338	Minimum Major Street Volume:	350
Major Street (Approach 2):	225	Satisfied?	YES
Total Major Street Volume:	563		
		Minimum Minor Street Volume:	253
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	171		
Total Minor Street Volume:	198	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-AM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-PM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	394	355	284
Major Street (Approach 2):	280	252	202
[b] Major Street Left-Turns:	71	64	51
Minor Street (Higher Volume):	236	212	170

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	284
Major Street (Approach 2):	202
[a] Major Street Left-Turns:	51
Minor Street (Higher Volume):	170

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **486** Minor: **221**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **486** Minor: **221**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

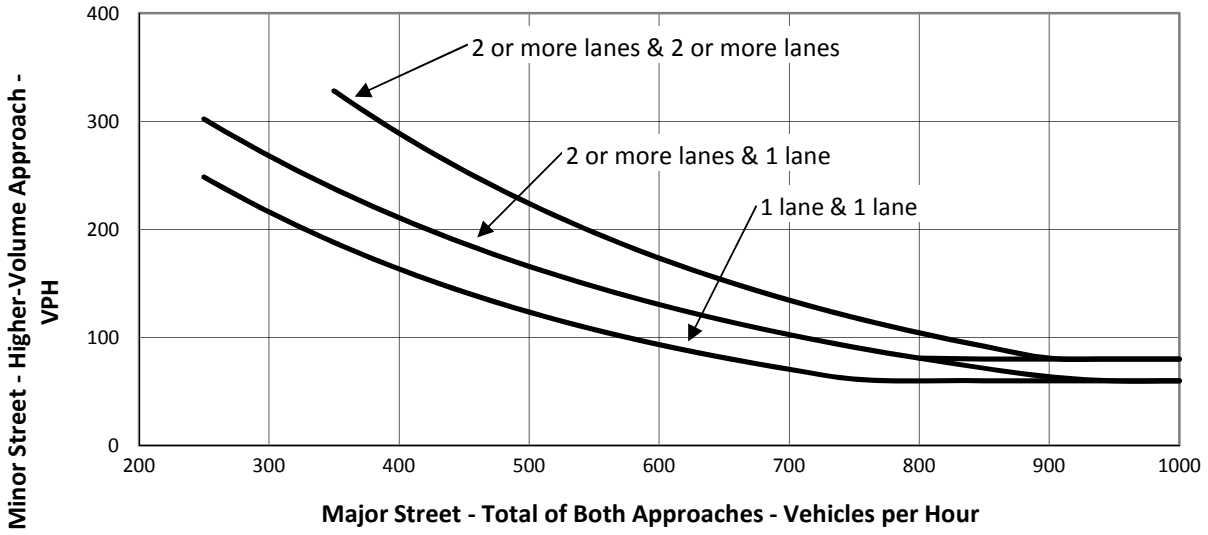
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	355
		Major Street (Approach 2):	252
Major Street Lanes:	2	[a] Major Street Left-Turns:	64
Minor Street Lanes:	1	Minor Street (Higher Volume):	212
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	355	Minimum Major Street Volume:	280
Major Street (Approach 2):	252	Satisfied?	YES
Total Major Street Volume:	607		
		Minimum Minor Street Volume:	128
Major Street Left Turns:	64	Satisfied?	YES
Minor Street (Higher Volume):	212		
Total Minor Street Volume:	276	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

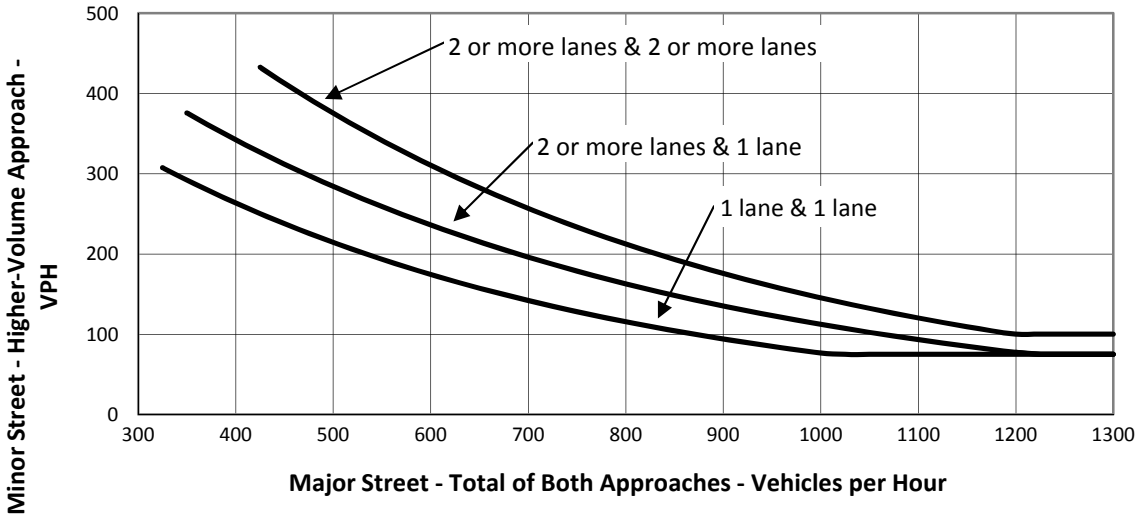
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	394
		Major Street (Approach 2):	280
Major Street Lanes:	2	[a] Major Street Left-Turns:	71
Minor Street Lanes:	1	Minor Street (Higher Volume):	236
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	394	Minimum Major Street Volume:	350
Major Street (Approach 2):	280	Satisfied?	YES
Total Major Street Volume:	674		
		Minimum Minor Street Volume:	206
Major Street Left Turns:	71	Satisfied?	YES
Minor Street (Higher Volume):	236		
Total Minor Street Volume:	307	Warrant 3 Satisfied?	**YES**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-PM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-AM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	277	252	188
Major Street (Approach 2):	278	253	189
[b] Major Street Left-Turns:	71	65	48
Minor Street (Higher Volume):	172	157	117

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	188
Major Street (Approach 2):	189
[a] Major Street Left-Turns:	48
Minor Street (Higher Volume):	117

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **377** Minor: **165**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **377** Minor: **165**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

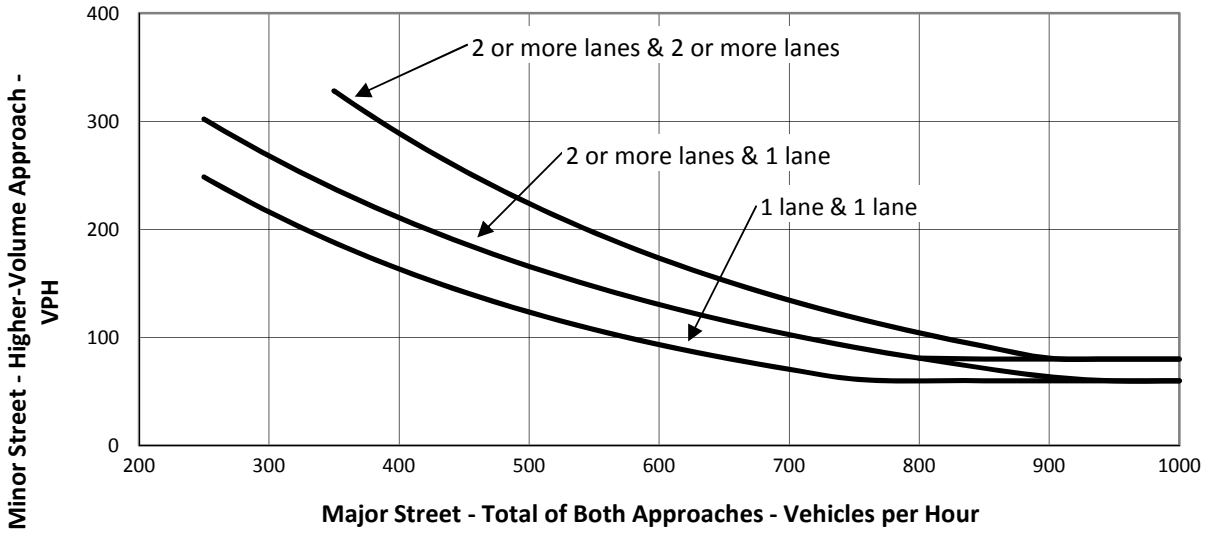
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	252
		Major Street (Approach 2):	253
Major Street Lanes:	2	[a] Major Street Left-Turns:	65
Minor Street Lanes:	1	Minor Street (Higher Volume):	157
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	252	Minimum Major Street Volume:	280
Major Street (Approach 2):	253	Satisfied?	YES
Total Major Street Volume:	505		
		Minimum Minor Street Volume:	164
Major Street Left Turns:	65	Satisfied?	YES
Minor Street (Higher Volume):	157		
Total Minor Street Volume:	222	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

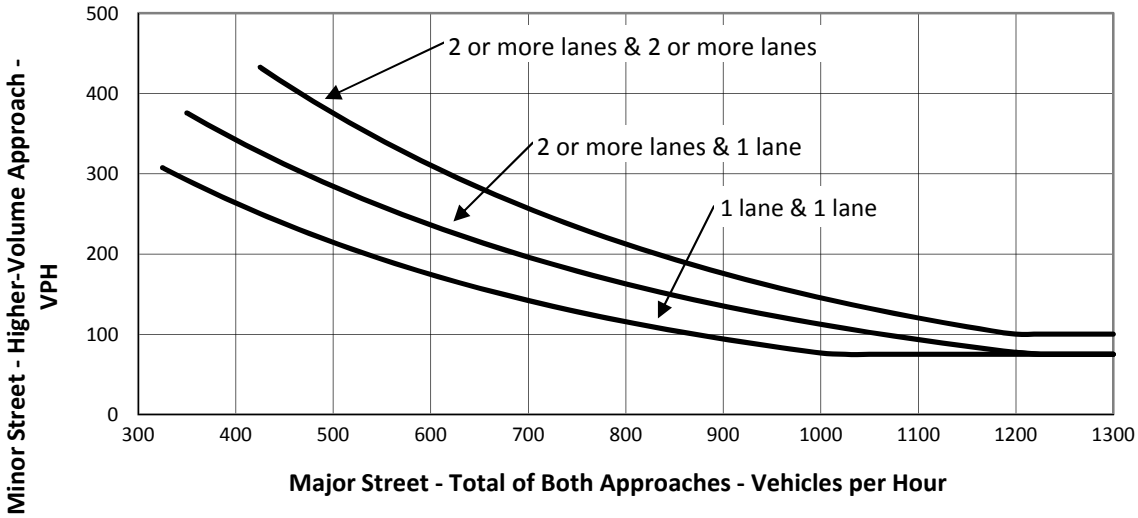
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	277
		Major Street (Approach 2):	278
Major Street Lanes:	2	[a] Major Street Left-Turns:	71
Minor Street Lanes:	1	Minor Street (Higher Volume):	172

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	277	Minimum Major Street Volume:	350
Major Street (Approach 2):	278	Satisfied?	YES
Total Major Street Volume:	555		
		Minimum Minor Street Volume:	257
Major Street Left Turns:	71	Satisfied?	NO
Minor Street (Higher Volume):	172		
Total Minor Street Volume:	243	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-AM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-PM) - Year 2016
Intersection Number:	3
Major Street Name:	State Route 18
Minor Street Name:	State Route 173

Intersection Number & Name as Displayed

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	360	328	245
Major Street (Approach 2):	284	258	193
[b] Major Street Left-Turns:	56	51	38
Minor Street (Higher Volume):	133	121	90

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name: State Route 18
Minor Street Name: State Route 173

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	245
Major Street (Approach 2):	193
[a] Major Street Left-Turns:	38
Minor Street (Higher Volume):	90

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **438** Minor: **128**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**YES**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **438** Minor: **128**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

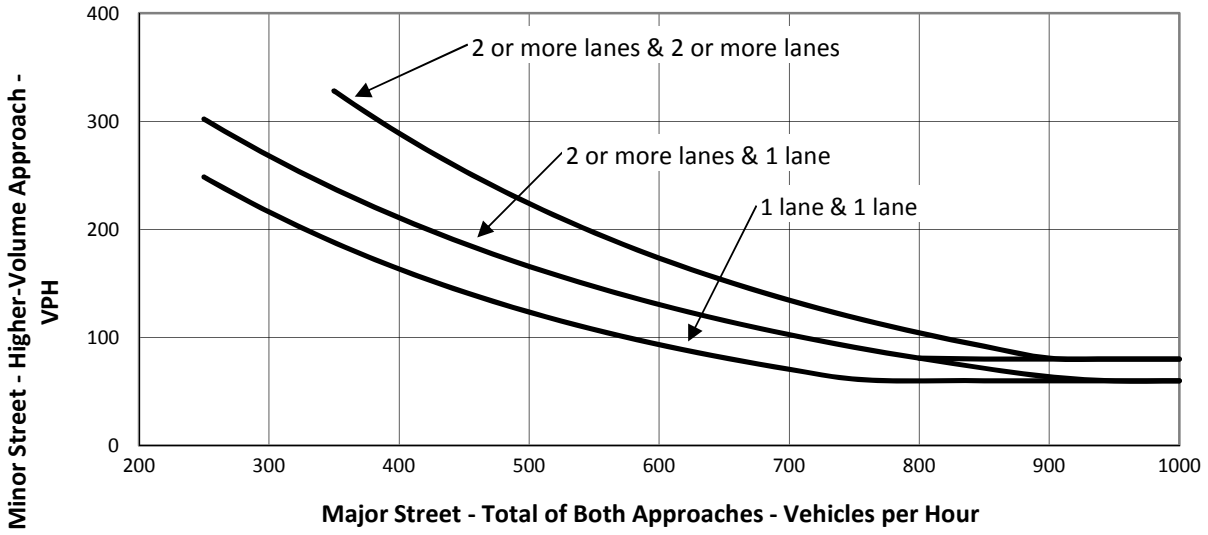
3. STATE ROUTE 18 & STATE ROUTE 173

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	328
		Major Street (Approach 2):	258
Major Street Lanes:	2	[a] Major Street Left-Turns:	51
Minor Street Lanes:	1	Minor Street (Higher Volume):	121
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	328	Minimum Major Street Volume:	280
Major Street (Approach 2):	258	Satisfied?	YES
Total Major Street Volume:	586		
		Minimum Minor Street Volume:	135
Major Street Left Turns:	51	Satisfied?	YES
Minor Street (Higher Volume):	121		
Total Minor Street Volume:	172	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

3. STATE ROUTE 18 & STATE ROUTE 173

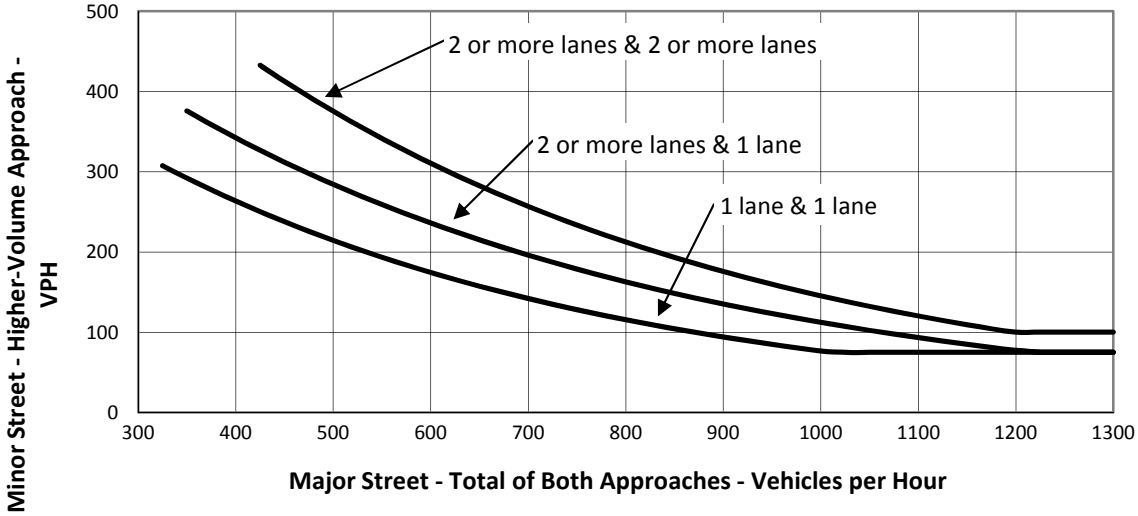
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	State Route 173	Major Street (Approach 1):	360
		Major Street (Approach 2):	284
Major Street Lanes:	2	[a] Major Street Left-Turns:	56
Minor Street Lanes:	1	Minor Street (Higher Volume):	133

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	360	Minimum Major Street Volume:	350
Major Street (Approach 2):	284	Satisfied?	YES
Total Major Street Volume:	644		
		Minimum Minor Street Volume:	218
Major Street Left Turns:	56	Satisfied?	NO
Minor Street (Higher Volume):	133		
Total Minor Street Volume:	189	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-PM) - Year 2016**

Intersection Number: **3**
Major Street Name: **State Route 18**
Minor Street Name: **State Route 173**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-AM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	221	199	159
Major Street (Approach 2):	157	141	113
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	60	54	43

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	159
Major Street (Approach 2):	113
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	43

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **272** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **272** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

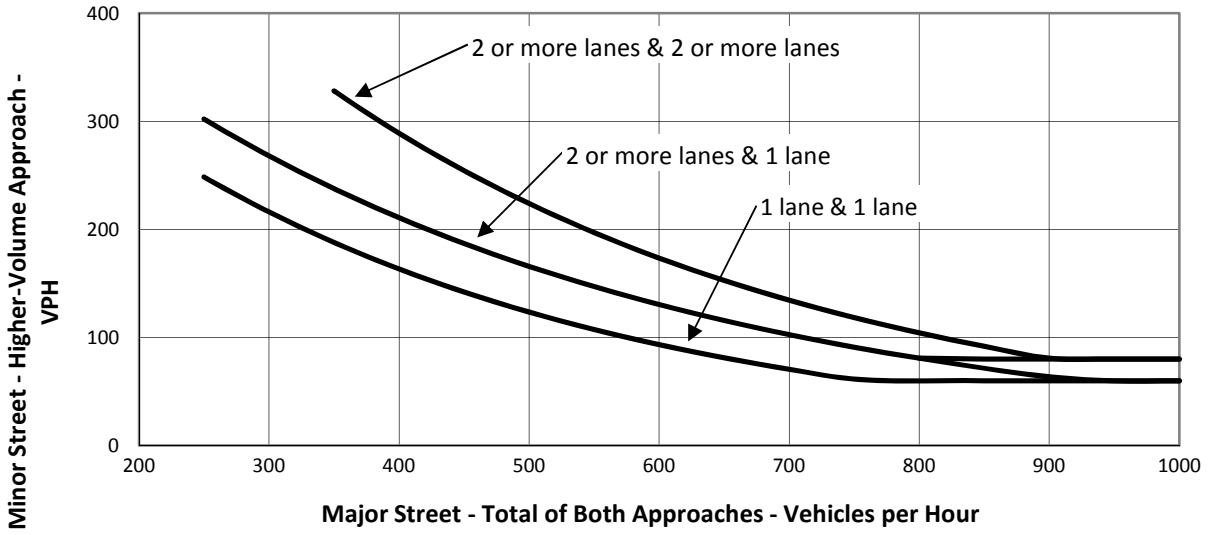
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	199
		Major Street (Approach 2):	141
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	54
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	199	Minimum Major Street Volume:	280
Major Street (Approach 2):	141	Satisfied?	YES
Total Major Street Volume:	340		
		Minimum Minor Street Volume:	243
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	54		
Total Minor Street Volume:	89	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

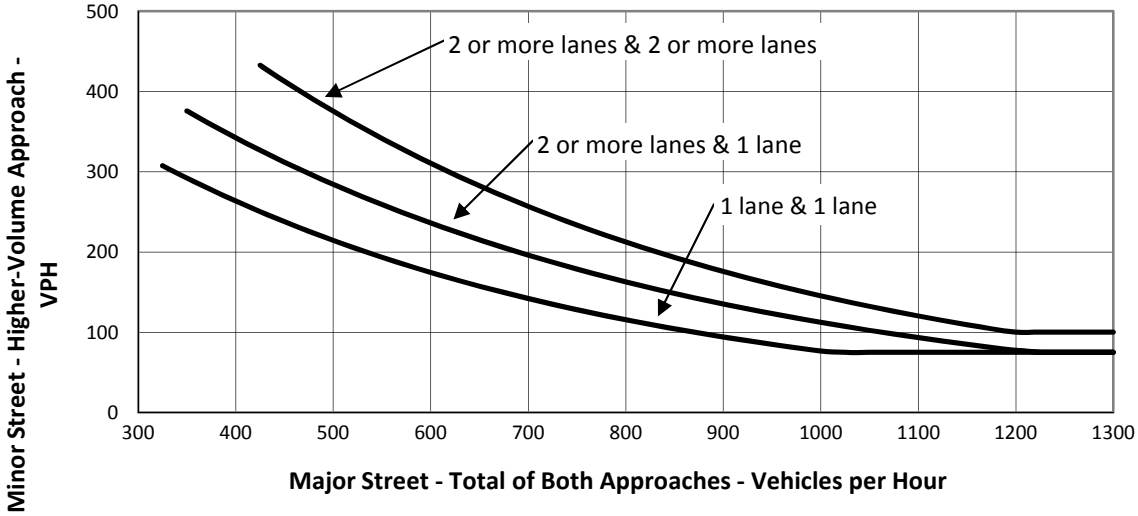
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	221
		Major Street (Approach 2):	157
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	60

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	221	Minimum Major Street Volume:	350
Major Street (Approach 2):	157	Satisfied?	YES
Total Major Street Volume:	378		
		Minimum Minor Street Volume:	357
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	60		
Total Minor Street Volume:	99	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-AM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-PM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	297	267	214
Major Street (Approach 2):	242	218	174
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	75	68	54

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	214
Major Street (Approach 2):	174
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	54

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

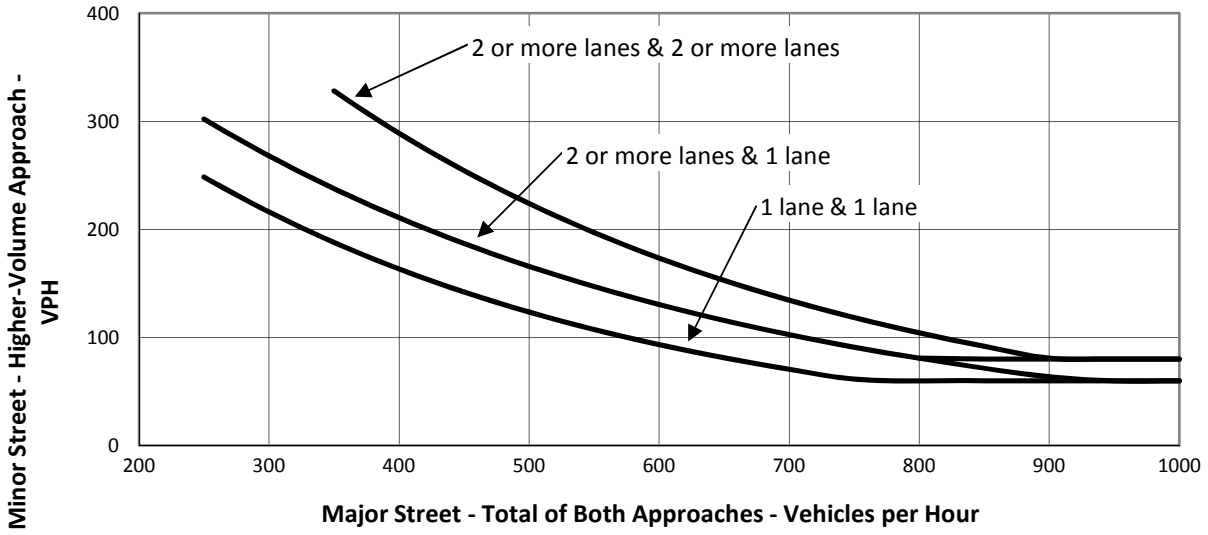
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	267
		Major Street (Approach 2):	218
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	267	Minimum Major Street Volume:	280
Major Street (Approach 2):	218	Satisfied?	YES
Total Major Street Volume:	485		
		Minimum Minor Street Volume:	172
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	103	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

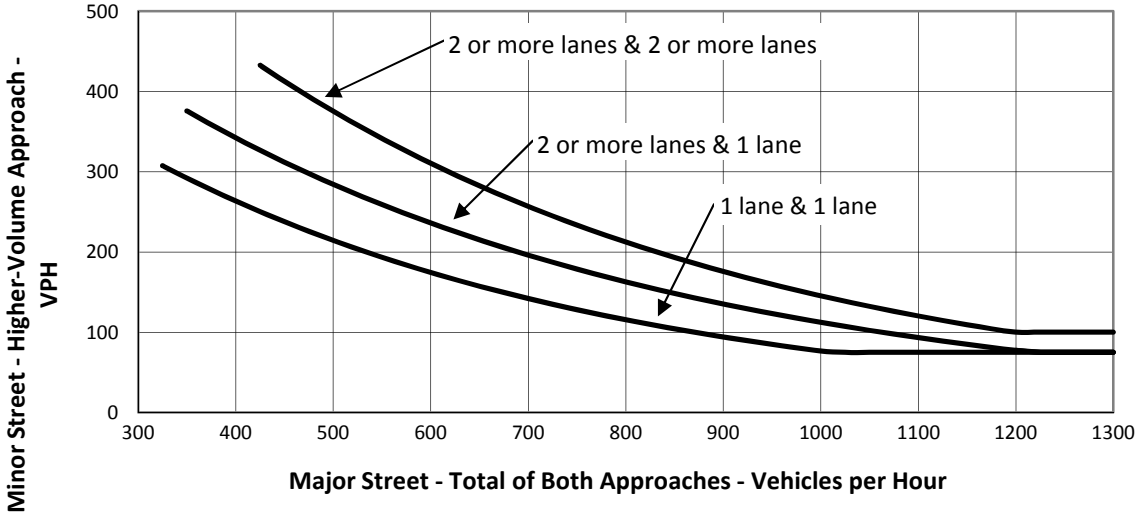
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	297
		Major Street (Approach 2):	242
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	75

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	297	Minimum Major Street Volume:	350
Major Street (Approach 2):	242	Satisfied?	YES
Total Major Street Volume:	539		
		Minimum Minor Street Volume:	264
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-PM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-AM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	197	179	134
Major Street (Approach 2):	174	158	118
[b] Major Street Left-Turns:	23	21	16
Minor Street (Higher Volume):	81	74	55

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	134
Major Street (Approach 2):	118
[a] Major Street Left-Turns:	16
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **252** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **252** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

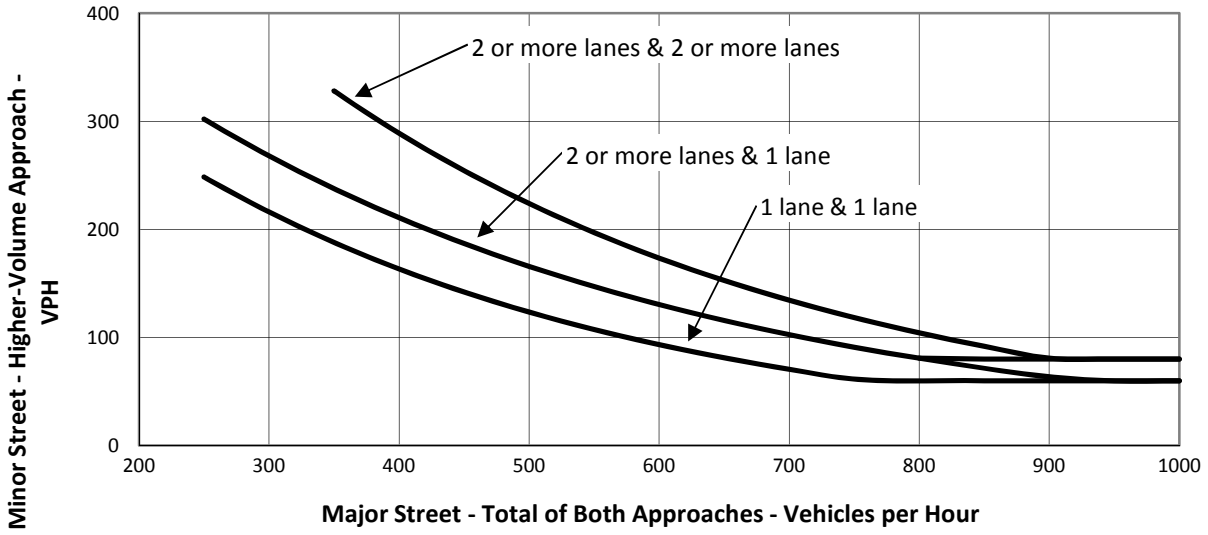
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	179
		Major Street (Approach 2):	158
Major Street Lanes:	2	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	179	Minimum Major Street Volume:	280
Major Street (Approach 2):	158	Satisfied?	YES
Total Major Street Volume:	337		
		Minimum Minor Street Volume:	245
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	95	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

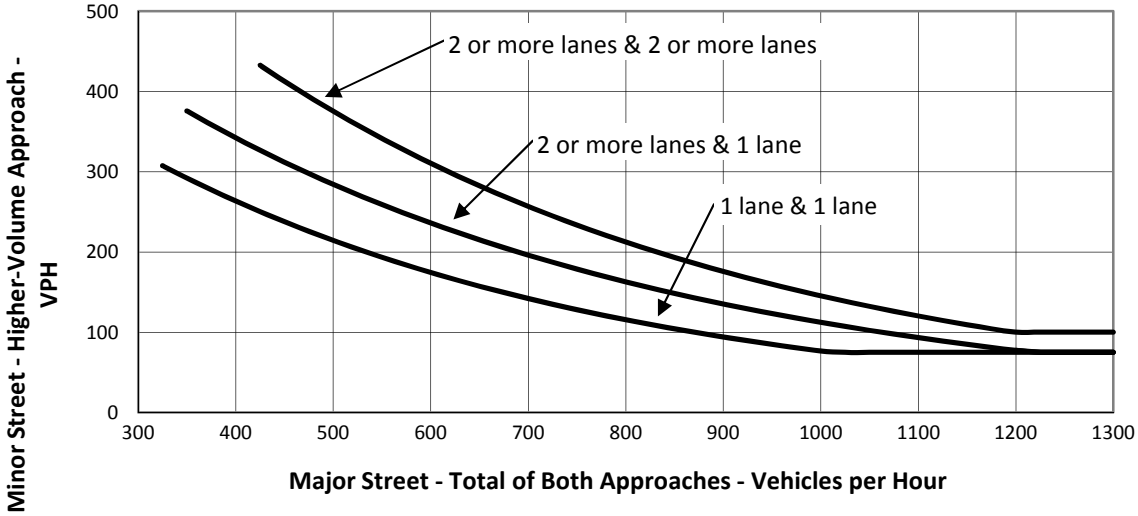
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	197
		Major Street (Approach 2):	174
Major Street Lanes:	2	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	81

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	197	Minimum Major Street Volume:	350
Major Street (Approach 2):	174	Satisfied?	YES
Total Major Street Volume:	371		
		Minimum Minor Street Volume:	361
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-AM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-PM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	220	200	150
Major Street (Approach 2):	192	175	131
[b] Major Street Left-Turns:	33	30	22
Minor Street (Higher Volume):	81	74	55

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	150
Major Street (Approach 2):	131
[a] Major Street Left-Turns:	22
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **281** Minor: **77**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **281** Minor: **77**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

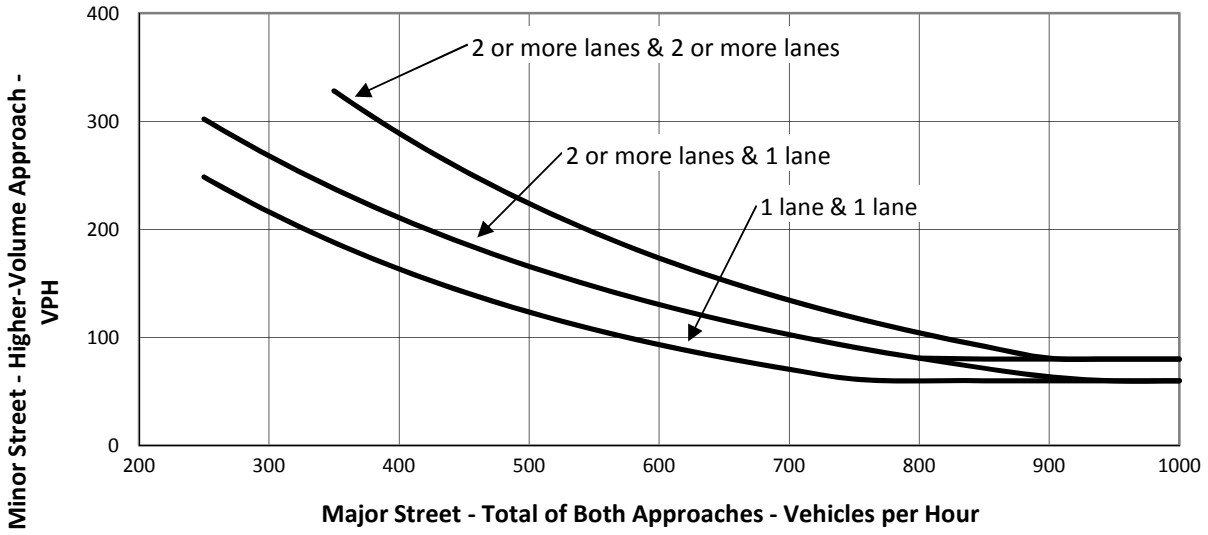
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	200
		Major Street (Approach 2):	175
Major Street Lanes:	2	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	200	Minimum Major Street Volume:	280
Major Street (Approach 2):	175	Satisfied?	YES
Total Major Street Volume:	375		
		Minimum Minor Street Volume:	224
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	104	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

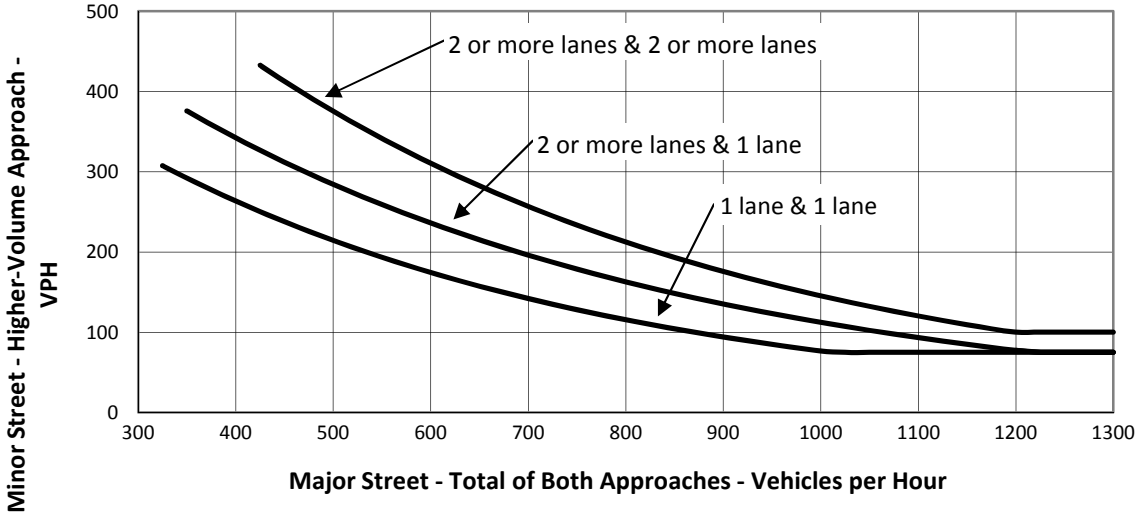
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	220
		Major Street (Approach 2):	192
Major Street Lanes:	2	[a] Major Street Left-Turns:	33
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	220	Minimum Major Street Volume:	350
Major Street (Approach 2):	192	Satisfied?	YES
Total Major Street Volume:	412		
		Minimum Minor Street Volume:	335
Major Street Left Turns:	33	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-PM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-AM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	223	201	161
Major Street (Approach 2):	158	142	114
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	60	54	43

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	161
Major Street (Approach 2):	114
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	43

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **275** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **275** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

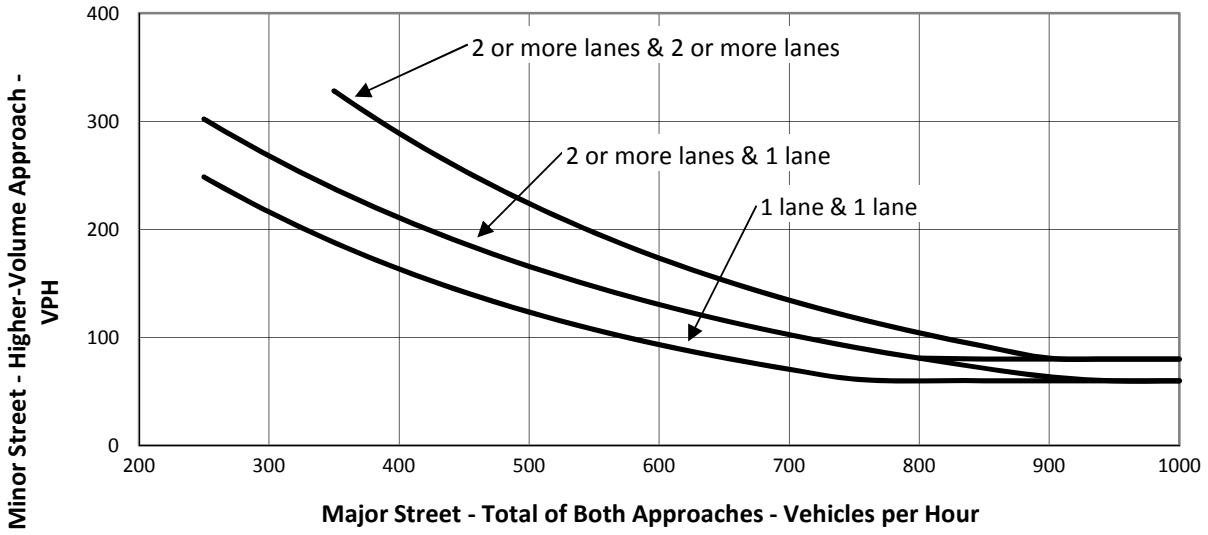
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	201
		Major Street (Approach 2):	142
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	54
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	201	Minimum Major Street Volume:	280
Major Street (Approach 2):	142	Satisfied?	YES
Total Major Street Volume:	343		
		Minimum Minor Street Volume:	242
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	54		
Total Minor Street Volume:	89	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

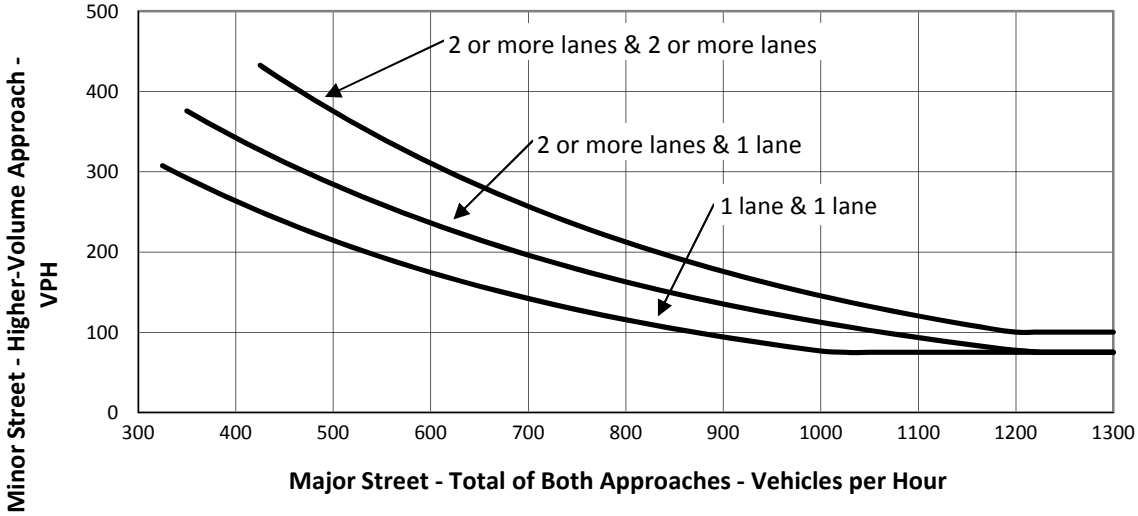
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	223
		Major Street (Approach 2):	158
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	60

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	223	Minimum Major Street Volume:	350
Major Street (Approach 2):	158	Satisfied?	YES
Total Major Street Volume:	381		
		Minimum Minor Street Volume:	355
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	60		
Total Minor Street Volume:	99	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-AM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-PM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	300	270	216
Major Street (Approach 2):	244	220	176
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	75	68	54

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	216
Major Street (Approach 2):	176
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	54

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **392** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **392** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

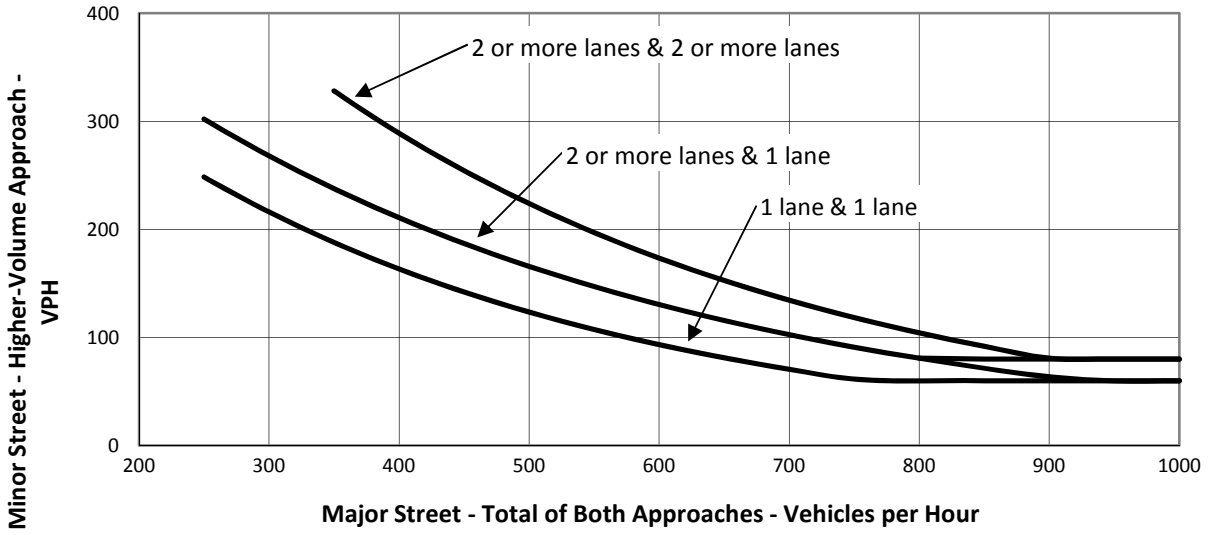
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	270
		Major Street (Approach 2):	220
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	270	Minimum Major Street Volume:	280
Major Street (Approach 2):	220	Satisfied?	YES
Total Major Street Volume:	490		
		Minimum Minor Street Volume:	170
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	103	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

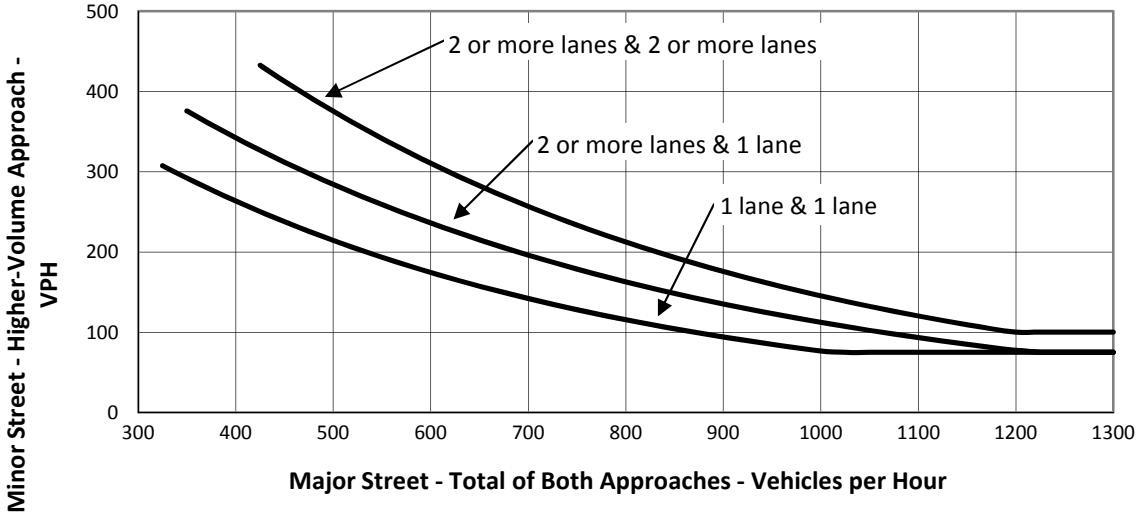
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	300
		Major Street (Approach 2):	244
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	75
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	300	Minimum Major Street Volume:	350
Major Street (Approach 2):	244	Satisfied?	YES
Total Major Street Volume:	544		
		Minimum Minor Street Volume:	262
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-PM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-AM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	199	181	135
Major Street (Approach 2):	175	159	119
[b] Major Street Left-Turns:	23	21	16
Minor Street (Higher Volume):	81	74	55

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	135
Major Street (Approach 2):	119
[a] Major Street Left-Turns:	16
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **254** Minor: **71**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **254** Minor: **71**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

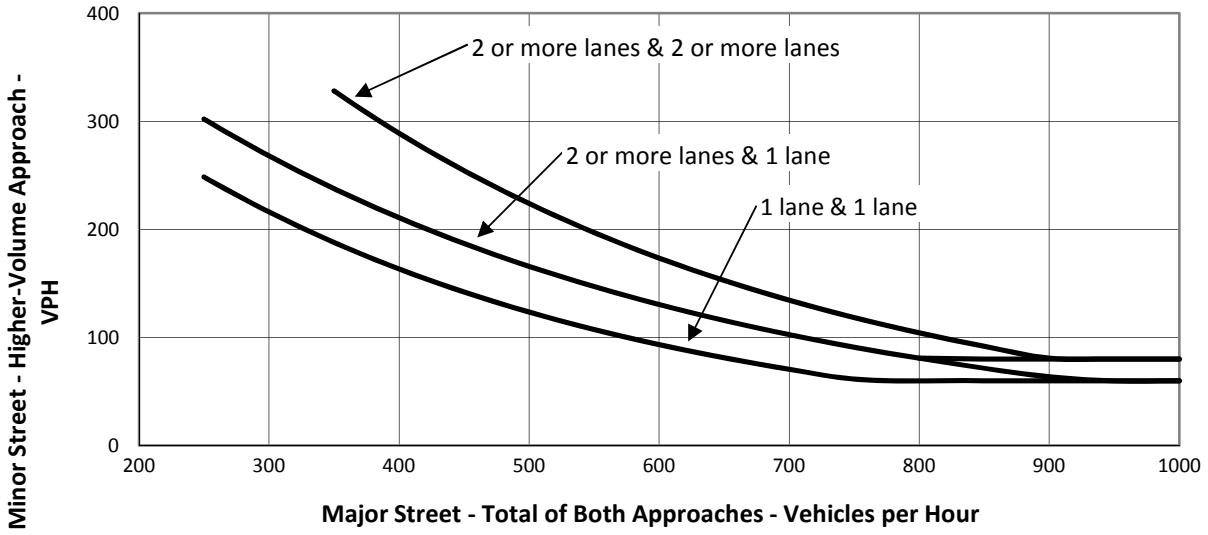
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	181
		Major Street (Approach 2):	159
Major Street Lanes:	2	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	181	Minimum Major Street Volume:	280
Major Street (Approach 2):	159	Satisfied?	YES
Total Major Street Volume:	340		
		Minimum Minor Street Volume:	243
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	95	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

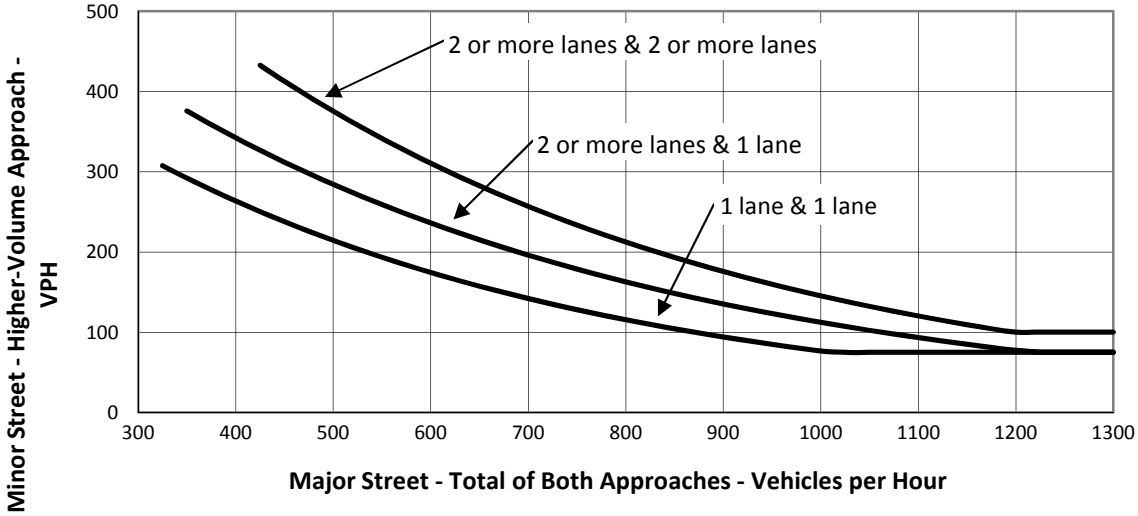
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	199
		Major Street (Approach 2):	175
Major Street Lanes:	2	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	199	Minimum Major Street Volume:	350
Major Street (Approach 2):	175	Satisfied?	YES
Total Major Street Volume:	374		
		Minimum Minor Street Volume:	359
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-AM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-PM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	222	202	151
Major Street (Approach 2):	194	177	132
[b] Major Street Left-Turns:	33	30	22
Minor Street (Higher Volume):	82	75	56

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	151
Major Street (Approach 2):	132
[a] Major Street Left-Turns:	22
Minor Street (Higher Volume):	56

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **283** Minor: **78**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **283** Minor: **78**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

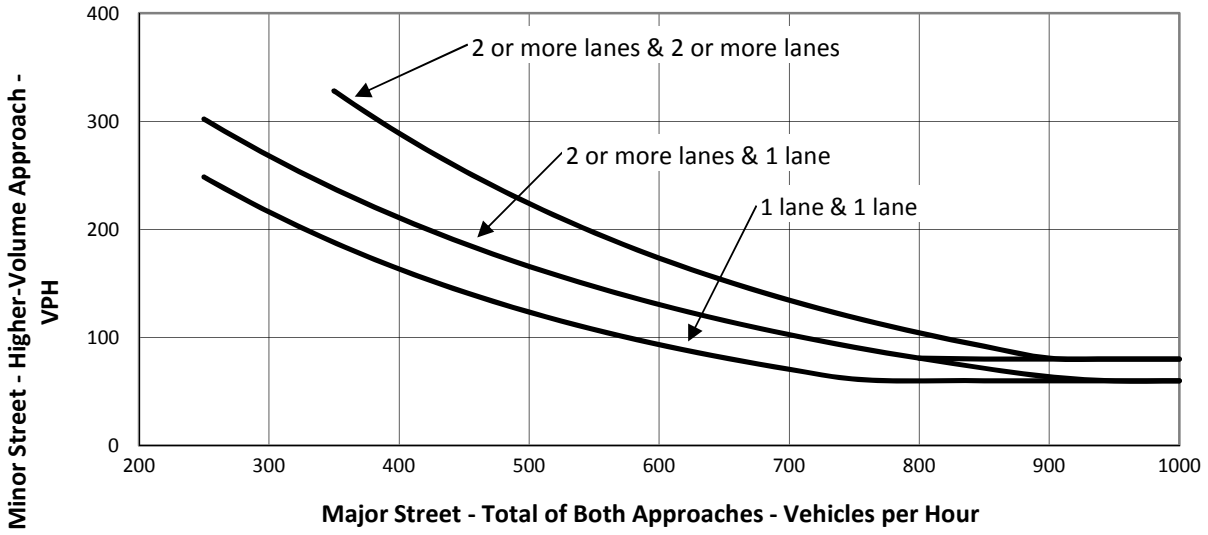
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	202
		Major Street (Approach 2):	177
Major Street Lanes:	2	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	75
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	202	Minimum Major Street Volume:	280
Major Street (Approach 2):	177	Satisfied?	YES
Total Major Street Volume:	379		
		Minimum Minor Street Volume:	222
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	105	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

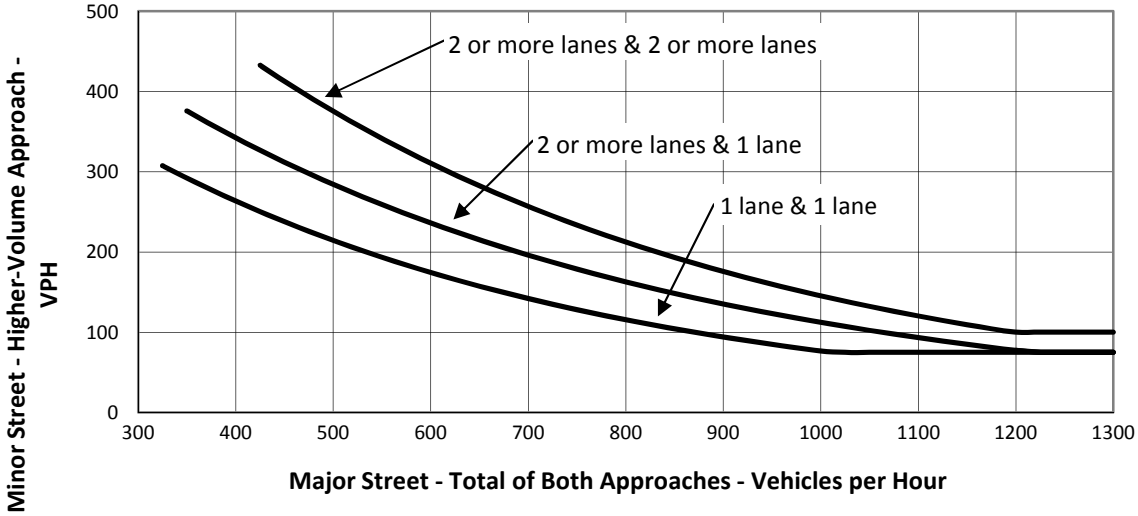
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	222
		Major Street (Approach 2):	194
Major Street Lanes:	2	[a] Major Street Left-Turns:	33
Minor Street Lanes:	1	Minor Street (Higher Volume):	82

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	222	Minimum Major Street Volume:	350
Major Street (Approach 2):	194	Satisfied?	YES
Total Major Street Volume:	416		
		Minimum Minor Street Volume:	332
Major Street Left Turns:	33	Satisfied?	NO
Minor Street (Higher Volume):	82		
Total Minor Street Volume:	115	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-PM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-AM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	265	239	191
Major Street (Approach 2):	189	170	136
[b] Major Street Left-Turns:	47	42	34
Minor Street (Higher Volume):	72	65	52

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	191
Major Street (Approach 2):	136
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	52

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **327** Minor: **86**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **327** Minor: **86**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

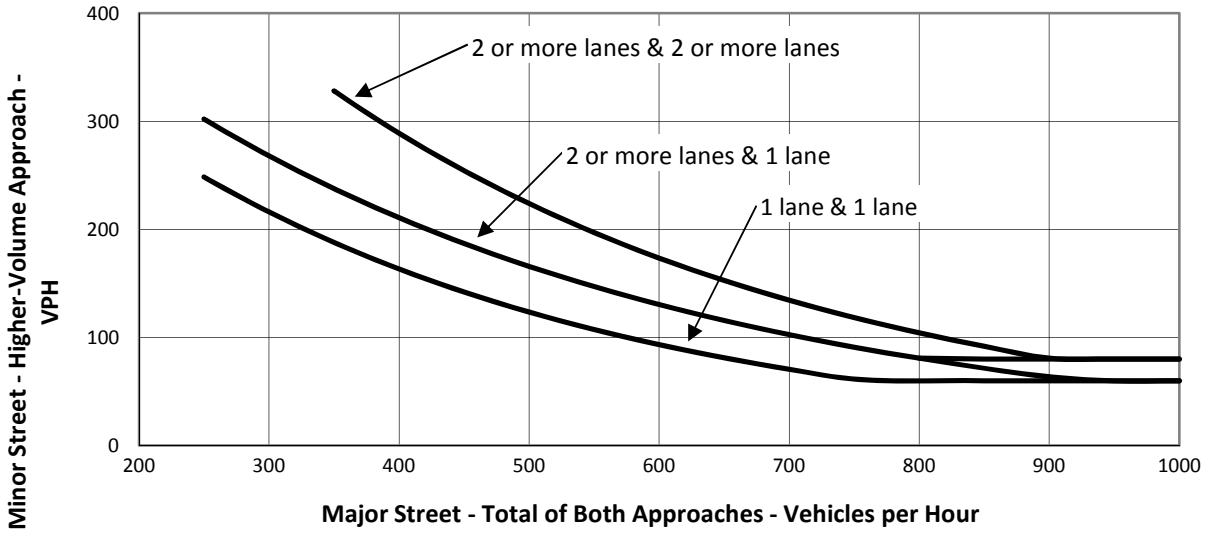
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	239
		Major Street (Approach 2):	170
Major Street Lanes:	2	[a] Major Street Left-Turns:	42
Minor Street Lanes:	1	Minor Street (Higher Volume):	65
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	239	Minimum Major Street Volume:	280
Major Street (Approach 2):	170	Satisfied?	YES
Total Major Street Volume:	409		
		Minimum Minor Street Volume:	206
Major Street Left Turns:	42	Satisfied?	NO
Minor Street (Higher Volume):	65		
Total Minor Street Volume:	107	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

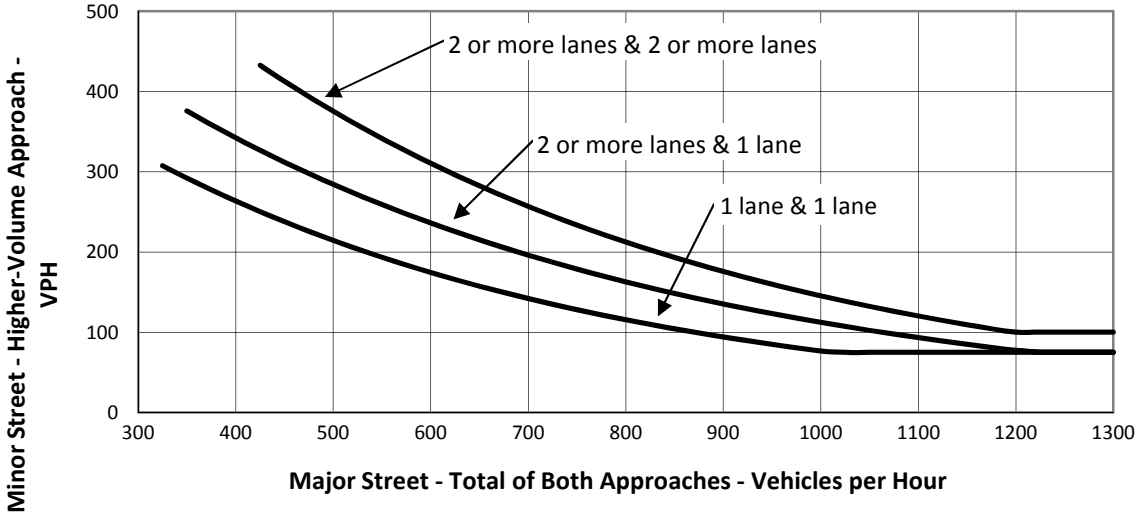
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	265
		Major Street (Approach 2):	189
Major Street Lanes:	2	[a] Major Street Left-Turns:	47
Minor Street Lanes:	1	Minor Street (Higher Volume):	72
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	265	Minimum Major Street Volume:	350
Major Street (Approach 2):	189	Satisfied?	YES
Total Major Street Volume:	454		
		Minimum Minor Street Volume:	310
Major Street Left Turns:	47	Satisfied?	NO
Minor Street (Higher Volume):	72		
Total Minor Street Volume:	119	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-AM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-PM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	356	320	256
Major Street (Approach 2):	291	262	210
[b] Major Street Left-Turns:	47	42	34
Minor Street (Higher Volume):	90	81	65

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	256
Major Street (Approach 2):	210
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	65

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **466** Minor: **99**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **466** Minor: **99**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

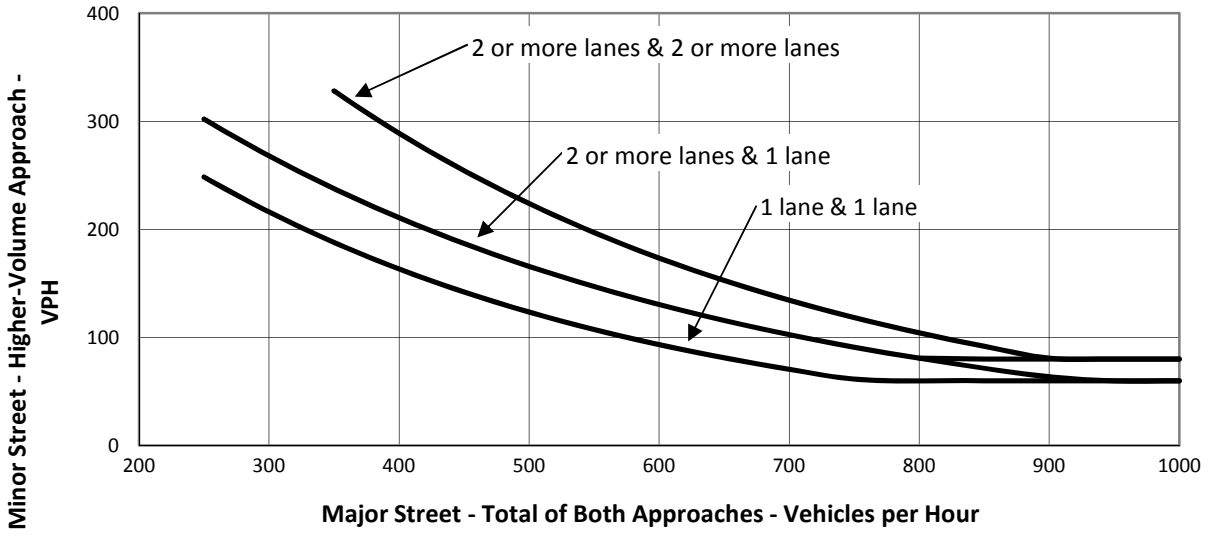
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	320
		Major Street (Approach 2):	262
Major Street Lanes:	2	[a] Major Street Left-Turns:	42
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	320	Minimum Major Street Volume:	280
Major Street (Approach 2):	262	Satisfied?	YES
Total Major Street Volume:	582		
		Minimum Minor Street Volume:	136
Major Street Left Turns:	42	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	123	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

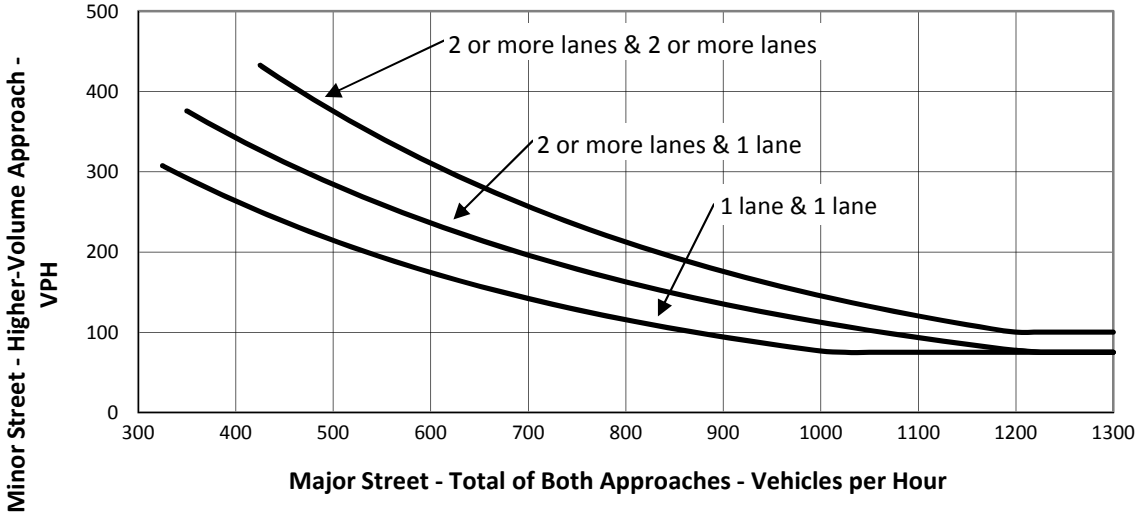
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	356
		Major Street (Approach 2):	291
Major Street Lanes:	2	[a] Major Street Left-Turns:	47
Minor Street Lanes:	1	Minor Street (Higher Volume):	90
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	356	Minimum Major Street Volume:	350
Major Street (Approach 2):	291	Satisfied?	YES
Total Major Street Volume:	647		
		Minimum Minor Street Volume:	216
Major Street Left Turns:	47	Satisfied?	NO
Minor Street (Higher Volume):	90		
Total Minor Street Volume:	137	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-PM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-AM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	237	216	161
Major Street (Approach 2):	209	190	142
[b] Major Street Left-Turns:	28	25	19
Minor Street (Higher Volume):	97	88	66

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	161
Major Street (Approach 2):	142
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	66

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **303** Minor: **85**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **303** Minor: **85**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

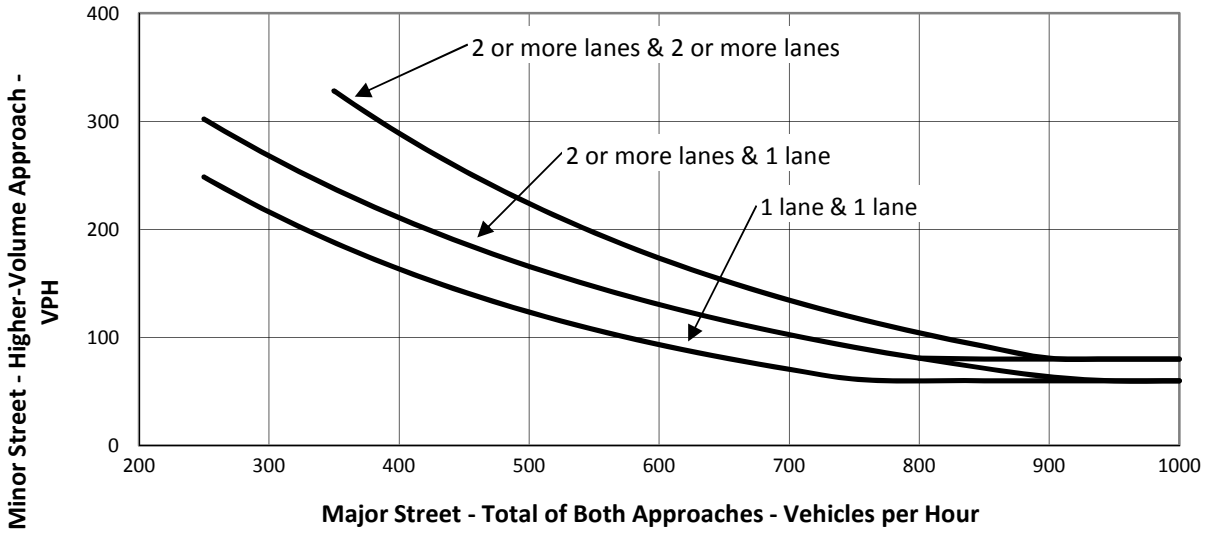
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	216
		Major Street (Approach 2):	190
Major Street Lanes:	2	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	88
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	216	Minimum Major Street Volume:	280
Major Street (Approach 2):	190	Satisfied?	YES
Total Major Street Volume:	406		
		Minimum Minor Street Volume:	208
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	88		
Total Minor Street Volume:	113	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

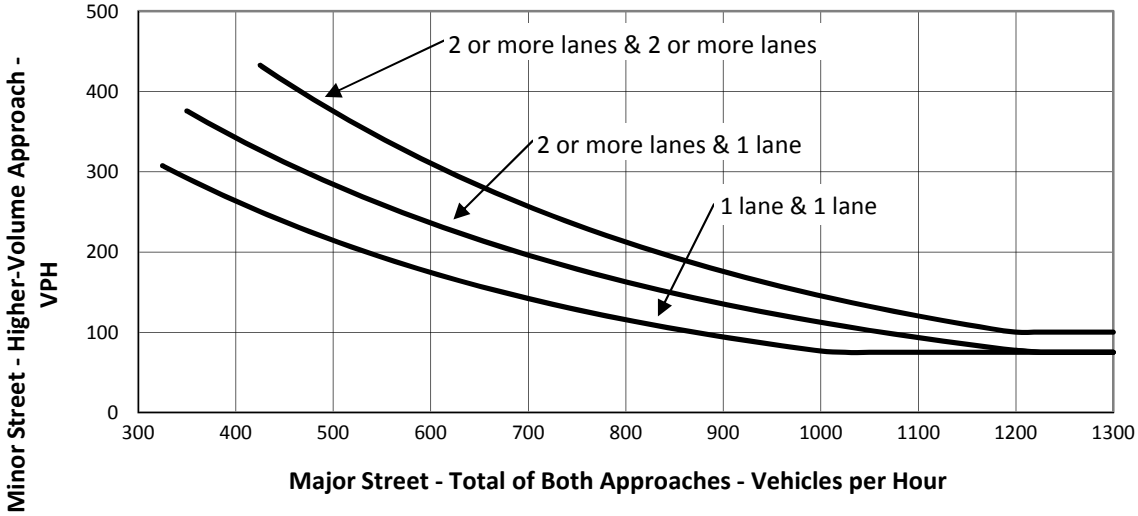
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	237
		Major Street (Approach 2):	209
Major Street Lanes:	2	[a] Major Street Left-Turns:	28
Minor Street Lanes:	1	Minor Street (Higher Volume):	97
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	237	Minimum Major Street Volume:	350
Major Street (Approach 2):	209	Satisfied?	YES
Total Major Street Volume:	446		
		Minimum Minor Street Volume:	314
Major Street Left Turns:	28	Satisfied?	NO
Minor Street (Higher Volume):	97		
Total Minor Street Volume:	125	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-AM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-PM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	264	240	180
Major Street (Approach 2):	231	210	157
[b] Major Street Left-Turns:	40	36	27
Minor Street (Higher Volume):	97	88	66

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	180
Major Street (Approach 2):	157
[a] Major Street Left-Turns:	27
Minor Street (Higher Volume):	66

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **337** Minor: **93**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **337** Minor: **93**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

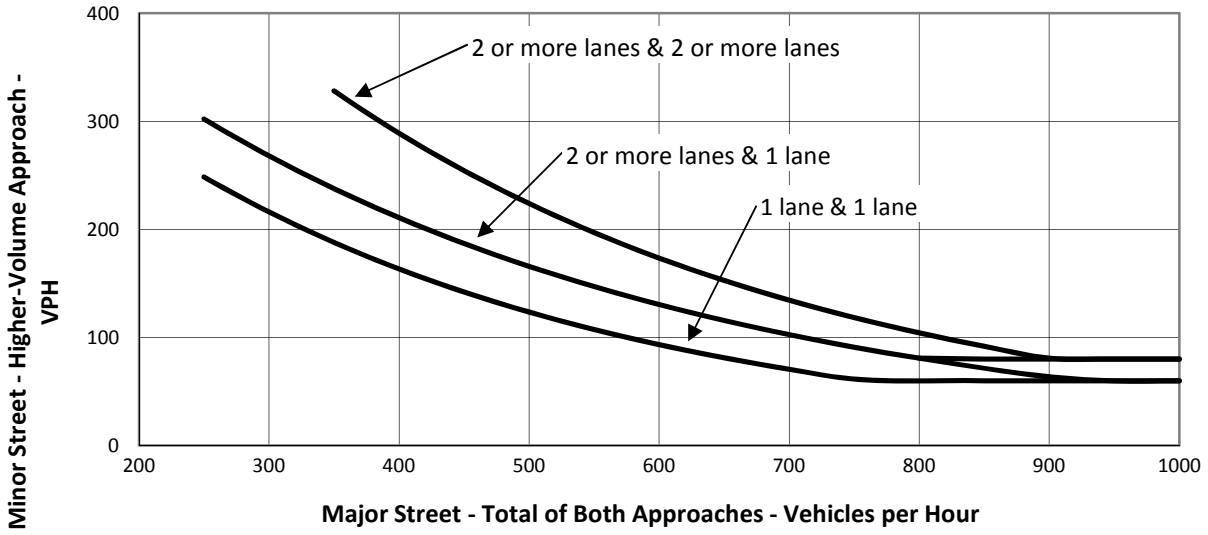
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	240
		Major Street (Approach 2):	210
Major Street Lanes:	2	[a] Major Street Left-Turns:	36
Minor Street Lanes:	1	Minor Street (Higher Volume):	88
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	240	Minimum Major Street Volume:	280
Major Street (Approach 2):	210	Satisfied?	YES
Total Major Street Volume:	450		
		Minimum Minor Street Volume:	187
Major Street Left Turns:	36	Satisfied?	NO
Minor Street (Higher Volume):	88		
Total Minor Street Volume:	124	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

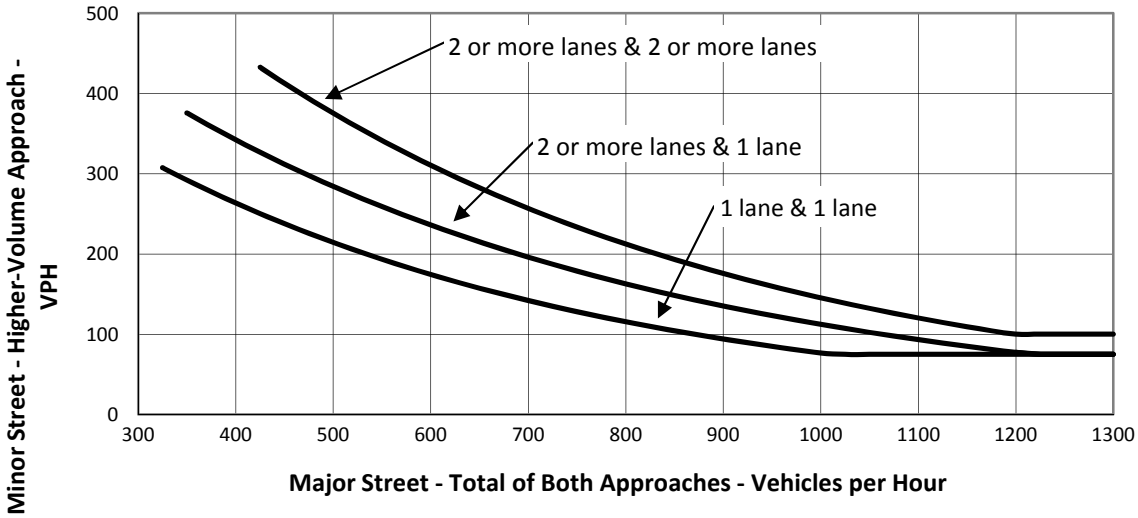
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	264
		Major Street (Approach 2):	231
Major Street Lanes:	2	[a] Major Street Left-Turns:	40
Minor Street Lanes:	1	Minor Street (Higher Volume):	97

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	264	Minimum Major Street Volume:	350
Major Street (Approach 2):	231	Satisfied?	YES
Total Major Street Volume:	495		
		Minimum Minor Street Volume:	287
Major Street Left Turns:	40	Satisfied?	NO
Minor Street (Higher Volume):	97		
Total Minor Street Volume:	137	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-PM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-AM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	287	258	207
Major Street (Approach 2):	166	149	120
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	2	2	1

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	207
Major Street (Approach 2):	120
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	1

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **327** Minor: **29**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **327** Minor: **29**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

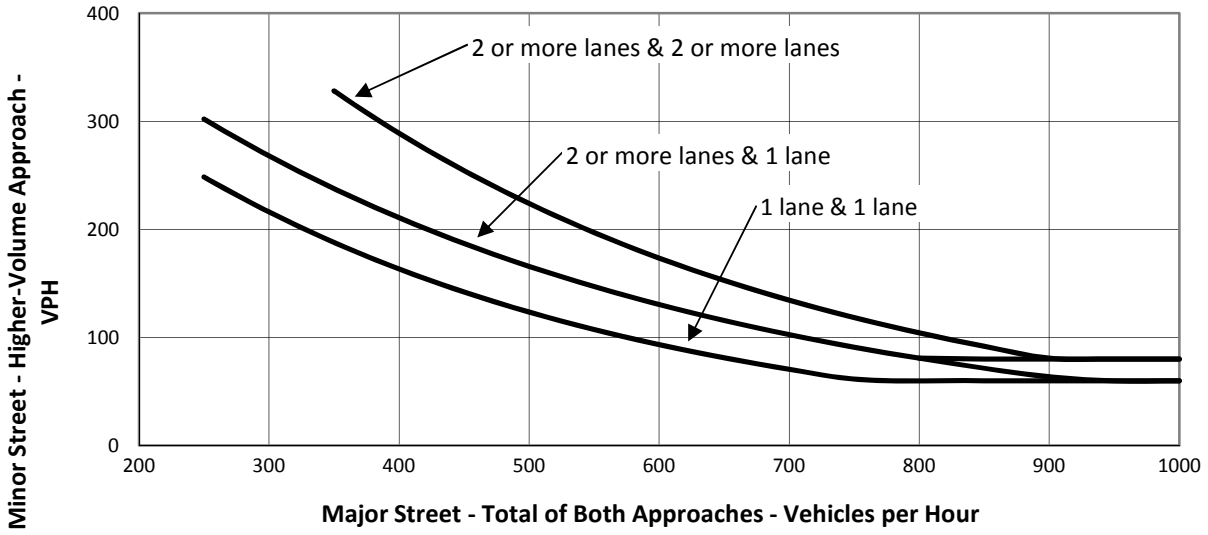
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	258
		Major Street (Approach 2):	149
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	2
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258	Minimum Major Street Volume:	280
Major Street (Approach 2):	149	Satisfied?	YES
Total Major Street Volume:	407		
		Minimum Minor Street Volume:	207
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	2		
Total Minor Street Volume:	37	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

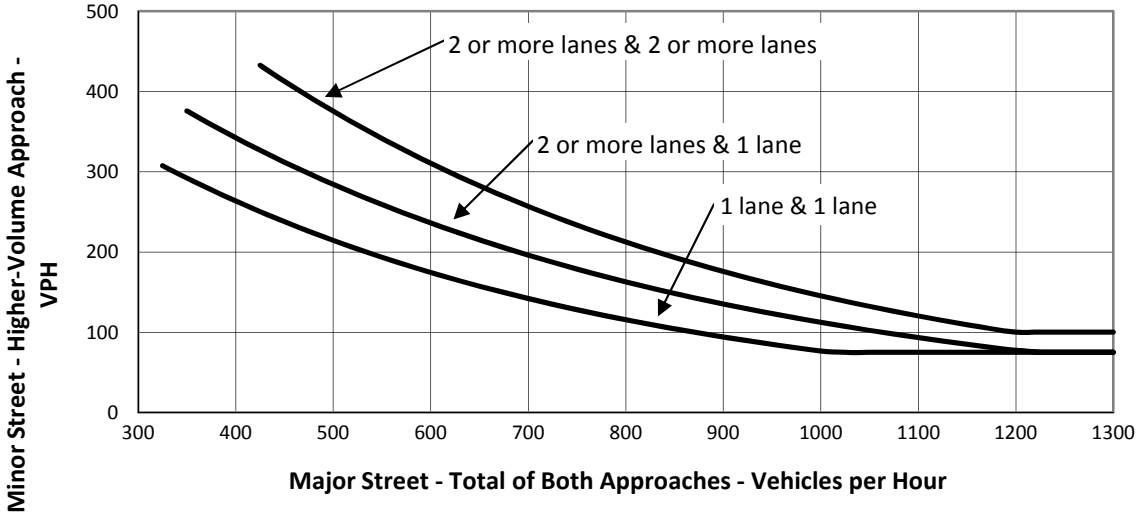
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	287
		Major Street (Approach 2):	166
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	2

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	287	Minimum Major Street Volume:	350
Major Street (Approach 2):	166	Satisfied?	YES
Total Major Street Volume:	453		
		Minimum Minor Street Volume:	310
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	2		
Total Minor Street Volume:	41	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-AM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-PM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	349	314	251
Major Street (Approach 2):	280	252	202
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	75	68	54

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	251
Major Street (Approach 2):	202
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	54

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **453** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **453** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

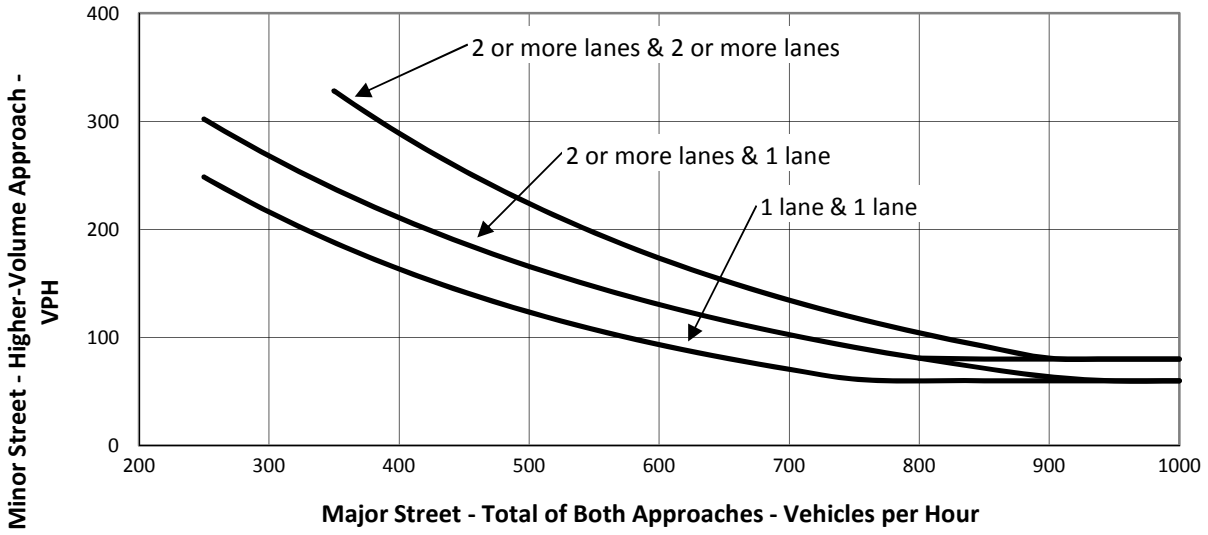
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	314
		Major Street (Approach 2):	252
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	314	Minimum Major Street Volume:	280
Major Street (Approach 2):	252	Satisfied?	YES
Total Major Street Volume:	566		
		Minimum Minor Street Volume:	142
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	103	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

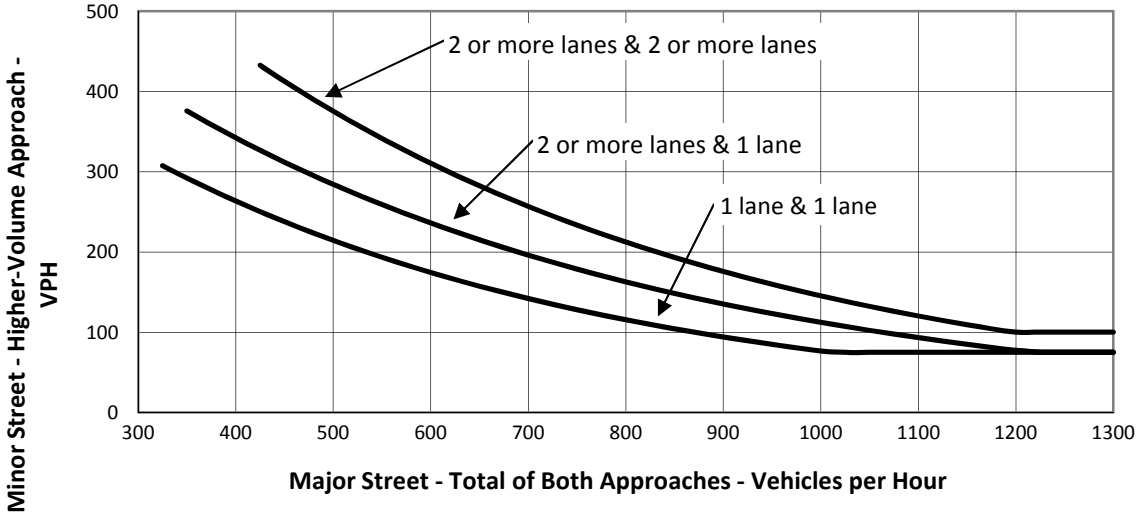
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	349
		Major Street (Approach 2):	280
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	75

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	349	Minimum Major Street Volume:	350
Major Street (Approach 2):	280	Satisfied?	YES
Total Major Street Volume:	629		
		Minimum Minor Street Volume:	224
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-PM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-AM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	263	239	179
Major Street (Approach 2):	183	167	124
[b] Major Street Left-Turns:	23	21	16
Minor Street (Higher Volume):	81	74	55

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	179
Major Street (Approach 2):	124
[a] Major Street Left-Turns:	16
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **303** Minor: **71**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **303** Minor: **71**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

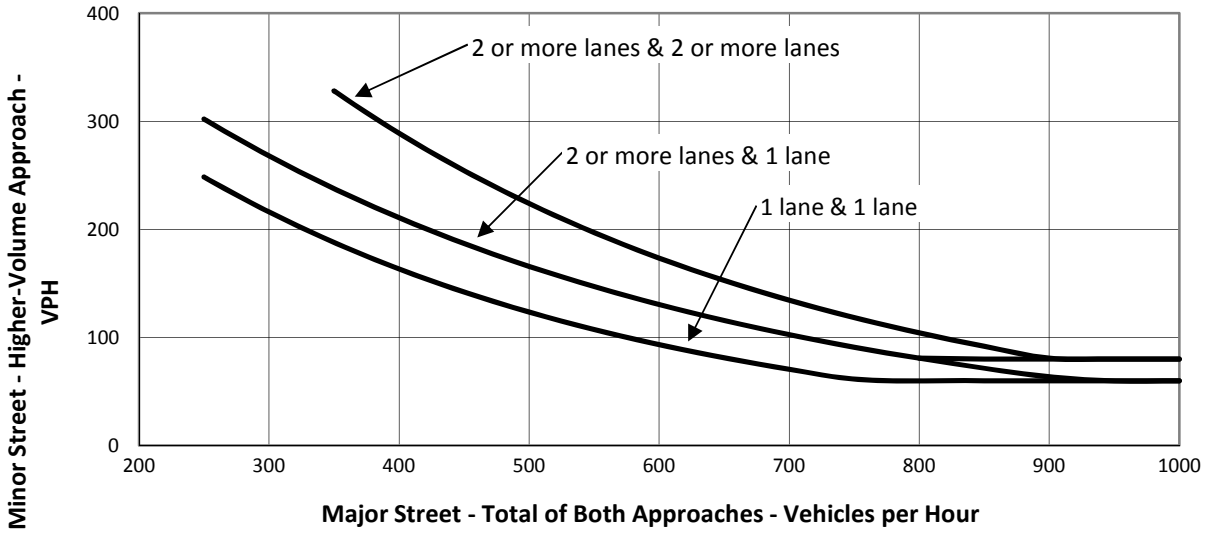
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	239
		Major Street (Approach 2):	167
Major Street Lanes:	2	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	239	Minimum Major Street Volume:	280
Major Street (Approach 2):	167	Satisfied?	YES
Total Major Street Volume:	406		
		Minimum Minor Street Volume:	208
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	95	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

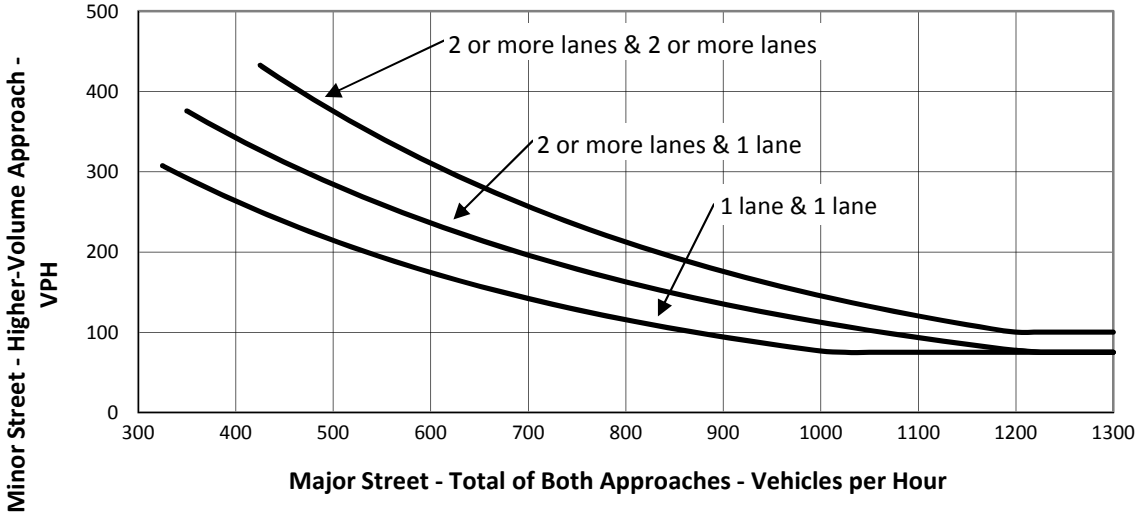
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	263
		Major Street (Approach 2):	183
Major Street Lanes:	2	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	263	Minimum Major Street Volume:	350
Major Street (Approach 2):	183	Satisfied?	YES
Total Major Street Volume:	446		
		Minimum Minor Street Volume:	314
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-AM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-PM) - Year 2015
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	272	248	185
Major Street (Approach 2):	230	209	156
[b] Major Street Left-Turns:	33	30	22
Minor Street (Higher Volume):	81	74	55

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	185
Major Street (Approach 2):	156
[a] Major Street Left-Turns:	22
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **341** Minor: **77**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **341** Minor: **77**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.
[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

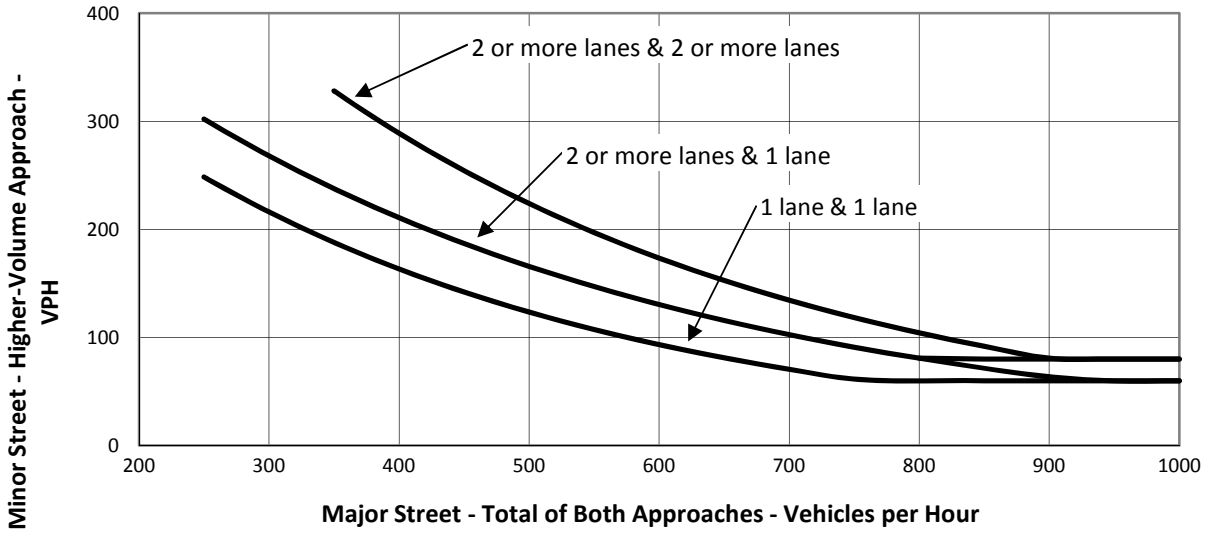
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	248
		Major Street (Approach 2):	209
Major Street Lanes:	2	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	248	Minimum Major Street Volume:	280
Major Street (Approach 2):	209	Satisfied?	YES
Total Major Street Volume:	457		
		Minimum Minor Street Volume:	184
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	104	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

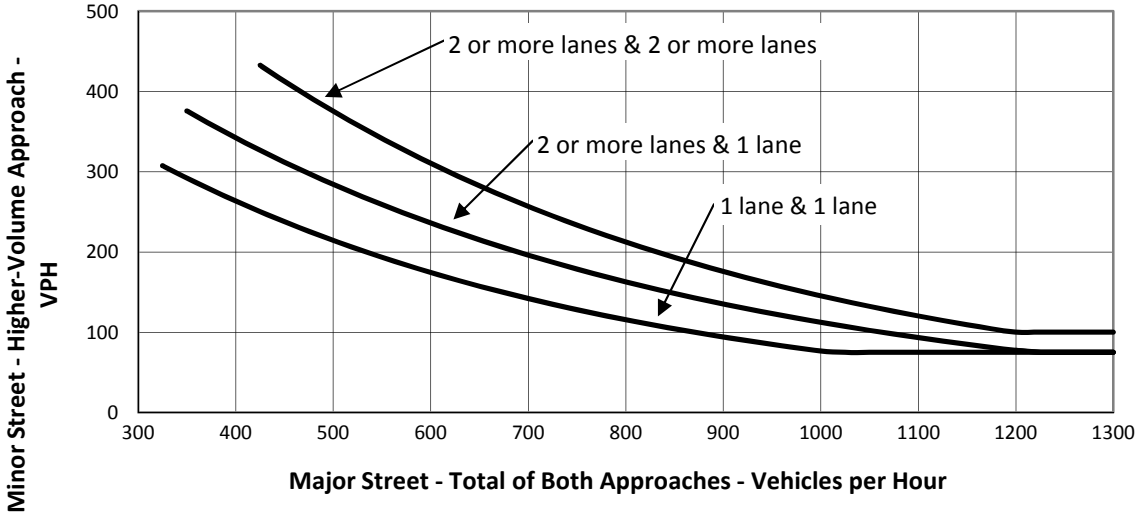
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	272
		Major Street (Approach 2):	230
Major Street Lanes:	2	[a] Major Street Left-Turns:	33
Minor Street Lanes:	1	Minor Street (Higher Volume):	81

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	272	Minimum Major Street Volume:	350
Major Street (Approach 2):	230	Satisfied?	YES
Total Major Street Volume:	502		
		Minimum Minor Street Volume:	283
Major Street Left Turns:	33	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-PM) - Year 2015**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	331	298	238
Major Street (Approach 2):	198	178	143
[b] Major Street Left-Turns:	47	42	34
Minor Street (Higher Volume):	72	65	52

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	238
Major Street (Approach 2):	143
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	52

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **381** Minor: **86**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **381** Minor: **86**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

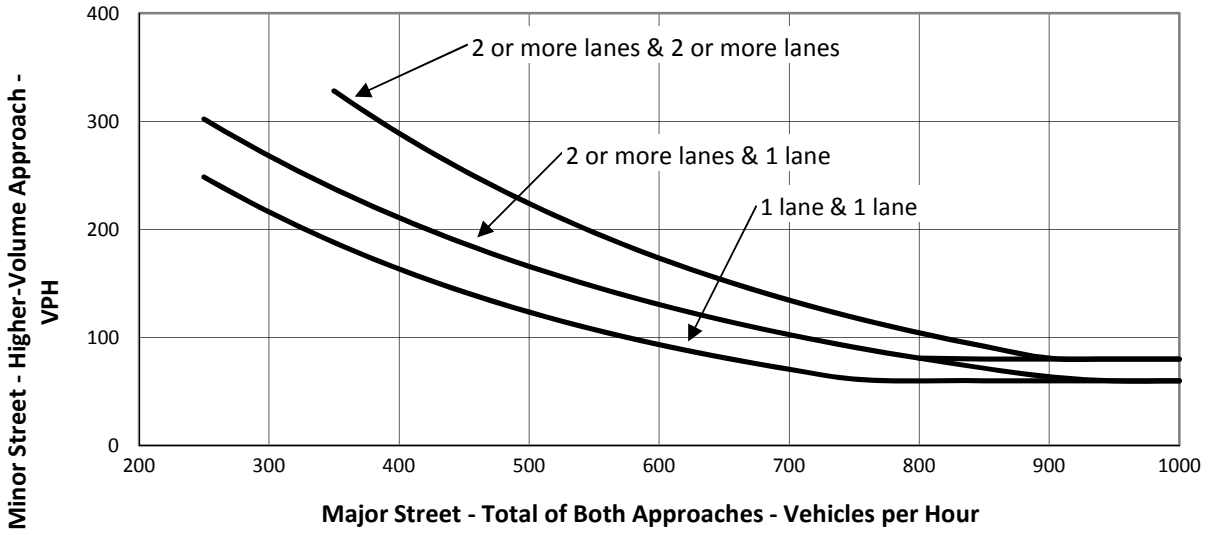
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	298
		Major Street (Approach 2):	178
Major Street Lanes:	2	[a] Major Street Left-Turns:	42
Minor Street Lanes:	1	Minor Street (Higher Volume):	65
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	298	Minimum Major Street Volume:	280
Major Street (Approach 2):	178	Satisfied?	YES
Total Major Street Volume:	476		
		Minimum Minor Street Volume:	176
Major Street Left Turns:	42	Satisfied?	NO
Minor Street (Higher Volume):	65		
Total Minor Street Volume:	107	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

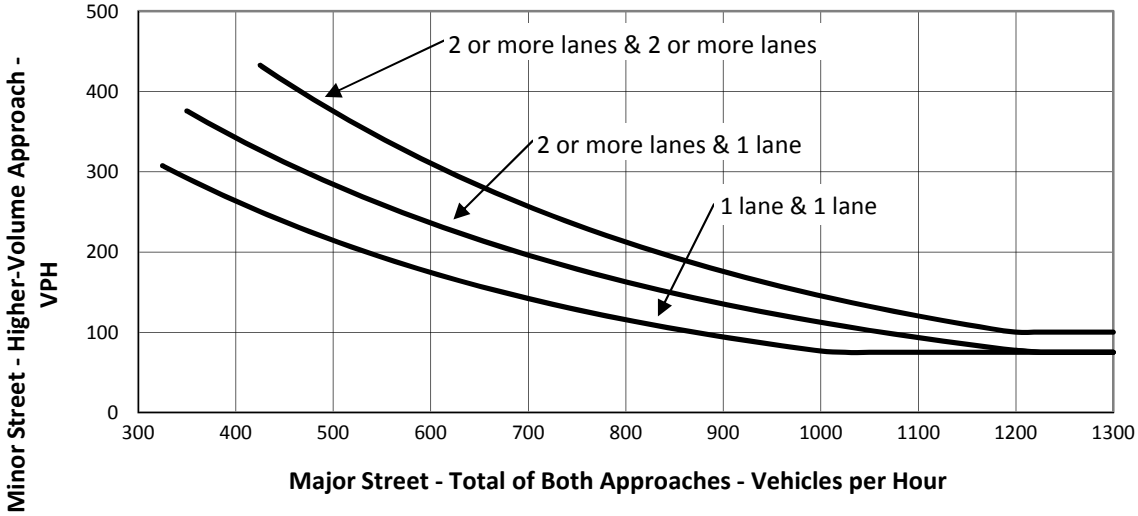
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	331
		Major Street (Approach 2):	198
Major Street Lanes:	2	[a] Major Street Left-Turns:	47
Minor Street Lanes:	1	Minor Street (Higher Volume):	72
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	331	Minimum Major Street Volume:	350
Major Street (Approach 2):	198	Satisfied?	YES
Total Major Street Volume:	529		
		Minimum Minor Street Volume:	269
Major Street Left Turns:	47	Satisfied?	NO
Minor Street (Higher Volume):	72		
Total Minor Street Volume:	119	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	408	367	294
Major Street (Approach 2):	329	296	237
[b] Major Street Left-Turns:	47	42	34
Minor Street (Higher Volume):	90	81	65

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	294
Major Street (Approach 2):	237
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	65

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **531** Minor: **99**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **531** Minor: **99**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**YES**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

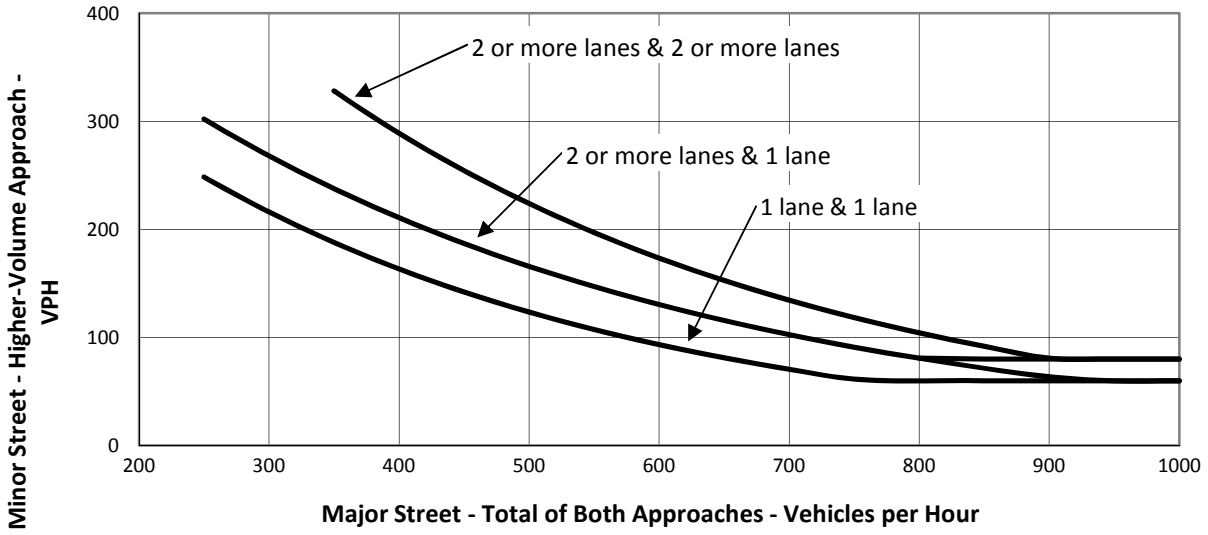
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	367
		Major Street (Approach 2):	296
Major Street Lanes:	2	[a] Major Street Left-Turns:	42
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	367	Minimum Major Street Volume:	280
Major Street (Approach 2):	296	Satisfied?	YES
Total Major Street Volume:	663		
		Minimum Minor Street Volume:	112
Major Street Left Turns:	42	Satisfied?	YES
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	123	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

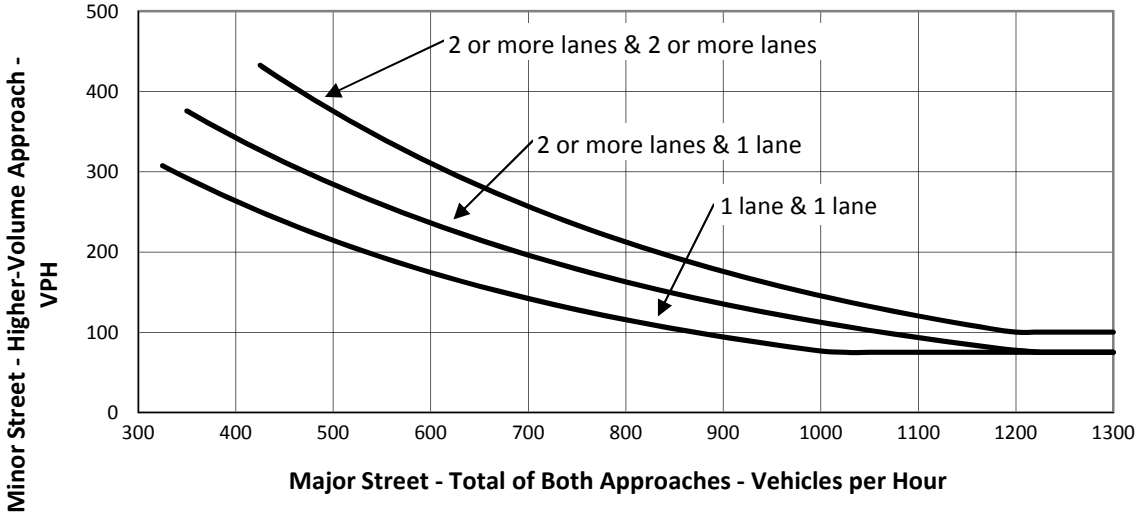
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	408
		Major Street (Approach 2):	329
Major Street Lanes:	2	[a] Major Street Left-Turns:	47
Minor Street Lanes:	1	Minor Street (Higher Volume):	90

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	408	Minimum Major Street Volume:	350
Major Street (Approach 2):	329	Satisfied?	YES
Total Major Street Volume:	737		
		Minimum Minor Street Volume:	183
Major Street Left Turns:	47	Satisfied?	NO
Minor Street (Higher Volume):	90		
Total Minor Street Volume:	137	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	303	276	206
Major Street (Approach 2):	218	198	148
[b] Major Street Left-Turns:	28	25	19
Minor Street (Higher Volume):	97	88	66

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	206
Major Street (Approach 2):	148
[a] Major Street Left-Turns:	19
Minor Street (Higher Volume):	66

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **354** Minor: **85**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **354** Minor: **85**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

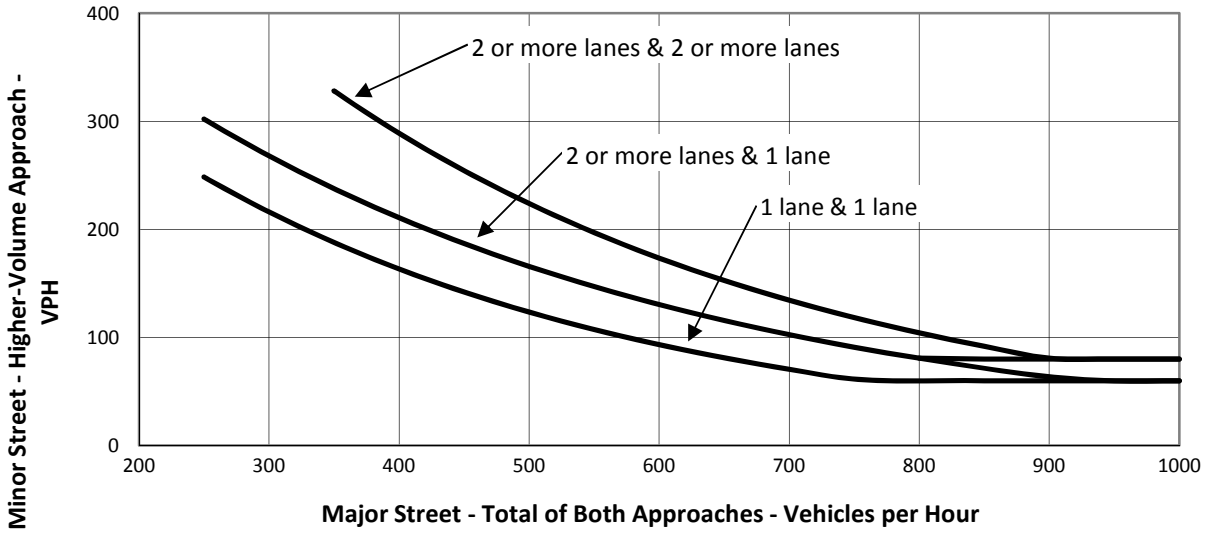
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	276
		Major Street (Approach 2):	198
Major Street Lanes:	2	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	88
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	276	Minimum Major Street Volume:	280
Major Street (Approach 2):	198	Satisfied?	YES
Total Major Street Volume:	474		
		Minimum Minor Street Volume:	177
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	88		
Total Minor Street Volume:	113	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

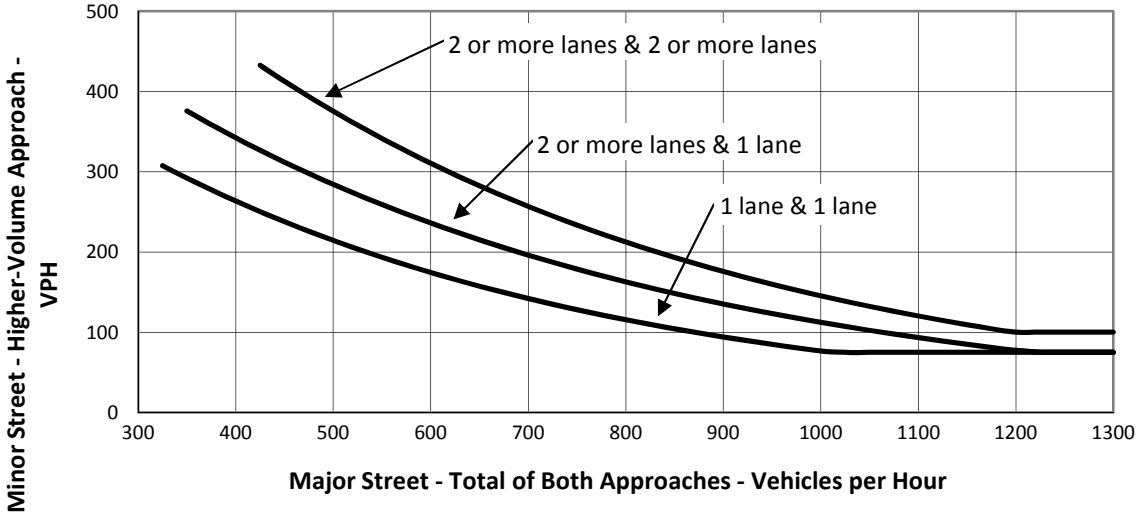
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	303
		Major Street (Approach 2):	218
Major Street Lanes:	2	[a] Major Street Left-Turns:	28
Minor Street Lanes:	1	Minor Street (Higher Volume):	97

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	303	Minimum Major Street Volume:	350
Major Street (Approach 2):	218	Satisfied?	YES
Total Major Street Volume:	521		
		Minimum Minor Street Volume:	273
Major Street Left Turns:	28	Satisfied?	NO
Minor Street (Higher Volume):	97		
Total Minor Street Volume:	125	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	316	288	215
Major Street (Approach 2):	269	245	183
[b] Major Street Left-Turns:	40	36	27
Minor Street (Higher Volume):	97	88	66

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	215
Major Street (Approach 2):	183
[a] Major Street Left-Turns:	27
Minor Street (Higher Volume):	66

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **398** Minor: **93**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **398** Minor: **93**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	YES		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

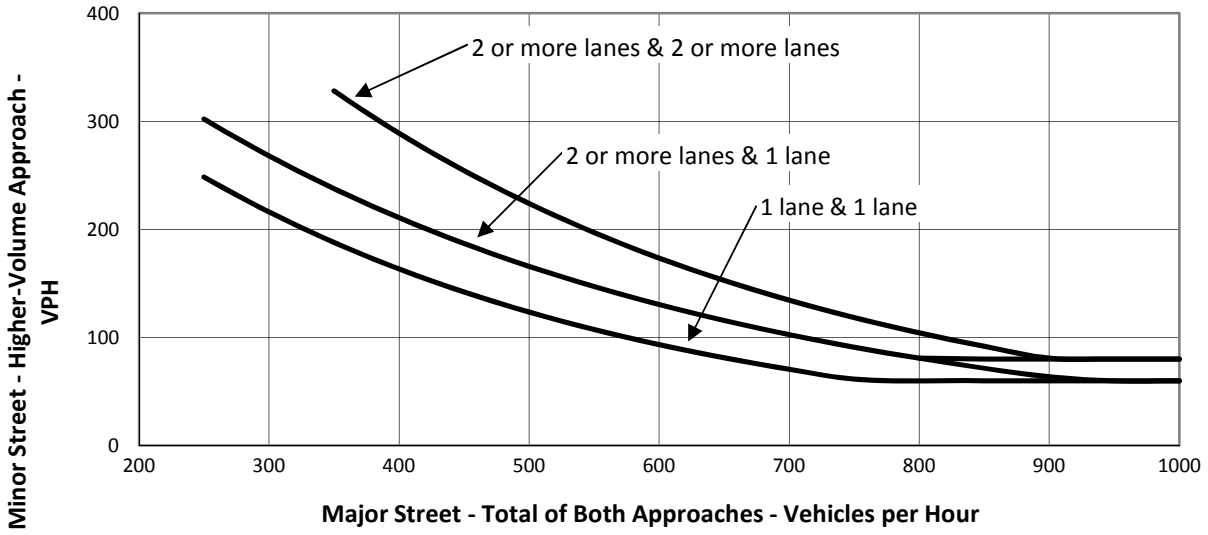
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	288
		Major Street (Approach 2):	245
Major Street Lanes:	2	[a] Major Street Left-Turns:	36
Minor Street Lanes:	1	Minor Street (Higher Volume):	88
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	288	Minimum Major Street Volume:	280
Major Street (Approach 2):	245	Satisfied?	YES
Total Major Street Volume:	533		
		Minimum Minor Street Volume:	153
Major Street Left Turns:	36	Satisfied?	NO
Minor Street (Higher Volume):	88		
Total Minor Street Volume:	124	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

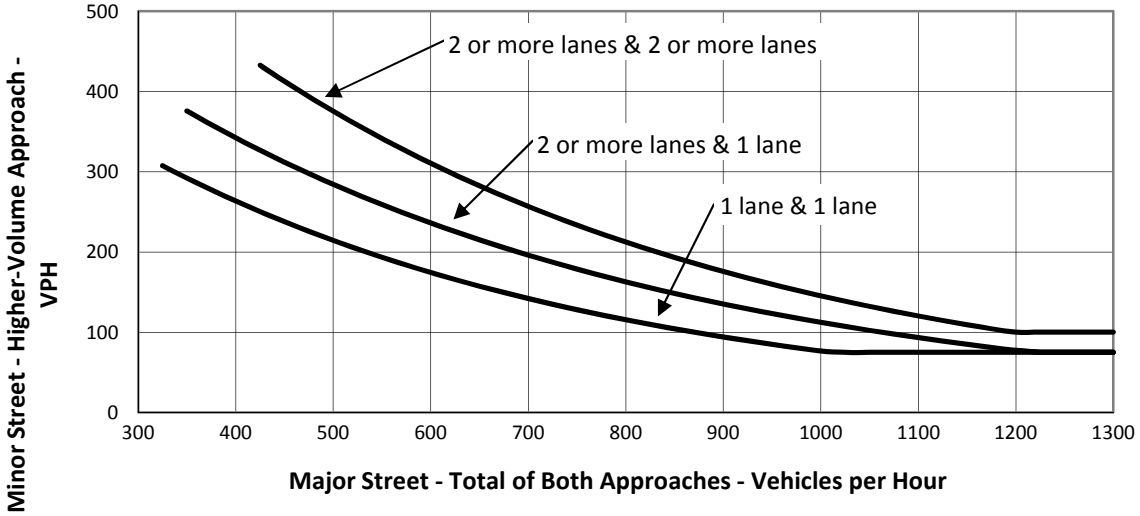
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	316
		Major Street (Approach 2):	269
Major Street Lanes:	2	[a] Major Street Left-Turns:	40
Minor Street Lanes:	1	Minor Street (Higher Volume):	97

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	316	Minimum Major Street Volume:	350
Major Street (Approach 2):	269	Satisfied?	YES
Total Major Street Volume:	585		
		Minimum Minor Street Volume:	243
Major Street Left Turns:	40	Satisfied?	NO
Minor Street (Higher Volume):	97		
Total Minor Street Volume:	137	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-AM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	289	260	208
Major Street (Approach 2):	167	150	120
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	60	54	43

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	208
Major Street (Approach 2):	120
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	43

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **328** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **328** Minor: **71**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

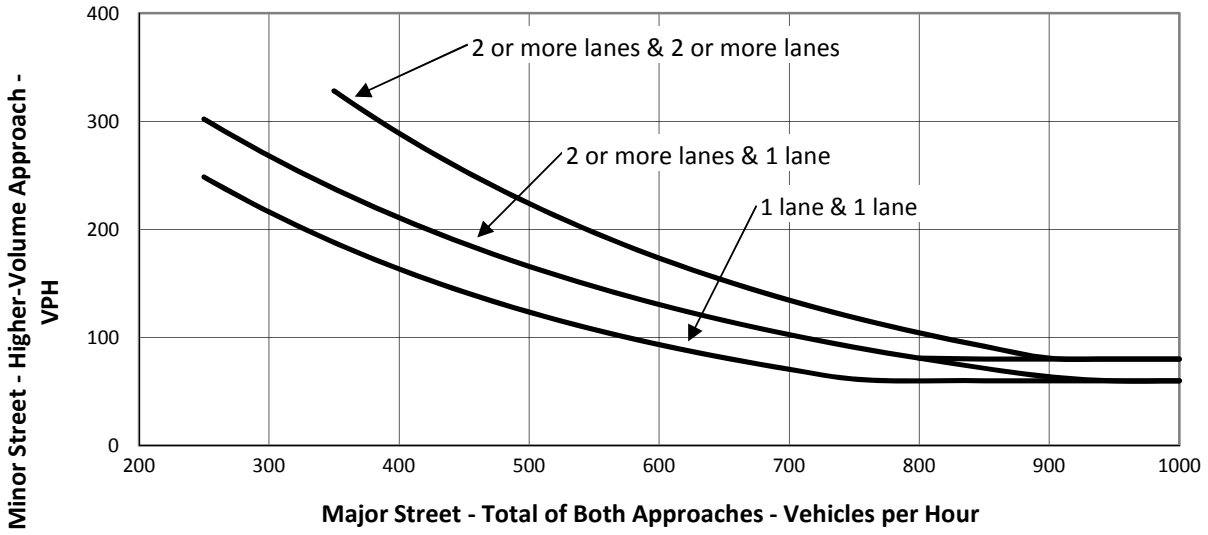
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	260
		Major Street (Approach 2):	150
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	54
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	260	Minimum Major Street Volume:	280
Major Street (Approach 2):	150	Satisfied?	YES
Total Major Street Volume:	410		
		Minimum Minor Street Volume:	206
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	54		
Total Minor Street Volume:	89	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

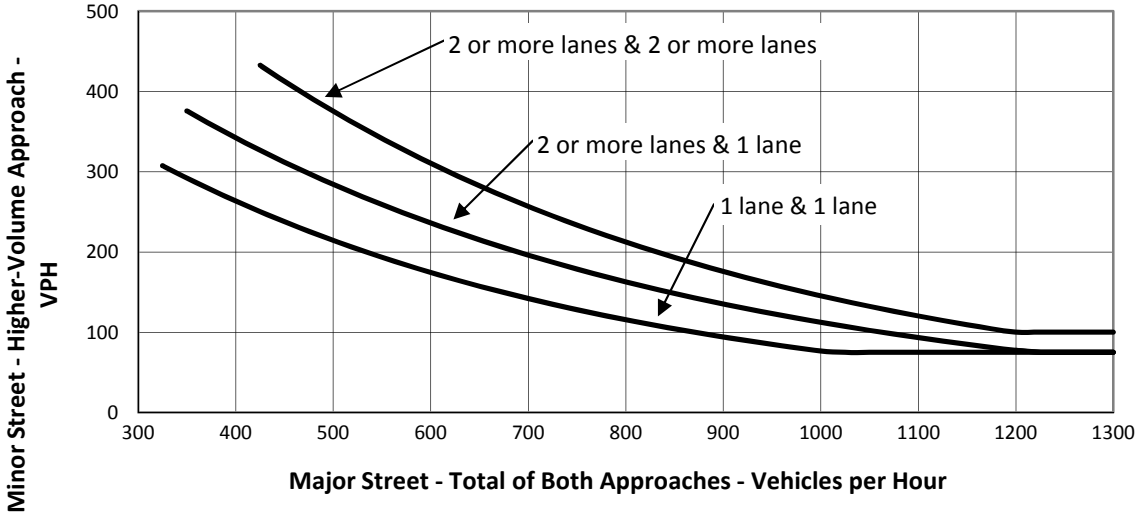
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	289
		Major Street (Approach 2):	167
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	60

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	289	Minimum Major Street Volume:	350
Major Street (Approach 2):	167	Satisfied?	YES
Total Major Street Volume:	456		
		Minimum Minor Street Volume:	309
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	60		
Total Minor Street Volume:	99	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-AM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-PM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	352	317	253
Major Street (Approach 2):	282	254	203
[b] Major Street Left-Turns:	39	35	28
Minor Street (Higher Volume):	75	68	54

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	253
Major Street (Approach 2):	203
[a] Major Street Left-Turns:	28
Minor Street (Higher Volume):	54

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **456** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **456** Minor: **82**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

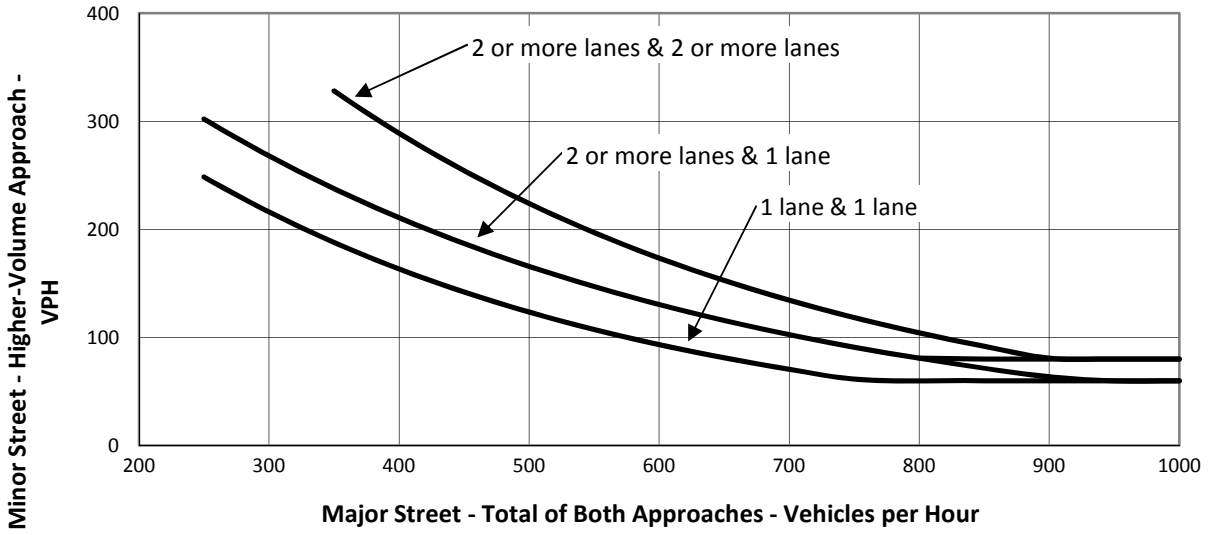
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	317
		Major Street (Approach 2):	254
Major Street Lanes:	2	[a] Major Street Left-Turns:	35
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	317	Minimum Major Street Volume:	280
Major Street (Approach 2):	254	Satisfied?	YES
Total Major Street Volume:	571		
		Minimum Minor Street Volume:	140
Major Street Left Turns:	35	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	103	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

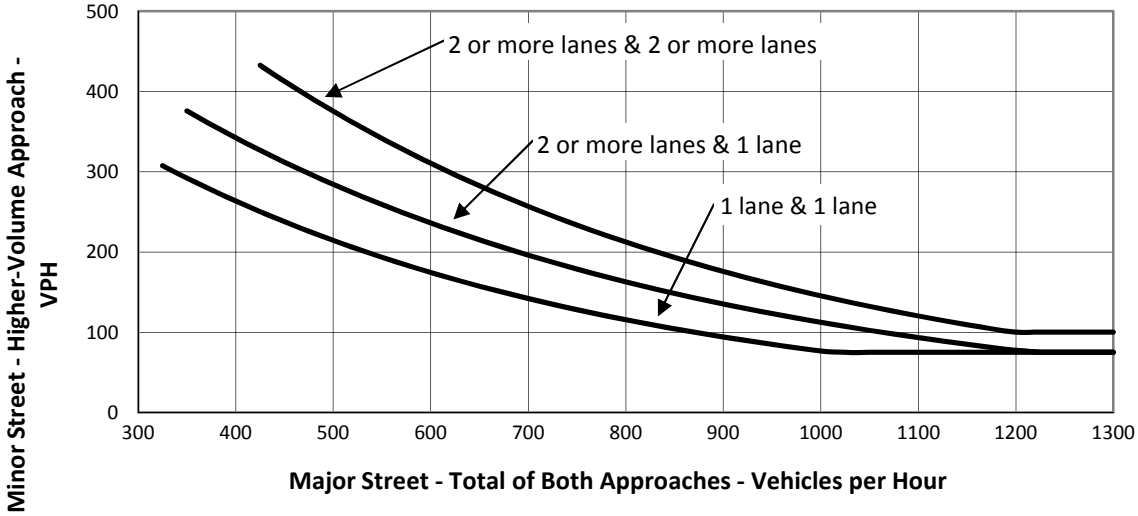
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	352
		Major Street (Approach 2):	282
Major Street Lanes:	2	[a] Major Street Left-Turns:	39
Minor Street Lanes:	1	Minor Street (Higher Volume):	75
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	352	Minimum Major Street Volume:	350
Major Street (Approach 2):	282	Satisfied?	YES
Total Major Street Volume:	634		
		Minimum Minor Street Volume:	222
Major Street Left Turns:	39	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	114	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-PM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-AM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	265	241	180
Major Street (Approach 2):	184	167	125
[b] Major Street Left-Turns:	23	21	16
Minor Street (Higher Volume):	81	74	55

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	180
Major Street (Approach 2):	125
[a] Major Street Left-Turns:	16
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **305** Minor: **71**
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **305** Minor: **71**
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

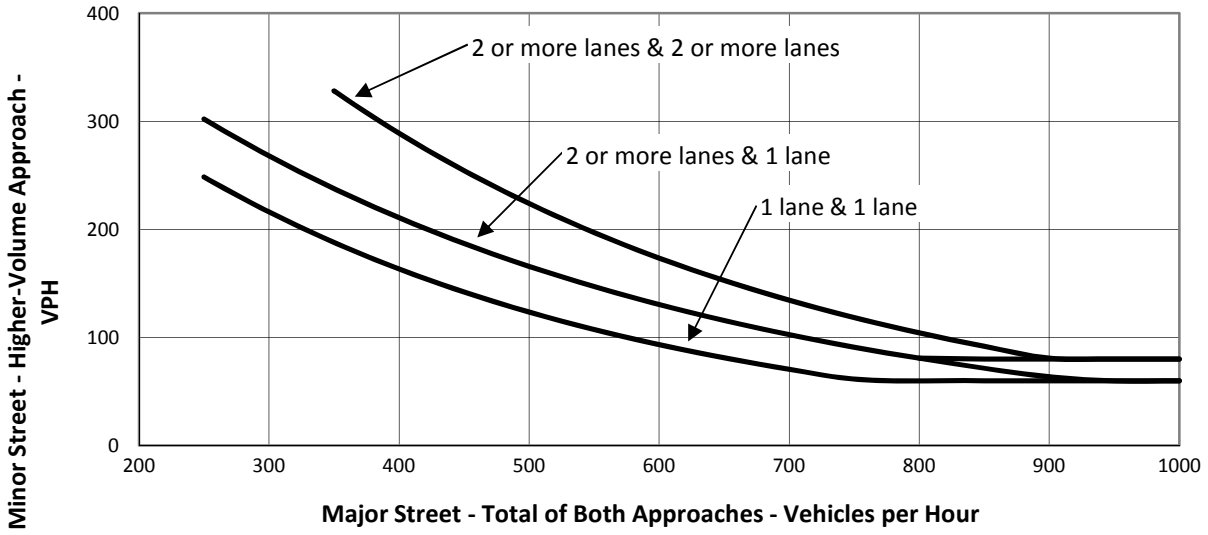
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	241
		Major Street (Approach 2):	167
Major Street Lanes:	2	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	241	Minimum Major Street Volume:	280
Major Street (Approach 2):	167	Satisfied?	YES
Total Major Street Volume:	408		
		Minimum Minor Street Volume:	207
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	95	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

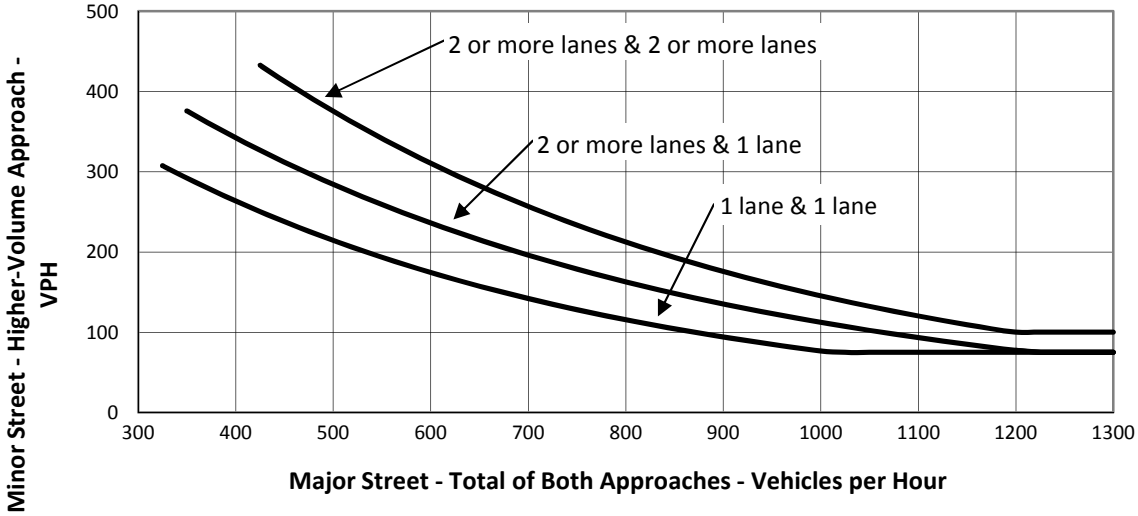
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	265
		Major Street (Approach 2):	184
Major Street Lanes:	2	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	81
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	265	Minimum Major Street Volume:	350
Major Street (Approach 2):	184	Satisfied?	YES
Total Major Street Volume:	449		
		Minimum Minor Street Volume:	313
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	81		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-AM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-PM) - Year 2016
Intersection Number:	4
Major Street Name:	State Route 18
Minor Street Name:	Kuffel Canyon Road

Intersection Number & Name as Displayed

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Lanes:	2
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	274	249	186
Major Street (Approach 2):	232	211	158
[b] Major Street Left-Turns:	33	30	22
Minor Street (Higher Volume):	82	75	56

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name: State Route 18
Minor Street Name: Kuffel Canyon Road

Major Street Lanes: 2
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	186
Major Street (Approach 2):	158
[a] Major Street Left-Turns:	22
Minor Street (Higher Volume):	56

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **344** Minor: **78**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
→	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **344** Minor: **78**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
→	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

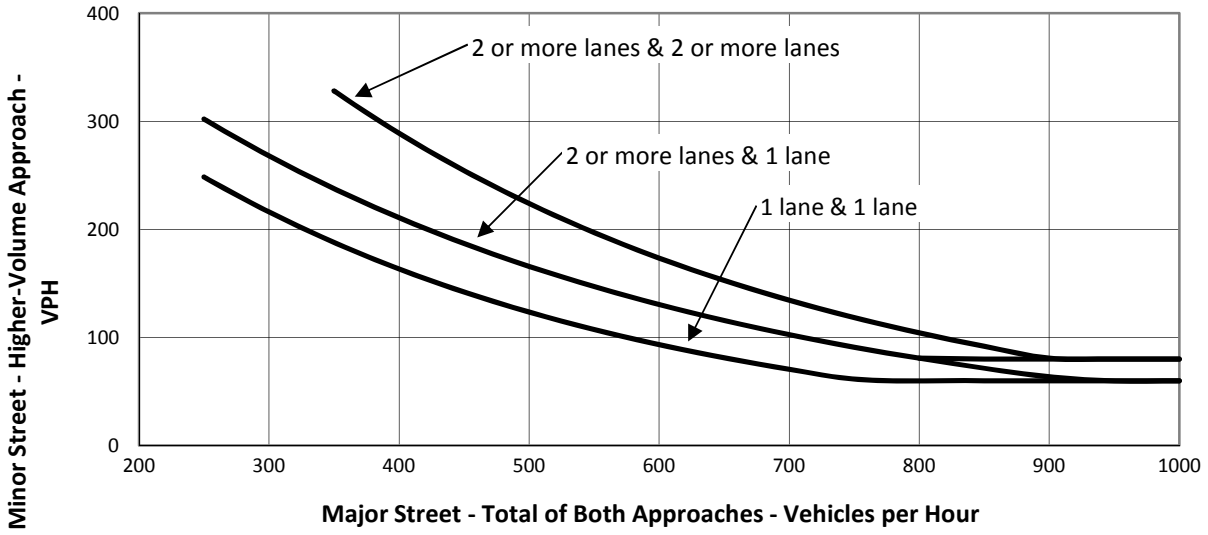
4. STATE ROUTE 18 & KUFFEL CANYON ROAD

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	249
		Major Street (Approach 2):	211
Major Street Lanes:	2	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	75
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	249	Minimum Major Street Volume:	280
Major Street (Approach 2):	211	Satisfied?	YES
Total Major Street Volume:	460		
		Minimum Minor Street Volume:	183
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	75		
Total Minor Street Volume:	105	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

4. STATE ROUTE 18 & KUFFEL CANYON ROAD

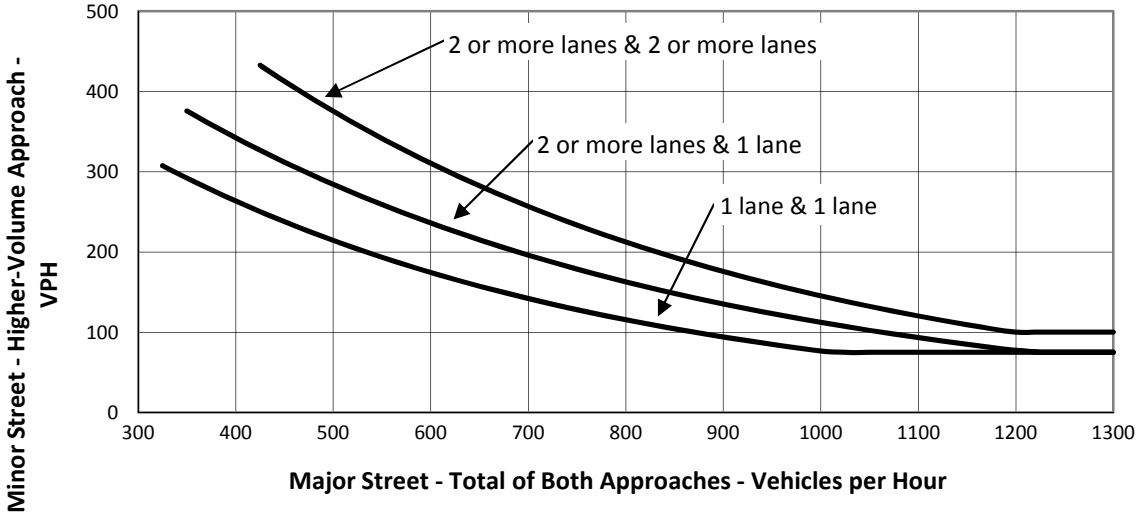
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Kuffel Canyon Road	Major Street (Approach 1):	274
		Major Street (Approach 2):	232
Major Street Lanes:	2	[a] Major Street Left-Turns:	33
Minor Street Lanes:	1	Minor Street (Higher Volume):	82

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	274	Minimum Major Street Volume:	350
Major Street (Approach 2):	232	Satisfied?	YES
Total Major Street Volume:	506		
		Minimum Minor Street Volume:	281
Major Street Left Turns:	33	Satisfied?	NO
Minor Street (Higher Volume):	82		
Total Minor Street Volume:	115	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-PM) - Year 2016**

Intersection Number: **4**
Major Street Name: **State Route 18**
Minor Street Name: **Kuffel Canyon Road**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SAT-AM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	287	258	207
Major Street (Approach 2):	248	223	179
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	207
Major Street (Approach 2):	179
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

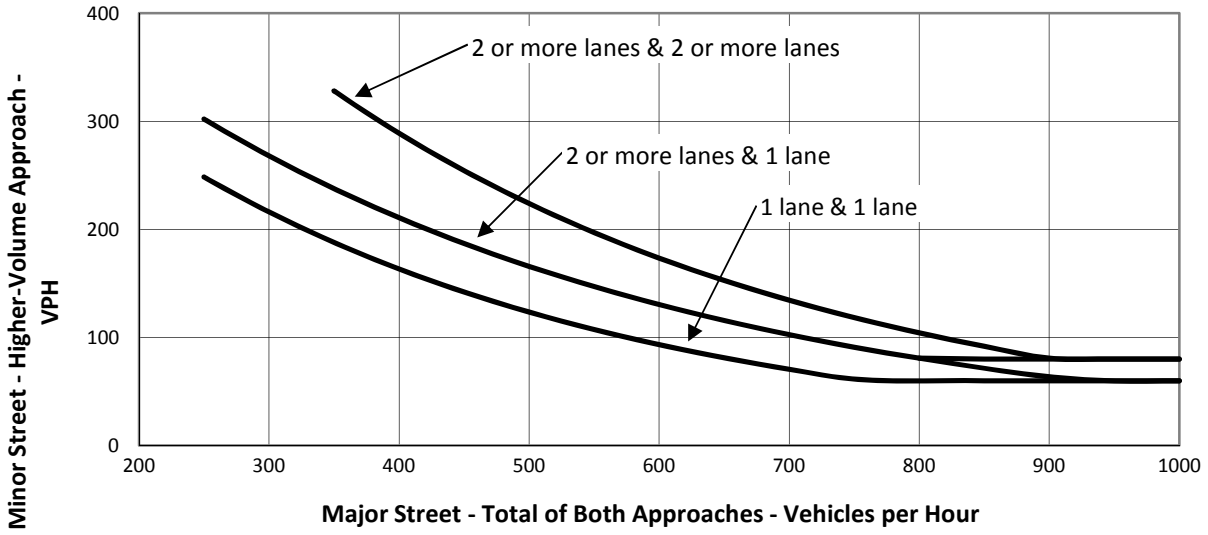
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	258
		Major Street (Approach 2):	223
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258	Minimum Major Street Volume:	330
Major Street (Approach 2):	223	Satisfied?	YES
Total Major Street Volume:	481		
		Minimum Minor Street Volume:	235
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

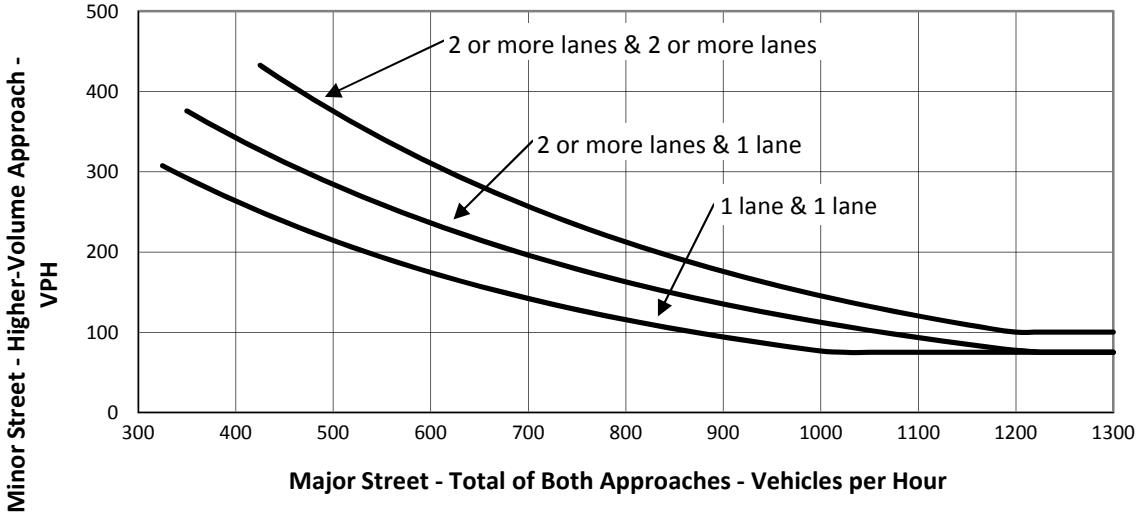
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	287
		Major Street (Approach 2):	248
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	287	Minimum Major Street Volume:	420
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	535		
		Minimum Minor Street Volume:	351
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

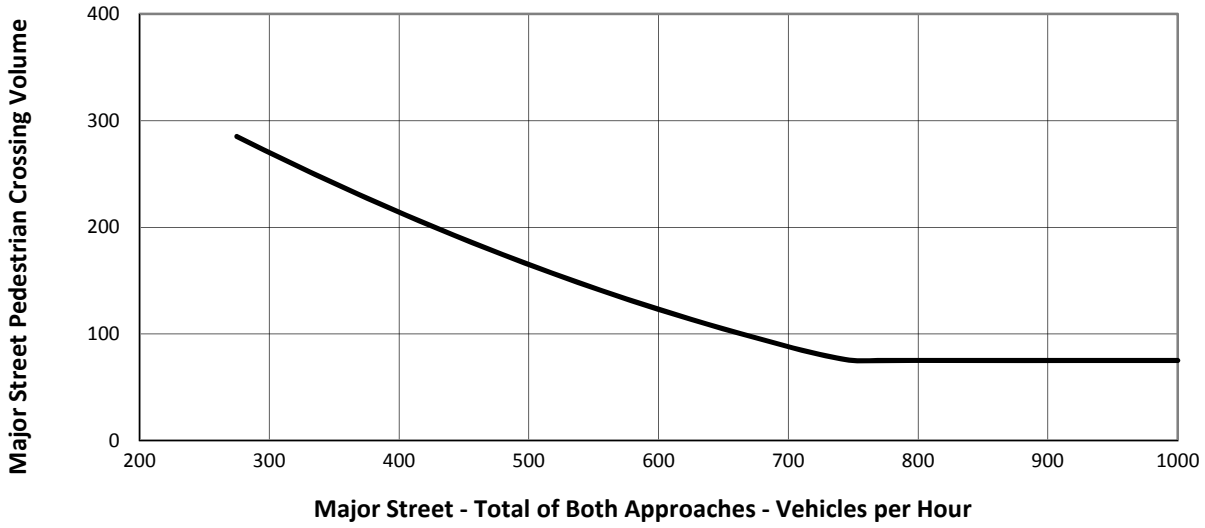
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	258
Major Street (Approach 2):	223
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258
Major Street (Approach 2):	223
Total Major Street Volume:	481
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	174
Satisfied?	NO
Warrant 4A Satisfied?	**NO**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

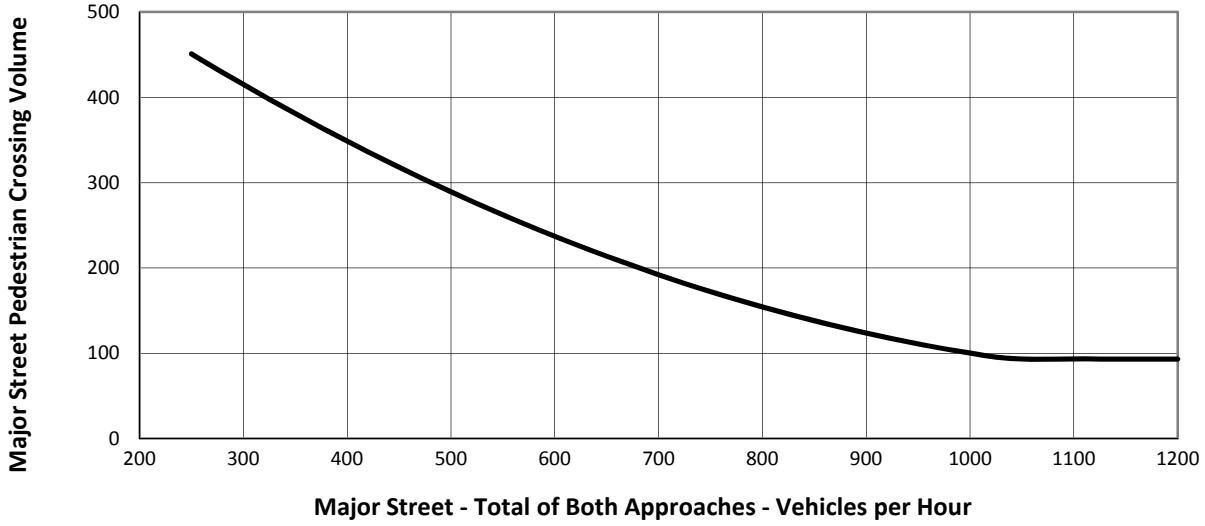
Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	287
		Major Street (Approach 2):	248
[a] Urban/Rural:	Rural		
		Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	287	Minimum Major Street Volume:	250
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	535		
		Minimum Pedestrian Volume:	270
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SAT-AM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	NO
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SAT-PM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	366	329	264
Major Street (Approach 2):	292	263	210
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	264
Major Street (Approach 2):	210
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

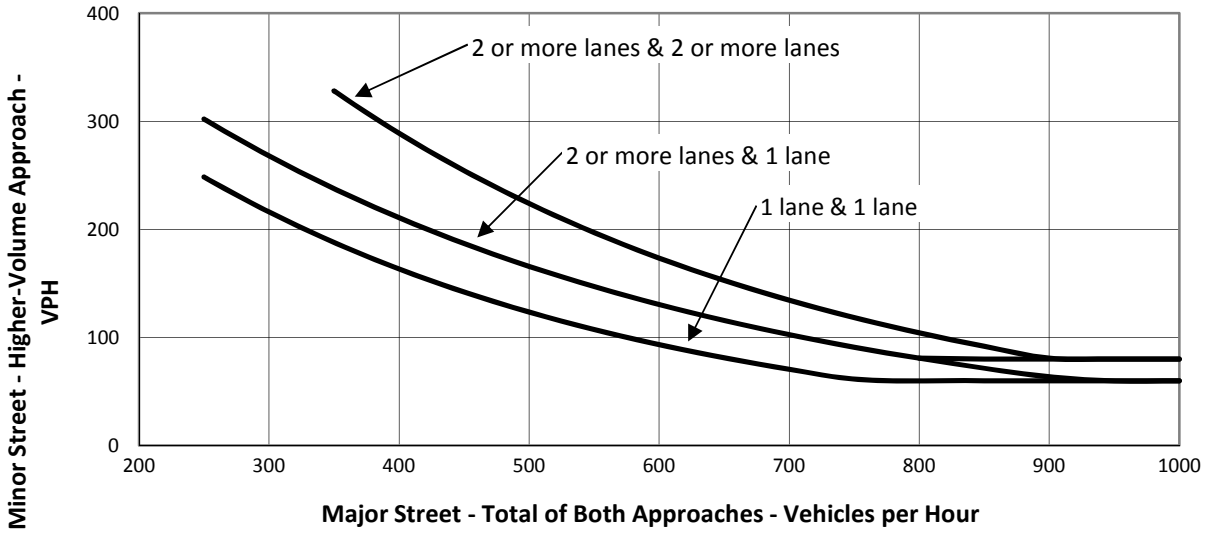
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	329
		Major Street (Approach 2):	263
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	330
Major Street (Approach 2):	263	Satisfied?	YES
Total Major Street Volume:	592		
		Minimum Minor Street Volume:	177
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

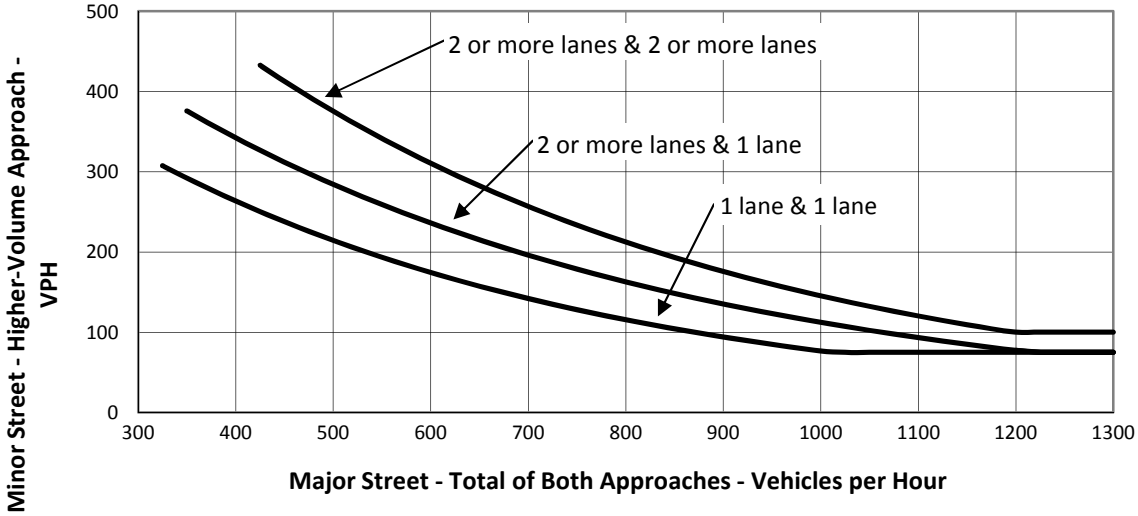
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	366
		Major Street (Approach 2):	292
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	366	Minimum Major Street Volume:	420
Major Street (Approach 2):	292	Satisfied?	YES
Total Major Street Volume:	658		
		Minimum Minor Street Volume:	278
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

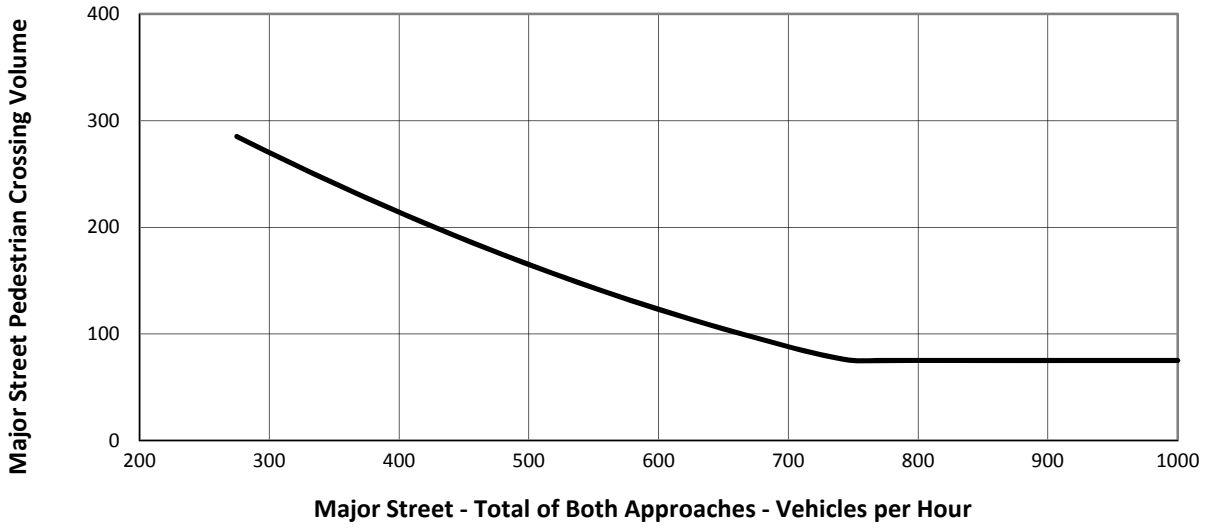
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	329
Major Street (Approach 2):	263
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	329
Major Street (Approach 2):	263
Total Major Street Volume:	592
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	126
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

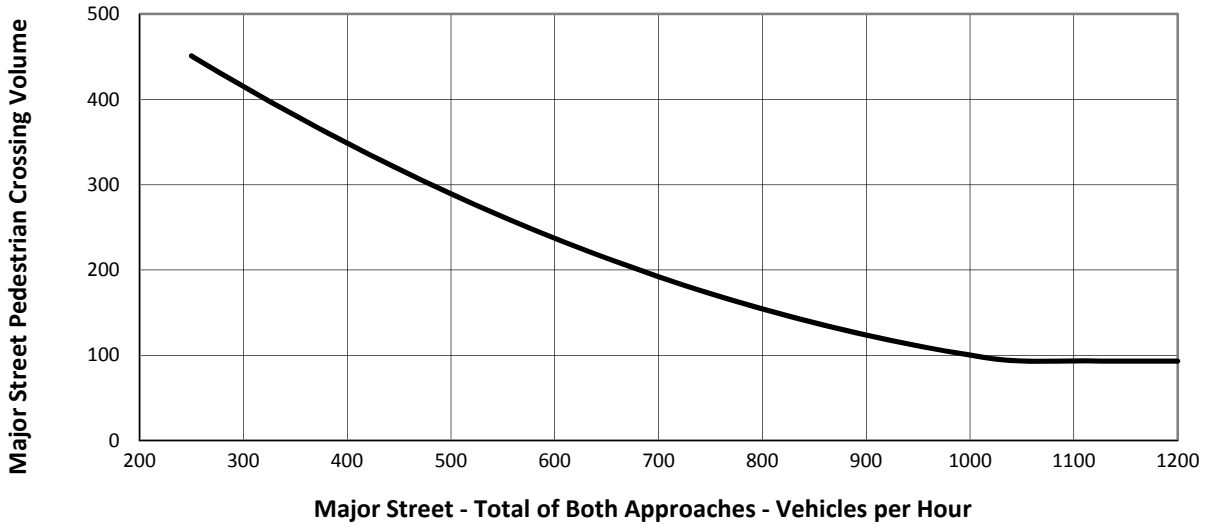
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	366
Major Street (Approach 2):	292
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	366
Major Street (Approach 2):	292
Total Major Street Volume:	658
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	210
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SAT-PM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SUN-AM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	295	268	201
Major Street (Approach 2):	272	248	185
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	201
Major Street (Approach 2):	185
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

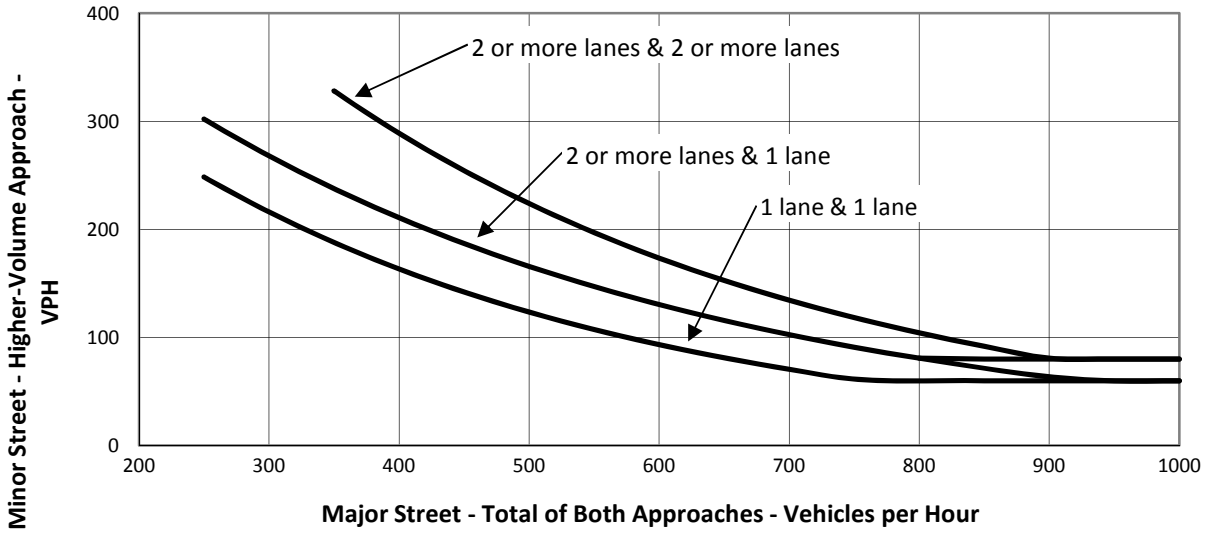
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	268
		Major Street (Approach 2):	248
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	268	Minimum Major Street Volume:	330
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	516		
		Minimum Minor Street Volume:	215
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

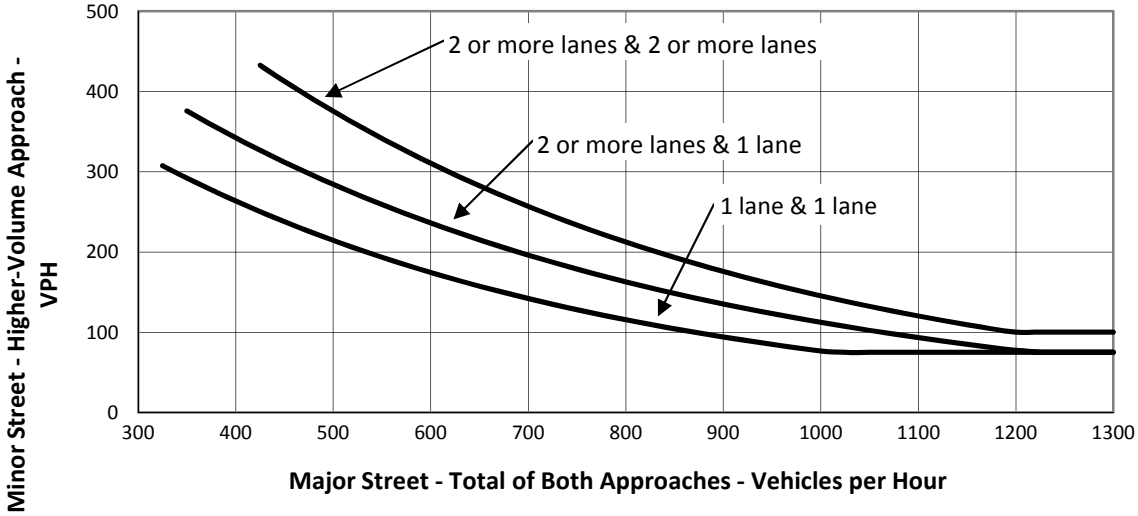
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	295
		Major Street (Approach 2):	272
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	295	Minimum Major Street Volume:	420
Major Street (Approach 2):	272	Satisfied?	YES
Total Major Street Volume:	567		
		Minimum Minor Street Volume:	331
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

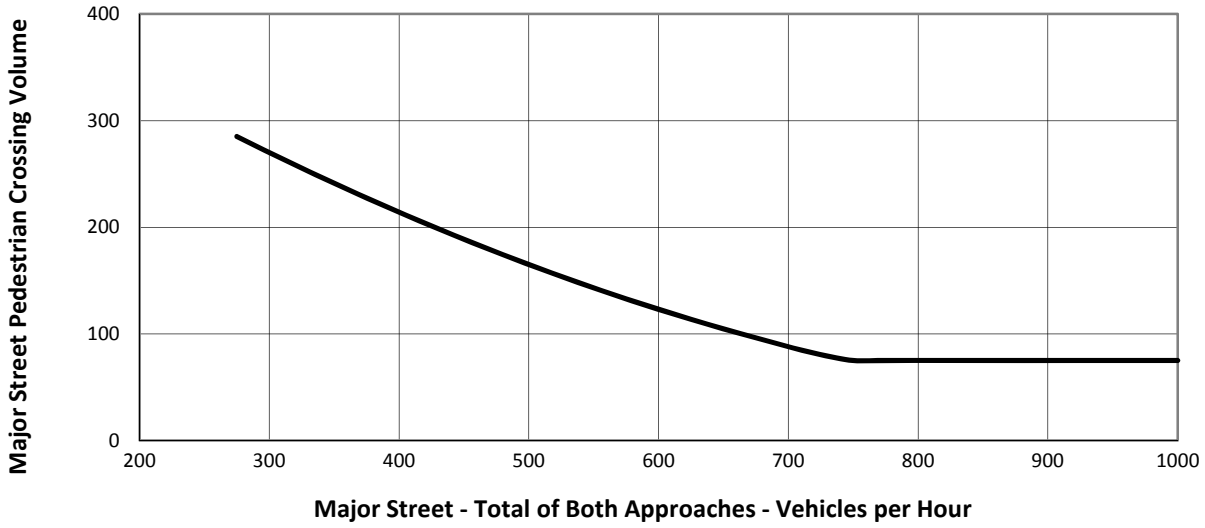
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	268
Major Street (Approach 2):	248
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	268
Major Street (Approach 2):	248
Total Major Street Volume:	516
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	158
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

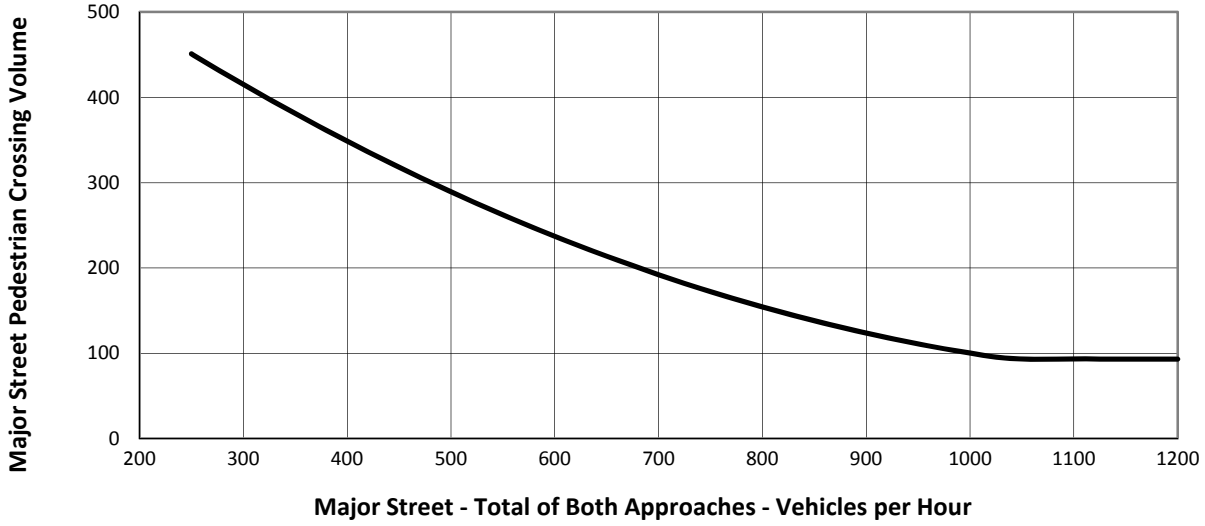
[a] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	295
Major Street (Approach 2):	272
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	295	Minimum Major Street Volume:	250
Major Street (Approach 2):	272	Satisfied?	YES
Total Major Street Volume:	567		
		Minimum Pedestrian Volume:	253
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SUN-AM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SUN-PM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	282	257	192
Major Street (Approach 2):	262	238	178
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	192
Major Street (Approach 2):	178
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **370** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **370** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

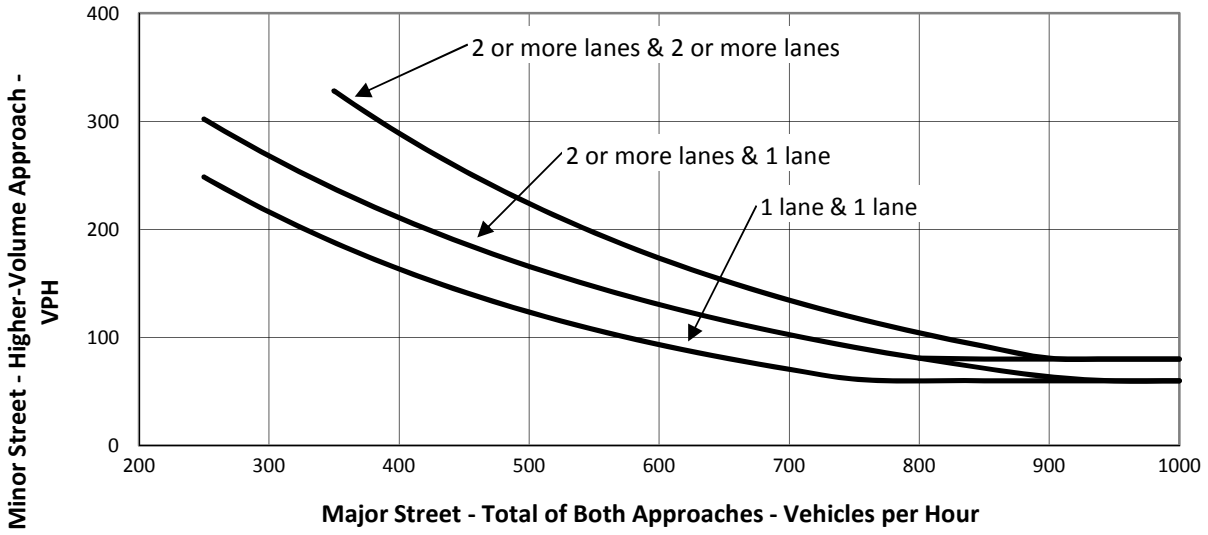
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	257
		Major Street (Approach 2):	238
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	257	Minimum Major Street Volume:	330
Major Street (Approach 2):	238	Satisfied?	YES
Total Major Street Volume:	495		
		Minimum Minor Street Volume:	227
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

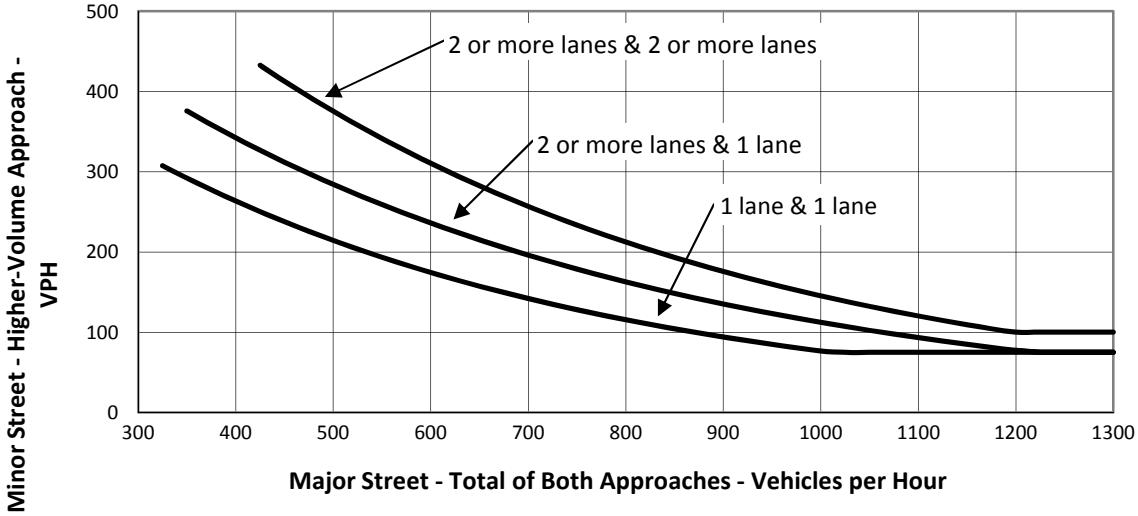
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	282
		Major Street (Approach 2):	262
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	282	Minimum Major Street Volume:	420
Major Street (Approach 2):	262	Satisfied?	YES
Total Major Street Volume:	544		
		Minimum Minor Street Volume:	345
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

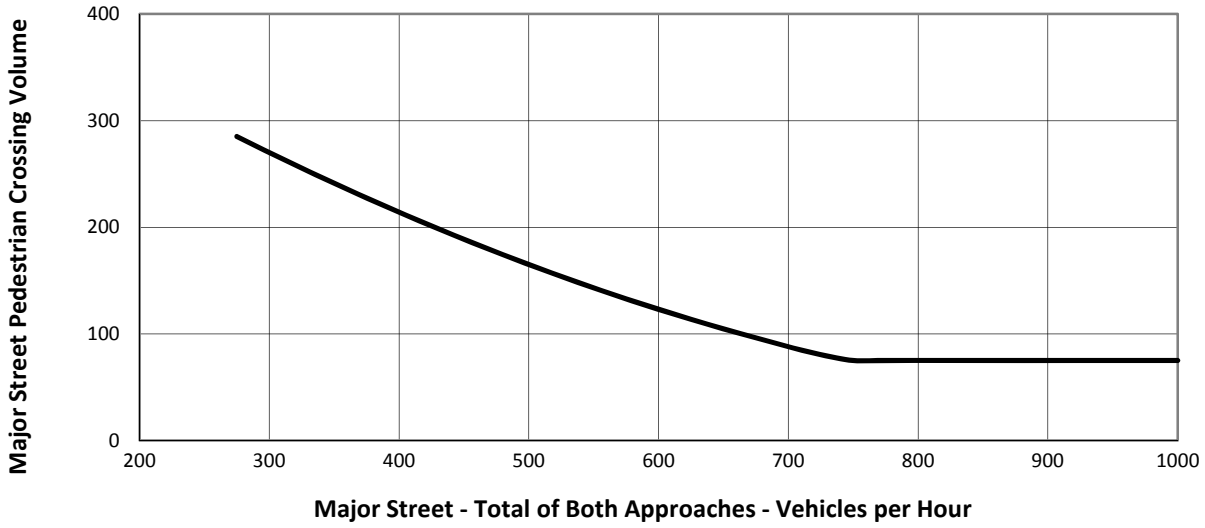
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	257
Major Street (Approach 2):	238
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	257
Major Street (Approach 2):	238
Total Major Street Volume:	495
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	167
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

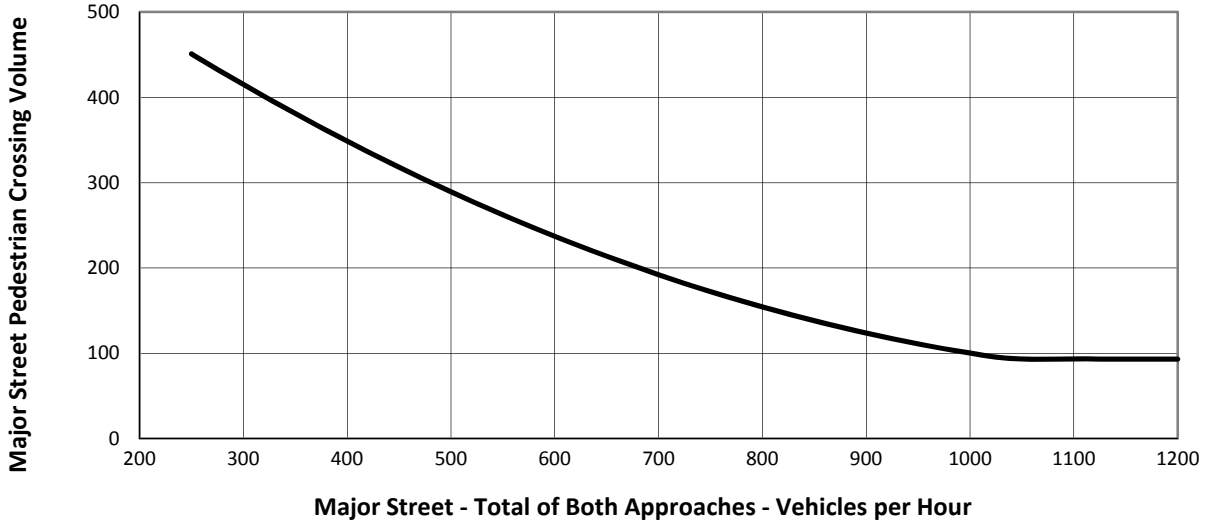
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	282
Major Street (Approach 2):	262
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	282
Major Street (Approach 2):	262
Total Major Street Volume:	544
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	265
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SUN-PM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SAT-AM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	289	260	208
Major Street (Approach 2):	250	225	180
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	208
Major Street (Approach 2):	180
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

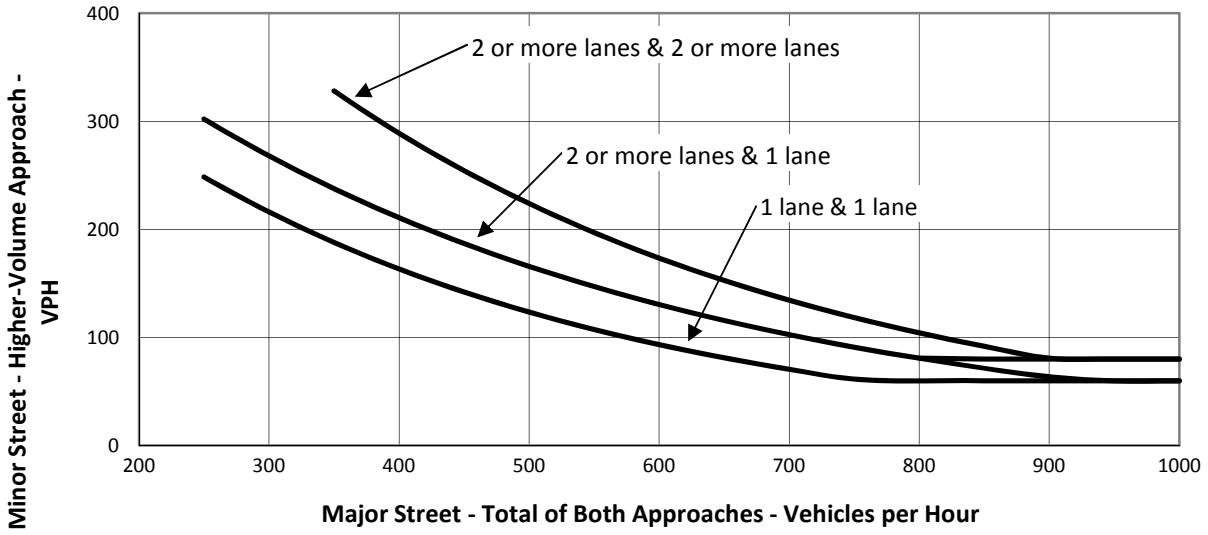
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	260
		Major Street (Approach 2):	225
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	260	Minimum Major Street Volume:	330
Major Street (Approach 2):	225	Satisfied?	YES
Total Major Street Volume:	485		
		Minimum Minor Street Volume:	233
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

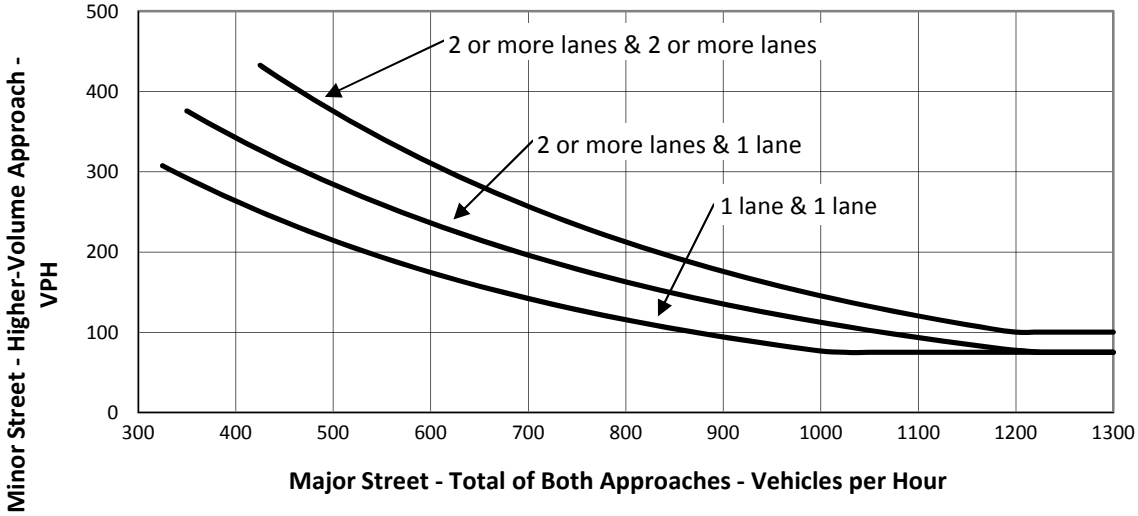
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	289
		Major Street (Approach 2):	250
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	289	Minimum Major Street Volume:	420
Major Street (Approach 2):	250	Satisfied?	YES
Total Major Street Volume:	539		
		Minimum Minor Street Volume:	349
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

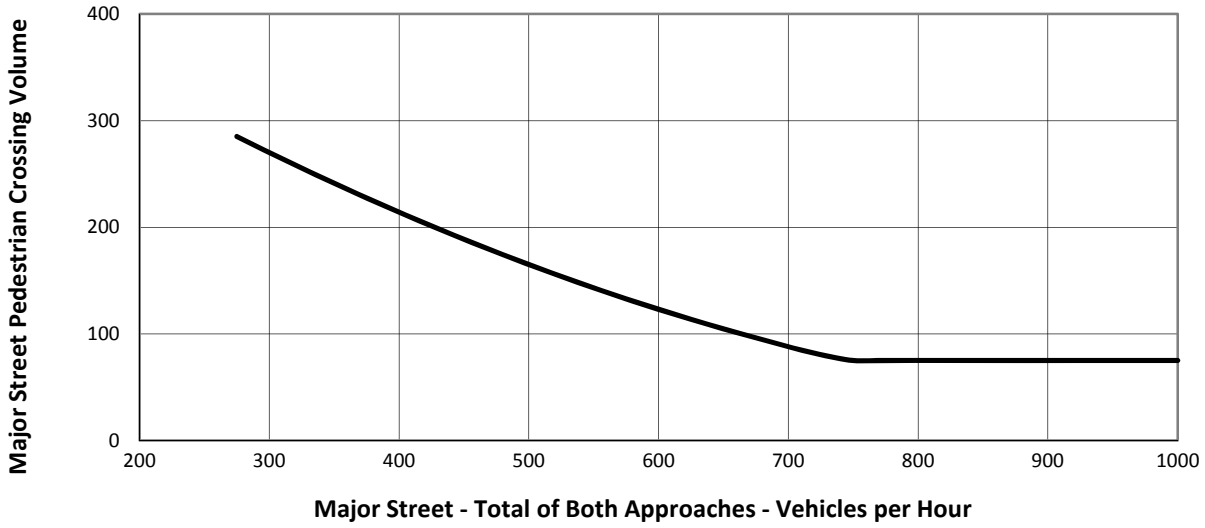
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	260
Major Street (Approach 2):	225
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	260
Major Street (Approach 2):	225
Total Major Street Volume:	485
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	172
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

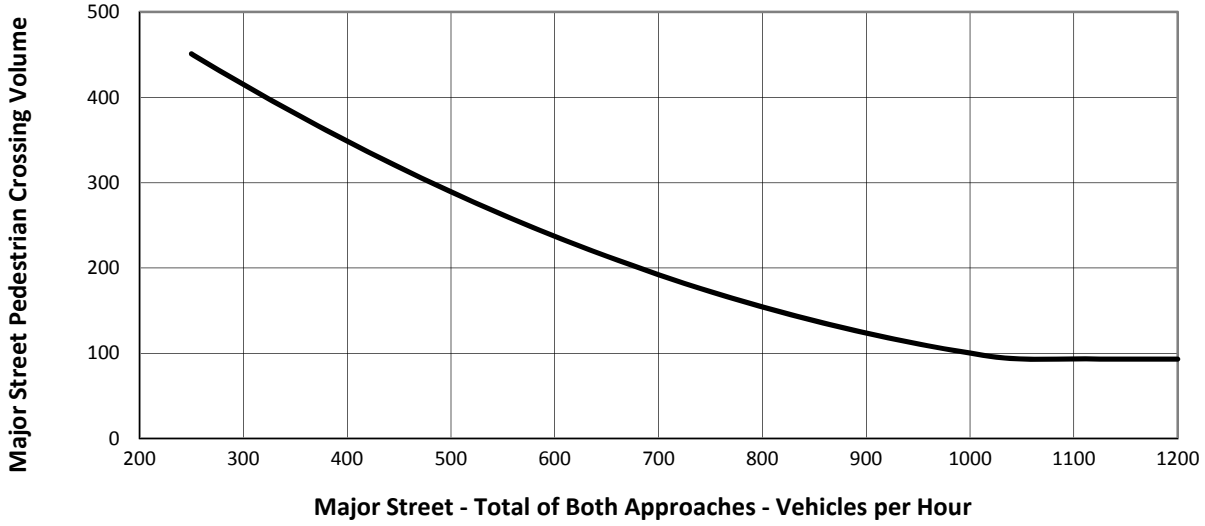
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	289
Major Street (Approach 2):	250
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	289
Major Street (Approach 2):	250
Total Major Street Volume:	539
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	268
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SAT-AM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SAT-PM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	369	332	266
Major Street (Approach 2):	295	266	212
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	266
Major Street (Approach 2):	212
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **478** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **478** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

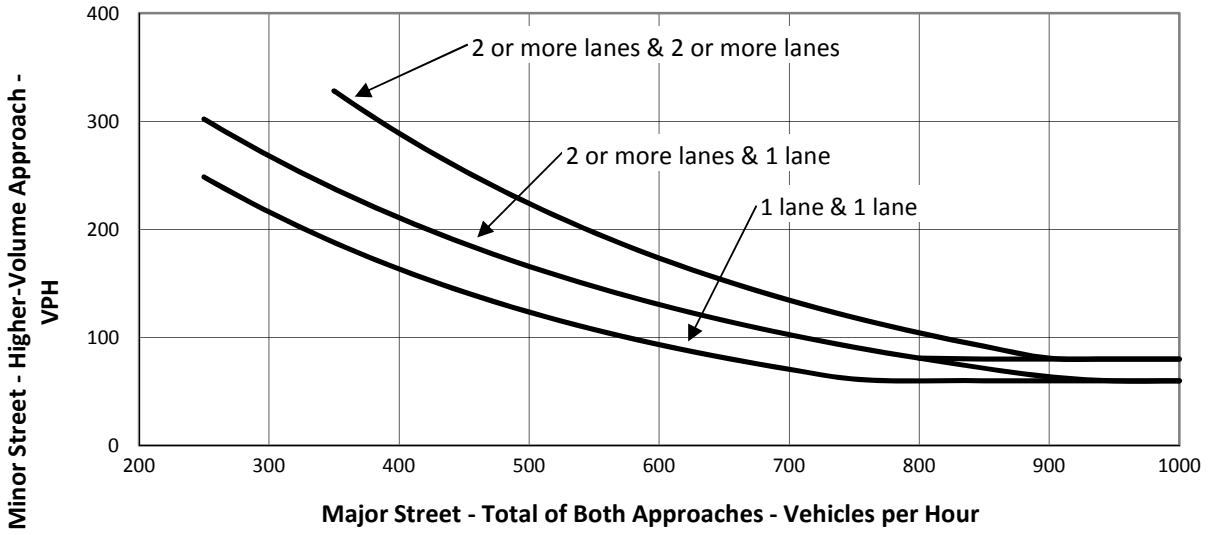
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	332
		Major Street (Approach 2):	266
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	332	Minimum Major Street Volume:	330
Major Street (Approach 2):	266	Satisfied?	YES
Total Major Street Volume:	598		
		Minimum Minor Street Volume:	174
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

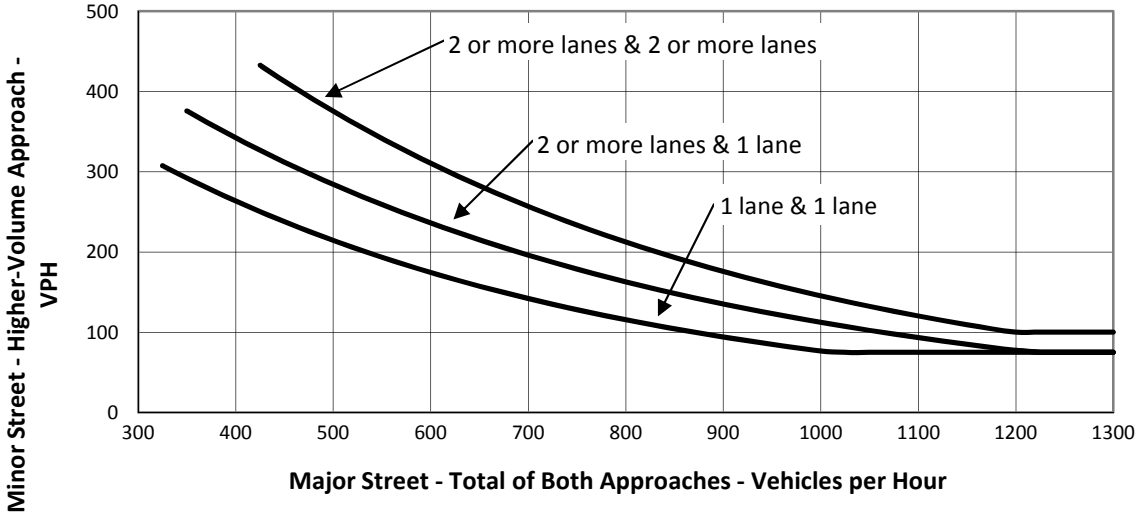
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	369
		Major Street (Approach 2):	295
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	369	Minimum Major Street Volume:	420
Major Street (Approach 2):	295	Satisfied?	YES
Total Major Street Volume:	664		
		Minimum Minor Street Volume:	275
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

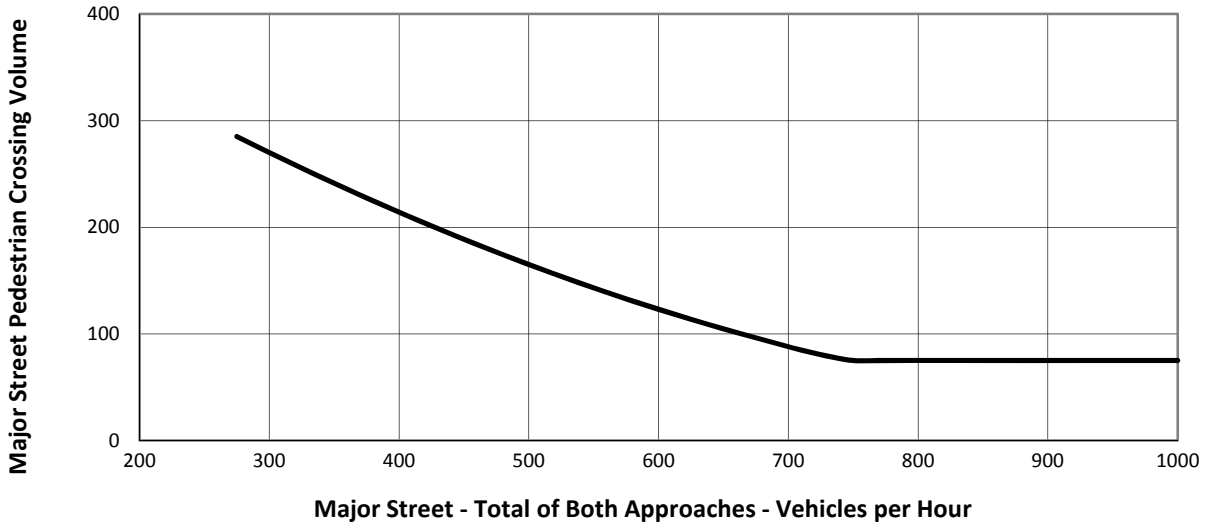
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	332
Major Street (Approach 2):	266
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	332
Major Street (Approach 2):	266
Total Major Street Volume:	598
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	124
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

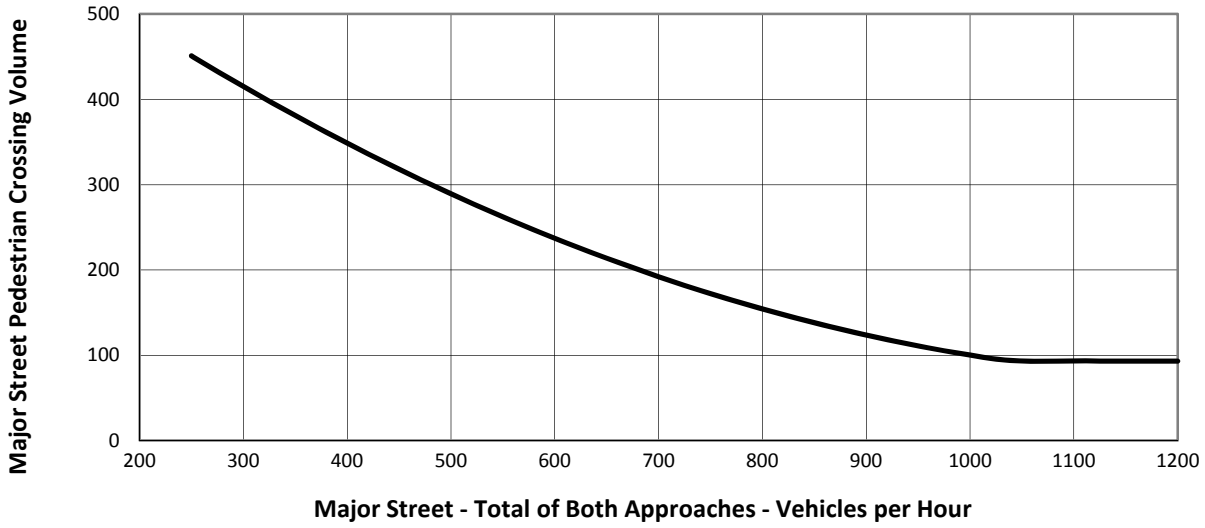
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	369
Major Street (Approach 2):	295
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	369
Major Street (Approach 2):	295
Total Major Street Volume:	664
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	207
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SAT-PM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SUN-AM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	297	270	202
Major Street (Approach 2):	274	249	186
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	202
Major Street (Approach 2):	186
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

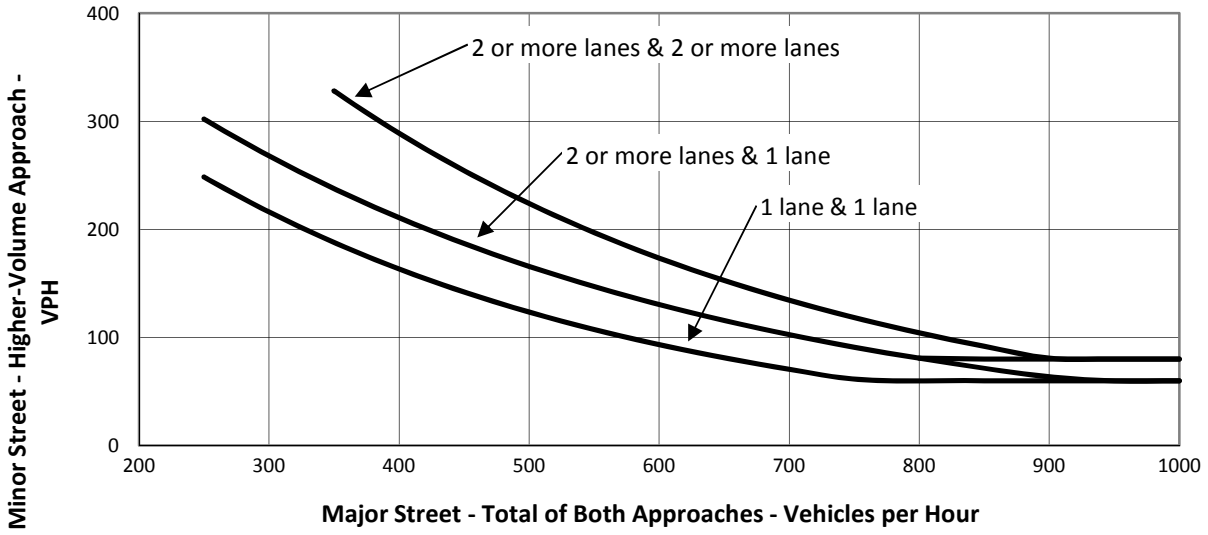
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	270
		Major Street (Approach 2):	249
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	270	Minimum Major Street Volume:	330
Major Street (Approach 2):	249	Satisfied?	YES
Total Major Street Volume:	519		
		Minimum Minor Street Volume:	213
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

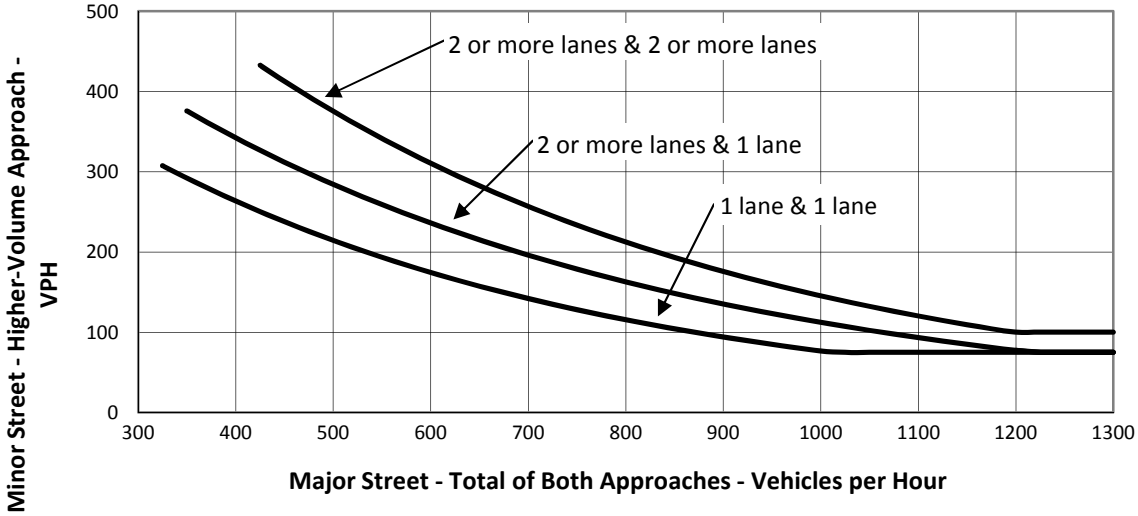
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	297
		Major Street (Approach 2):	274
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	297	Minimum Major Street Volume:	420
Major Street (Approach 2):	274	Satisfied?	YES
Total Major Street Volume:	571		
		Minimum Minor Street Volume:	328
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

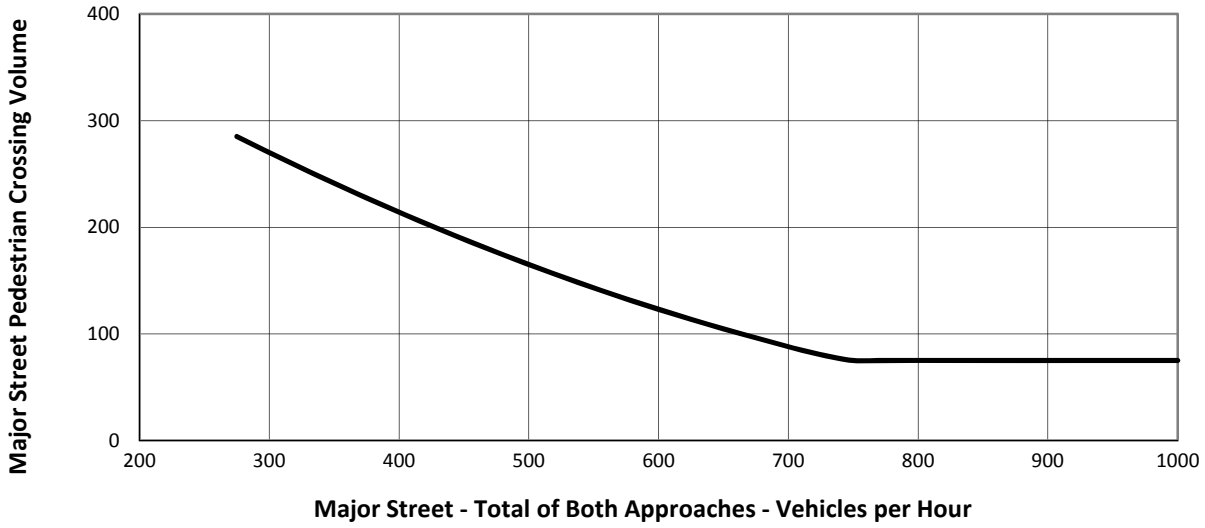
Major Street (Approach 1):	270
Major Street (Approach 2):	249
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	270
Major Street (Approach 2):	249
Total Major Street Volume:	519
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	156
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

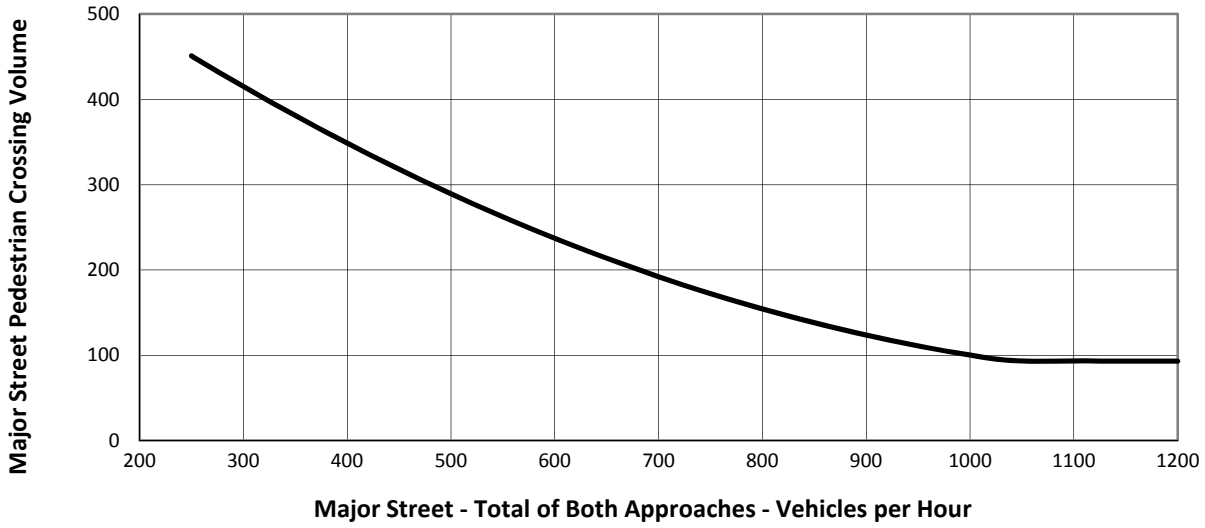
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	297
Major Street (Approach 2):	274
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	297
Major Street (Approach 2):	274
Total Major Street Volume:	571
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	251
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SUN-AM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SUN-PM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	284	258	193
Major Street (Approach 2):	264	240	180
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	193
Major Street (Approach 2):	180
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **373** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **373** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

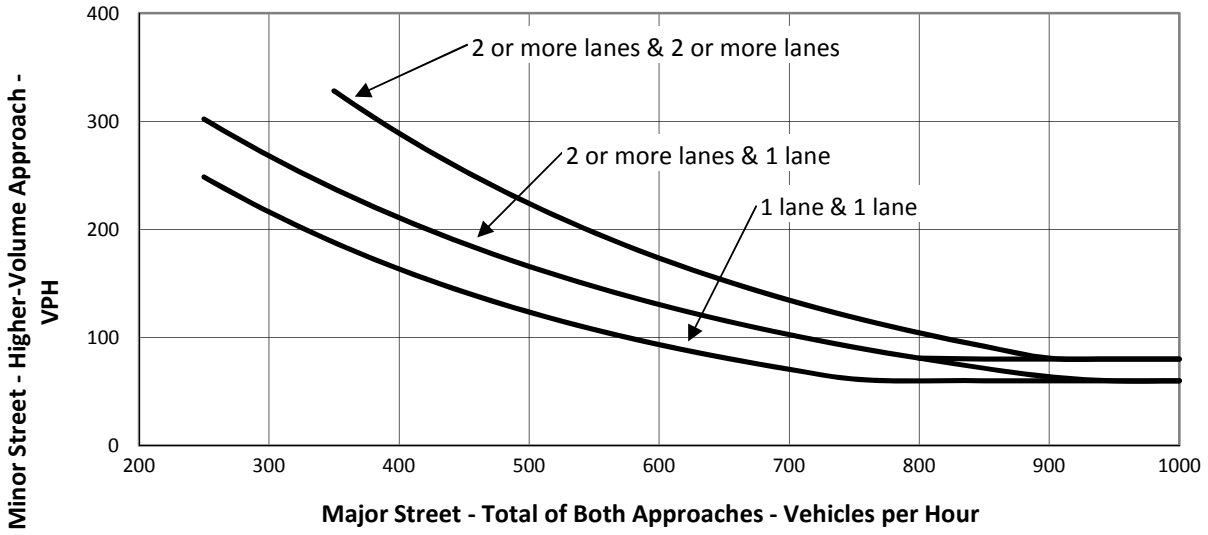
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	258
		Major Street (Approach 2):	240
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258	Minimum Major Street Volume:	330
Major Street (Approach 2):	240	Satisfied?	YES
Total Major Street Volume:	498		
		Minimum Minor Street Volume:	225
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

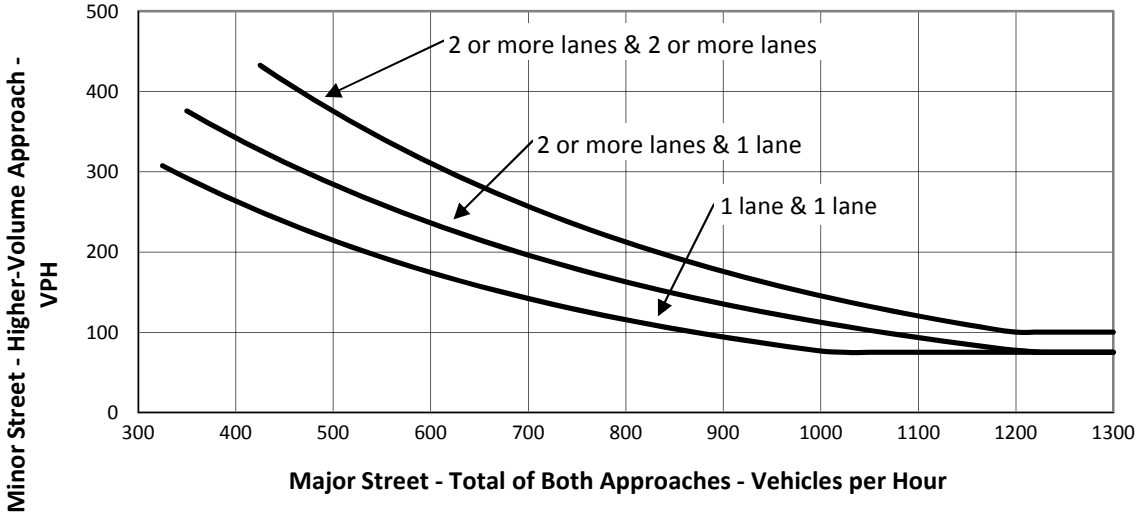
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	284
		Major Street (Approach 2):	264
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	284	Minimum Major Street Volume:	420
Major Street (Approach 2):	264	Satisfied?	YES
Total Major Street Volume:	548		
		Minimum Minor Street Volume:	343
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

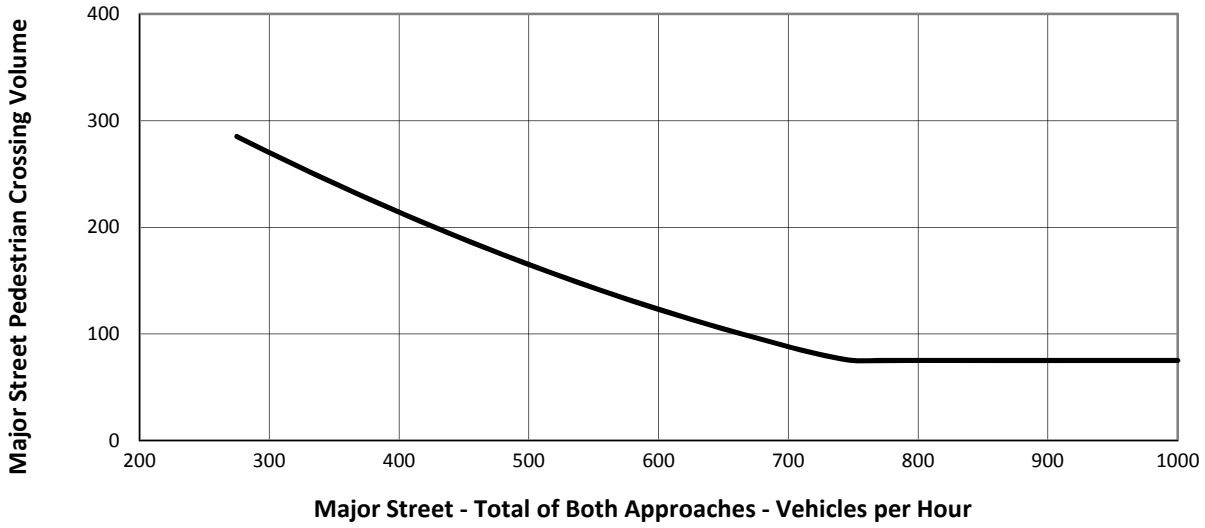
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	258
Major Street (Approach 2):	240
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258
Major Street (Approach 2):	240
Total Major Street Volume:	498
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	166
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

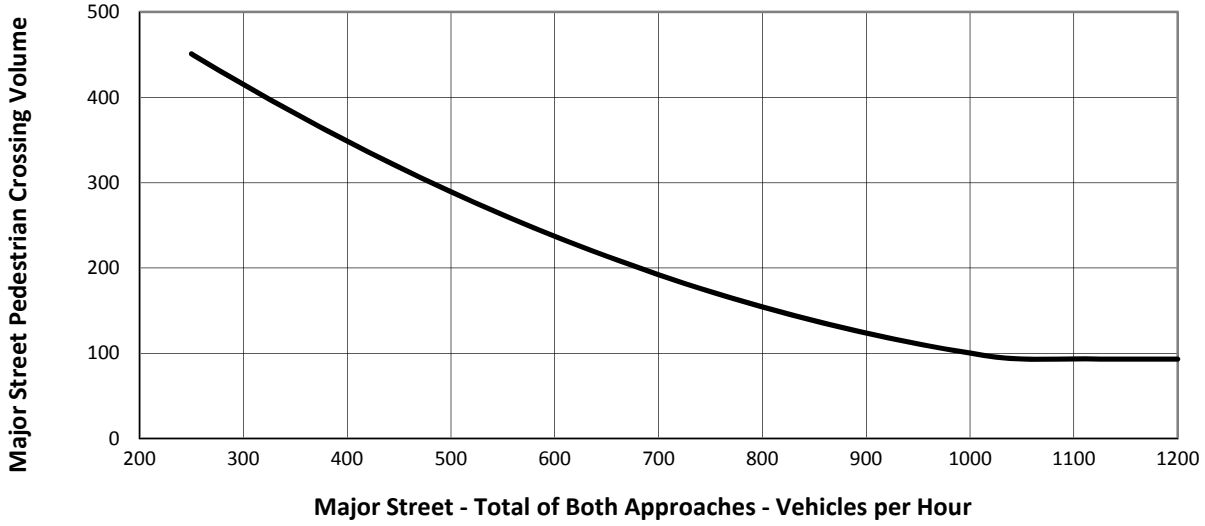
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	284
Major Street (Approach 2):	264
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	284
Major Street (Approach 2):	264
Total Major Street Volume:	548
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	263
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SUN-PM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SAT-AM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	332	299	239
Major Street (Approach 2):	281	253	202
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	239
Major Street (Approach 2):	202
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **441** Minor: **45**
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **441** Minor: **45**
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

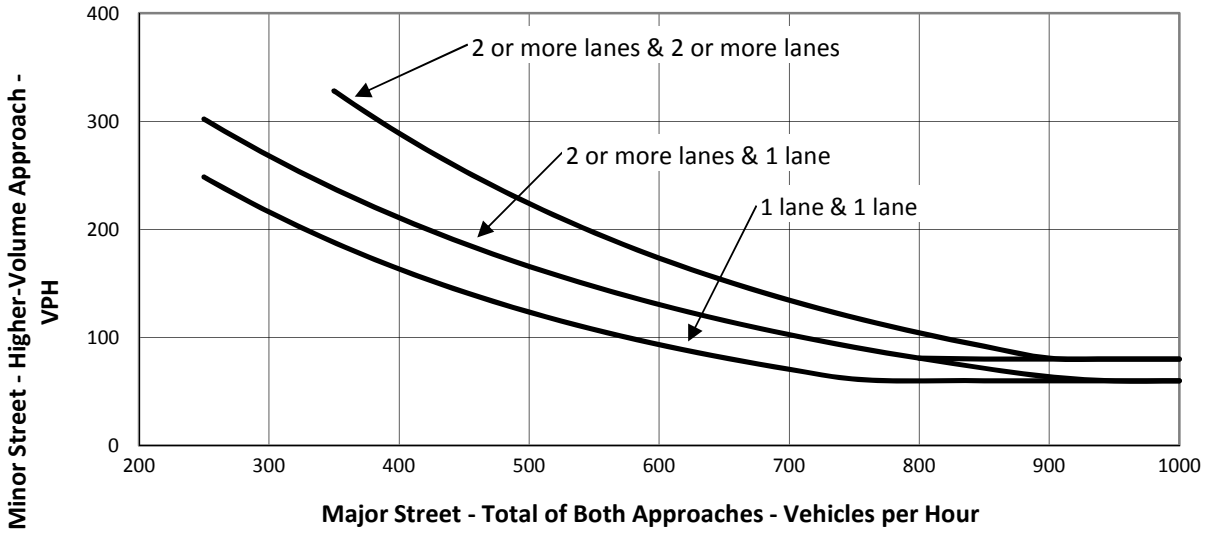
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	299
		Major Street (Approach 2):	253
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299	Minimum Major Street Volume:	330
Major Street (Approach 2):	253	Satisfied?	YES
Total Major Street Volume:	552		
		Minimum Minor Street Volume:	196
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

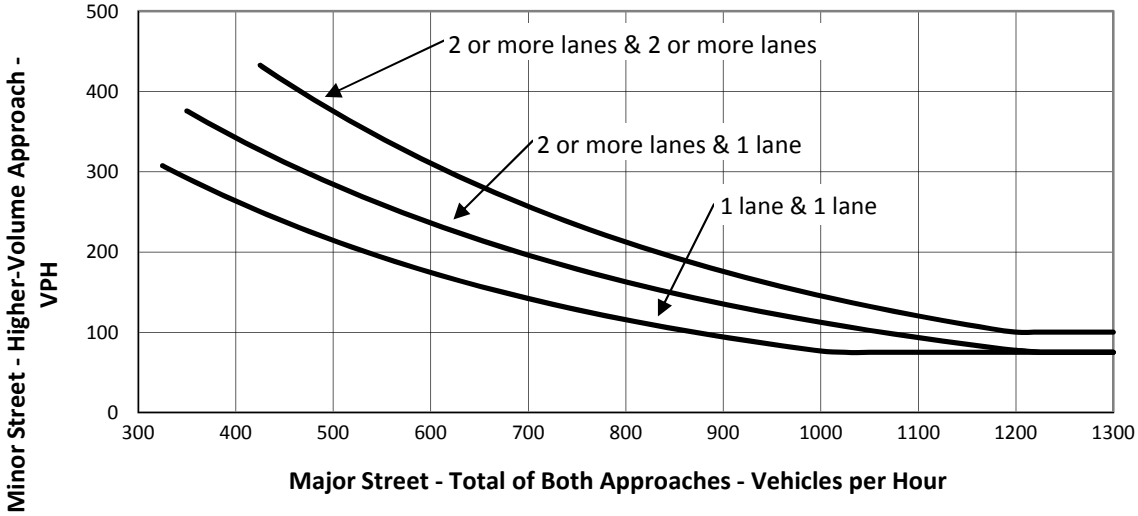
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	332
		Major Street (Approach 2):	281
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	332	Minimum Major Street Volume:	420
Major Street (Approach 2):	281	Satisfied?	YES
Total Major Street Volume:	613		
		Minimum Minor Street Volume:	303
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

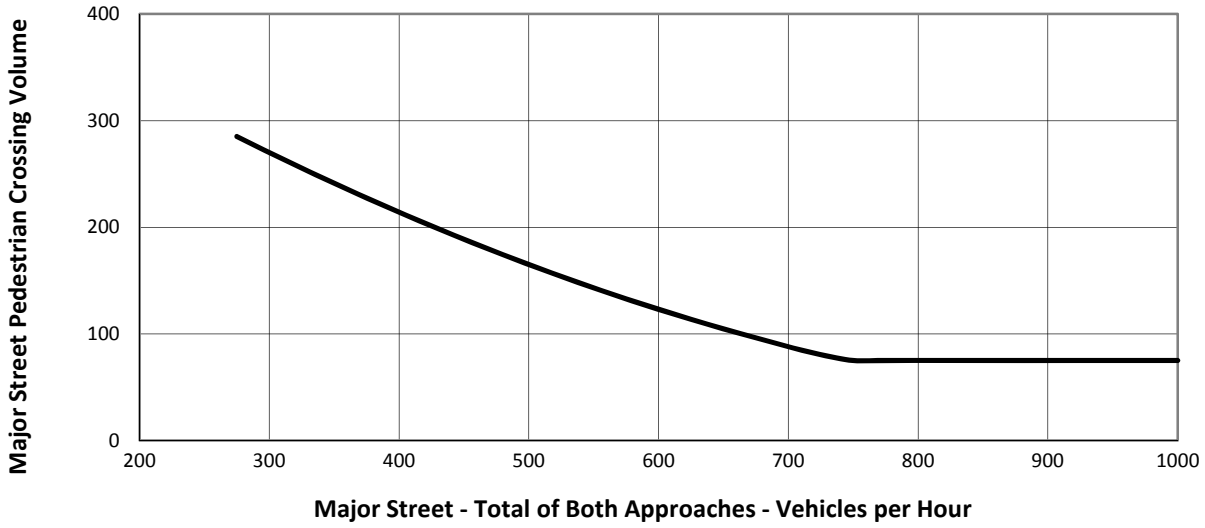
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	299
Major Street (Approach 2):	253
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299
Major Street (Approach 2):	253
Total Major Street Volume:	552
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	142
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

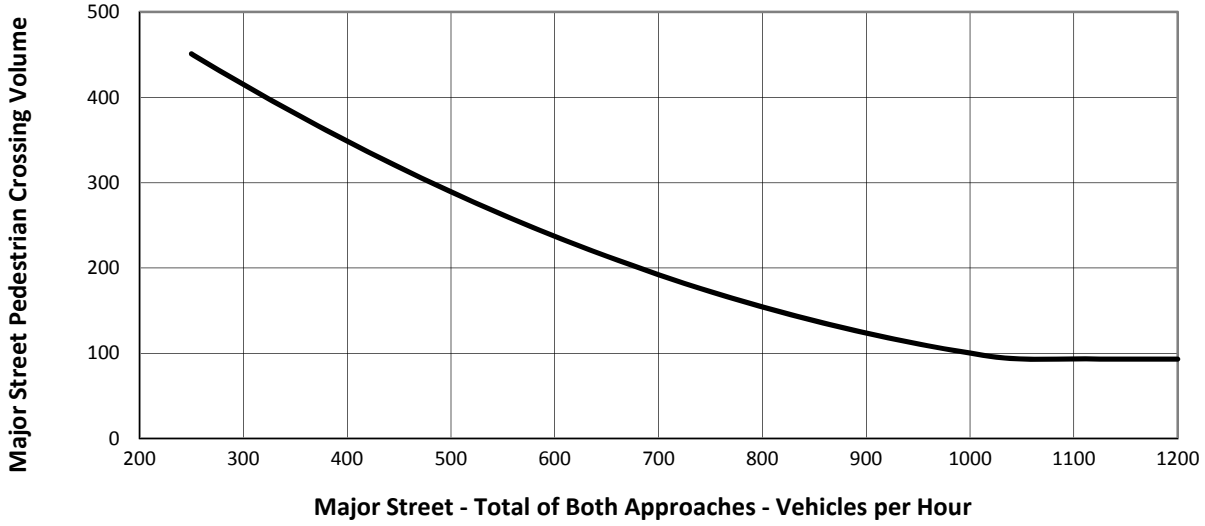
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	332
Major Street (Approach 2):	281
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	332
Major Street (Approach 2):	281
Total Major Street Volume:	613
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	231
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SAT-AM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SAT-PM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	430	387	310
Major Street (Approach 2):	343	309	247
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	310
Major Street (Approach 2):	247
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **557** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **557** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

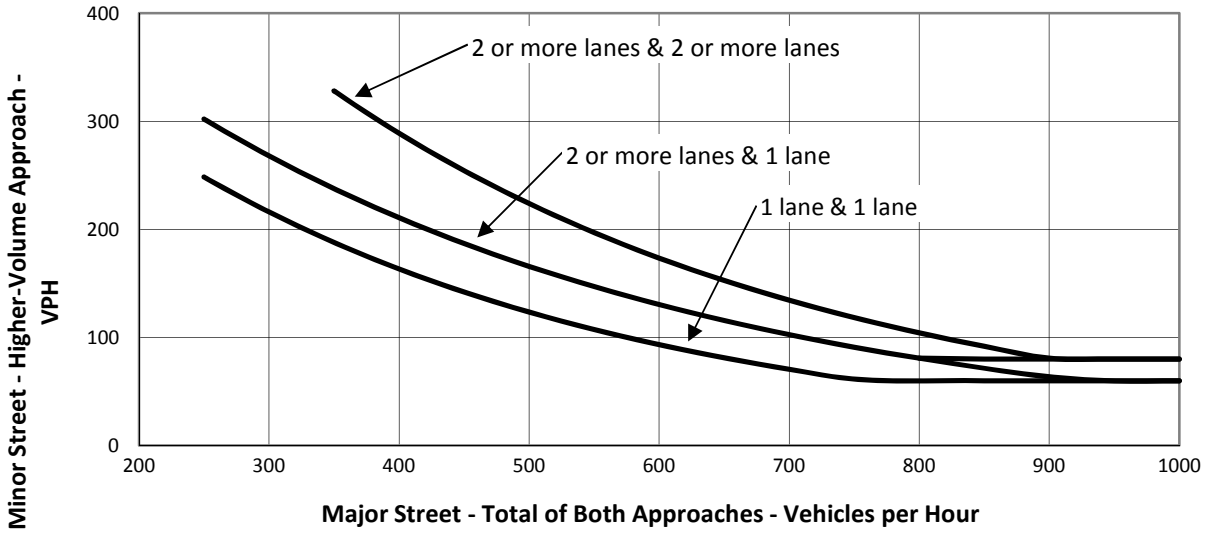
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	387
		Major Street (Approach 2):	309
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	387	Minimum Major Street Volume:	330
Major Street (Approach 2):	309	Satisfied?	YES
Total Major Street Volume:	696		
		Minimum Minor Street Volume:	136
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

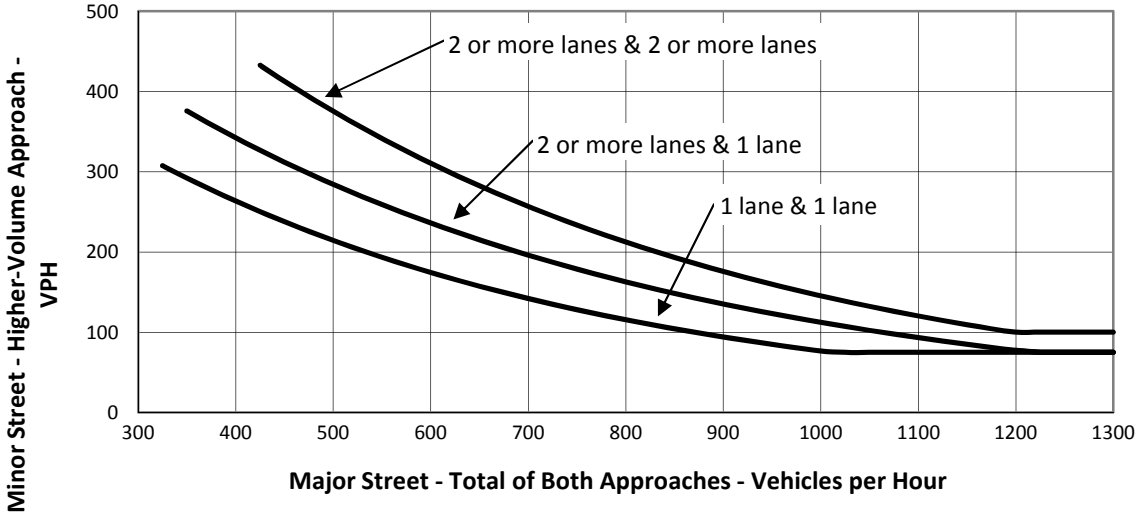
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	430
		Major Street (Approach 2):	343
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	430	Minimum Major Street Volume:	420
Major Street (Approach 2):	343	Satisfied?	YES
Total Major Street Volume:	773		
		Minimum Minor Street Volume:	224
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

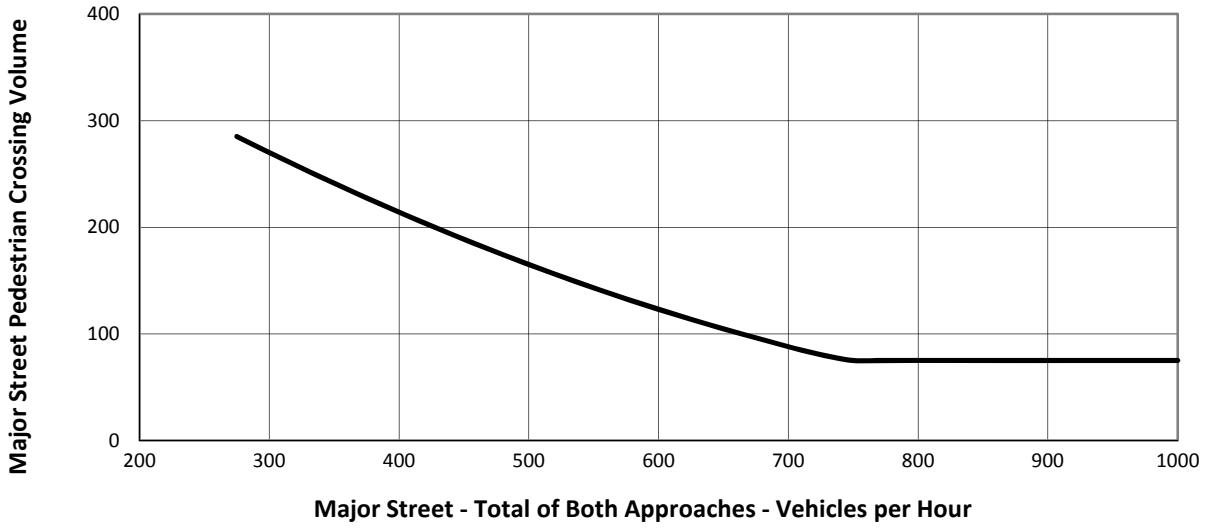
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	387
Major Street (Approach 2):	309
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	387
Major Street (Approach 2):	309
Total Major Street Volume:	696
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	89
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

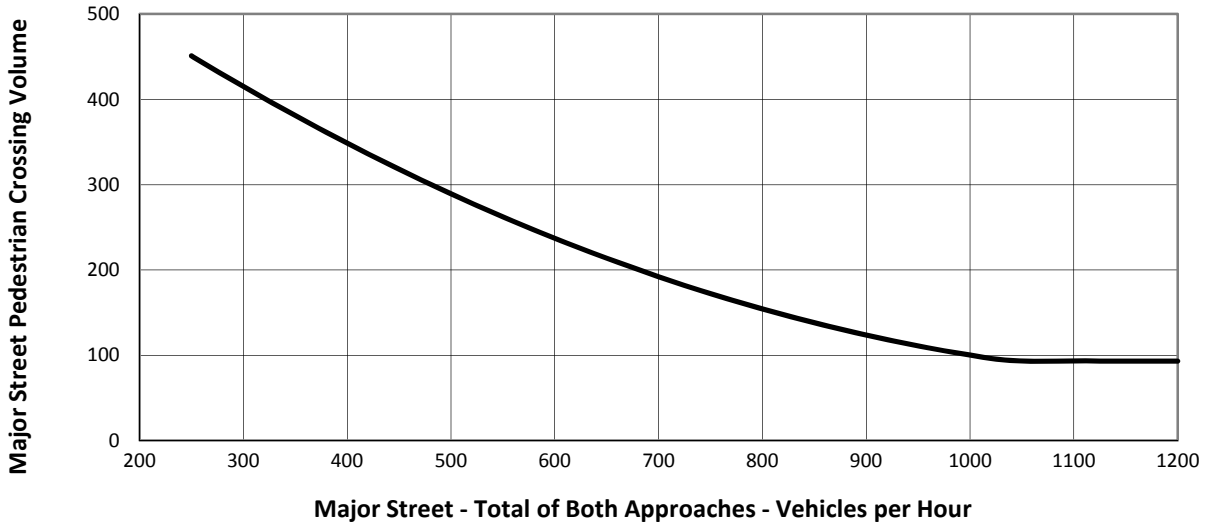
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	430
Major Street (Approach 2):	343
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	430
Major Street (Approach 2):	343
Total Major Street Volume:	773
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	164
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SAT-PM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SUN-AM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	342	311	233
Major Street (Approach 2):	310	282	211
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	233
Major Street (Approach 2):	211
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **444** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **444** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

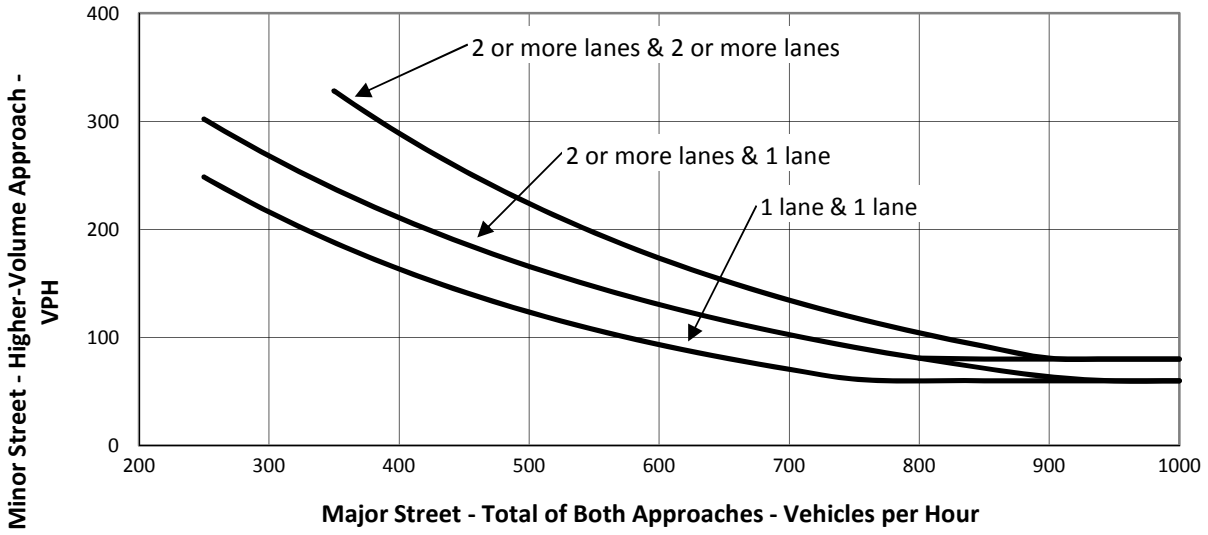
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	311
		Major Street (Approach 2):	282
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	311	Minimum Major Street Volume:	330
Major Street (Approach 2):	282	Satisfied?	YES
Total Major Street Volume:	593		
		Minimum Minor Street Volume:	177
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

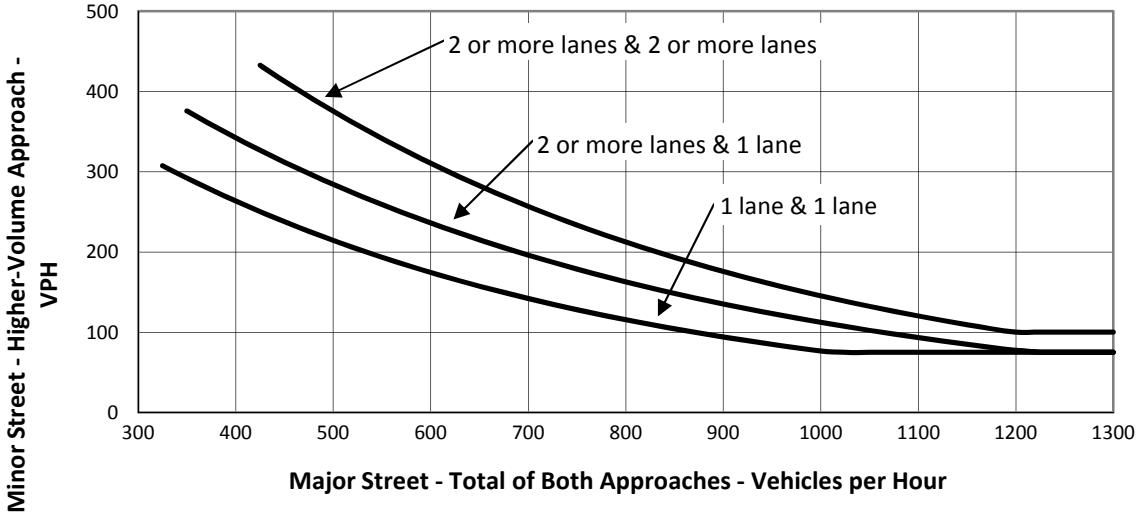
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	342
		Major Street (Approach 2):	310
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	342	Minimum Major Street Volume:	420
Major Street (Approach 2):	310	Satisfied?	YES
Total Major Street Volume:	652		
		Minimum Minor Street Volume:	281
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

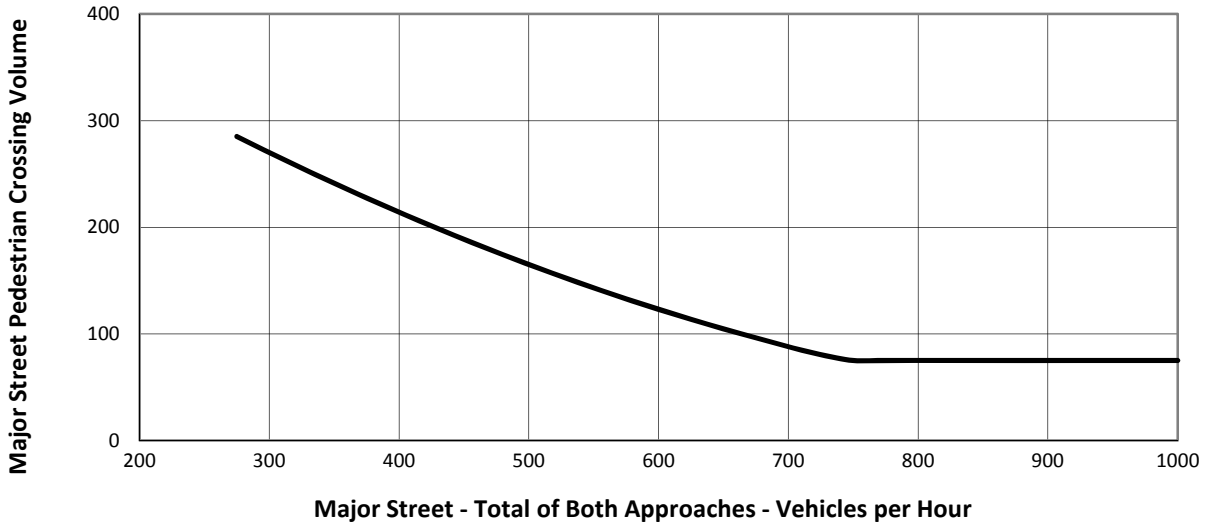
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	311
Major Street (Approach 2):	282
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	311
Major Street (Approach 2):	282
Total Major Street Volume:	593
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	126
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

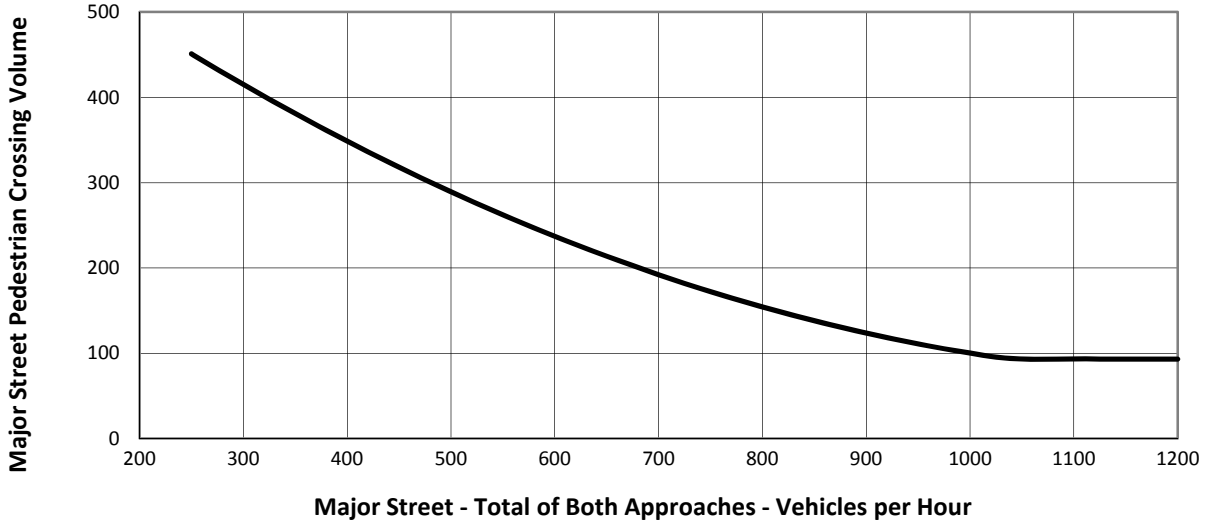
Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	342
		Major Street (Approach 2):	310
[a] Urban/Rural:	Rural		
		Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	342	Minimum Major Street Volume:	250
Major Street (Approach 2):	310	Satisfied?	YES
Total Major Street Volume:	652		
		Minimum Pedestrian Volume:	213
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SUN-AM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SUN-PM)- Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	329	299	224
Major Street (Approach 2):	307	279	209
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM)- YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	224
Major Street (Approach 2):	209
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **433** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **433** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM)- YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

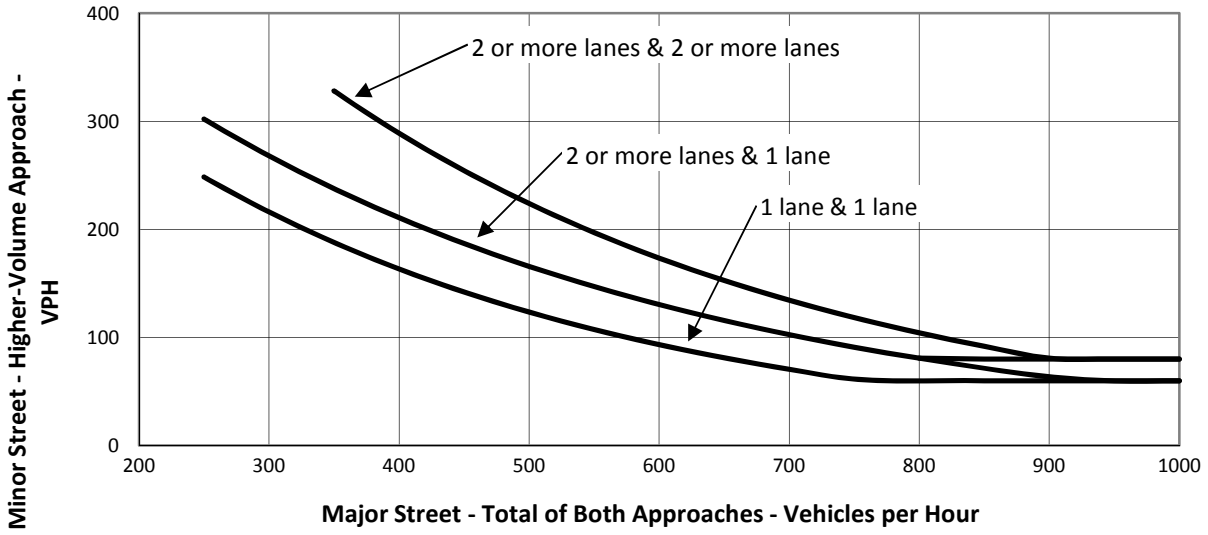
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	299
		Major Street (Approach 2):	279
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299	Minimum Major Street Volume:	330
Major Street (Approach 2):	279	Satisfied?	YES
Total Major Street Volume:	578		
		Minimum Minor Street Volume:	184
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

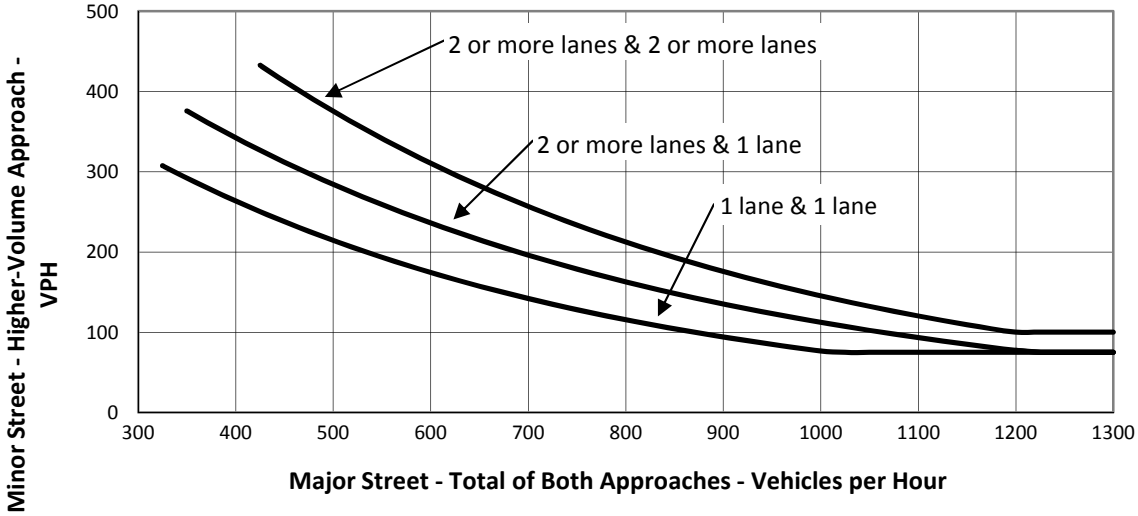
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	329
		Major Street (Approach 2):	307
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	420
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	636		
		Minimum Minor Street Volume:	290
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

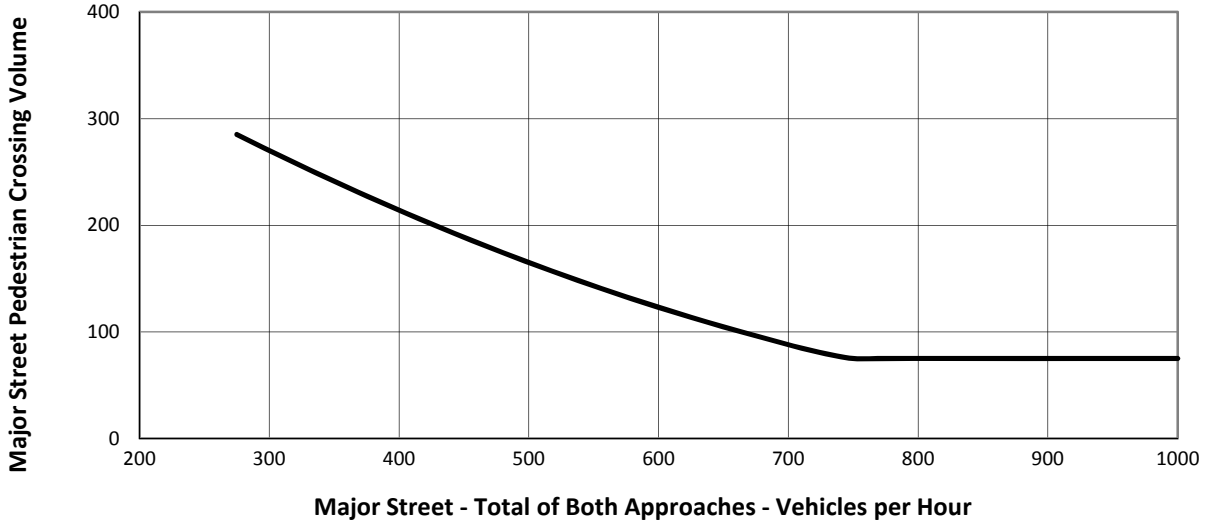
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	299
Major Street (Approach 2):	279
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299
Major Street (Approach 2):	279
Total Major Street Volume:	578
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	132
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

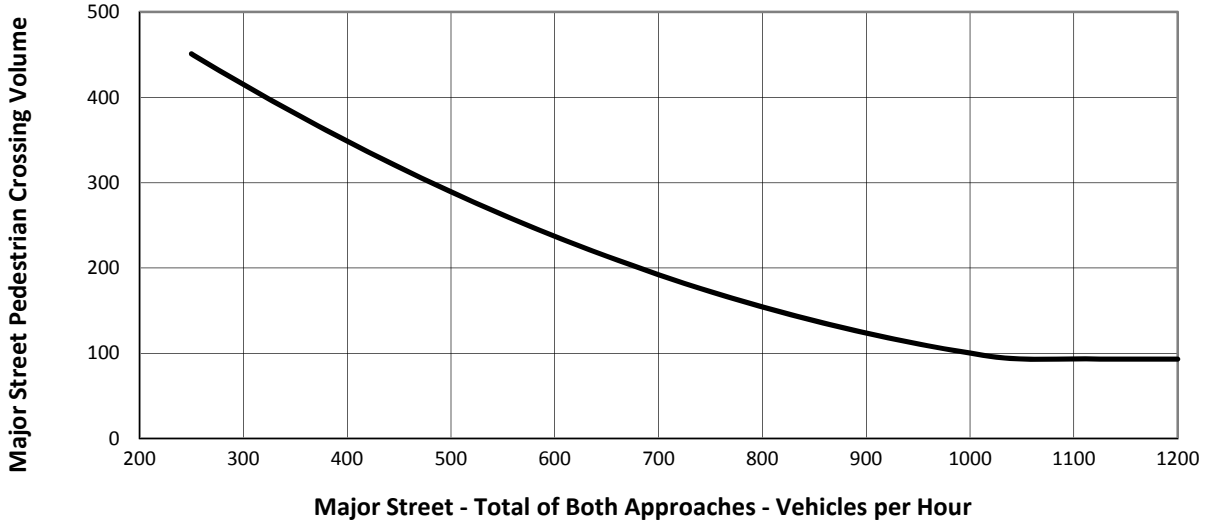
[a] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	329
Major Street (Approach 2):	307
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	250
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	636		
		Minimum Pedestrian Volume:	220
Pedestrian Crossing Volume:	234	Satisfied?	YES
		Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SUN-PM)- Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-AM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	221	199	159
Major Street (Approach 2):	177	159	127
[b] Major Street Left-Turns:	17	15	12
Minor Street (Higher Volume):	48	43	35

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	159
Major Street (Approach 2):	127
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	35

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **286** Minor: **47**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **286** Minor: **47**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

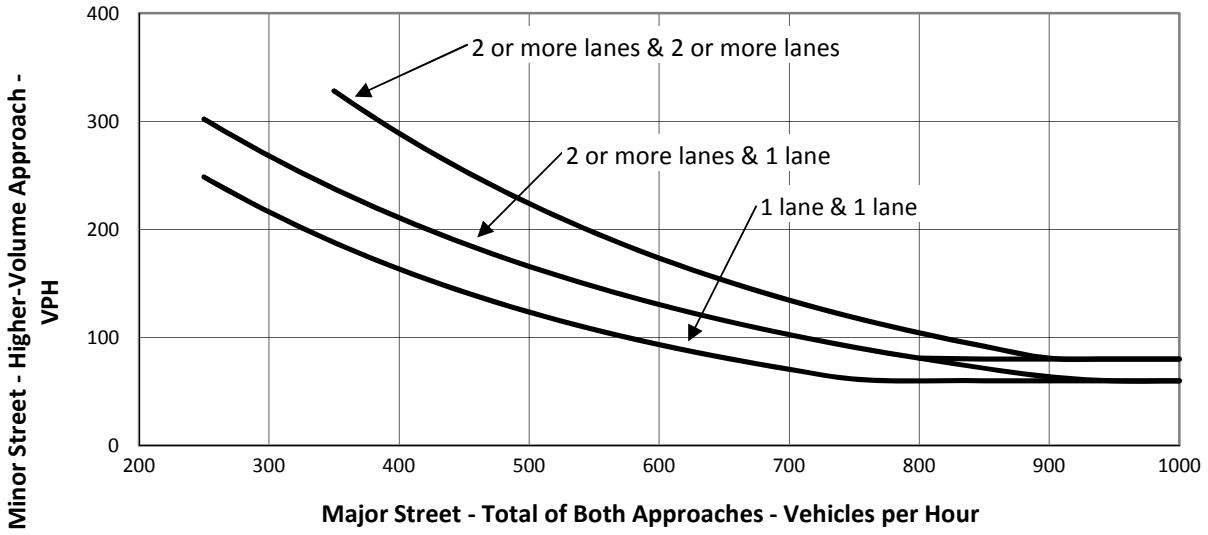
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	199
		Major Street (Approach 2):	159
Major Street Lanes:	1	[a] Major Street Left-Turns:	15
Minor Street Lanes:	1	Minor Street (Higher Volume):	43
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	199	Minimum Major Street Volume:	270
Major Street (Approach 2):	159	Satisfied?	YES
Total Major Street Volume:	358		
		Minimum Minor Street Volume:	184
Major Street Left Turns:	15	Satisfied?	NO
Minor Street (Higher Volume):	43		
Total Minor Street Volume:	58	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

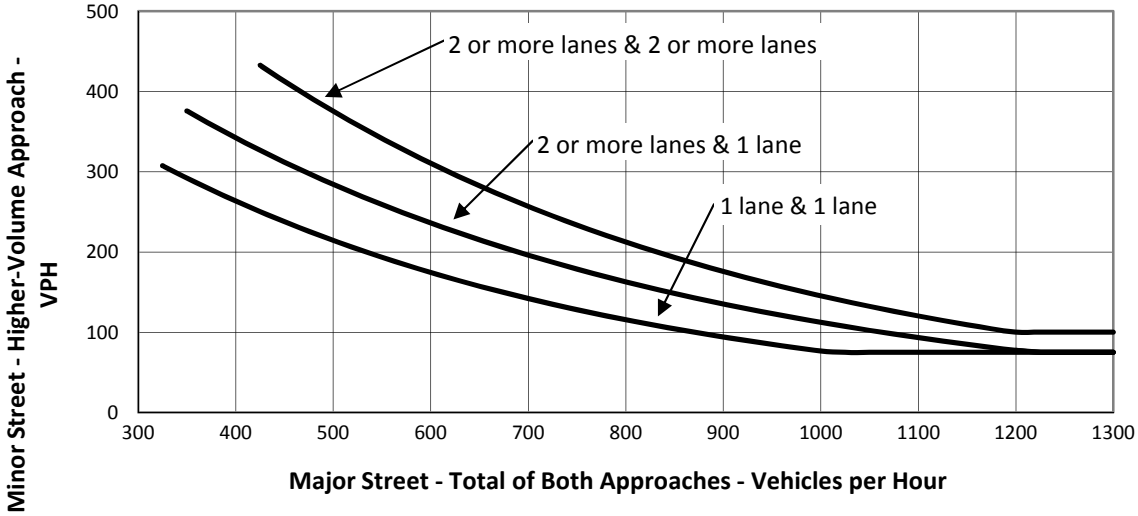
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	221
		Major Street (Approach 2):	177
Major Street Lanes:	1	[a] Major Street Left-Turns:	17
Minor Street Lanes:	1	Minor Street (Higher Volume):	48
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	221	Minimum Major Street Volume:	310
Major Street (Approach 2):	177	Satisfied?	YES
Total Major Street Volume:	398		
		Minimum Minor Street Volume:	265
Major Street Left Turns:	17	Satisfied?	NO
Minor Street (Higher Volume):	48		
Total Minor Street Volume:	65	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-AM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sat-PM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	281	253	202
Major Street (Approach 2):	253	228	182
[b] Major Street Left-Turns:	23	21	17
Minor Street (Higher Volume):	47	42	34

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	202
Major Street (Approach 2):	182
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	34

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **384** Minor: **51**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **384** Minor: **51**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

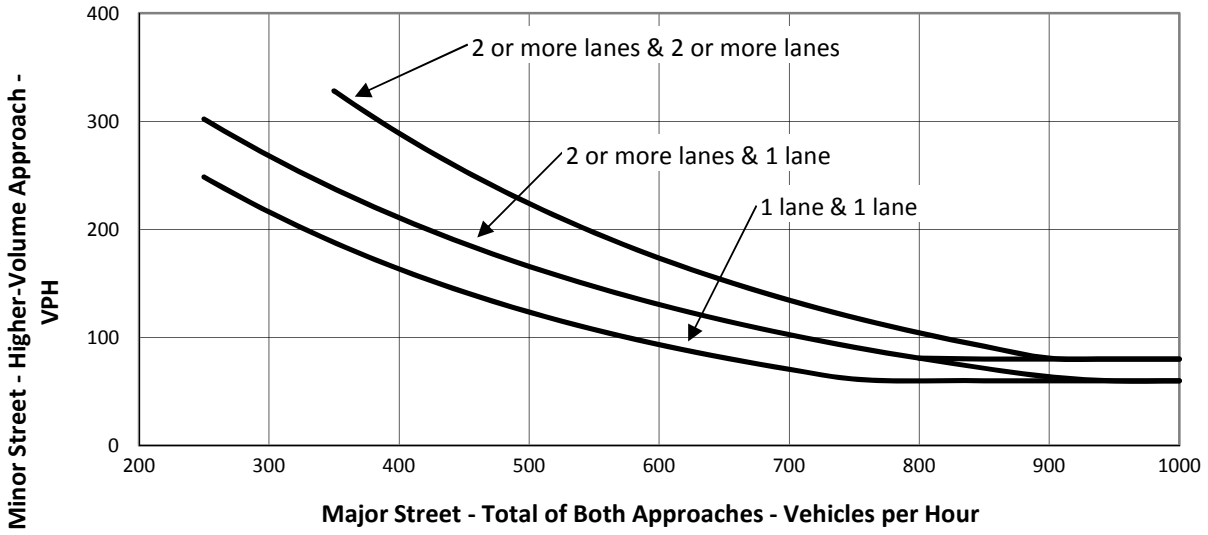
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	253
		Major Street (Approach 2):	228
Major Street Lanes:	1	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	42
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	253	Minimum Major Street Volume:	270
Major Street (Approach 2):	228	Satisfied?	YES
Total Major Street Volume:	481		
		Minimum Minor Street Volume:	130
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	42		
Total Minor Street Volume:	63	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

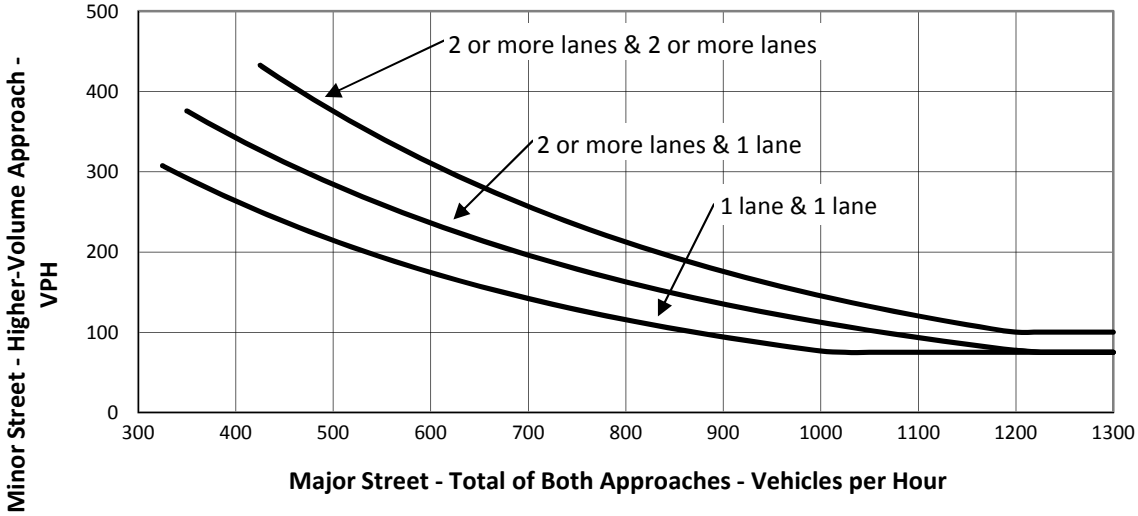
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	281
		Major Street (Approach 2):	253
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	47
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	281	Minimum Major Street Volume:	310
Major Street (Approach 2):	253	Satisfied?	YES
Total Major Street Volume:	534		
		Minimum Minor Street Volume:	200
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	47		
Total Minor Street Volume:	70	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sat-PM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-AM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	238	214	171
Major Street (Approach 2):	191	172	138
[b] Major Street Left-Turns:	17	15	12
Minor Street (Higher Volume):	82	74	59

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	171
Major Street (Approach 2):	138
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	59

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **309** Minor: **71**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **309** Minor: **71**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

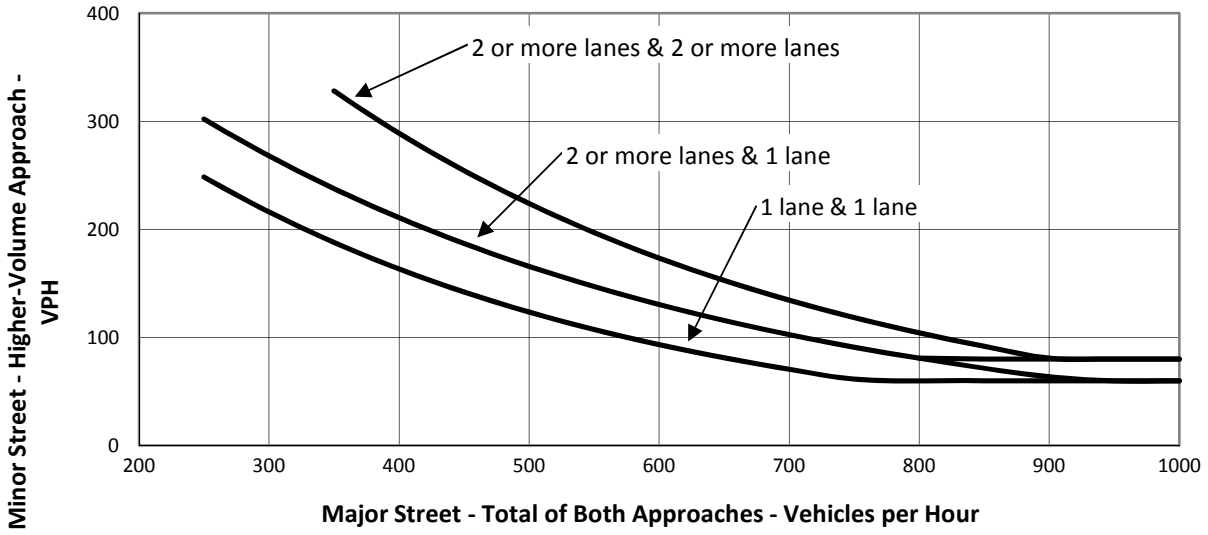
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	214
		Major Street (Approach 2):	172
Major Street Lanes:	1	[a] Major Street Left-Turns:	15
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	214	Minimum Major Street Volume:	270
Major Street (Approach 2):	172	Satisfied?	YES
Total Major Street Volume:	386		
		Minimum Minor Street Volume:	170
Major Street Left Turns:	15	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	89	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

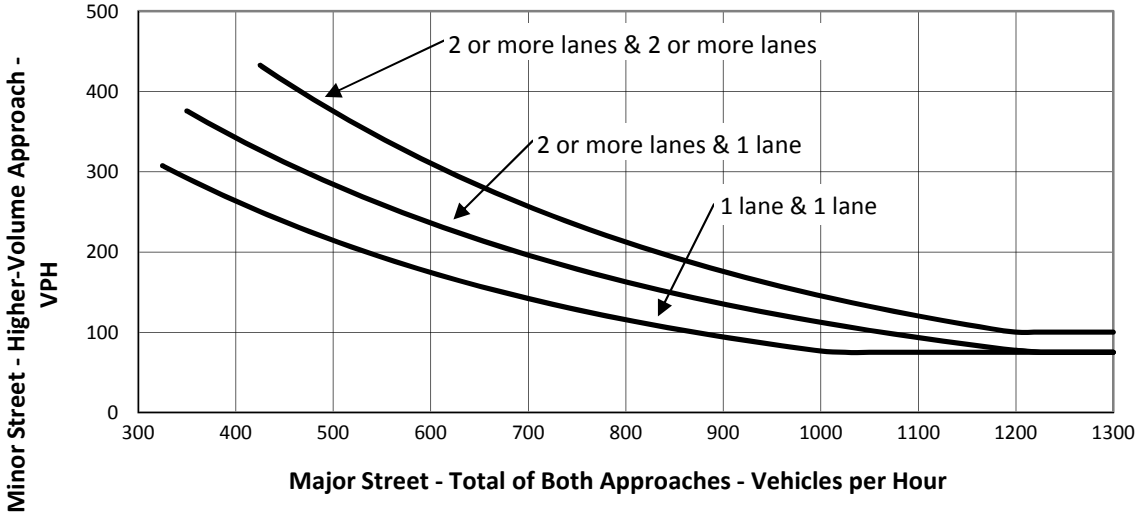
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	238
		Major Street (Approach 2):	191
Major Street Lanes:	1	[a] Major Street Left-Turns:	17
Minor Street Lanes:	1	Minor Street (Higher Volume):	82
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	238	Minimum Major Street Volume:	310
Major Street (Approach 2):	191	Satisfied?	YES
Total Major Street Volume:	429		
		Minimum Minor Street Volume:	248
Major Street Left Turns:	17	Satisfied?	NO
Minor Street (Higher Volume):	82		
Total Minor Street Volume:	99	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-AM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sat-PM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	291	262	210
Major Street (Approach 2):	289	260	208
[b] Major Street Left-Turns:	23	21	17
Minor Street (Higher Volume):	67	60	48

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	210
Major Street (Approach 2):	208
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	48

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **418** Minor: **65**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **418** Minor: **65**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

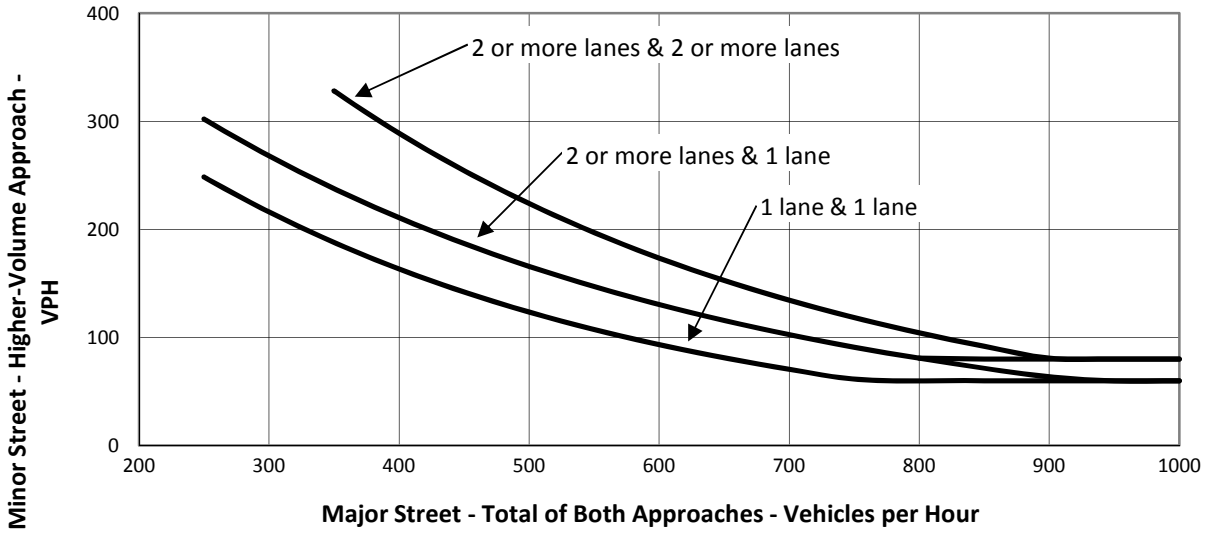
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	262
		Major Street (Approach 2):	260
Major Street Lanes:	1	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	60
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	262	Minimum Major Street Volume:	270
Major Street (Approach 2):	260	Satisfied?	YES
Total Major Street Volume:	522		
		Minimum Minor Street Volume:	116
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	60		
Total Minor Street Volume:	81	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

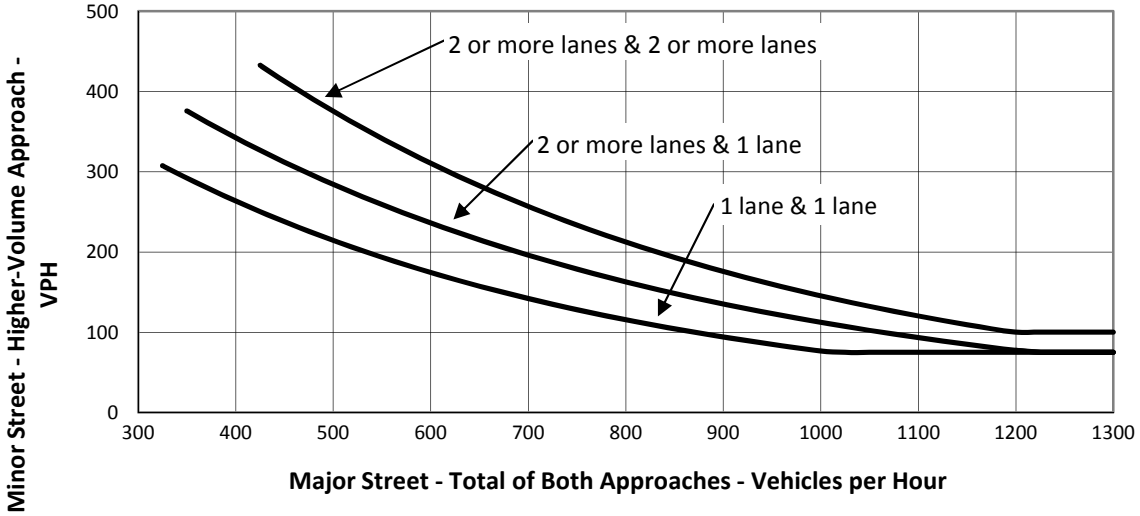
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	291
		Major Street (Approach 2):	289
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	67
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	291	Minimum Major Street Volume:	310
Major Street (Approach 2):	289	Satisfied?	YES
Total Major Street Volume:	580		
		Minimum Minor Street Volume:	182
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	67		
Total Minor Street Volume:	90	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sat-PM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-AM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	223	201	161
Major Street (Approach 2):	179	161	129
[b] Major Street Left-Turns:	17	15	12
Minor Street (Higher Volume):	48	43	35

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	161
Major Street (Approach 2):	129
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	35

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **290** Minor: **47**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **290** Minor: **47**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

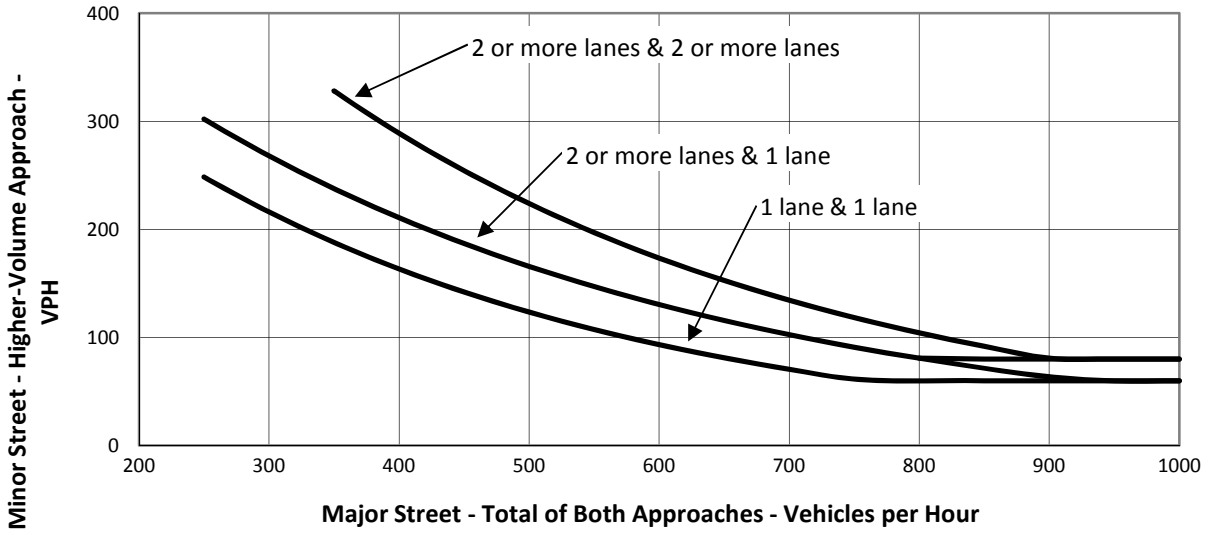
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	201
		Major Street (Approach 2):	161
Major Street Lanes:	1	[a] Major Street Left-Turns:	15
Minor Street Lanes:	1	Minor Street (Higher Volume):	43
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	201	Minimum Major Street Volume:	270
Major Street (Approach 2):	161	Satisfied?	YES
Total Major Street Volume:	362		
		Minimum Minor Street Volume:	182
Major Street Left Turns:	15	Satisfied?	NO
Minor Street (Higher Volume):	43		
Total Minor Street Volume:	58	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

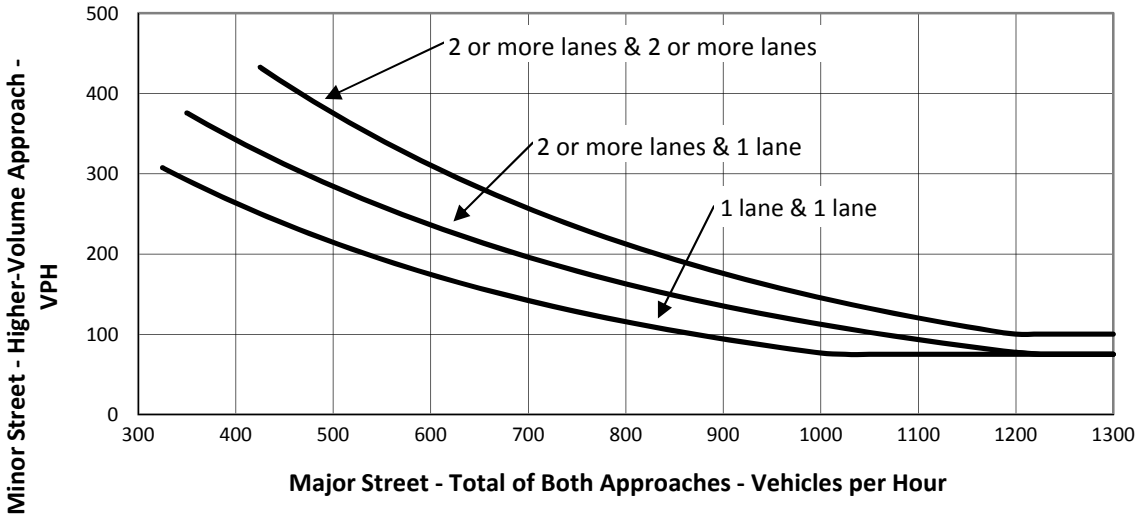
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	223
		Major Street (Approach 2):	179
Major Street Lanes:	1	[a] Major Street Left-Turns:	17
Minor Street Lanes:	1	Minor Street (Higher Volume):	48
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	223	Minimum Major Street Volume:	310
Major Street (Approach 2):	179	Satisfied?	YES
Total Major Street Volume:	402		
		Minimum Minor Street Volume:	262
Major Street Left Turns:	17	Satisfied?	NO
Minor Street (Higher Volume):	48		
Total Minor Street Volume:	65	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-AM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sat-PM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	284	256	204
Major Street (Approach 2):	255	230	184
[b] Major Street Left-Turns:	23	21	17
Minor Street (Higher Volume):	47	42	34

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	204
Major Street (Approach 2):	184
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	34

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **51**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **51**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

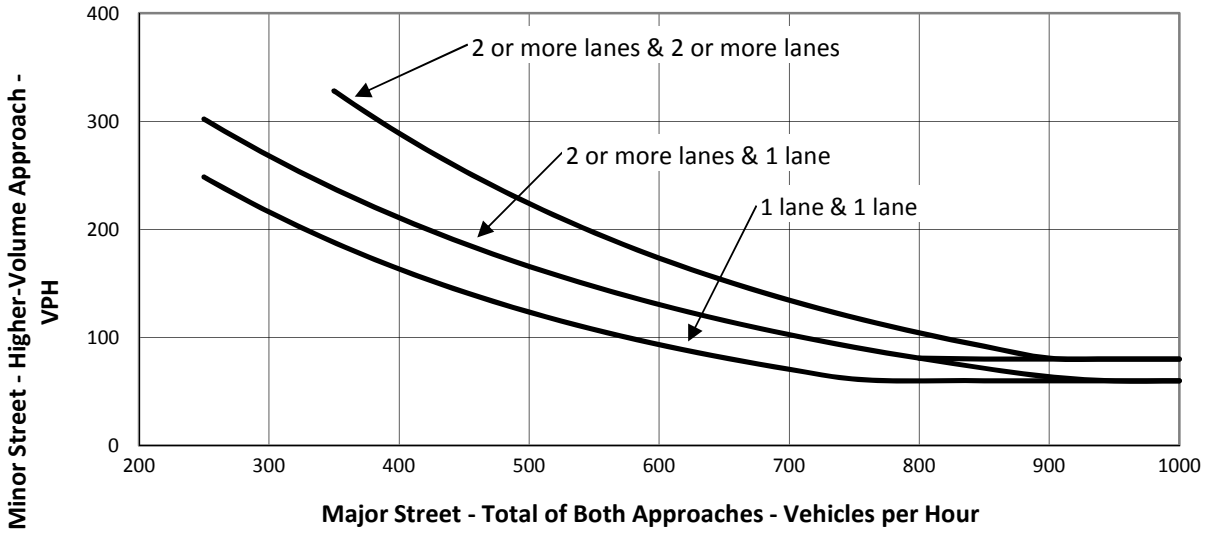
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	256
		Major Street (Approach 2):	230
Major Street Lanes:	1	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	42
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	256	Minimum Major Street Volume:	270
Major Street (Approach 2):	230	Satisfied?	YES
Total Major Street Volume:	486		
		Minimum Minor Street Volume:	128
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	42		
Total Minor Street Volume:	63	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

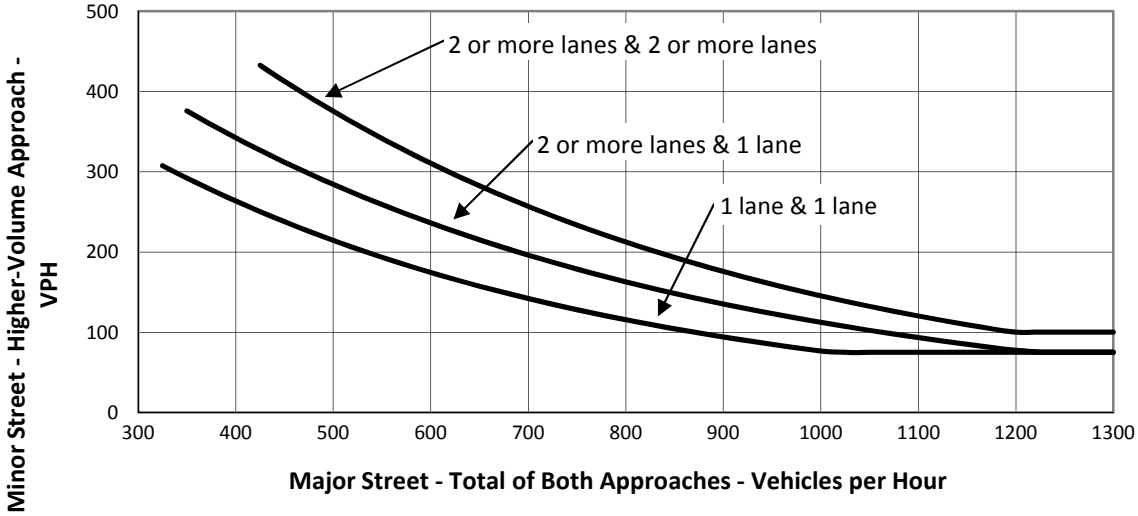
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	284
		Major Street (Approach 2):	255
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	47
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	284	Minimum Major Street Volume:	310
Major Street (Approach 2):	255	Satisfied?	YES
Total Major Street Volume:	539		
		Minimum Minor Street Volume:	198
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	47		
Total Minor Street Volume:	70	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sat-PM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-AM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	230	207	166
Major Street (Approach 2):	193	174	139
[b] Major Street Left-Turns:	17	15	12
Minor Street (Higher Volume):	82	74	59

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	166
Major Street (Approach 2):	139
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	59

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **305** Minor: **71**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **305** Minor: **71**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

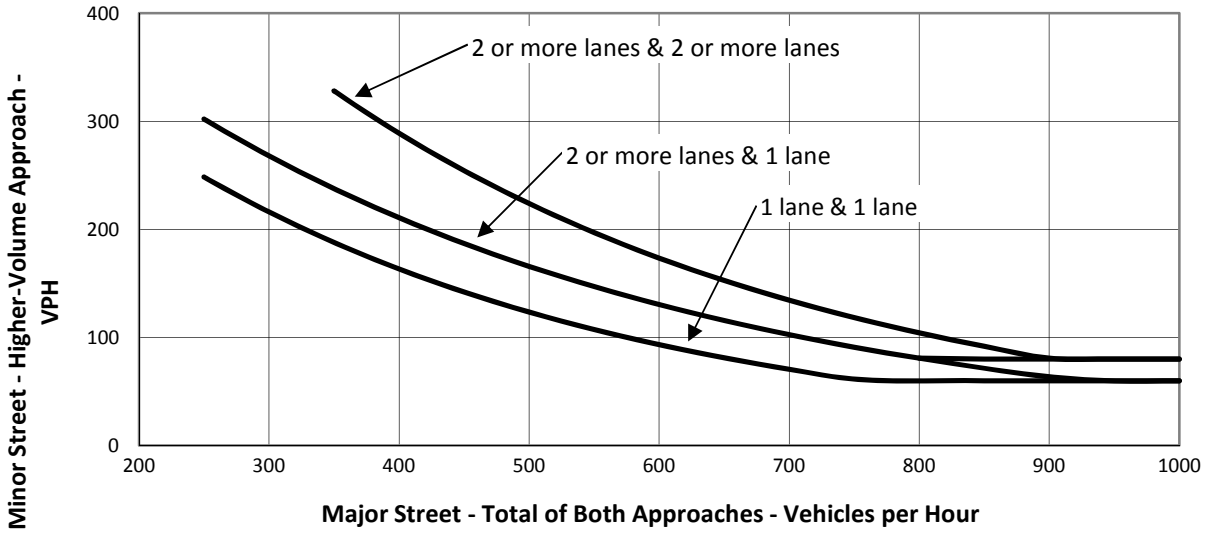
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	207
		Major Street (Approach 2):	174
Major Street Lanes:	1	[a] Major Street Left-Turns:	15
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	207	Minimum Major Street Volume:	270
Major Street (Approach 2):	174	Satisfied?	YES
Total Major Street Volume:	381		
		Minimum Minor Street Volume:	172
Major Street Left Turns:	15	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	89	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

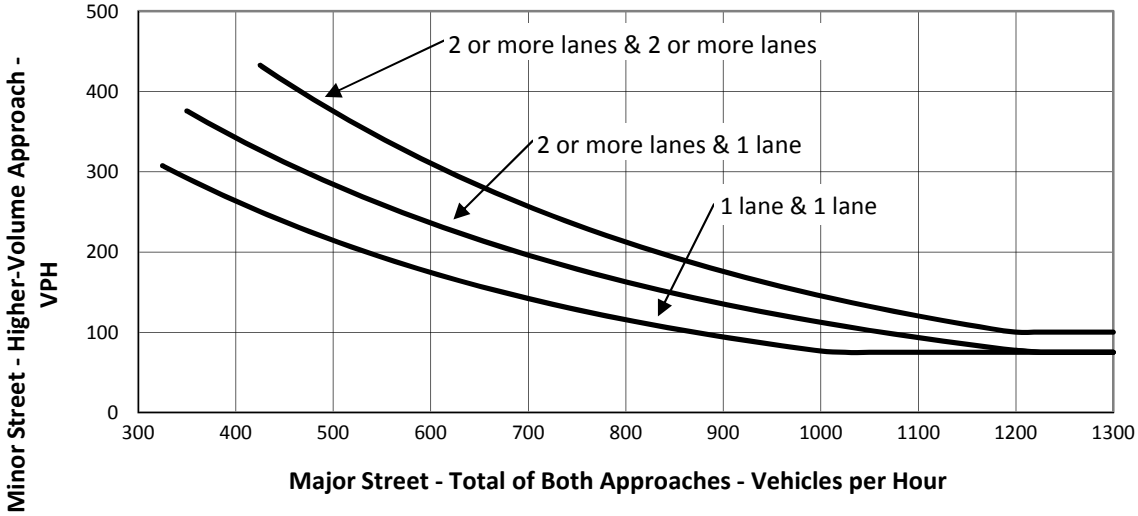
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	230
		Major Street (Approach 2):	193
Major Street Lanes:	1	[a] Major Street Left-Turns:	17
Minor Street Lanes:	1	Minor Street (Higher Volume):	82
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	230	Minimum Major Street Volume:	310
Major Street (Approach 2):	193	Satisfied?	YES
Total Major Street Volume:	423		
		Minimum Minor Street Volume:	251
Major Street Left Turns:	17	Satisfied?	NO
Minor Street (Higher Volume):	82		
Total Minor Street Volume:	99	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-AM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sat-PM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	293	264	211
Major Street (Approach 2):	292	263	210
[b] Major Street Left-Turns:	23	21	17
Minor Street (Higher Volume):	67	60	48

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	211
Major Street (Approach 2):	210
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	48

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **421** Minor: **65**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **421** Minor: **65**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

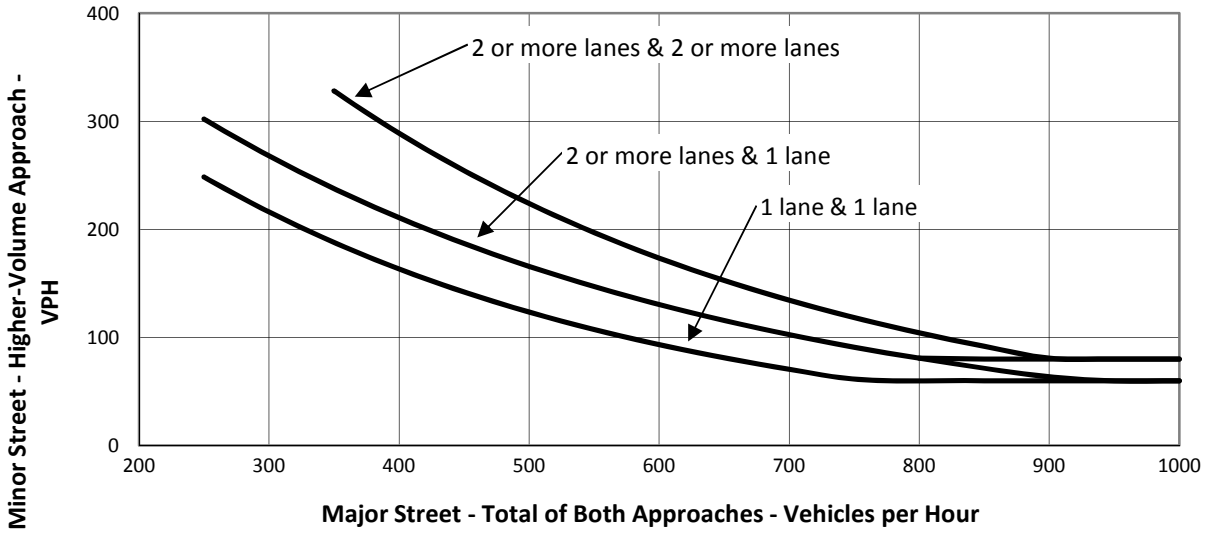
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	264
		Major Street (Approach 2):	263
Major Street Lanes:	1	[a] Major Street Left-Turns:	21
Minor Street Lanes:	1	Minor Street (Higher Volume):	60
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	264	Minimum Major Street Volume:	270
Major Street (Approach 2):	263	Satisfied?	YES
Total Major Street Volume:	527		
		Minimum Minor Street Volume:	115
Major Street Left Turns:	21	Satisfied?	NO
Minor Street (Higher Volume):	60		
Total Minor Street Volume:	81	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

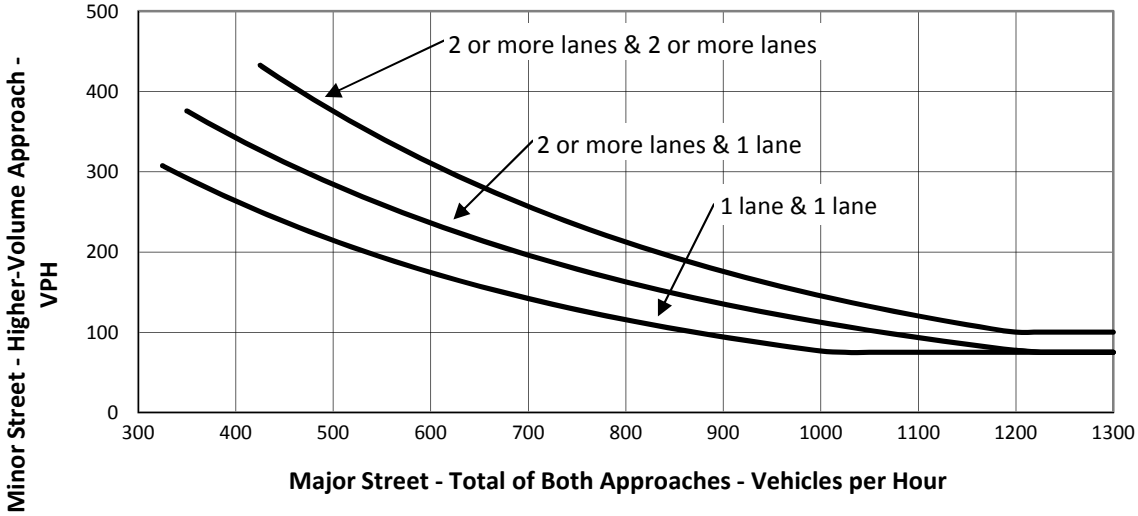
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	293
		Major Street (Approach 2):	292
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	67
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	293	Minimum Major Street Volume:	310
Major Street (Approach 2):	292	Satisfied?	YES
Total Major Street Volume:	585		
		Minimum Minor Street Volume:	180
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	67		
Total Minor Street Volume:	90	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sat-PM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-AM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	235	212	169
Major Street (Approach 2):	212	191	153
[b] Major Street Left-Turns:	20	18	14
Minor Street (Higher Volume):	58	52	42

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	169
Major Street (Approach 2):	153
[a] Major Street Left-Turns:	14
Minor Street (Higher Volume):	42

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **322** Minor: **56**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **322** Minor: **56**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

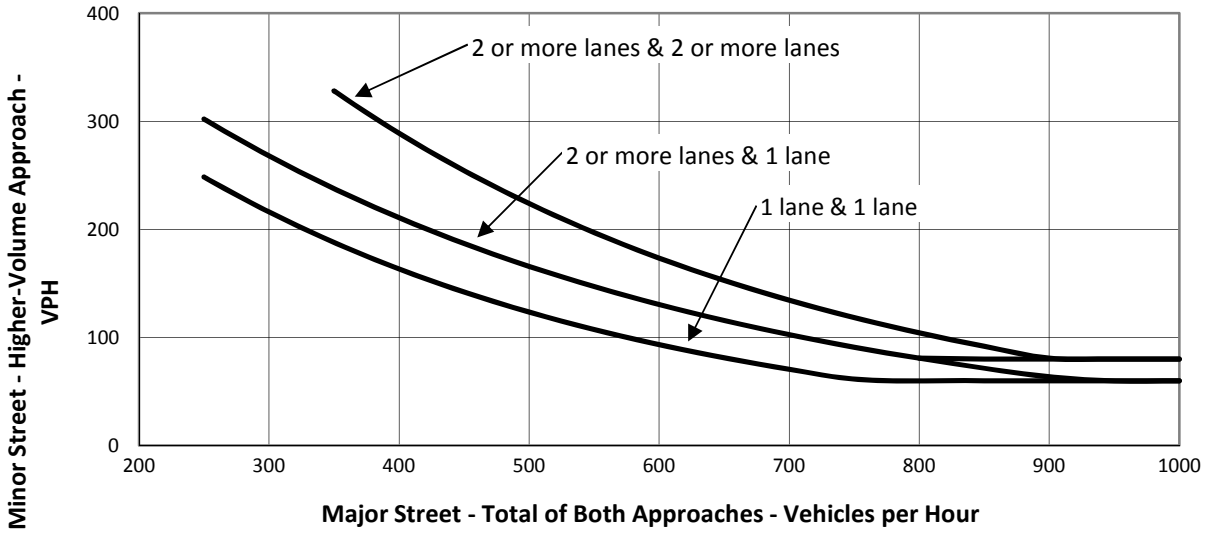
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	212
		Major Street (Approach 2):	191
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	52
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	212	Minimum Major Street Volume:	270
Major Street (Approach 2):	191	Satisfied?	YES
Total Major Street Volume:	403		
		Minimum Minor Street Volume:	162
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	52		
Total Minor Street Volume:	70	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

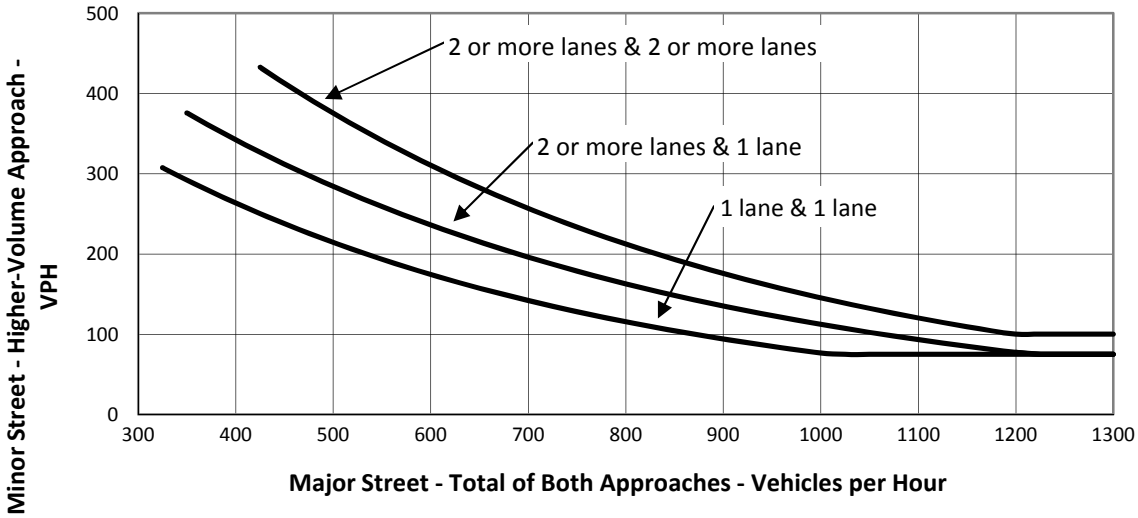
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	235
		Major Street (Approach 2):	212
Major Street Lanes:	1	[a] Major Street Left-Turns:	20
Minor Street Lanes:	1	Minor Street (Higher Volume):	58
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	235	Minimum Major Street Volume:	310
Major Street (Approach 2):	212	Satisfied?	YES
Total Major Street Volume:	447		
		Minimum Minor Street Volume:	239
Major Street Left Turns:	20	Satisfied?	NO
Minor Street (Higher Volume):	58		
Total Minor Street Volume:	78	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-AM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sat-PM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	338	304	243
Major Street (Approach 2):	303	273	218
[b] Major Street Left-Turns:	28	25	20
Minor Street (Higher Volume):	56	50	40

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	243
Major Street (Approach 2):	218
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	40

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **461** Minor: **60**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **461** Minor: **60**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

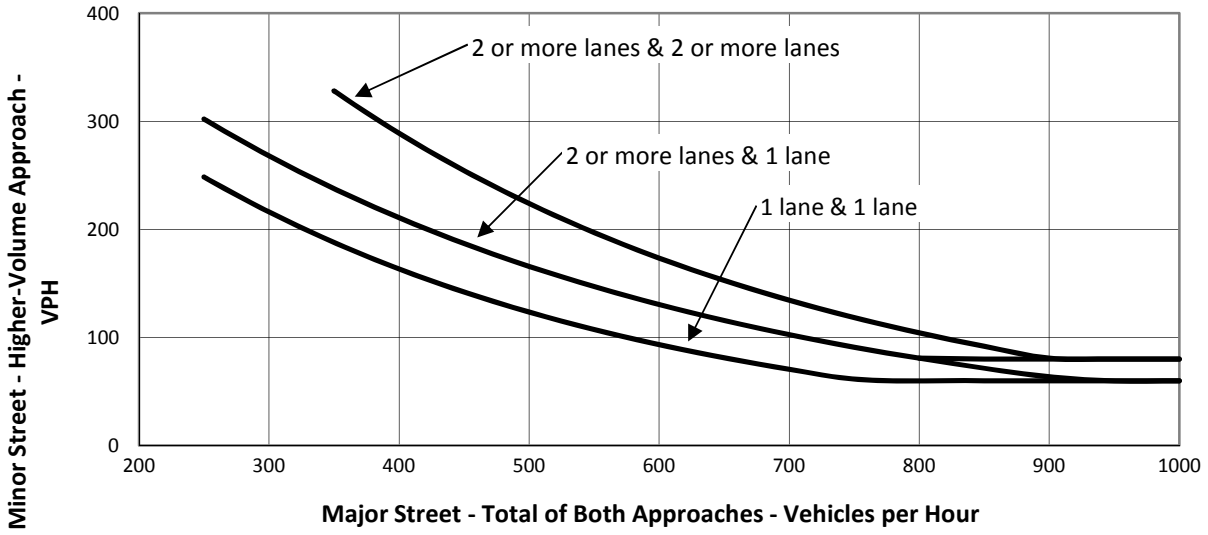
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	304
		Major Street (Approach 2):	273
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	50
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	304	Minimum Major Street Volume:	270
Major Street (Approach 2):	273	Satisfied?	YES
Total Major Street Volume:	577		
		Minimum Minor Street Volume:	100
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	50		
Total Minor Street Volume:	75	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

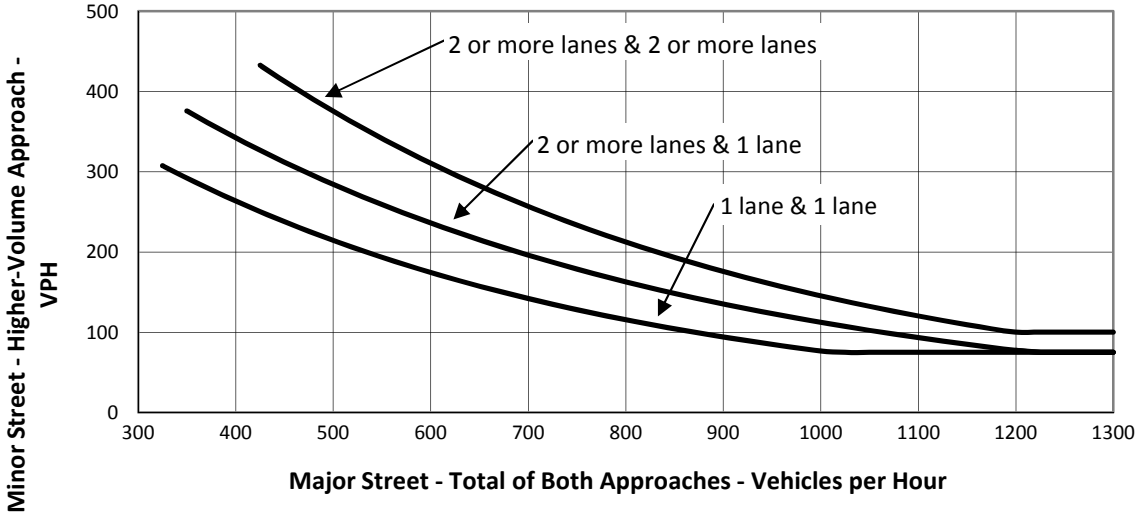
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	338
		Major Street (Approach 2):	303
Major Street Lanes:	1	[a] Major Street Left-Turns:	28
Minor Street Lanes:	1	Minor Street (Higher Volume):	56
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	338	Minimum Major Street Volume:	310
Major Street (Approach 2):	303	Satisfied?	YES
Total Major Street Volume:	641		
		Minimum Minor Street Volume:	160
Major Street Left Turns:	28	Satisfied?	NO
Minor Street (Higher Volume):	56		
Total Minor Street Volume:	84	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sat-PM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	272	245	196
Major Street (Approach 2):	236	212	170
[b] Major Street Left-Turns:	20	18	14
Minor Street (Higher Volume):	92	83	66

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	196
Major Street (Approach 2):	170
[a] Major Street Left-Turns:	14
Minor Street (Higher Volume):	66

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **366** Minor: **80**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **366** Minor: **80**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

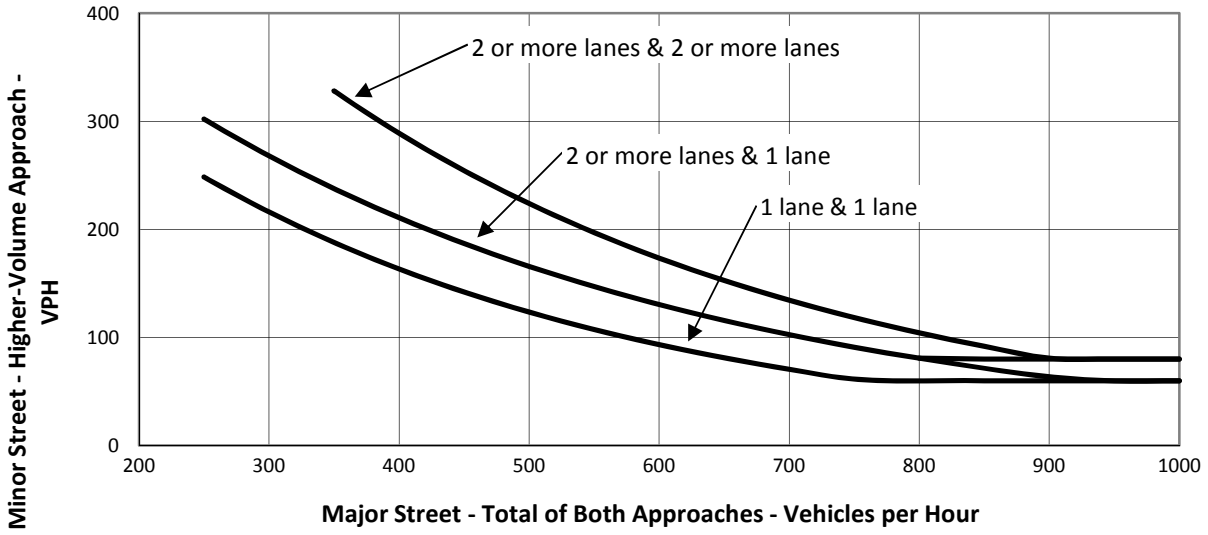
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	245
		Major Street (Approach 2):	212
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	83
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	245	Minimum Major Street Volume:	270
Major Street (Approach 2):	212	Satisfied?	YES
Total Major Street Volume:	457		
		Minimum Minor Street Volume:	139
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	83		
Total Minor Street Volume:	101	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

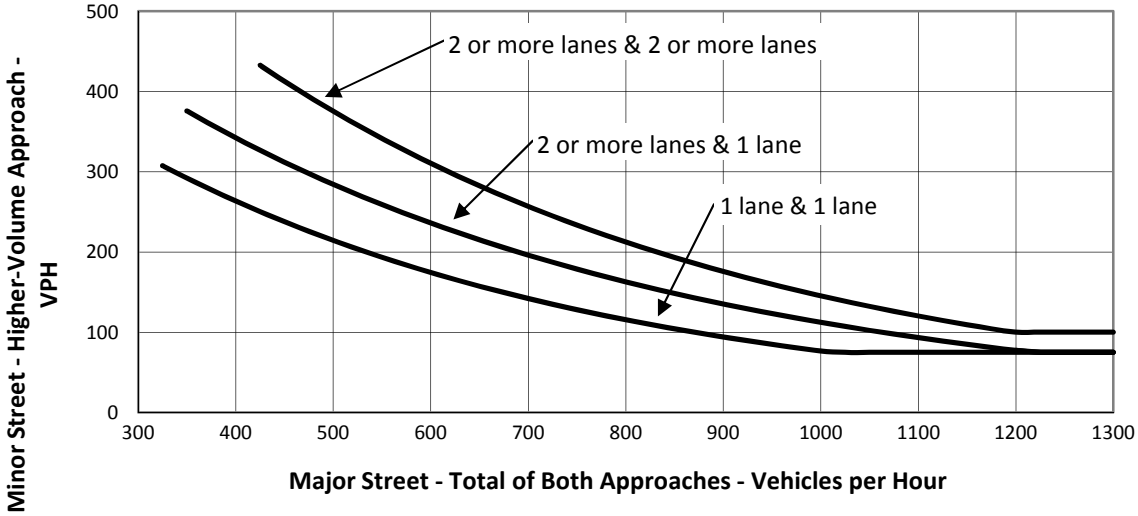
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	272
		Major Street (Approach 2):	236
Major Street Lanes:	1	[a] Major Street Left-Turns:	20
Minor Street Lanes:	1	Minor Street (Higher Volume):	92
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	272	Minimum Major Street Volume:	310
Major Street (Approach 2):	236	Satisfied?	YES
Total Major Street Volume:	508		
		Minimum Minor Street Volume:	211
Major Street Left Turns:	20	Satisfied?	NO
Minor Street (Higher Volume):	92		
Total Minor Street Volume:	112	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-AM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	346	311	249
Major Street (Approach 2):	341	307	246
[b] Major Street Left-Turns:	28	25	20
Minor Street (Higher Volume):	76	68	55

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	249
Major Street (Approach 2):	246
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	55

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **495** Minor: **75**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **495** Minor: **75**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

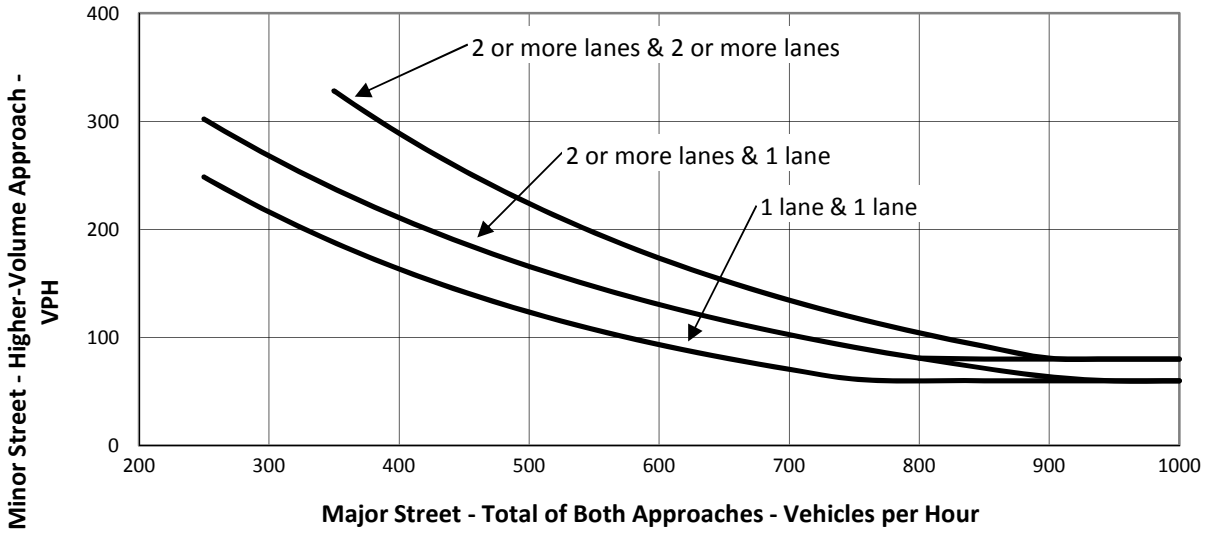
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	311
		Major Street (Approach 2):	307
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	311	Minimum Major Street Volume:	270
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	618		
		Minimum Minor Street Volume:	89
Major Street Left Turns:	25	Satisfied?	YES
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	93	Warrant 2 Satisfied?	**YES**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

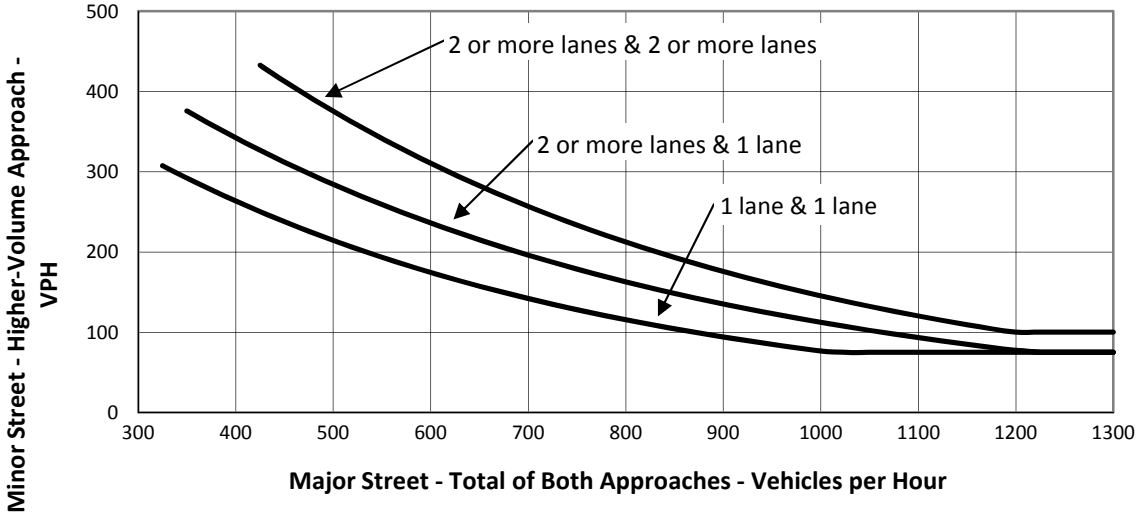
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	346
		Major Street (Approach 2):	341
Major Street Lanes:	1	[a] Major Street Left-Turns:	28
Minor Street Lanes:	1	Minor Street (Higher Volume):	76
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	346	Minimum Major Street Volume:	310
Major Street (Approach 2):	341	Satisfied?	YES
Total Major Street Volume:	687		
		Minimum Minor Street Volume:	146
Major Street Left Turns:	28	Satisfied?	NO
Minor Street (Higher Volume):	76		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sat-PM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-AM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	238	217	162
Major Street (Approach 2):	187	170	127
[b] Major Street Left-Turns:	25	23	17
Minor Street (Higher Volume):	34	31	23

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	162
Major Street (Approach 2):	127
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	23

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **289** Minor: **40**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **289** Minor: **40**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

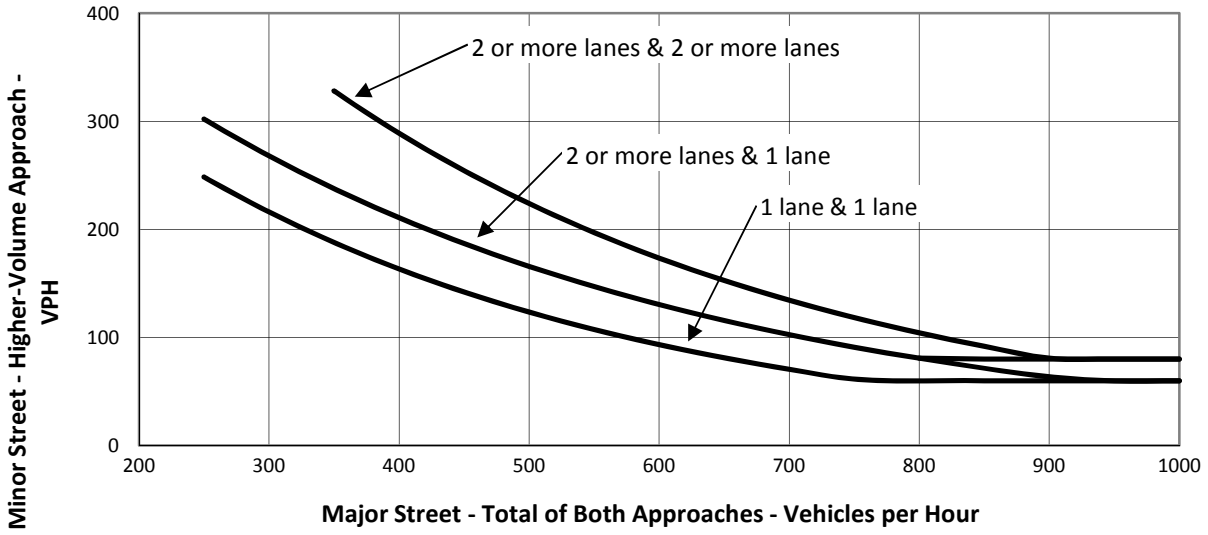
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	217
		Major Street (Approach 2):	170
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	31
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	217	Minimum Major Street Volume:	270
Major Street (Approach 2):	170	Satisfied?	YES
Total Major Street Volume:	387		
		Minimum Minor Street Volume:	169
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	31		
Total Minor Street Volume:	54	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

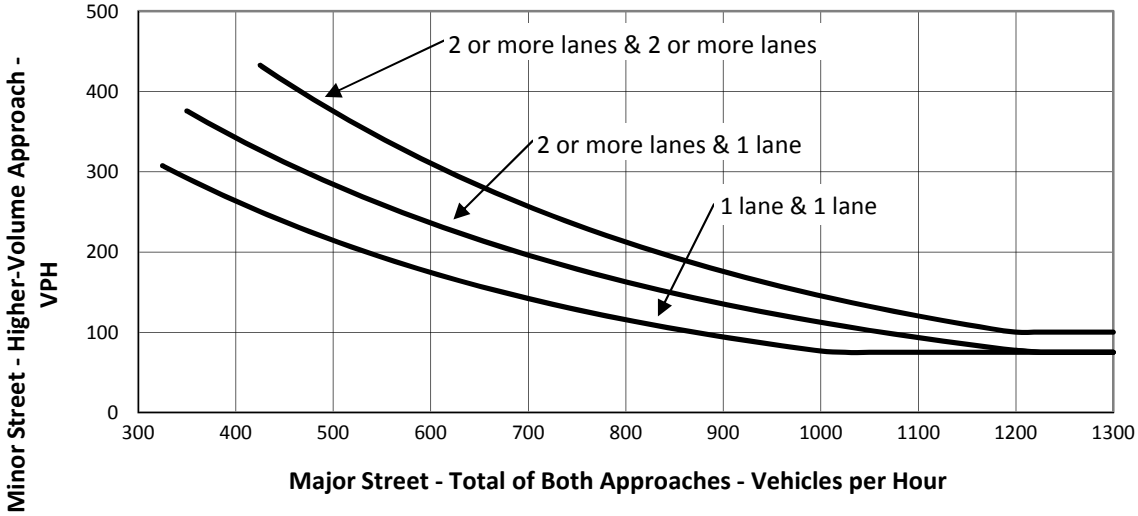
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	238
		Major Street (Approach 2):	187
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	34
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	238	Minimum Major Street Volume:	310
Major Street (Approach 2):	187	Satisfied?	YES
Total Major Street Volume:	425		
		Minimum Minor Street Volume:	250
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	34		
Total Minor Street Volume:	59	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-AM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Conditions (Sun-PM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	234	213	159
Major Street (Approach 2):	204	186	139
[b] Major Street Left-Turns:	18	16	12
Minor Street (Higher Volume):	41	37	28

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	159
Major Street (Approach 2):	139
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	28

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **298** Minor: **40**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **298** Minor: **40**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

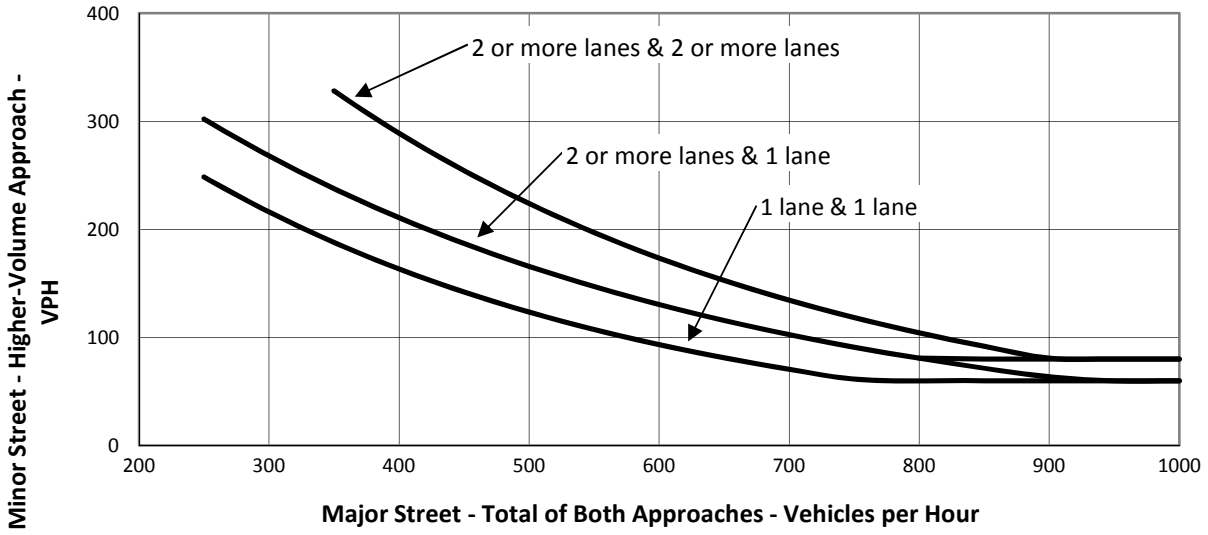
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	213
		Major Street (Approach 2):	186
Major Street Lanes:	1	[a] Major Street Left-Turns:	16
Minor Street Lanes:	1	Minor Street (Higher Volume):	37
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	213	Minimum Major Street Volume:	270
Major Street (Approach 2):	186	Satisfied?	YES
Total Major Street Volume:	399		
		Minimum Minor Street Volume:	164
Major Street Left Turns:	16	Satisfied?	NO
Minor Street (Higher Volume):	37		
Total Minor Street Volume:	53	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

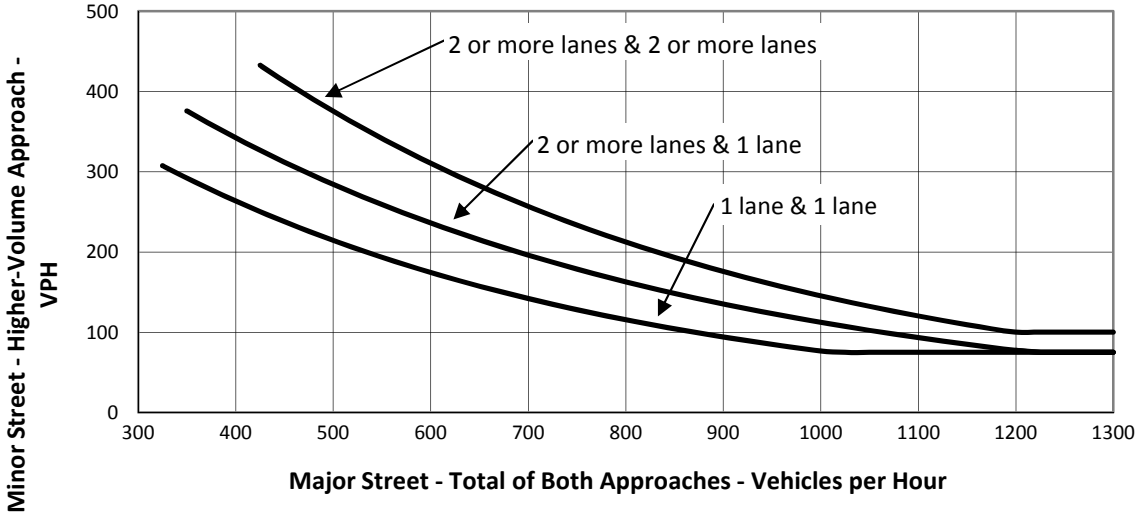
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	234
		Major Street (Approach 2):	204
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	41
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	234	Minimum Major Street Volume:	310
Major Street (Approach 2):	204	Satisfied?	YES
Total Major Street Volume:	438		
		Minimum Minor Street Volume:	244
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	41		
Total Minor Street Volume:	59	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Conditions (Sun-PM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-AM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	245	223	167
Major Street (Approach 2):	201	183	137
[b] Major Street Left-Turns:	25	23	17
Minor Street (Higher Volume):	68	62	46

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	167
Major Street (Approach 2):	137
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **304** Minor: **63**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **304** Minor: **63**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

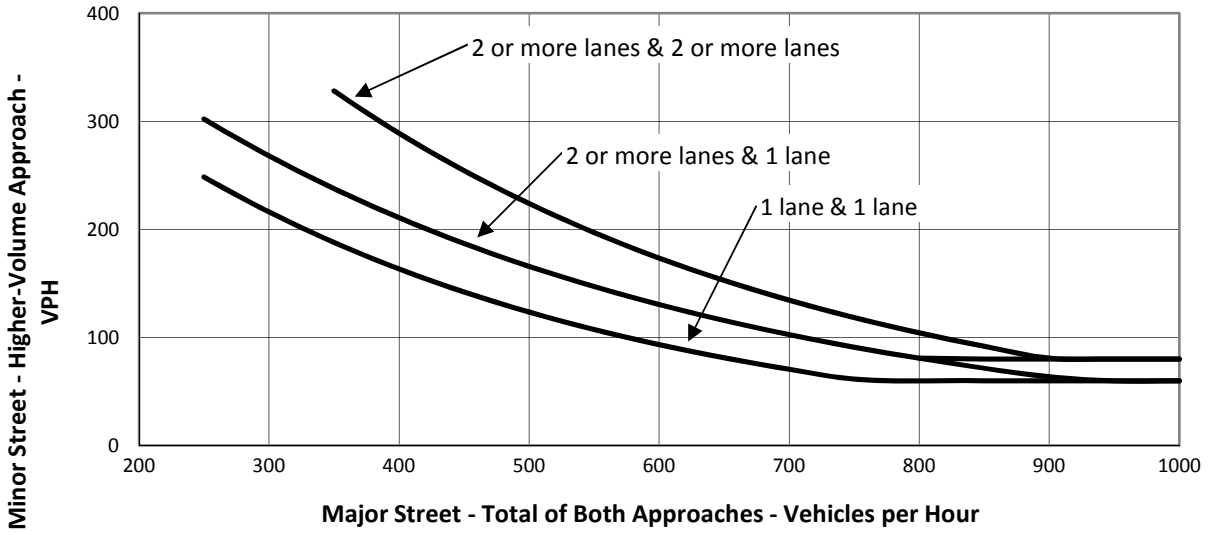
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	223
		Major Street (Approach 2):	183
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	223	Minimum Major Street Volume:	270
Major Street (Approach 2):	183	Satisfied?	YES
Total Major Street Volume:	406		
		Minimum Minor Street Volume:	161
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	85	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

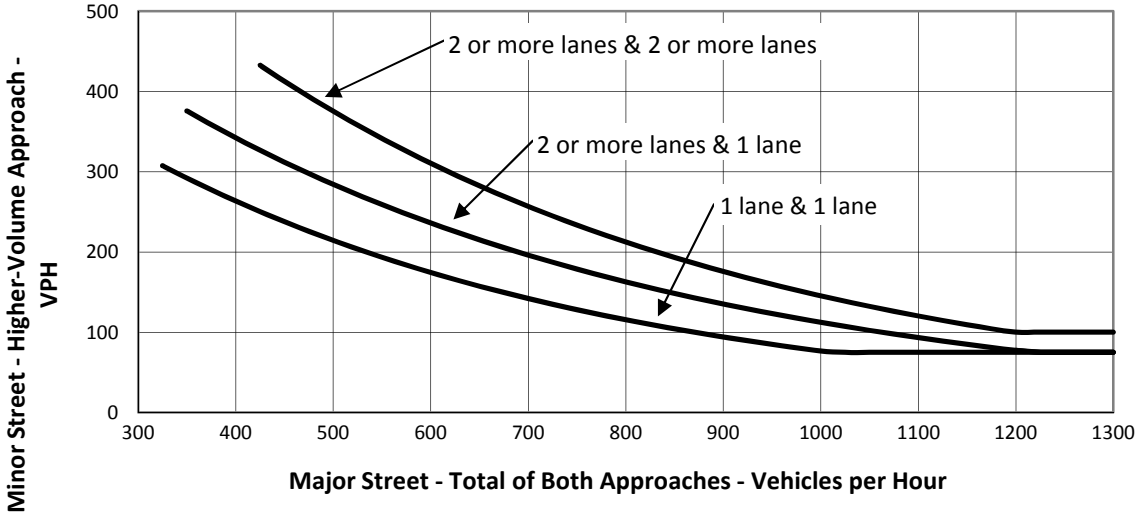
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	245
		Major Street (Approach 2):	201
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	245	Minimum Major Street Volume:	310
Major Street (Approach 2):	201	Satisfied?	YES
Total Major Street Volume:	446		
		Minimum Minor Street Volume:	240
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	93	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-AM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (Sun-PM) - Year 2015
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	242	220	165
Major Street (Approach 2):	242	220	165
[b] Major Street Left-Turns:	18	16	12
Minor Street (Higher Volume):	61	56	41

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	165
Major Street (Approach 2):	165
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	41

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **330** Minor: **53**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **330** Minor: **53**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

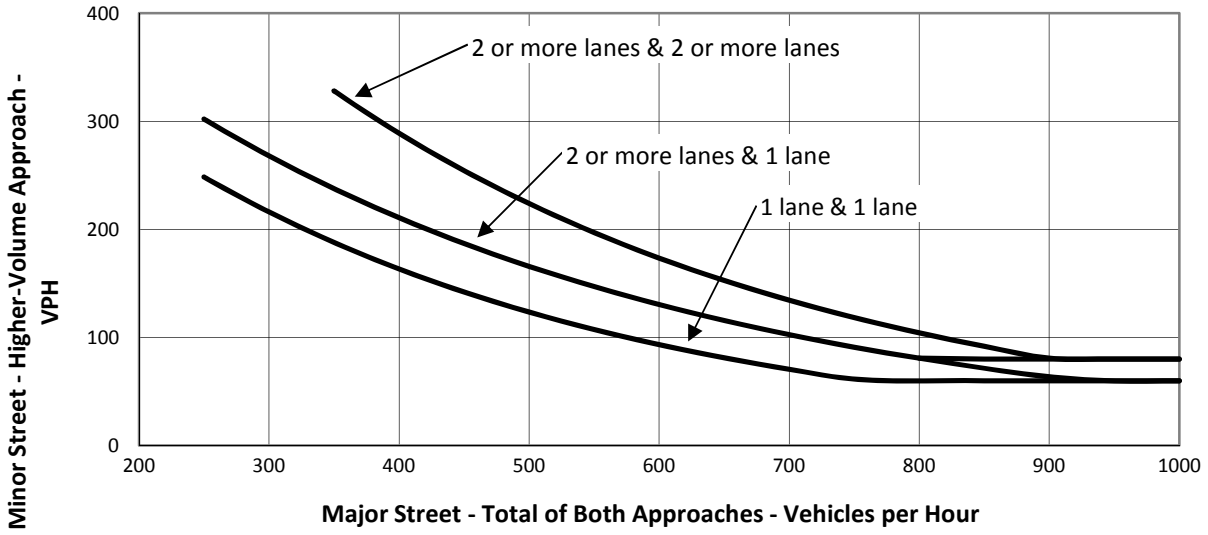
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	220
		Major Street (Approach 2):	220
Major Street Lanes:	1	[a] Major Street Left-Turns:	16
Minor Street Lanes:	1	Minor Street (Higher Volume):	56
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	220	Minimum Major Street Volume:	270
Major Street (Approach 2):	220	Satisfied?	YES
Total Major Street Volume:	440		
		Minimum Minor Street Volume:	146
Major Street Left Turns:	16	Satisfied?	NO
Minor Street (Higher Volume):	56		
Total Minor Street Volume:	72	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

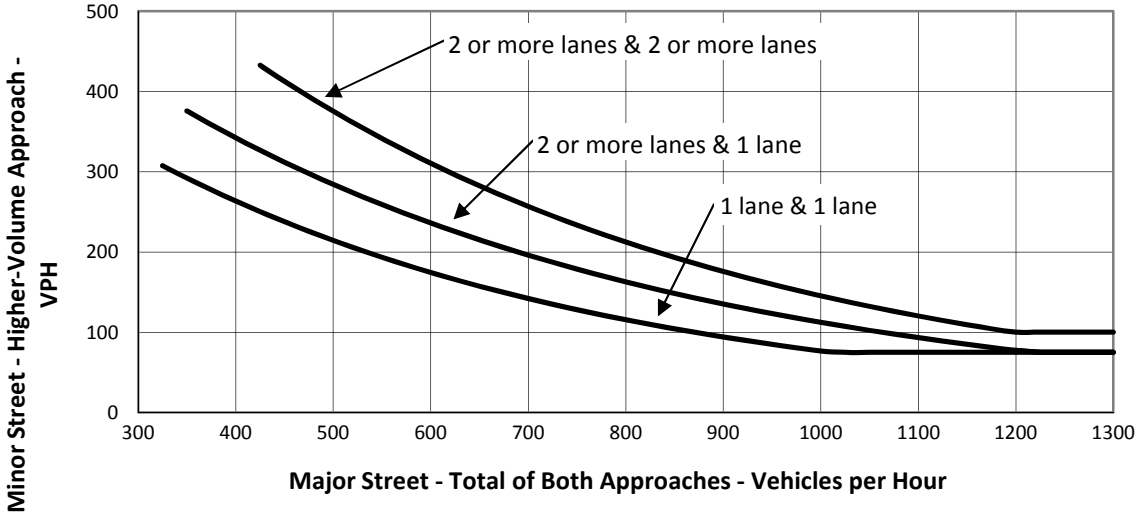
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	242
		Major Street (Approach 2):	242
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	61
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	242	Minimum Major Street Volume:	310
Major Street (Approach 2):	242	Satisfied?	YES
Total Major Street Volume:	484		
		Minimum Minor Street Volume:	222
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	79	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (Sun-PM) - Year 2015**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-AM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	240	218	163
Major Street (Approach 2):	189	172	129
[b] Major Street Left-Turns:	25	23	17
Minor Street (Higher Volume):	34	31	23

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	163
Major Street (Approach 2):	129
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	23

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **292** Minor: **40**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **292** Minor: **40**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

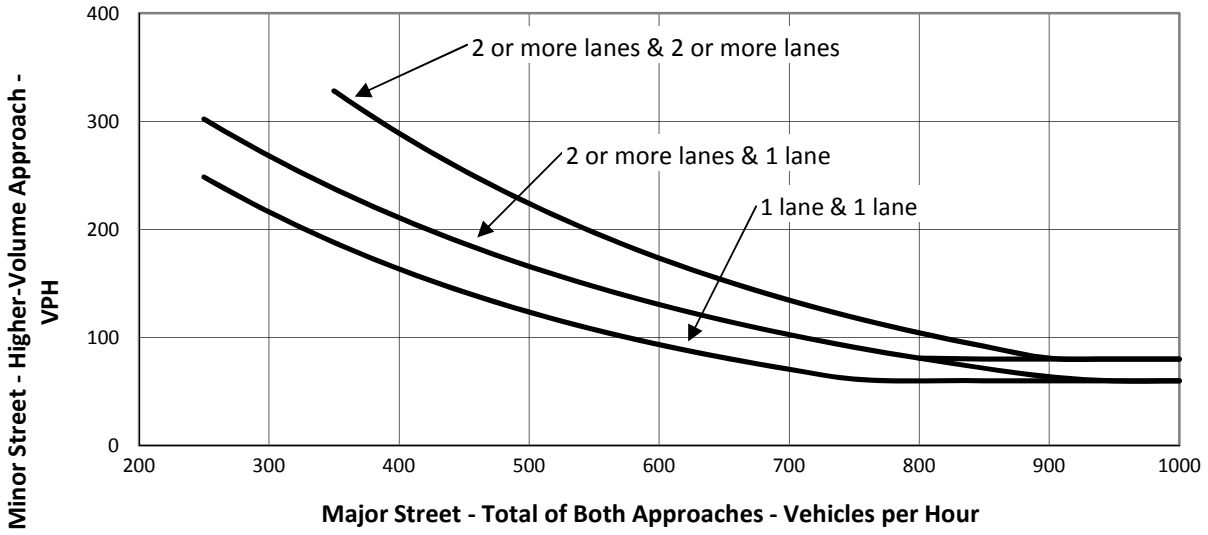
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	218
		Major Street (Approach 2):	172
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	31
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	218	Minimum Major Street Volume:	270
Major Street (Approach 2):	172	Satisfied?	YES
Total Major Street Volume:	390		
		Minimum Minor Street Volume:	168
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	31		
Total Minor Street Volume:	54	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Skypark at Santa's Village

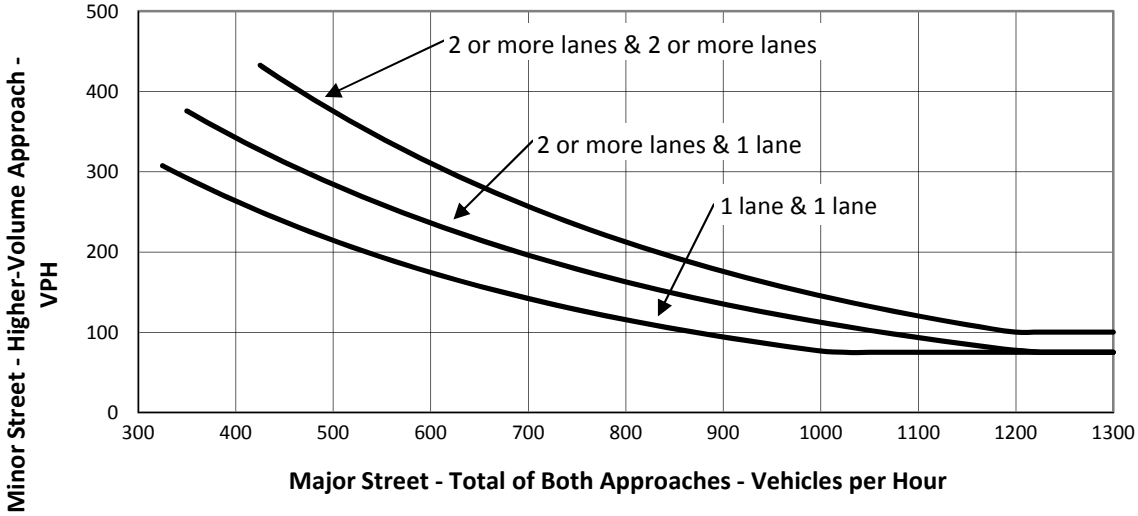
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	240
		Major Street (Approach 2):	189
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	34
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	240	Minimum Major Street Volume:	310
Major Street (Approach 2):	189	Satisfied?	YES
Total Major Street Volume:	429		
		Minimum Minor Street Volume:	248
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	34		
Total Minor Street Volume:	59	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-AM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Conditions (Sun-PM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	236	215	160
Major Street (Approach 2):	206	187	140
[b] Major Street Left-Turns:	18	16	12
Minor Street (Higher Volume):	41	37	28

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	160
Major Street (Approach 2):	140
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	28

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **300** Minor: **40**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **300** Minor: **40**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

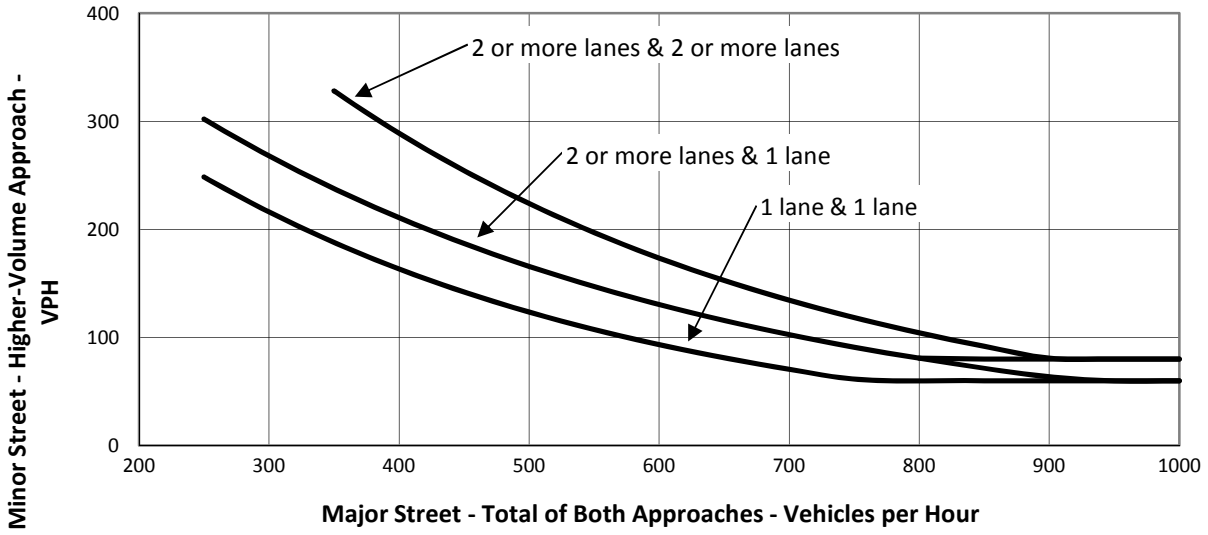
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	215
		Major Street (Approach 2):	187
Major Street Lanes:	1	[a] Major Street Left-Turns:	16
Minor Street Lanes:	1	Minor Street (Higher Volume):	37
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	215	Minimum Major Street Volume:	270
Major Street (Approach 2):	187	Satisfied?	YES
Total Major Street Volume:	402		
		Minimum Minor Street Volume:	162
Major Street Left Turns:	16	Satisfied?	NO
Minor Street (Higher Volume):	37		
Total Minor Street Volume:	53	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

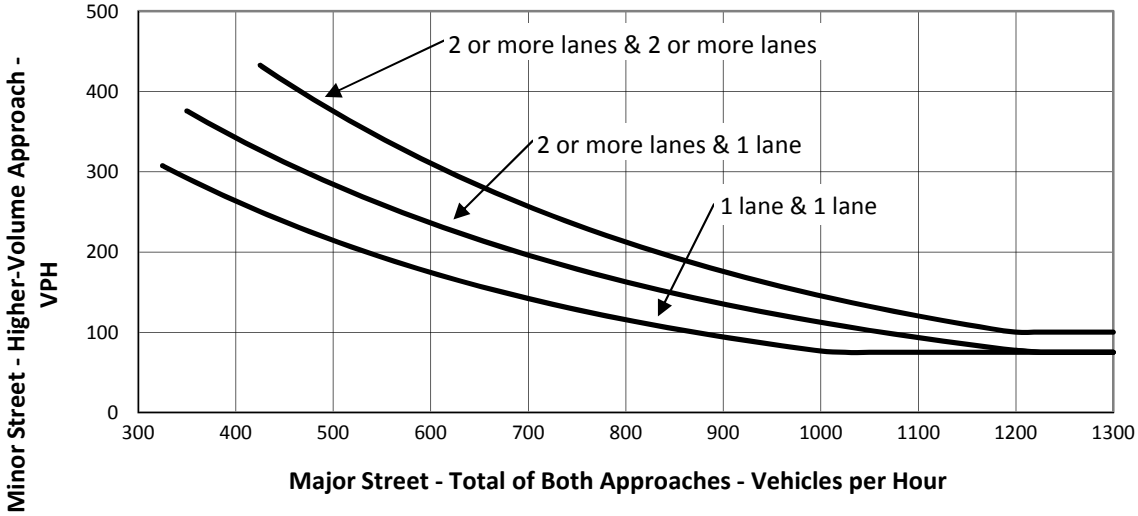
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	236
		Major Street (Approach 2):	206
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	41
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	236	Minimum Major Street Volume:	310
Major Street (Approach 2):	206	Satisfied?	YES
Total Major Street Volume:	442		
		Minimum Minor Street Volume:	242
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	41		
Total Minor Street Volume:	59	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Conditions (Sun-PM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-AM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	247	225	168
Major Street (Approach 2):	203	185	138
[b] Major Street Left-Turns:	25	23	17
Minor Street (Higher Volume):	68	62	46

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	168
Major Street (Approach 2):	138
[a] Major Street Left-Turns:	17
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **306** Minor: **63**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **306** Minor: **63**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

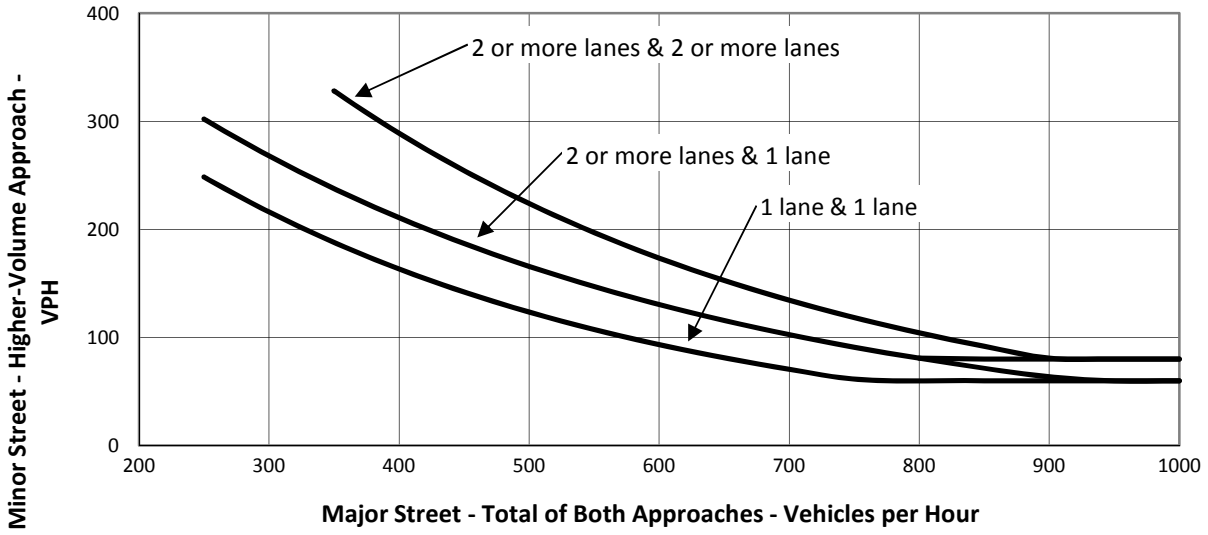
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	225
		Major Street (Approach 2):	185
Major Street Lanes:	1	[a] Major Street Left-Turns:	23
Minor Street Lanes:	1	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	225	Minimum Major Street Volume:	270
Major Street (Approach 2):	185	Satisfied?	YES
Total Major Street Volume:	410		
		Minimum Minor Street Volume:	159
Major Street Left Turns:	23	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	85	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

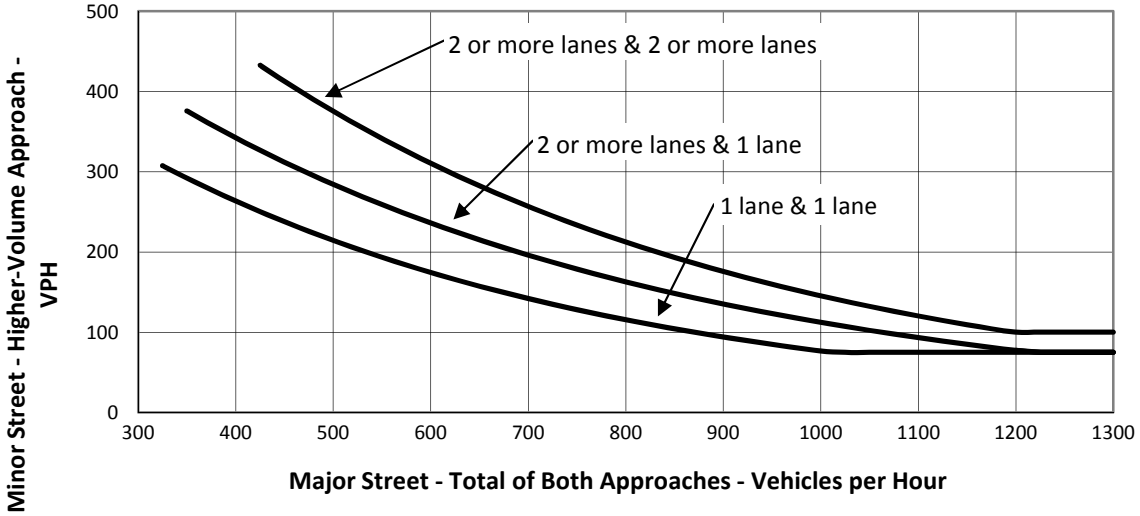
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	247
		Major Street (Approach 2):	203
Major Street Lanes:	1	[a] Major Street Left-Turns:	25
Minor Street Lanes:	1	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	247	Minimum Major Street Volume:	310
Major Street (Approach 2):	203	Satisfied?	YES
Total Major Street Volume:	450		
		Minimum Minor Street Volume:	238
Major Street Left Turns:	25	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	93	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-AM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (Sun-PM) - Year 2016
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	244	222	166
Major Street (Approach 2):	244	222	166
[b] Major Street Left-Turns:	18	16	12
Minor Street (Higher Volume):	61	56	41

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	166
Major Street (Approach 2):	166
[a] Major Street Left-Turns:	12
Minor Street (Higher Volume):	41

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **332** Minor: **53**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **332** Minor: **53**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

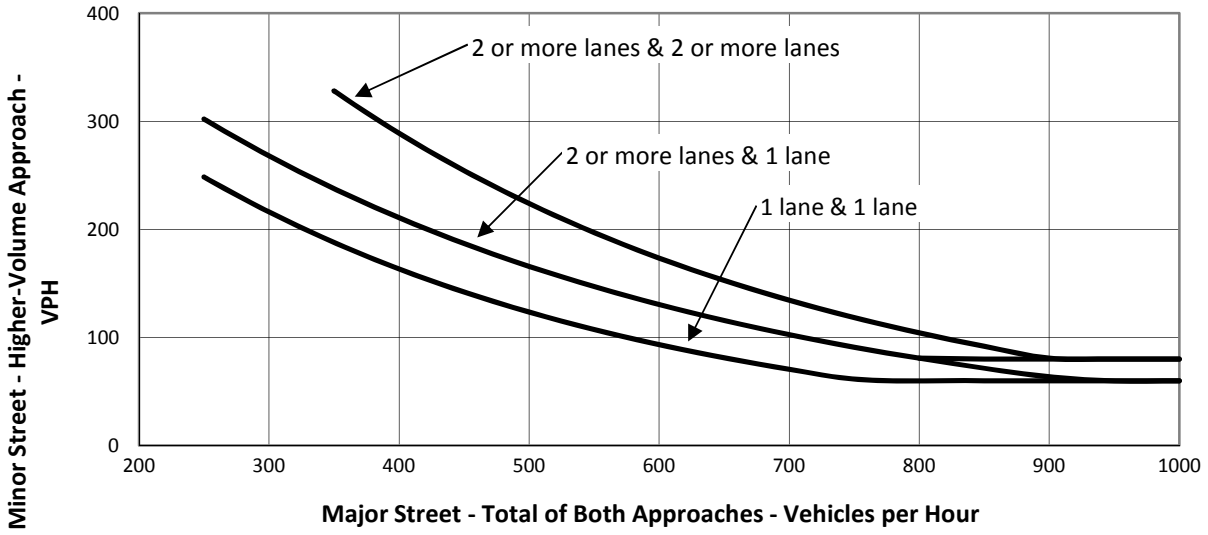
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	222
		Major Street (Approach 2):	222
Major Street Lanes:	1	[a] Major Street Left-Turns:	16
Minor Street Lanes:	1	Minor Street (Higher Volume):	56
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	222	Minimum Major Street Volume:	270
Major Street (Approach 2):	222	Satisfied?	YES
Total Major Street Volume:	444		
		Minimum Minor Street Volume:	144
Major Street Left Turns:	16	Satisfied?	NO
Minor Street (Higher Volume):	56		
Total Minor Street Volume:	72	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

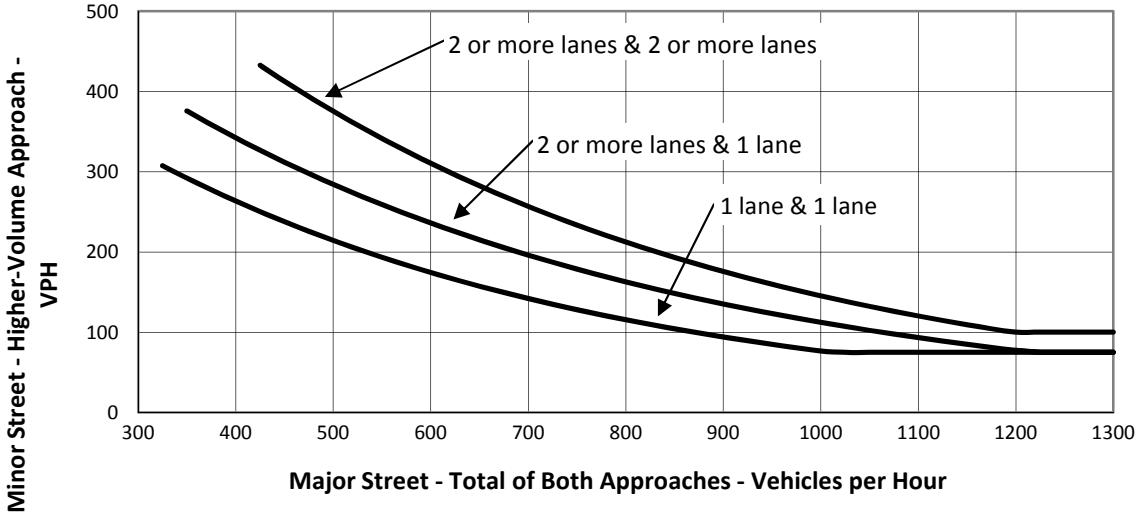
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	244
		Major Street (Approach 2):	244
Major Street Lanes:	1	[a] Major Street Left-Turns:	18
Minor Street Lanes:	1	Minor Street (Higher Volume):	61
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	244	Minimum Major Street Volume:	310
Major Street (Approach 2):	244	Satisfied?	YES
Total Major Street Volume:	488		
		Minimum Minor Street Volume:	220
Major Street Left Turns:	18	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	79	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (Sun-PM) - Year 2016**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-AM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	285	259	194
Major Street (Approach 2):	224	204	152
[b] Major Street Left-Turns:	30	27	20
Minor Street (Higher Volume):	40	36	27

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	194
Major Street (Approach 2):	152
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	27

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **346** Minor: **47**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **346** Minor: **47**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

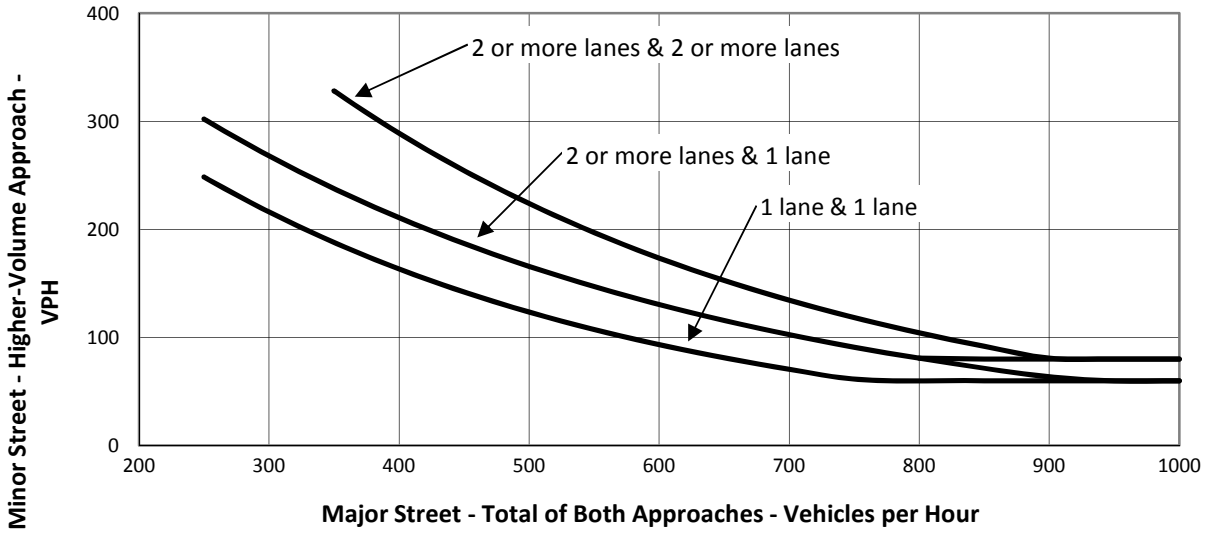
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	259
		Major Street (Approach 2):	204
Major Street Lanes:	1	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	36
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	259	Minimum Major Street Volume:	270
Major Street (Approach 2):	204	Satisfied?	YES
Total Major Street Volume:	463		
		Minimum Minor Street Volume:	137
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	36		
Total Minor Street Volume:	63	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

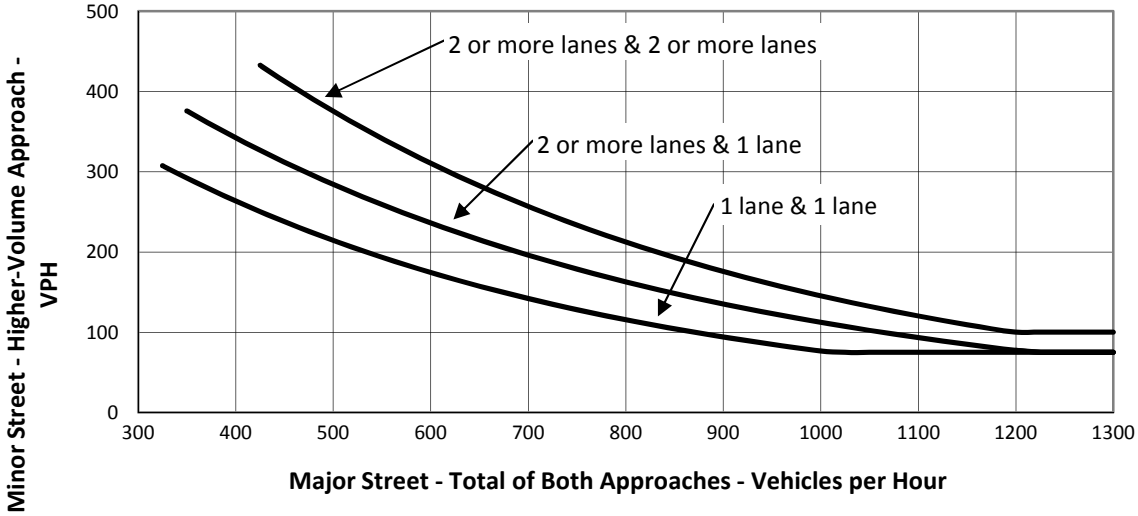
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	285
		Major Street (Approach 2):	224
Major Street Lanes:	1	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	40
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	285	Minimum Major Street Volume:	310
Major Street (Approach 2):	224	Satisfied?	YES
Total Major Street Volume:	509		
		Minimum Minor Street Volume:	210
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	40		
Total Minor Street Volume:	70	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-AM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Conditions (Sun-PM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	281	256	191
Major Street (Approach 2):	245	223	167
[b] Major Street Left-Turns:	22	20	15
Minor Street (Higher Volume):	50	46	34

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	191
Major Street (Approach 2):	167
[a] Major Street Left-Turns:	15
Minor Street (Higher Volume):	34

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **358** Minor: **49**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **358** Minor: **49**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

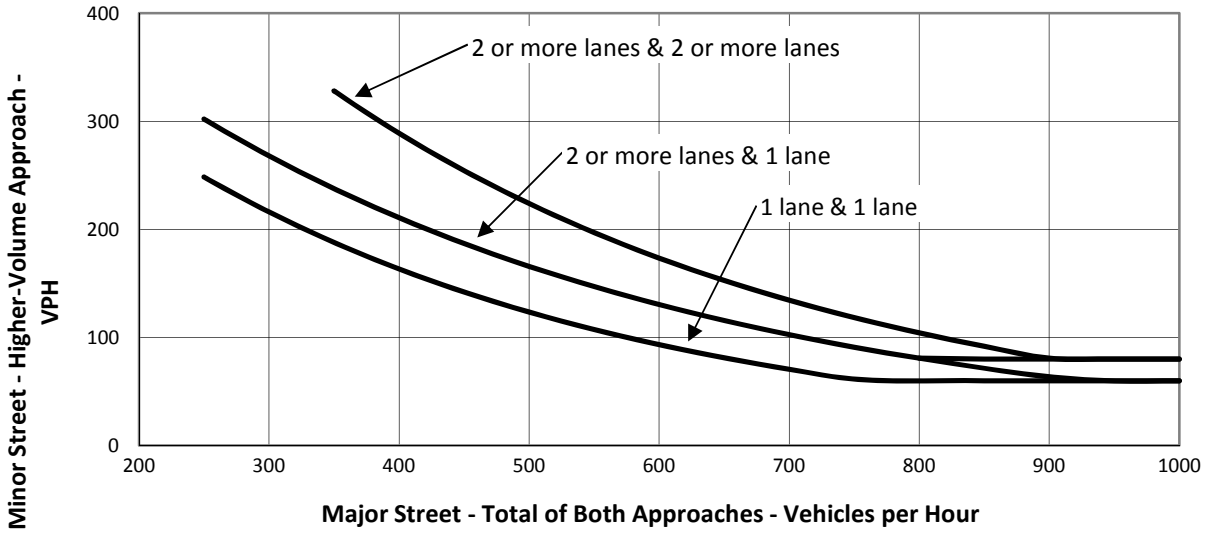
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	256
		Major Street (Approach 2):	223
Major Street Lanes:	1	[a] Major Street Left-Turns:	20
Minor Street Lanes:	1	Minor Street (Higher Volume):	46
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	256	Minimum Major Street Volume:	270
Major Street (Approach 2):	223	Satisfied?	YES
Total Major Street Volume:	479		
		Minimum Minor Street Volume:	131
Major Street Left Turns:	20	Satisfied?	NO
Minor Street (Higher Volume):	46		
Total Minor Street Volume:	66	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

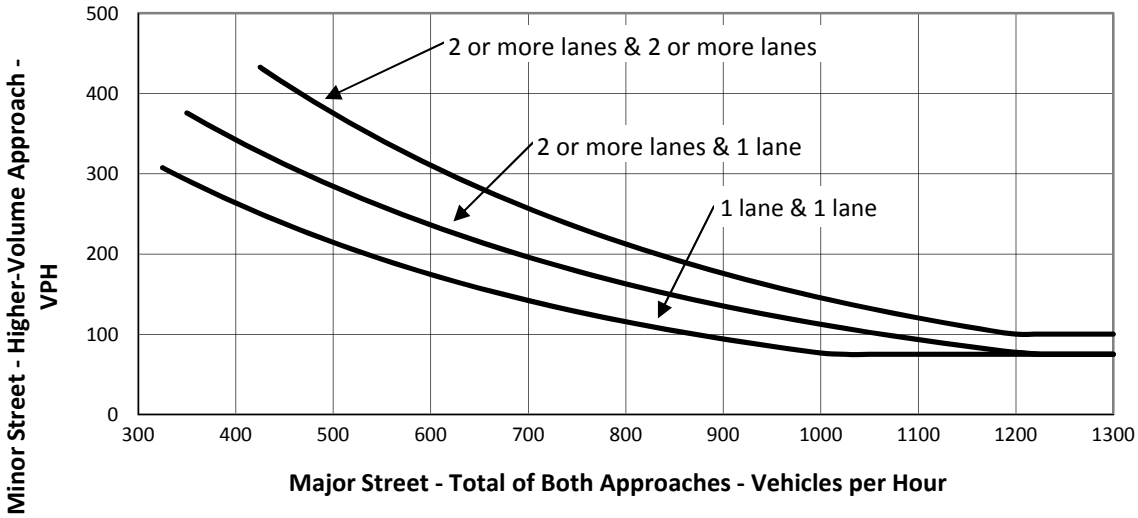
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	281
		Major Street (Approach 2):	245
Major Street Lanes:	1	[a] Major Street Left-Turns:	22
Minor Street Lanes:	1	Minor Street (Higher Volume):	50
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	281	Minimum Major Street Volume:	310
Major Street (Approach 2):	245	Satisfied?	YES
Total Major Street Volume:	526		
		Minimum Minor Street Volume:	203
Major Street Left Turns:	22	Satisfied?	NO
Minor Street (Higher Volume):	50		
Total Minor Street Volume:	72	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Conditions (Sun-PM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	292	266	199
Major Street (Approach 2):	238	217	162
[b] Major Street Left-Turns:	30	27	20
Minor Street (Higher Volume):	74	67	50

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	199
Major Street (Approach 2):	162
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	50

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **361** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **361** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

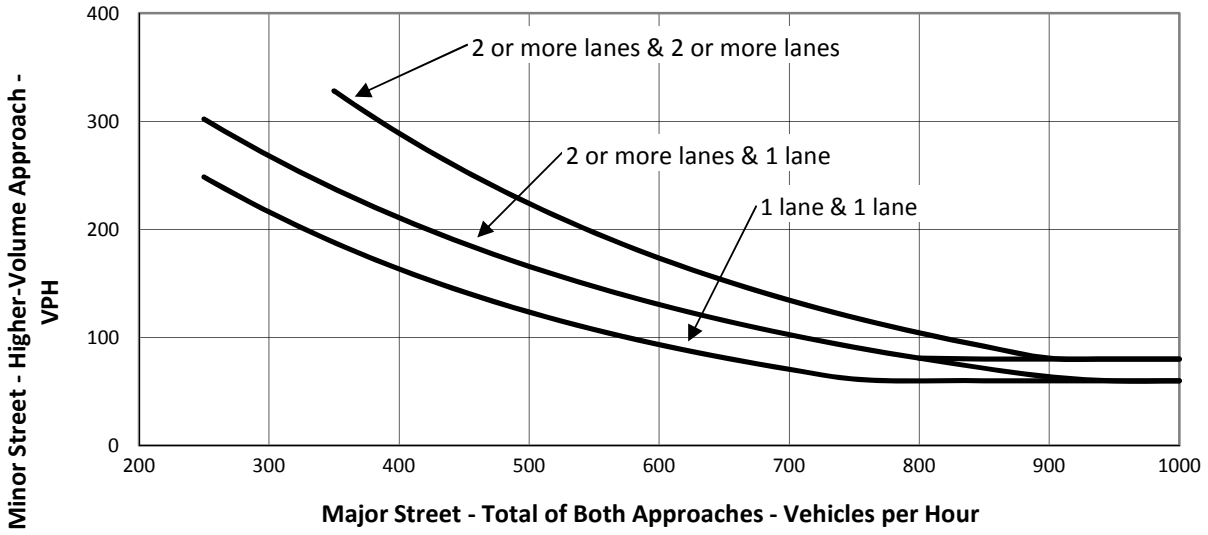
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	266
		Major Street (Approach 2):	217
Major Street Lanes:	1	[a] Major Street Left-Turns:	27
Minor Street Lanes:	1	Minor Street (Higher Volume):	67
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	266	Minimum Major Street Volume:	270
Major Street (Approach 2):	217	Satisfied?	YES
Total Major Street Volume:	483		
		Minimum Minor Street Volume:	130
Major Street Left Turns:	27	Satisfied?	NO
Minor Street (Higher Volume):	67		
Total Minor Street Volume:	94	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

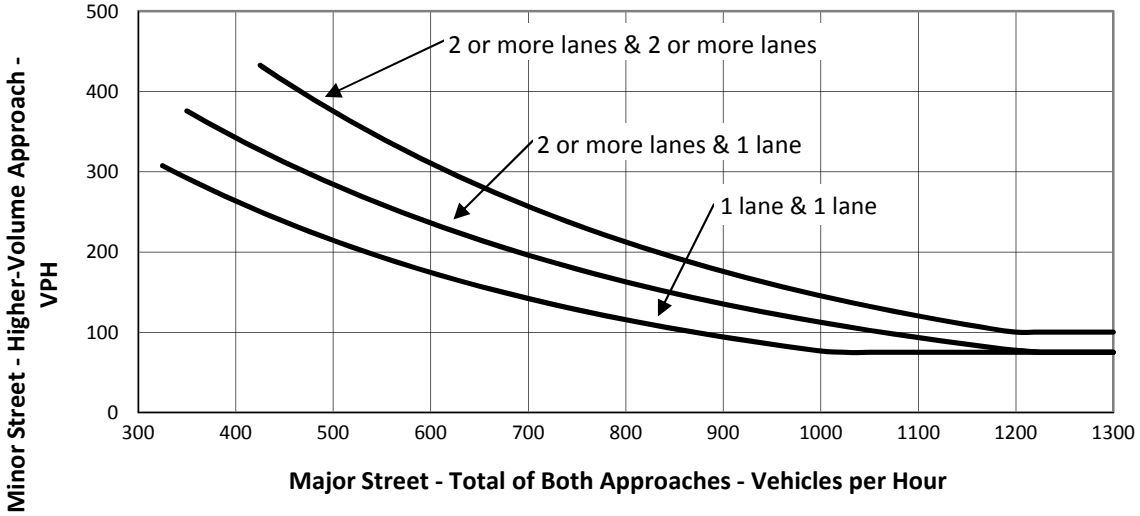
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	292
		Major Street (Approach 2):	238
Major Street Lanes:	1	[a] Major Street Left-Turns:	30
Minor Street Lanes:	1	Minor Street (Higher Volume):	74
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	292	Minimum Major Street Volume:	310
Major Street (Approach 2):	238	Satisfied?	YES
Total Major Street Volume:	530		
		Minimum Minor Street Volume:	202
Major Street Left Turns:	30	Satisfied?	NO
Minor Street (Higher Volume):	74		
Total Minor Street Volume:	104	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-AM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035
Intersection Number:	6
Major Street Name:	State Route 18
Minor Street Name:	Live Oak Drive

Intersection Number & Name as Displayed

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Lanes:	1
Minor Street Lanes:	1
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	289	263	197
Major Street (Approach 2):	283	258	192
[b] Major Street Left-Turns:	22	20	15
Minor Street (Higher Volume):	70	64	48

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name: State Route 18
Minor Street Name: Live Oak Drive

Major Street Lanes: 1
Minor Street Lanes: 1

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	197
Major Street (Approach 2):	192
[a] Major Street Left-Turns:	15
Minor Street (Higher Volume):	48

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **389** Minor: **63**
→	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **389** Minor: **63**
→	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

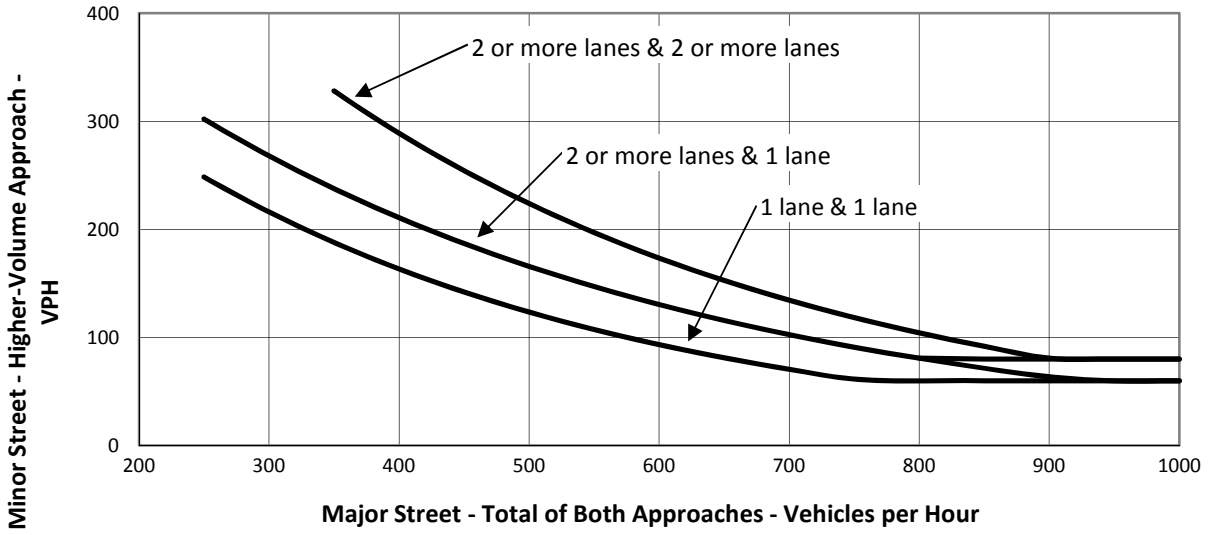
6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	263
		Major Street (Approach 2):	258
Major Street Lanes:	1	[a] Major Street Left-Turns:	20
Minor Street Lanes:	1	Minor Street (Higher Volume):	64
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	263	Minimum Major Street Volume:	270
Major Street (Approach 2):	258	Satisfied?	YES
Total Major Street Volume:	521		
		Minimum Minor Street Volume:	116
Major Street Left Turns:	20	Satisfied?	NO
Minor Street (Higher Volume):	64		
Total Minor Street Volume:	84	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2035

Skypark at Santa's Village

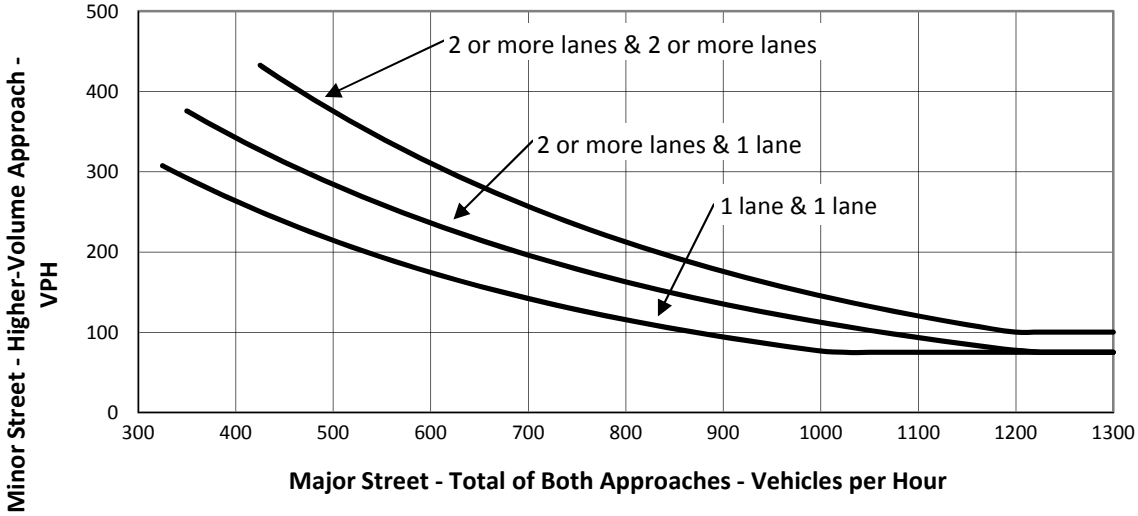
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

6. STATE ROUTE 18 & LIVE OAK DRIVE

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Live Oak Drive	Major Street (Approach 1):	289
		Major Street (Approach 2):	283
Major Street Lanes:	1	[a] Major Street Left-Turns:	22
Minor Street Lanes:	1	Minor Street (Higher Volume):	70
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	289	Minimum Major Street Volume:	310
Major Street (Approach 2):	283	Satisfied?	YES
Total Major Street Volume:	572		
		Minimum Minor Street Volume:	185
Major Street Left Turns:	22	Satisfied?	NO
Minor Street (Higher Volume):	70		
Total Minor Street Volume:	92	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From California *Manual on Uniform Traffic Control Devices, 2010 Edition.*

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (Sun-PM) - Year 2035**

Intersection Number: **6**
Major Street Name: **State Route 18**
Minor Street Name: **Live Oak Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Appendix G

Intersection Control Evaluation

PSOMAS

SR-18/SKYPARK AT SANTA'S VILLAGE ACCESS ROAD
INTERSECTION IMPROVEMENT PROJECT
08 – SBd – 18 – PM 26.4
Date: December 9, 2015

INTERSECTION CONTROL EVALUATION - DESIGN AND TRAFFIC ANALYSIS

Introduction

Skypark at Santa's Village is a commercial entertainment development located on SR 18 in Skyforest near Kuffel Canyon Road in rural San Bernardino County. It has a long history as a seasonal attraction but has not operated in a number of years. The owner, Bill Johnson, is working on restoring the site. An Environmental Impact Report is currently being prepared for the proposed development.

The property owner, in coordination with the California Department of Transportation (Caltrans), is proposing to modify the existing access to the Skypark property, by constructing a single new access intersection on SR 18, located between the two existing access roads.

The purpose of the project is to provide a new controlled intersection that will accommodate anticipated traffic demands and operations and provide safe passage for pedestrians to cross SR 18 from the planned parking lots on both sides of the highway.

Psomas conducted this Intersection Control Evaluation (ICE) to objectively evaluate and analyze intersection control and access alternatives at the subject intersection. This is consistent with Caltrans Traffic Operations Policy Directive #13-02, dated August 23, 2013.

The ICE evaluated the following alternatives access treatments for the main Project entry point:

1. Single driveway with two-way stop control
2. Split driveways with two-way stop control and a pedestrian underpass
3. Single driveway with four-way stop control
4. Single driveway with traffic signal control
5. Roundabout design

Existing Conditions

Primary regional access to the Project site is provided by SR 18, which generally runs in the east-west direction. SR 18 is a two lane state highway that bisects the site.

The existing access to the Skypark property consists of two uncontrolled driveway access locations located west and east of the proposed intersection. The existing property is unoccupied and thus, has very low traffic volumes.

The State of California (Caltrans) owns approximately 100 ft of right of way centered on the centerline of SR 18 through the extent of the project limits.

Project Description

The Development Project contains several recreational and visitor support facilities along with a 70-space campground on the south side of SR 18, with two main parking lots, one on the north side and one on the south side of SR 18. The proposed improvements within Caltrans right of way include the following:

- Driveways to both parking lots will be aligned to create a central controlled access point on SR 18;
- The driveways will provide two outbound lanes (one shared through/right turn lane, one left-turn lane) and one inbound lane. The driveways will accommodate delivery trucks.
- SR 18 will be widened to accommodate left-turn lanes for the traffic signal alternative or additional channelization for the roundabout alternative;
- Pedestrian access will be provided by at-grade crosswalks which will connect the two parking lots and lead to a pathway that will connect to the park entrance;
- In an effort to reduce the project footprint and impacts to the heavily treed surroundings, the project will request design exceptions for 2:1 fill slopes and reduced shoulder widths tapering from 8 ft to 2 ft. The existing highway has 2:1 fill slopes and shoulders less than 2 ft through the project limits.
- Retaining walls are also anticipated in certain locations to limit project footprint;
- Drainage improvements will be required to convey runoff to existing drainage swales;
- Other improvements will include lighting, signage, pavement delineation, guard railing, and erosion control.

Traffic Analysis

A traffic report titled "Traffic Impact Study for the Skypark at Santa's Village Project, Skyforest, California", dated November 2015 has been prepared by Gibson Transportation Consulting, Inc.

The study analyzed the potential Project-generated traffic impacts on the street system surrounding the Project Site when compared to Existing Conditions (Year 2015), Opening Year Conditions (Year 2016) and Full Build-Out Conditions (Year 2035). After consultation with Caltrans and the County, it was determined that intersection traffic impacts for the Project would be evaluated on Saturday and Sunday during the morning peak hours (9:00 AM to 11:00 AM) when the highest number of park guests will be arriving and afternoon peak hours (2:30 PM to 4:30 PM) when the highest number of park guests will be departing.

The following summarizes the results of this analysis:

- The Project is anticipated to result in 128 trips during the morning peak hour and 155 trips during the afternoon peak hour on a Design Day of the year. These volumes are expected to occur only on the weekends in December and in the summertime. The vast majority of other days of the year will experience far less Project traffic.

- There were no significant traffic impacts found in the Existing plus Project, the Opening Year plus Project (Year 2016), and the Full Build-Out plus Project (Year 2035) analyses.
- The Project driveway could operate with two-way stop sign control (Alternative 1) without creating a significant impact on vehicular traffic flow. However, Caltrans and the County were concerned with potential operational issues that may not be fully measured in the significant traffic impact analysis methodology. Specifically, Caltrans was concerned with the possibility of pedestrians crossing SR 18 unprotected and the number of left turns that would occur from SR 18 into the Project on busy Project days. For these reasons the Single driveway with two-way stop control (Alternative 1) was considered to be infeasible and eliminated from further evaluation.
- Following further review of the Split driveways with two-way stop control and a pedestrian underpass (Alternative 2), Caltrans was not in favor of this option and therefore was eliminated from further evaluation.
- To alleviate the operational concerns, a configuration with the two driveways aligned at a single intersection was considered. Traffic turning left into the Project driveways would be served by adding left-turn lanes at the Project driveways approaching from both directions on SR 18. This would minimize the conflict between the vehicles turning into the Project driveways and the vehicles traveling through on SR 18. Alternative 3 tests this lane configuration as a four-way stop controlled intersection.
- A signal warrant analysis was conducted for the single intersection with traffic signal control and is contained in Attachment C. A traffic signal is warranted based on the number of pedestrians crossing SR 18 once the Project is open and operational. Alternative 4 tests this lane configuration as a signalized intersection.
- Alternative 5 tests a roundabout that would achieve a similar operational improvement.
- The intersection operating conditions for morning and evening peak hours on a Saturday and Sunday are shown in Table 1 below for all of the study scenarios. As shown, the intersection operates at an acceptable LOS under all scenarios for Alternatives 3, 4, and 5.

TABLE 1
SR 18/Intersection Level of Service
(w/ Improvement Condition)

Alternative	Scenario	Peak Hour*	Saturday		Sunday	
			Delay (sec)	LOS	Delay (sec)	LOS
Alternative 3: Single driveway with four-way stop control	Existing Plus Project	AM PM	9.5 11.8	A B	9.6 10.3	A B
	Opening Year Plus Project	AM PM	9.5 11.9	A B	9.7 10.3	A B
	Future Build-Out Plus Project	AM PM	9.7 12.7	A B	10 10.7	A B
Alternative 4: Single driveway with traffic signal control	Existing Plus Project	AM PM	13.3 12.6	B B	13.2 12.9	B B
	Opening Year Plus Project	AM PM	13.3 12.6	B B	13.2 12.9	B B
	Future Build-Out Plus Project	AM PM	16.2 12.8	B B	16.0 13.0	B B
Alternative 5: Roundabout design at intersection	Existing Plus Project	AM PM	5.8 6.5	A A	6.0 5.8	A A
	Opening Year Plus Project	AM PM	5.8 6.6	A A	6.0 5.9	A A
	Future Build-Out Plus Project	AM PM	6.0 6.9	A A	6.2 6.0	A A

* Saturday and Sunday peak hours
Source: Gibson Transportation Consulting, Inc.

Key Findings

The intersection evaluations considered traffic operations, service life and maintenance, life cycle cost, geometrics, project footprint and other design considerations. The following is a summary of the key findings:

- Alternatives 3, 4, and 5 provide acceptable traffic operations under the opening year and full build out scenarios. Under Alternative 3, 4, and 5 the intersection operates at LOS B or better.
- Alternative 4 provides the safest controlled method for pedestrians to cross SR 18.
- Alternative 5 would allow for pedestrian at marked cross walks but this would be an uncontrolled crossing.
- Alternatives 3 and 5 would be an unanticipated intersection control alternative on this largely rural highway. No other all-way stop controlled intersections or roundabouts exist on SR 18.
- The estimated Roundabout Alternative construction cost is higher than the Traffic Signal Alternative, requires more right-of-way, and has a greater impact on the adjacent topography and forest.
- The B/C ratio for the traffic signal control alternative and the roundabout control alternative are comparable.

- Traffic volumes show a directional split of between 5:1 and 10:1 for the peak hour between SR 18 and the entrance driveways.
- Public outreach has not occurred with the surrounding community however it is anticipated that support for the traffic signal will be greater than a roundabout or an all way stop controlled intersection.
- The property owner is not in support of the Roundabout alternative.
- The County of San Bernardino has expressed support of providing a Traffic Signal improvement at this location in conjunction with the Project.
- The operating and maintenance costs is generally accepted to be higher for the traffic signal versus roundabouts over a 20 year design life (Page 3-34 NCHRP 672).
- Safety comparisons indicate a higher reduction in the number and severity of accidents for the roundabout alternatives versus traffic signal alternatives (Page 3-30 and 3-33 NCHRP 672).
- Right of way acquisition is significantly higher for the roundabout (Alternative 5) versus the Alternatives 3 and 4 however since all right of way will be dedicated to the State only administrative costs are assumed to be associated with the right of way acquisition.

Conclusions

There is not a significant difference in implementation costs between the Traffic Signal (Alt 4) and Roundabout (Alt 5) alternatives. Neither strategy has an overwhelming advantage in terms of benefit/cost ratio.

Table 2 summarizes the cost benefit analysis for the project alternatives. The detailed analysis is included in Attachment E. Estimated construction costs for both alternatives are included in Attachment F.

Table 2. Summary of ICE Cost Benefit Analysis

Intersection Control Option	Estimated Cost (dollars)	Estimated Service Life (years)	Estimated PM Peak Delay - 2035 (seconds)	Estimated Collision Savings (dollars)	Benefit vs. Cost Index
Alternative 3: Single driveway with four-way stop control	$ 1,665,000	20	12.7 / LOS B	$ 4,084,000	2.45
Alternative 4: Single driveway with traffic signal control	$ 1,973,000	20	16.2 / LOS B	$ 4,143,000	2.10
Alternative 5: Roundabout design at intersection	$ 2,269,000	20	6.9 / LOS A	$ 6,998,000	3.08

The ICE showed safety concerns regarding pedestrian crossing of SR 18 with Alternatives 3and 5 and left-turn safety/operational concerns with Alternative 2. In addition, it is anticipated that the local community will not support implementation of an all way stop controlled intersection or a roundabout (Alternatives 3 or 5). Due to the improved operational performance of Alternative 4, it is recommended that Alternative 4 be used in the proposed project and be carried forward into Final Design through Caltrans PEER Encroachment Permit Process.

Attachments:

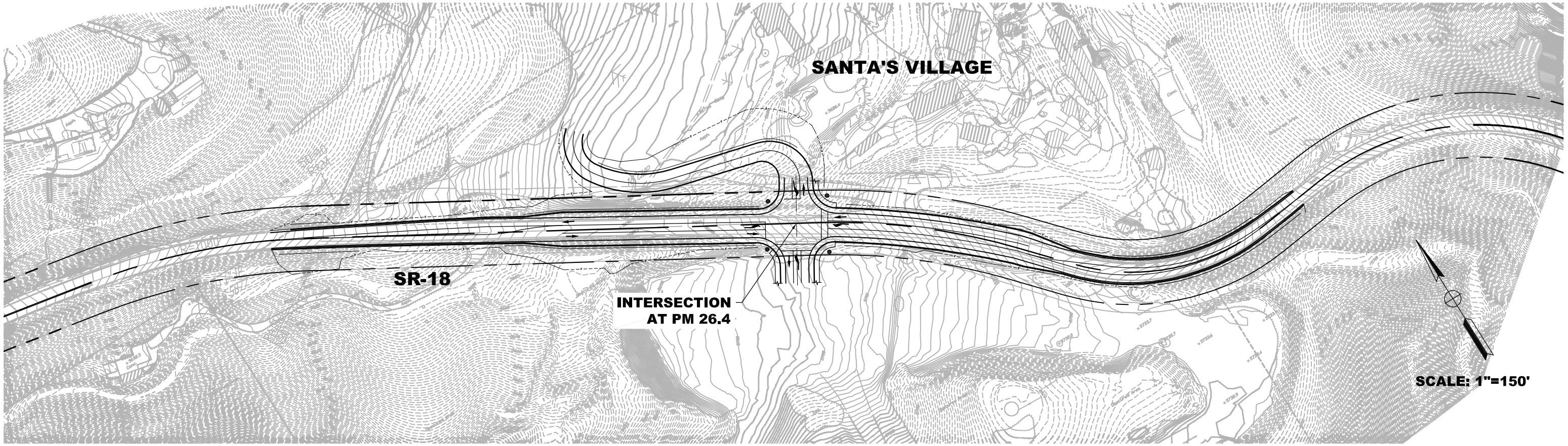
A Location Map
B Preliminary Drawings
C Signal Warrant Analysis
D LOS Worksheets
E Cost Benefit Analysis Spreadsheet
F Preliminary Project Cost Estimates

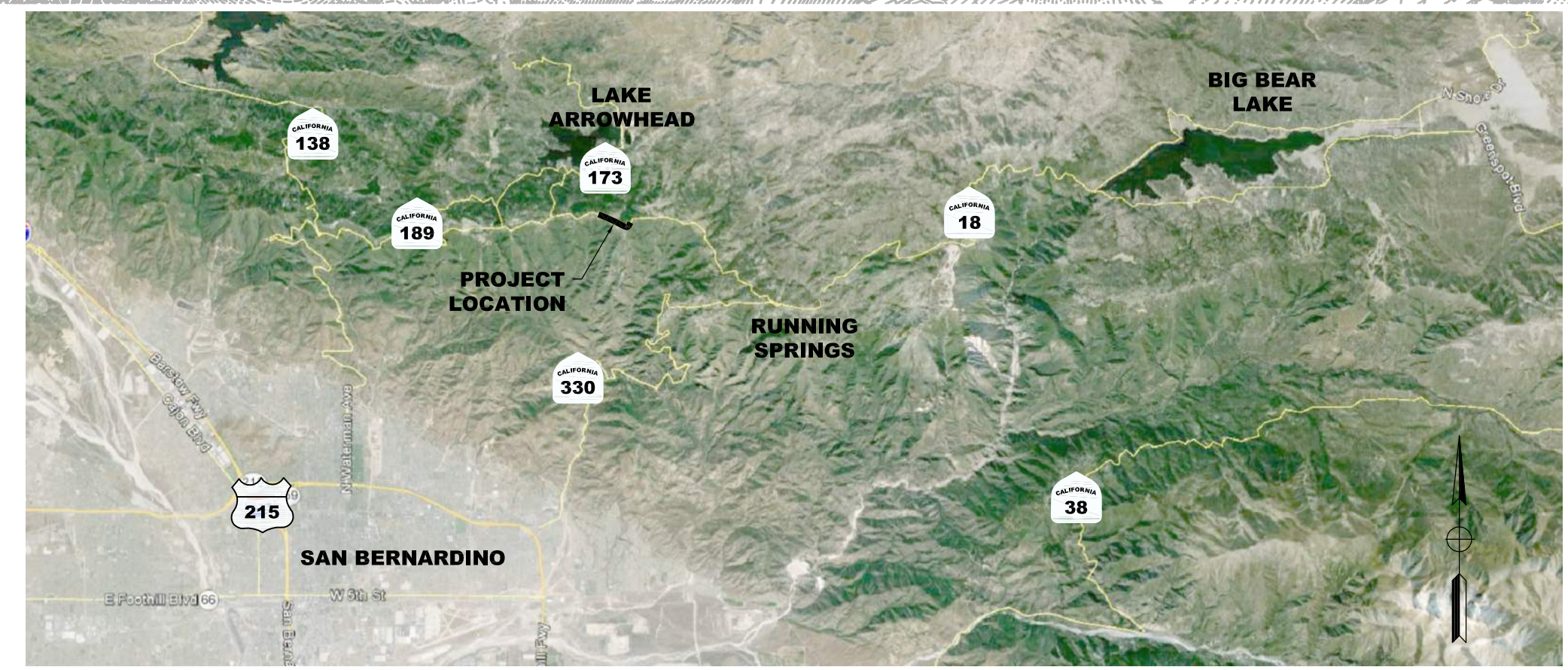
This Intersection Control Evaluation Technical Memorandum has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

12/7/2015

REGISTERED CIVIL ENGINEER *DATE*

Attachment A – Location Map





SKYPARK AT SANTA'S VILLAGE
LOCATION MAP

PSOMAS

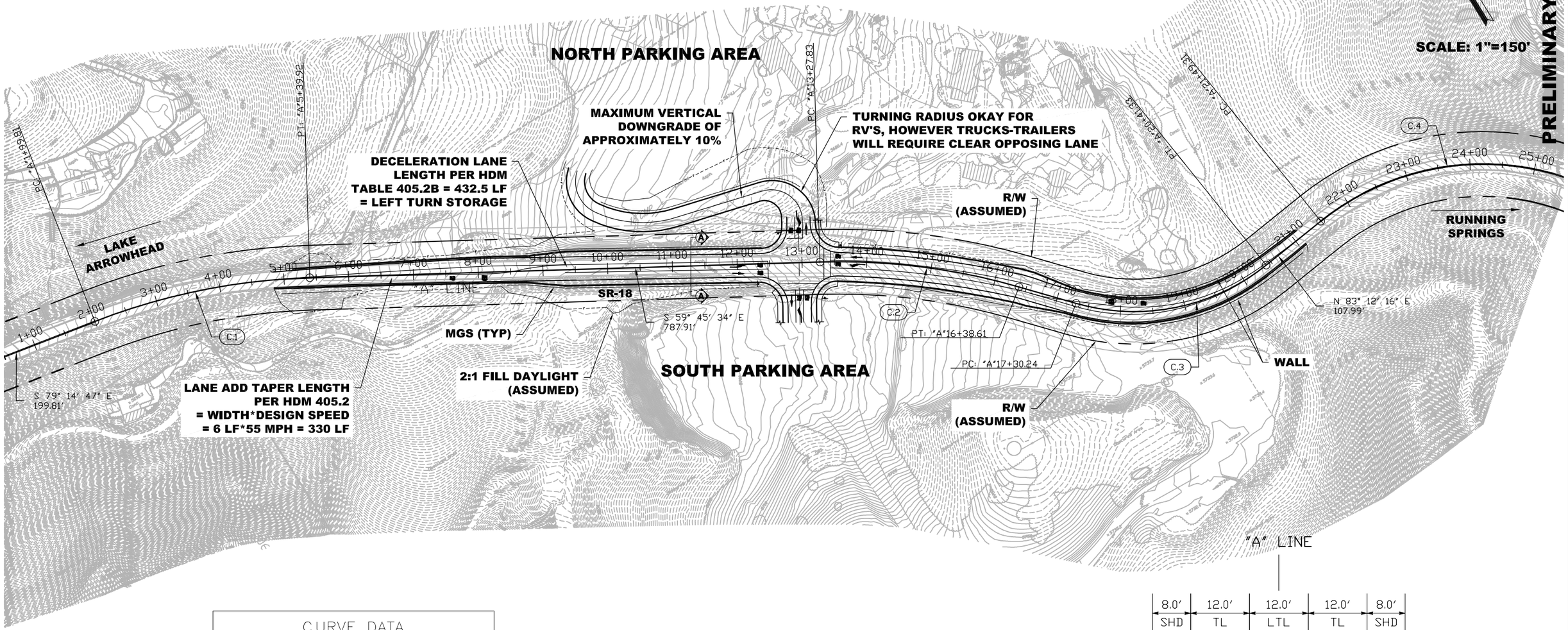
Attachment B – Preliminary Engineering Drawings

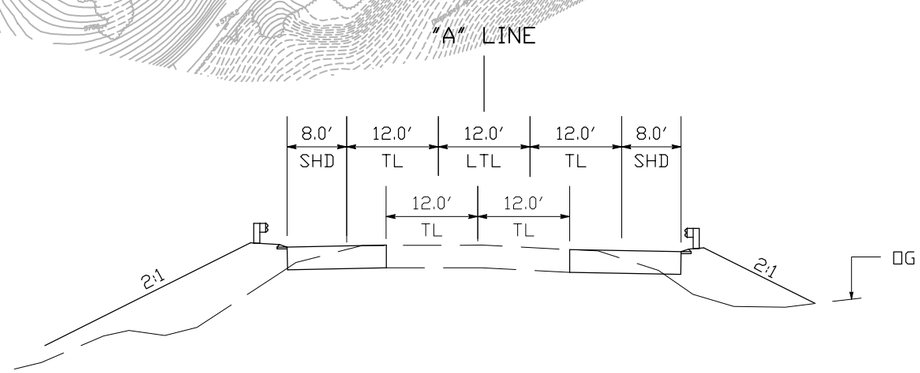
ASSUMES THE FOLLOWING CAN BE APPROVED BY CALTRANS THROUGH DESIGN EXCEPTIONS:

- **2:1 CUT/FILL SLOPES WITH MGS RAILING PROTECTION**
- **NO CENTER MEDIAN WIDTH**
- **NO LEFT SHOULDERS**
- **2'-8' RIGHT SHOULDERS**

PRELIMINARY PLANNING

SCALE: 1"=150'





CURVE DATA				
No. X	R	Δ	T	L
C.1	1000'	19°29'12"	338.47'	340.11'
C.2	1000'	17°48'23"	309.53'	310.78'
C.3	325'	54°50'33"	299.34'	311.08'
C.4	400'	60°01'32"	400.15'	419.06'

SKYPARK AT SANTA'S VILLAGE
LAKE ARROWHEAD, CALIFORNIA
PM26.4, ALTERNATIVE 3 - FOUR-WAY STOP

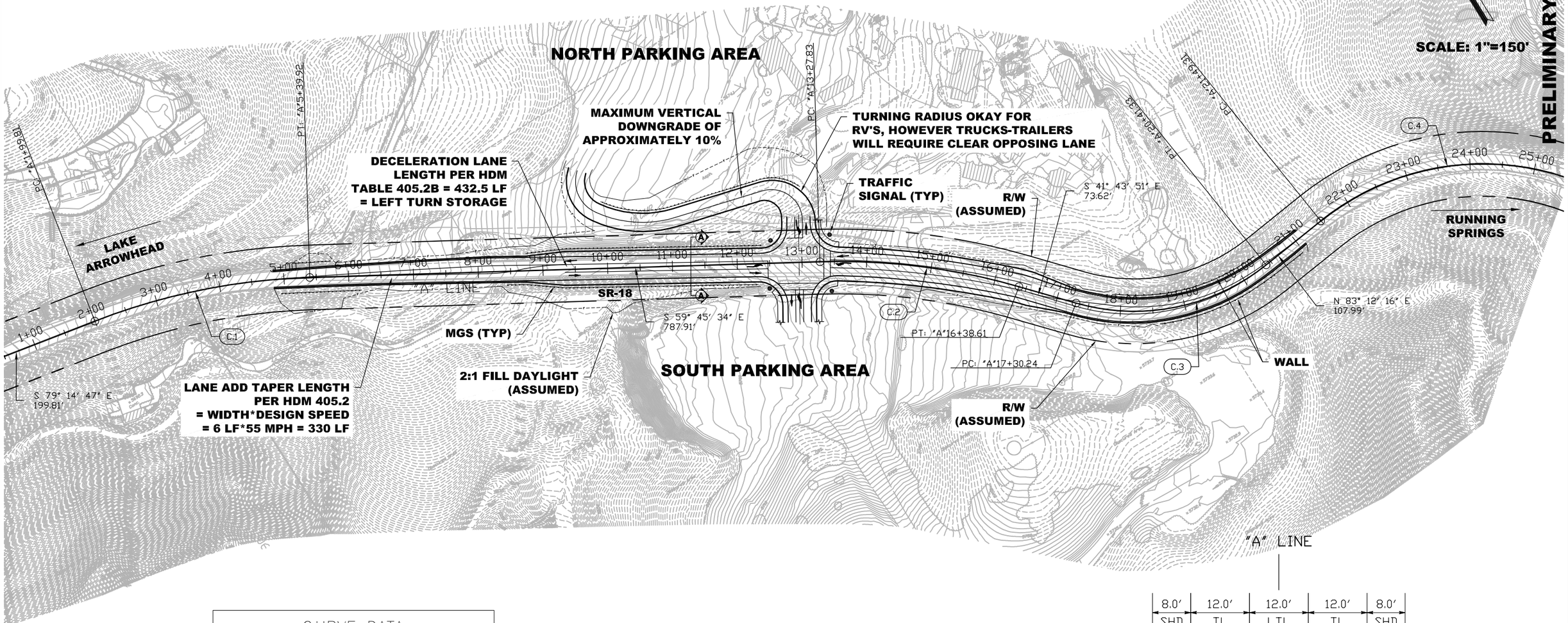
PSOMAS

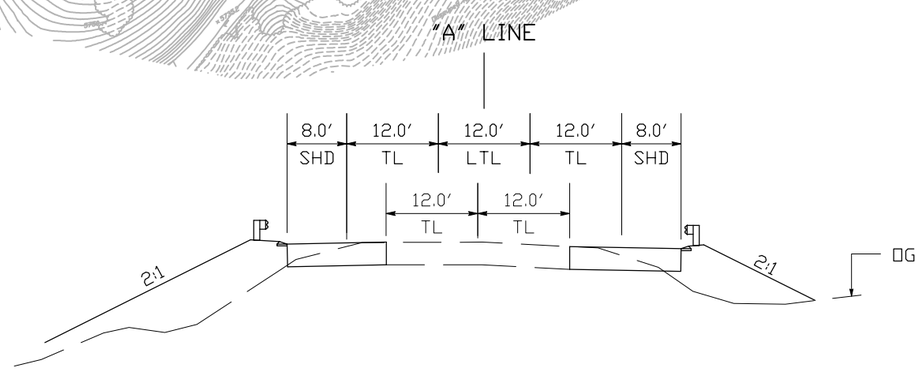
ASSUMES THE FOLLOWING CAN BE APPROVED BY CALTRANS THROUGH DESIGN EXCEPTIONS:

- **2:1 CUT/FILL SLOPES WITH MGS RAILING PROTECTION**
- **NO CENTER MEDIAN WIDTH**
- **NO LEFT SHOULDERS**
- **2'-8' RIGHT SHOULDERS**

PRELIMINARY PLANNING

SCALE: 1"=150'





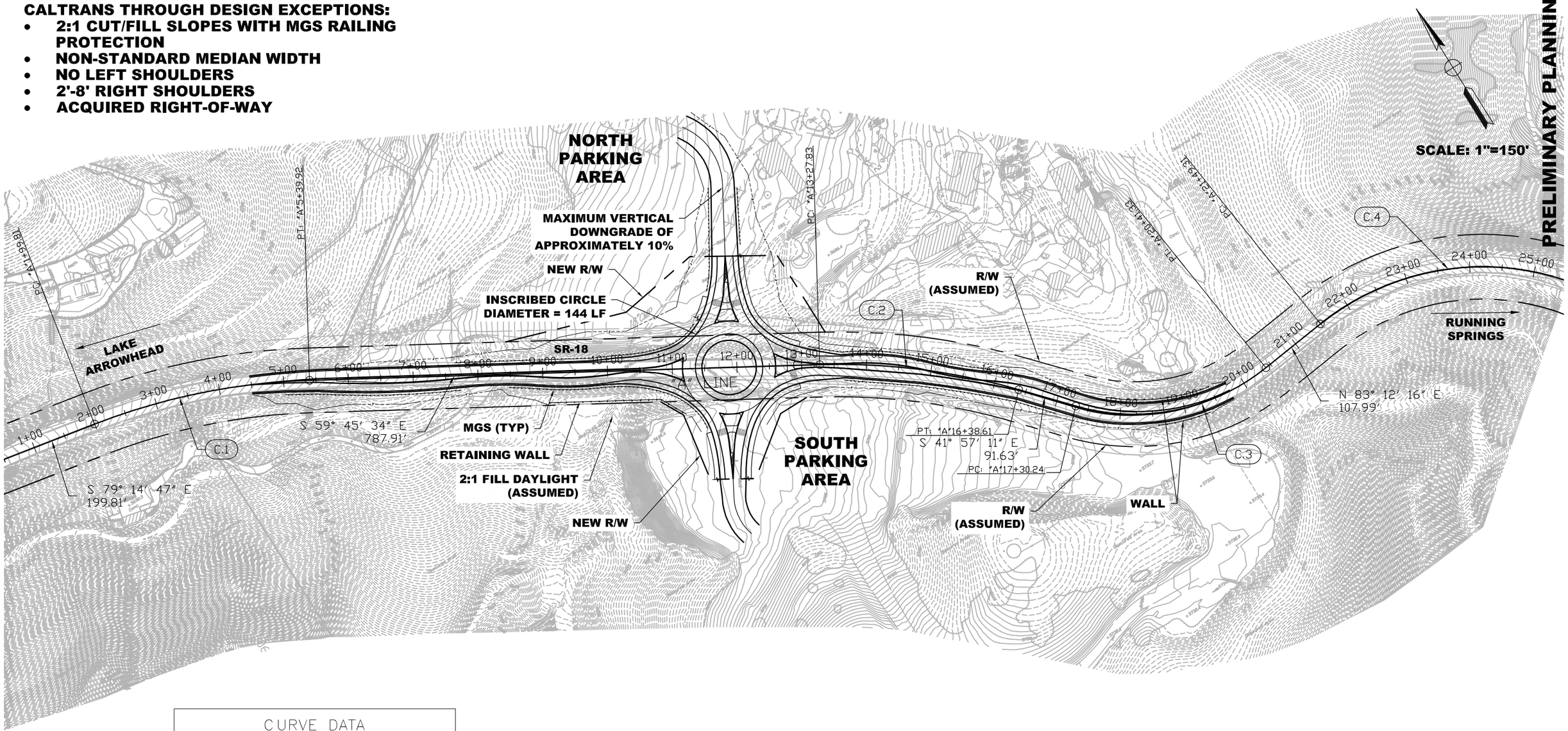
CURVE DATA				
No. X	R	Δ	T	L
C.1	1000'	19°29'12"	338.47'	340.11'
C.2	1000'	17°48'23"	309.53'	310.78'
C.3	325'	54°50'33"	299.34'	311.08'
C.4	400'	60°01'32"	400.15'	419.06'

SKYPARK AT SANTA'S VILLAGE
LAKE ARROWHEAD, CALIFORNIA
PM26.4, ALTERNATIVE 4 - TRAFFIC SIGNAL

PSOMAS

ASSUMES THE FOLLOWING CAN BE APPROVED BY CALTRANS THROUGH DESIGN EXCEPTIONS:

- **2:1 CUT/FILL SLOPES WITH MGS RAILING PROTECTION**
- **NON-STANDARD MEDIAN WIDTH**
- **NO LEFT SHOULDERS**
- **2'-8' RIGHT SHOULDERS**
- **ACQUIRED RIGHT-OF-WAY**



CURVE DATA				
No. X	R	Δ	T	L
C.1	1000'	19°29'12"	338.47'	340.11'
C.2	1000'	17°48'23"	309.53'	310.78'
C.3	325'	54°50'33"	299.34'	311.08'
C.4	400'	60°01'32"	400.15'	419.06'

SKYPARK AT SANTA'S VILLAGE
LAKE ARROWHEAD, CALIFORNIA
PM26.4, ALTERNATIVE 5 - ROUNDABOUT

PSOMAS

Attachment C – Signal Warrant Analysis

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SAT-AM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	287	258	207
Major Street (Approach 2):	248	223	179
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	207
Major Street (Approach 2):	179
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

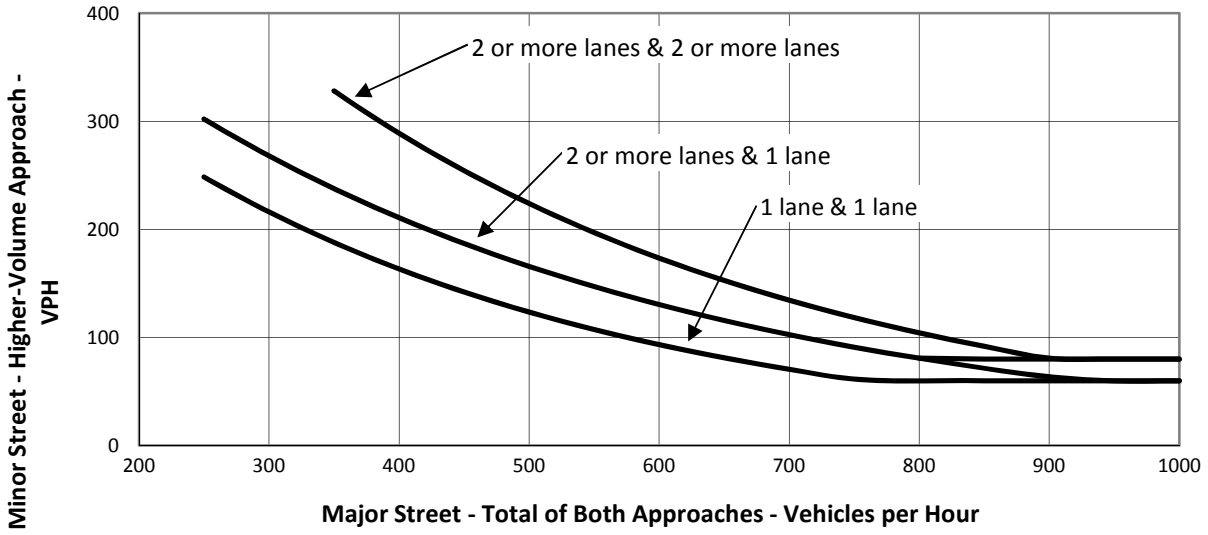
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	258
		Major Street (Approach 2):	223
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258	Minimum Major Street Volume:	330
Major Street (Approach 2):	223	Satisfied?	YES
Total Major Street Volume:	481		
		Minimum Minor Street Volume:	235
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

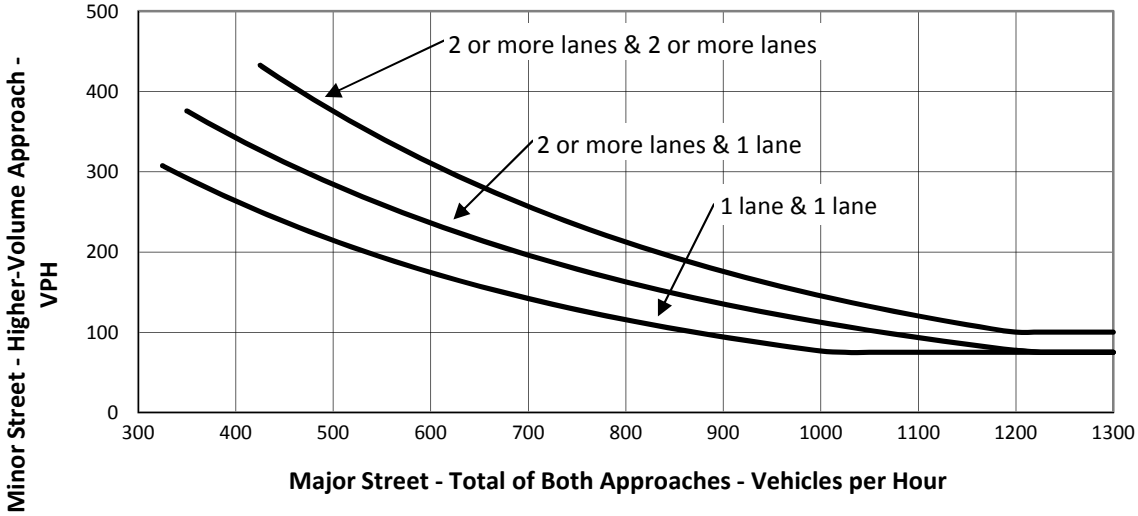
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	287
		Major Street (Approach 2):	248
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	287	Minimum Major Street Volume:	420
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	535		
		Minimum Minor Street Volume:	351
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

EXISTING PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

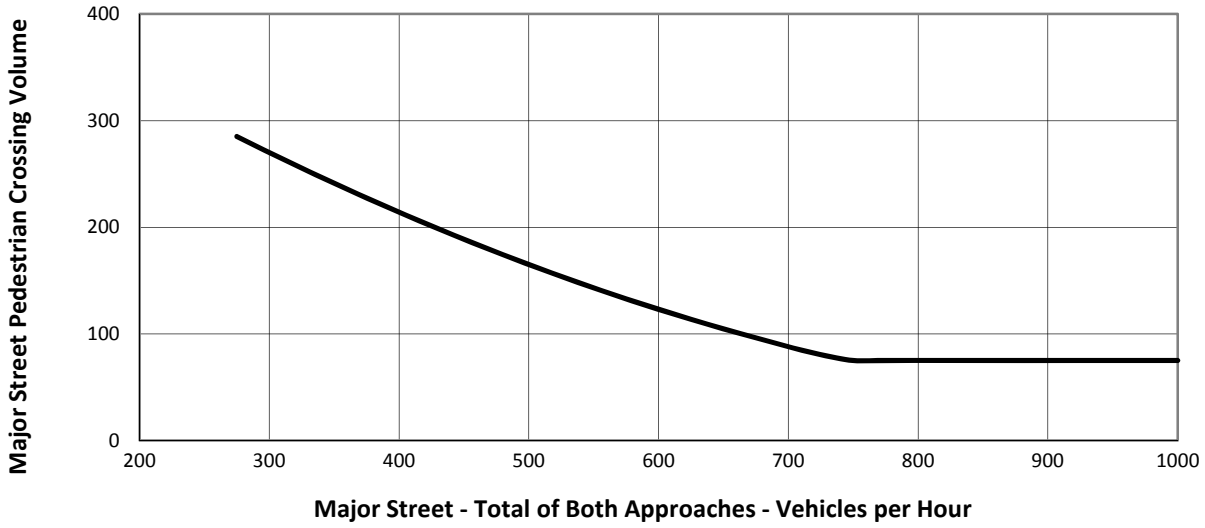
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	258
Major Street (Approach 2):	223
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258
Major Street (Approach 2):	223
Total Major Street Volume:	481
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	174
Satisfied?	NO
Warrant 4A Satisfied?	**NO**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

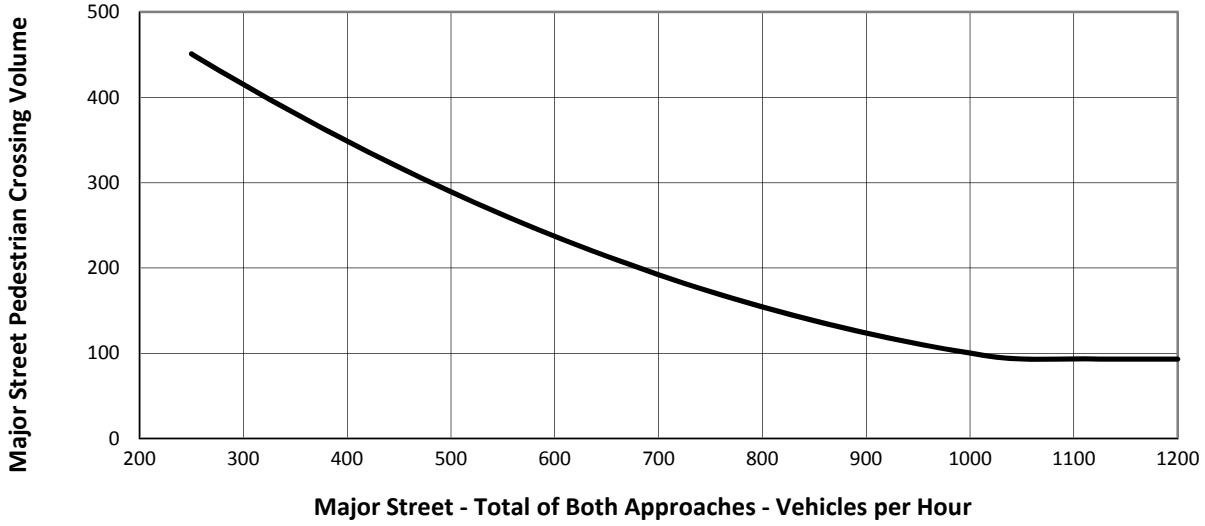
Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	287
		Major Street (Approach 2):	248
[a] Urban/Rural:	Rural		
		Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	287	Minimum Major Street Volume:	250
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	535		
		Minimum Pedestrian Volume:	270
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SAT-AM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	NO
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SAT-PM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	366	329	264
Major Street (Approach 2):	292	263	210
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	264
Major Street (Approach 2):	210
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **474** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

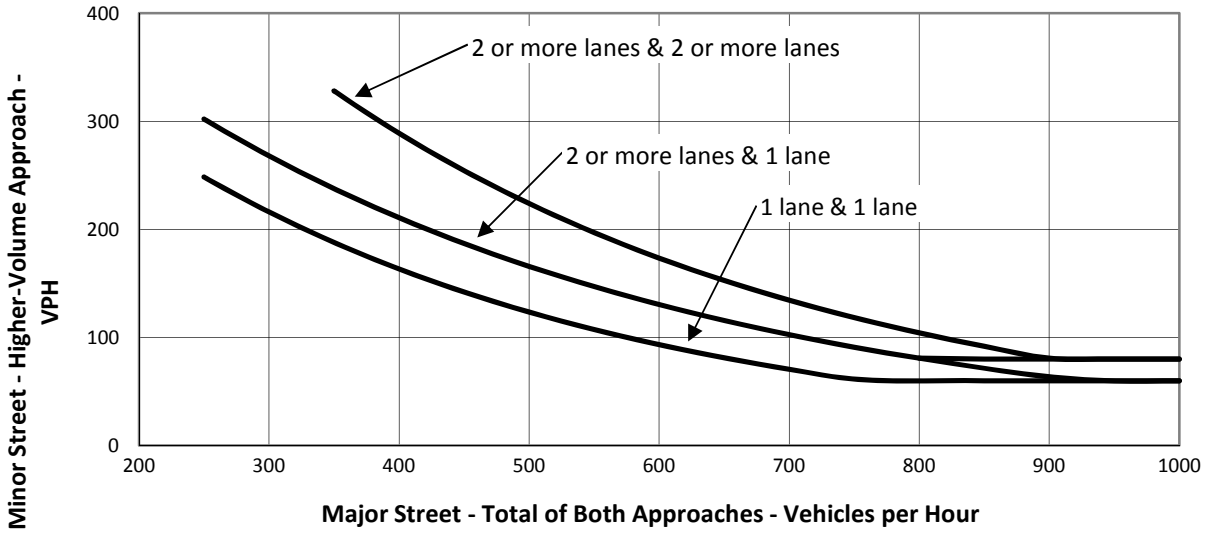
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	329
		Major Street (Approach 2):	263
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	330
Major Street (Approach 2):	263	Satisfied?	YES
Total Major Street Volume:	592		
		Minimum Minor Street Volume:	177
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

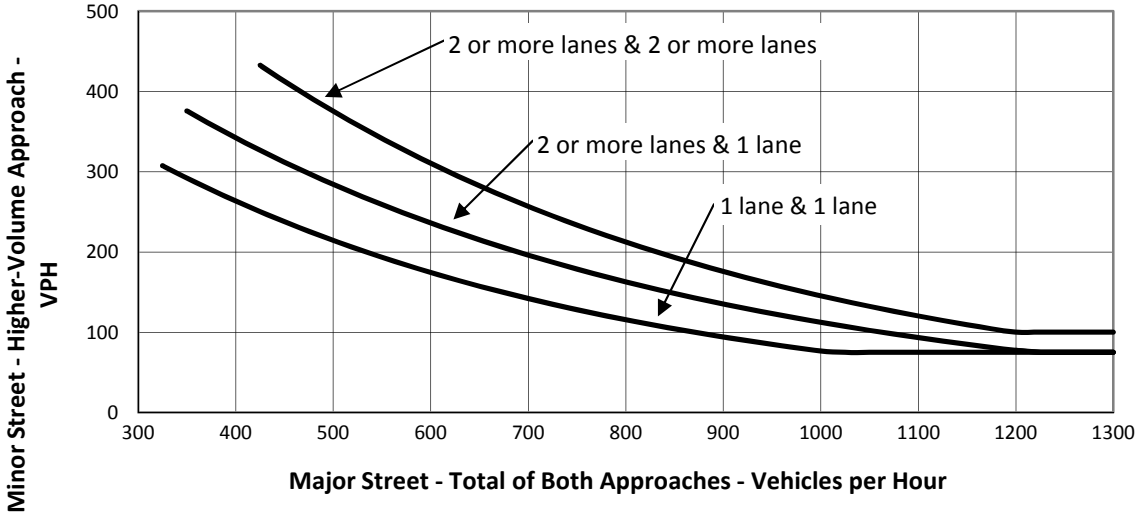
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	366
		Major Street (Approach 2):	292
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	366	Minimum Major Street Volume:	420
Major Street (Approach 2):	292	Satisfied?	YES
Total Major Street Volume:	658		
		Minimum Minor Street Volume:	278
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

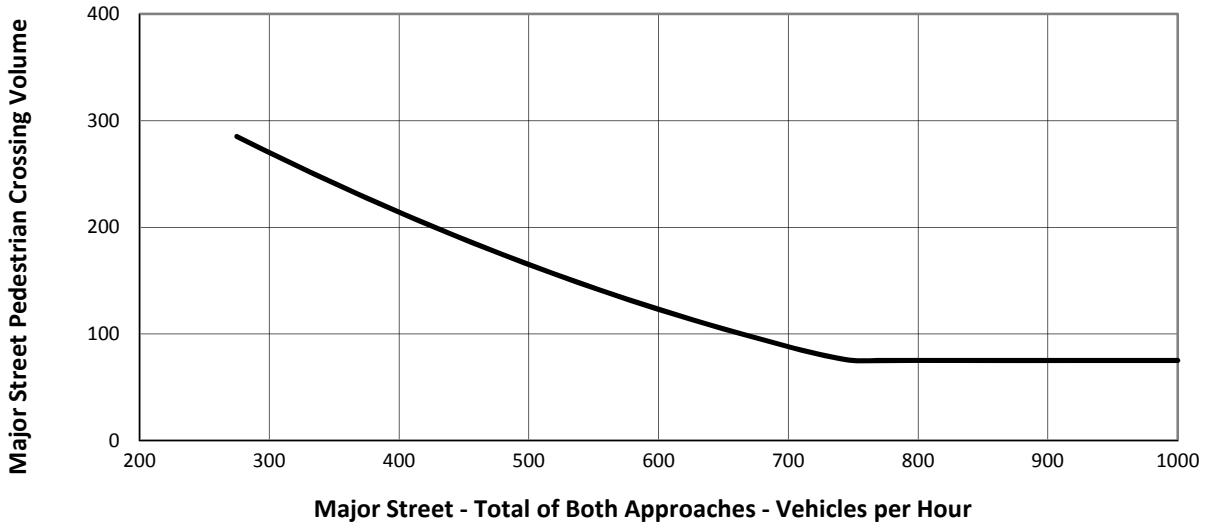
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	329
Major Street (Approach 2):	263
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	329
Major Street (Approach 2):	263
Total Major Street Volume:	592
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	126
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

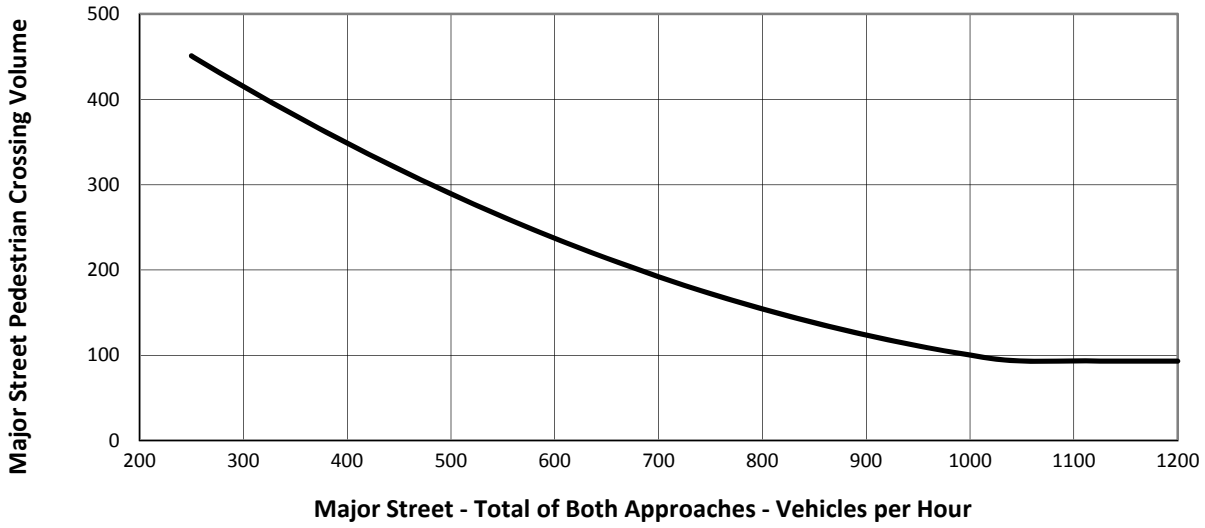
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	366
Major Street (Approach 2):	292
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	366
Major Street (Approach 2):	292
Total Major Street Volume:	658
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	210
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SAT-PM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SUN-AM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	295	268	201
Major Street (Approach 2):	272	248	185
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	201
Major Street (Approach 2):	185
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **386** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

EXISTING PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

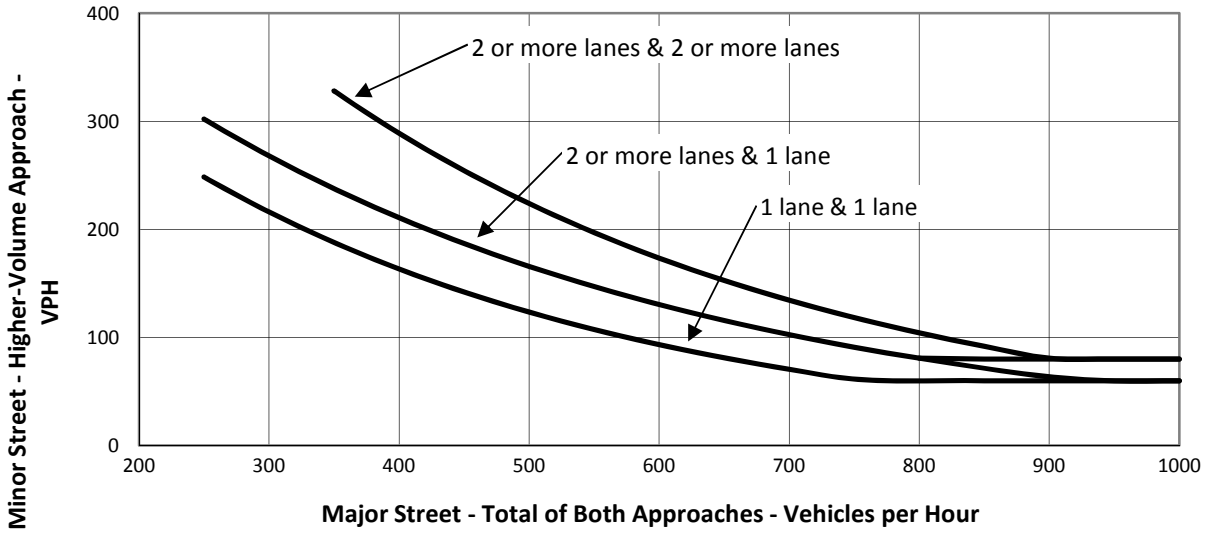
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	268
		Major Street (Approach 2):	248
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	268	Minimum Major Street Volume:	330
Major Street (Approach 2):	248	Satisfied?	YES
Total Major Street Volume:	516		
		Minimum Minor Street Volume:	215
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

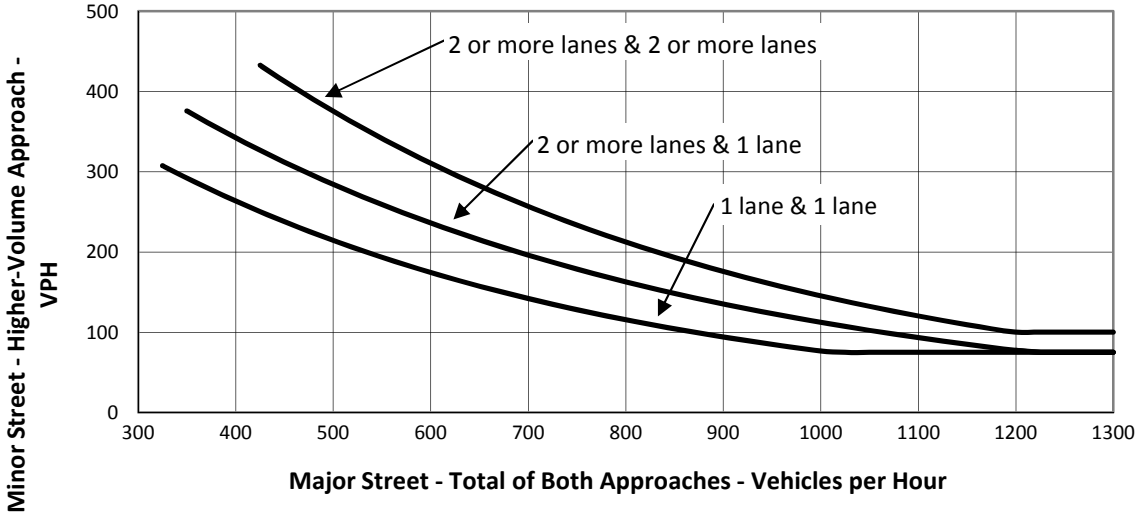
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	295
		Major Street (Approach 2):	272
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	295	Minimum Major Street Volume:	420
Major Street (Approach 2):	272	Satisfied?	YES
Total Major Street Volume:	567		
		Minimum Minor Street Volume:	331
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

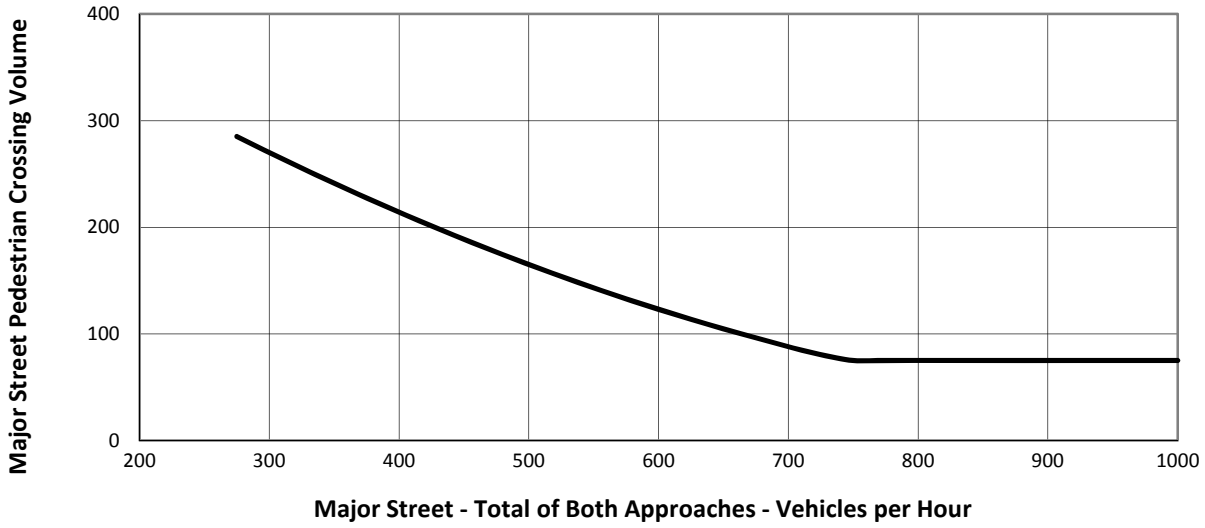
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	268
Major Street (Approach 2):	248
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	268
Major Street (Approach 2):	248
Total Major Street Volume:	516
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	158
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

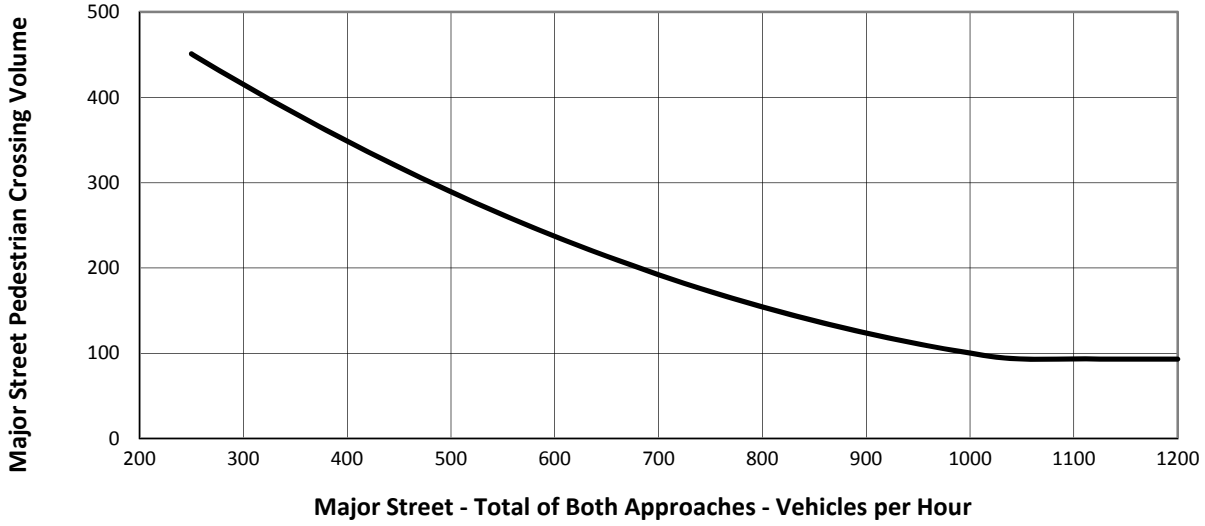
[a] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	295
Major Street (Approach 2):	272
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	295	Minimum Major Street Volume:	250
Major Street (Approach 2):	272	Satisfied?	YES
Total Major Street Volume:	567		
		Minimum Pedestrian Volume:	253
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SUN-AM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Existing Plus Project Conditions (SUN-PM) - Year 2015
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	282	257	192
Major Street (Approach 2):	262	238	178
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

EXISTING PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2015

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	192
Major Street (Approach 2):	178
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **370** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **370** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

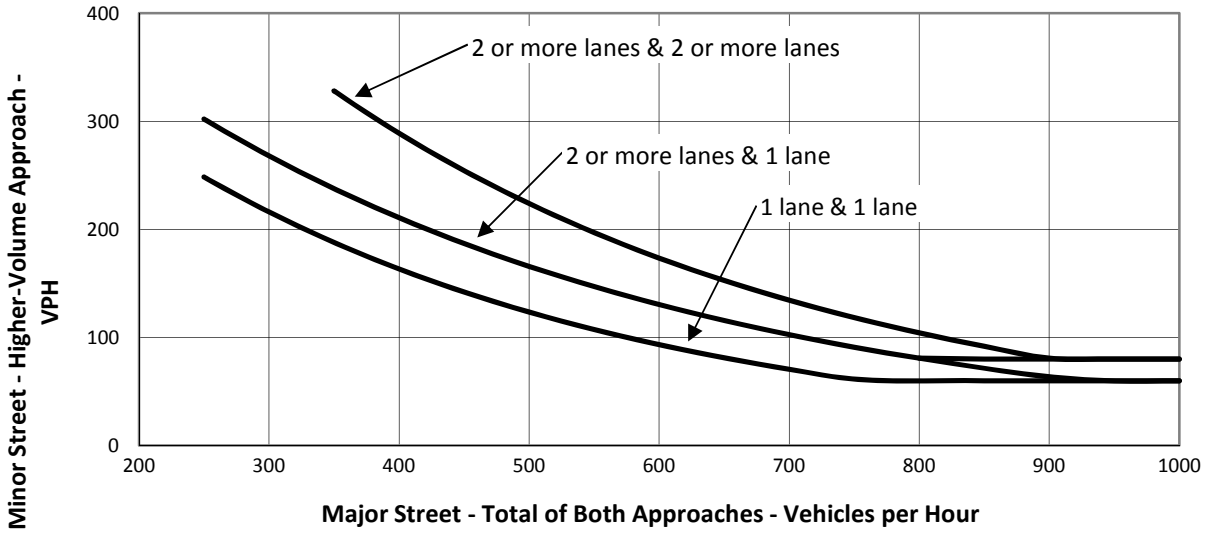
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	257
		Major Street (Approach 2):	238
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	257	Minimum Major Street Volume:	330
Major Street (Approach 2):	238	Satisfied?	YES
Total Major Street Volume:	495		
		Minimum Minor Street Volume:	227
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

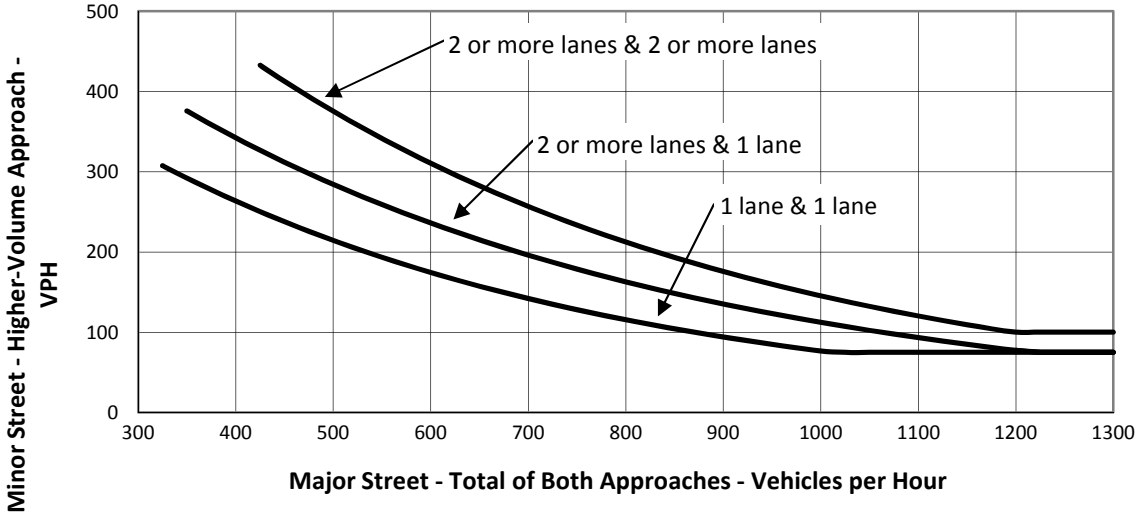
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	282
		Major Street (Approach 2):	262
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	282	Minimum Major Street Volume:	420
Major Street (Approach 2):	262	Satisfied?	YES
Total Major Street Volume:	544		
		Minimum Minor Street Volume:	345
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

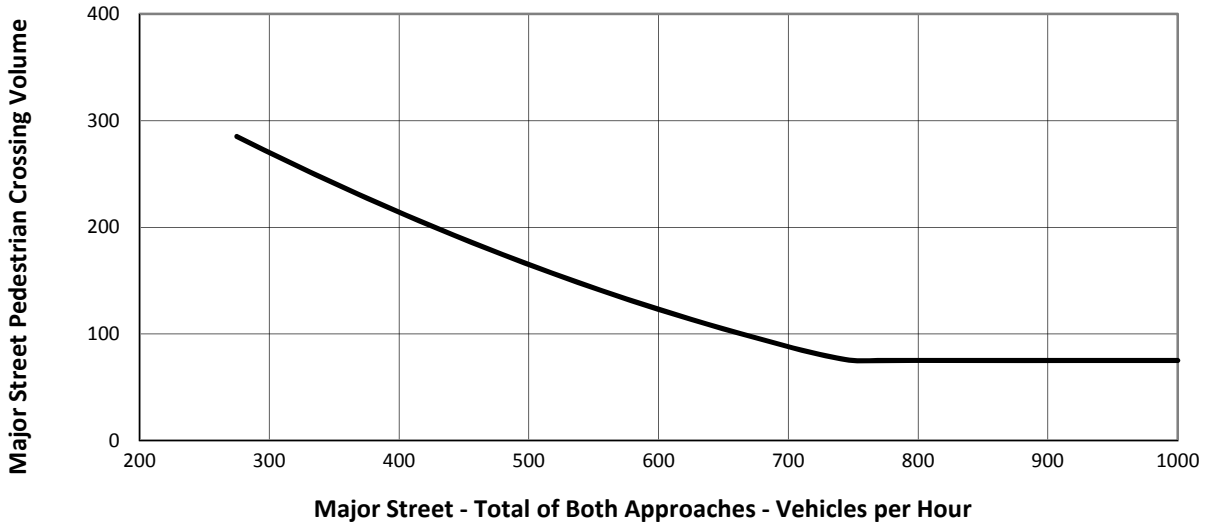
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	257
Major Street (Approach 2):	238
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	257
Major Street (Approach 2):	238
Total Major Street Volume:	495
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	167
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

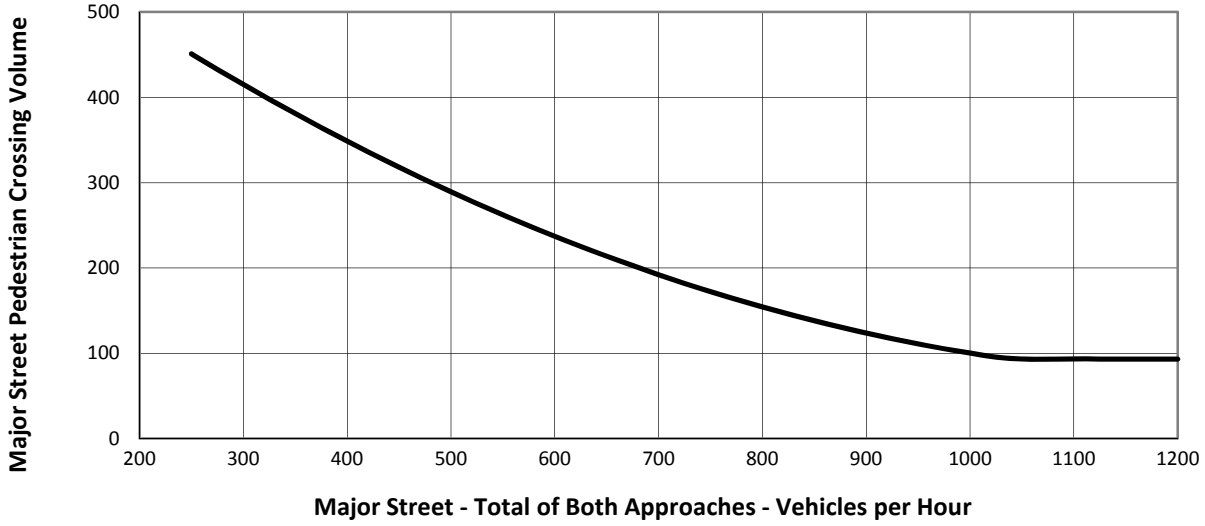
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	282
Major Street (Approach 2):	262
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	282
Major Street (Approach 2):	262
Total Major Street Volume:	544
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	265
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Existing Plus Project Conditions (SUN-PM) - Year 2015**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SAT-AM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	289	260	208
Major Street (Approach 2):	250	225	180
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	208
Major Street (Approach 2):	180
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **45**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

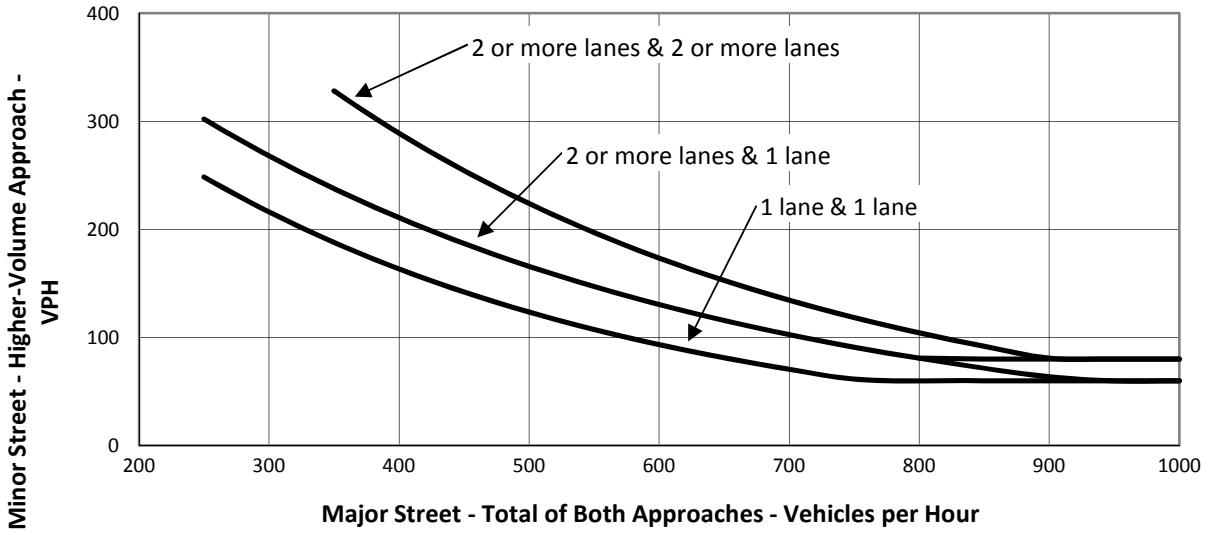
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	260
		Major Street (Approach 2):	225
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	260	Minimum Major Street Volume:	330
Major Street (Approach 2):	225	Satisfied?	YES
Total Major Street Volume:	485		
		Minimum Minor Street Volume:	233
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

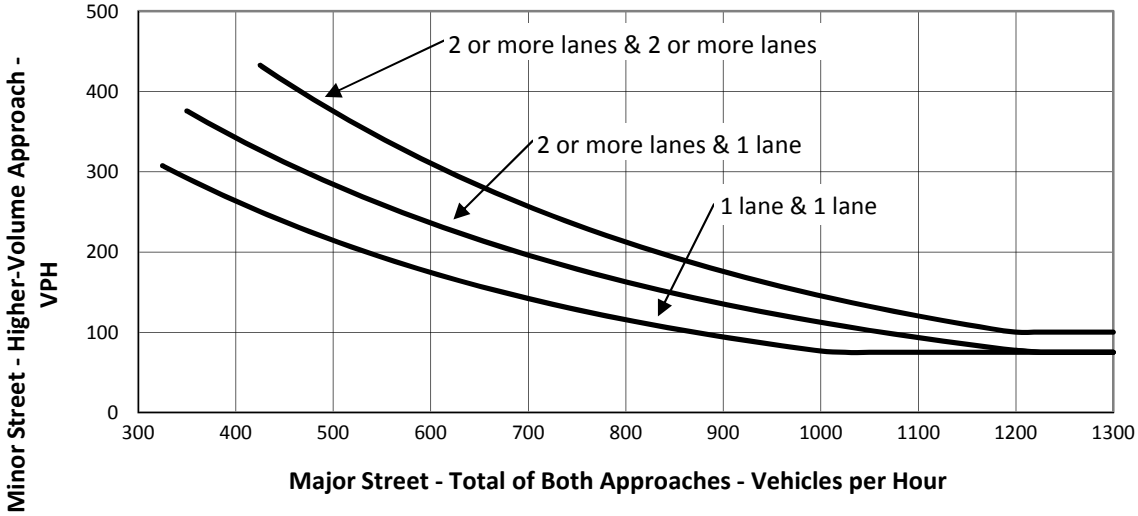
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	289
		Major Street (Approach 2):	250
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	289	Minimum Major Street Volume:	420
Major Street (Approach 2):	250	Satisfied?	YES
Total Major Street Volume:	539		
		Minimum Minor Street Volume:	349
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

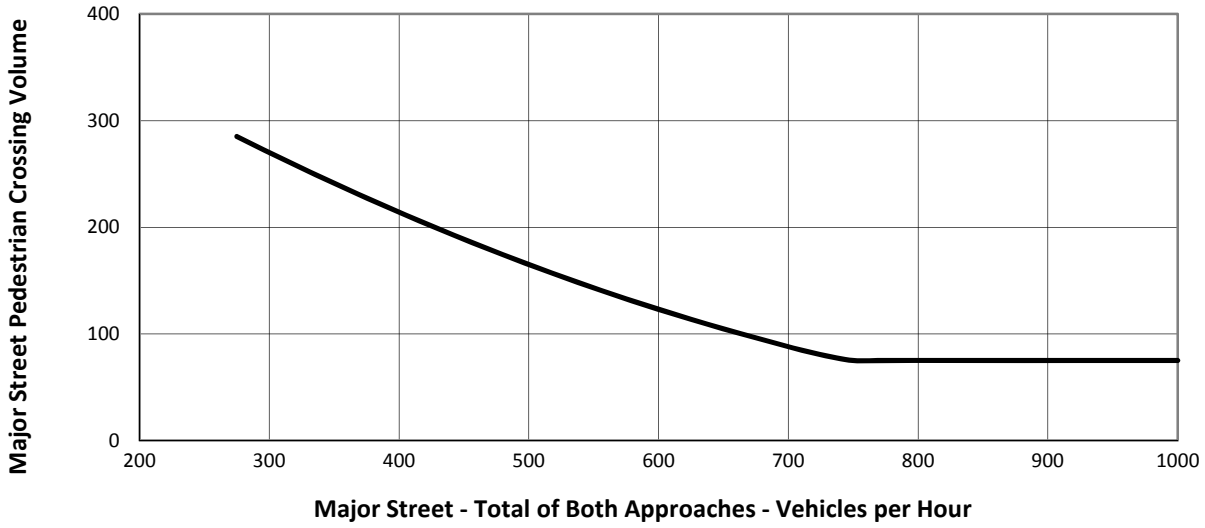
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	260
Major Street (Approach 2):	225
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	260
Major Street (Approach 2):	225
Total Major Street Volume:	485
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	172
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

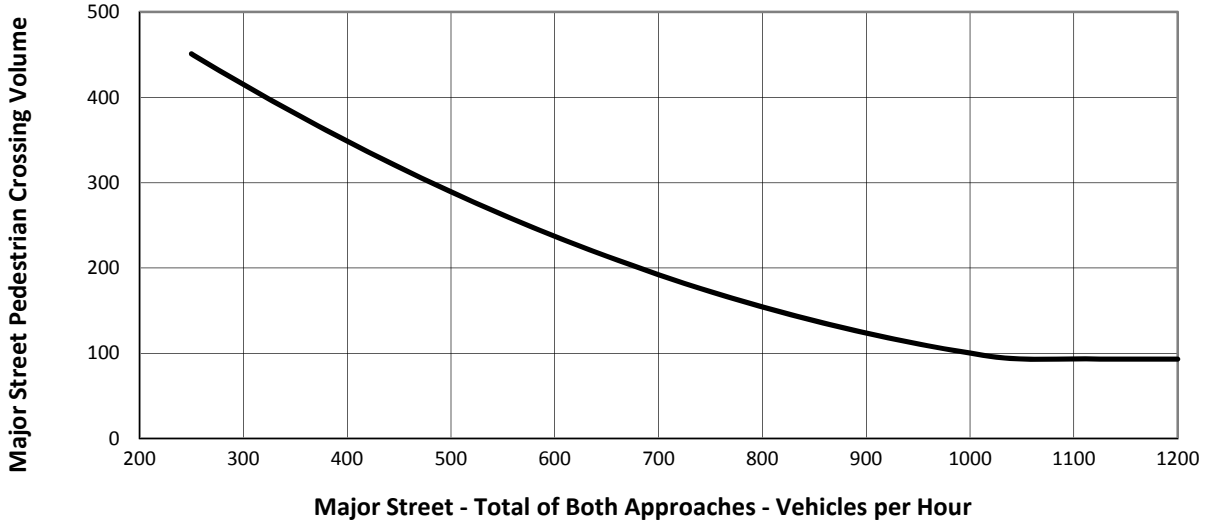
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	289
Major Street (Approach 2):	250
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	289
Major Street (Approach 2):	250
Total Major Street Volume:	539
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	268
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SAT-AM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SAT-PM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	369	332	266
Major Street (Approach 2):	295	266	212
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	266
Major Street (Approach 2):	212
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **478** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **478** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

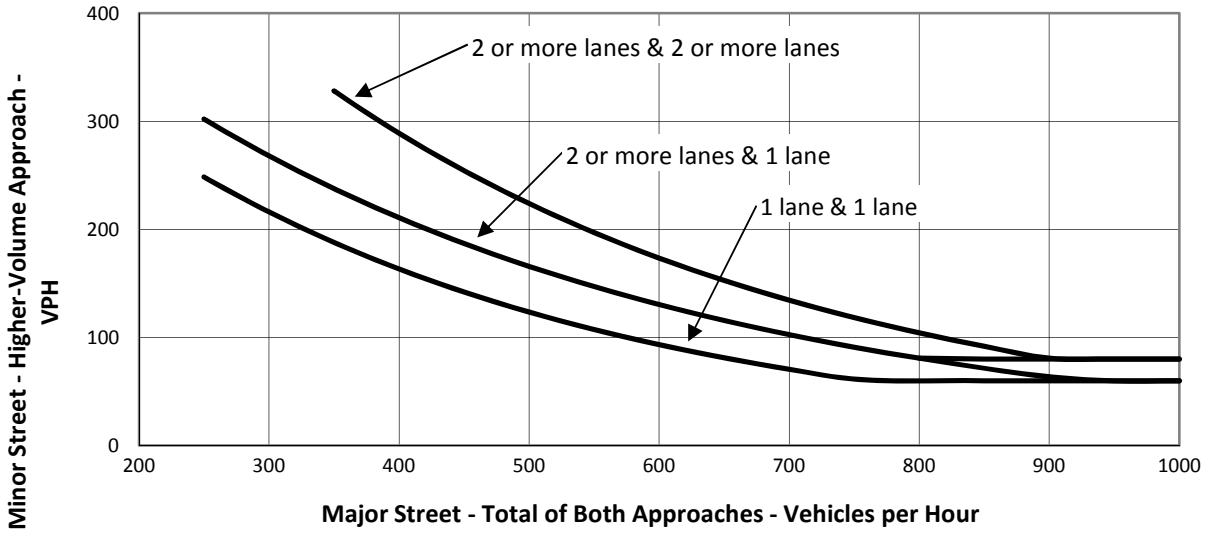
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	332
		Major Street (Approach 2):	266
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	332	Minimum Major Street Volume:	330
Major Street (Approach 2):	266	Satisfied?	YES
Total Major Street Volume:	598		
		Minimum Minor Street Volume:	174
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

OPENING YEAR PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2016

Skypark at Santa's Village

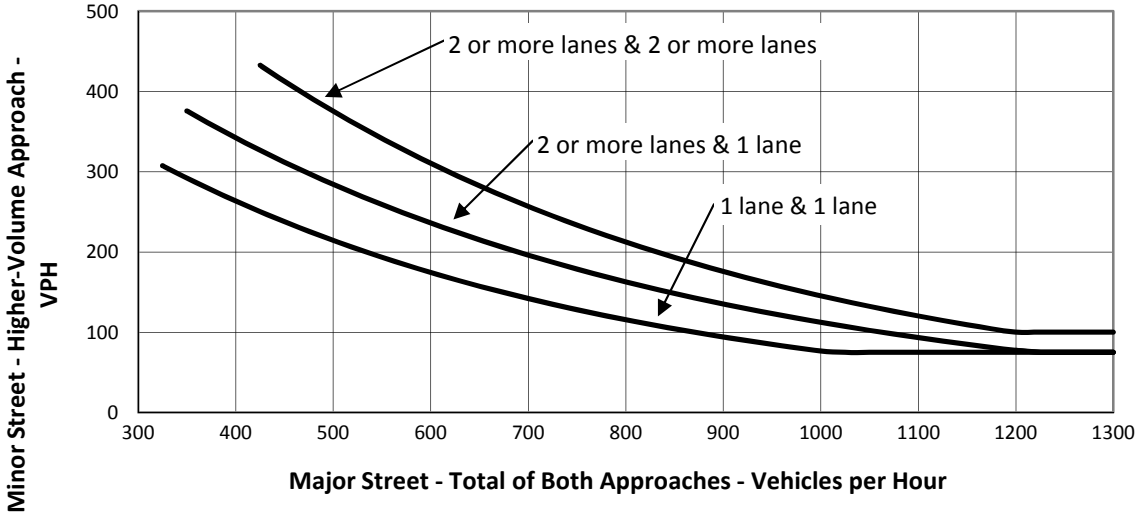
Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	369
		Major Street (Approach 2):	295
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	369	Minimum Major Street Volume:	420
Major Street (Approach 2):	295	Satisfied?	YES
Total Major Street Volume:	664		
		Minimum Minor Street Volume:	275
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

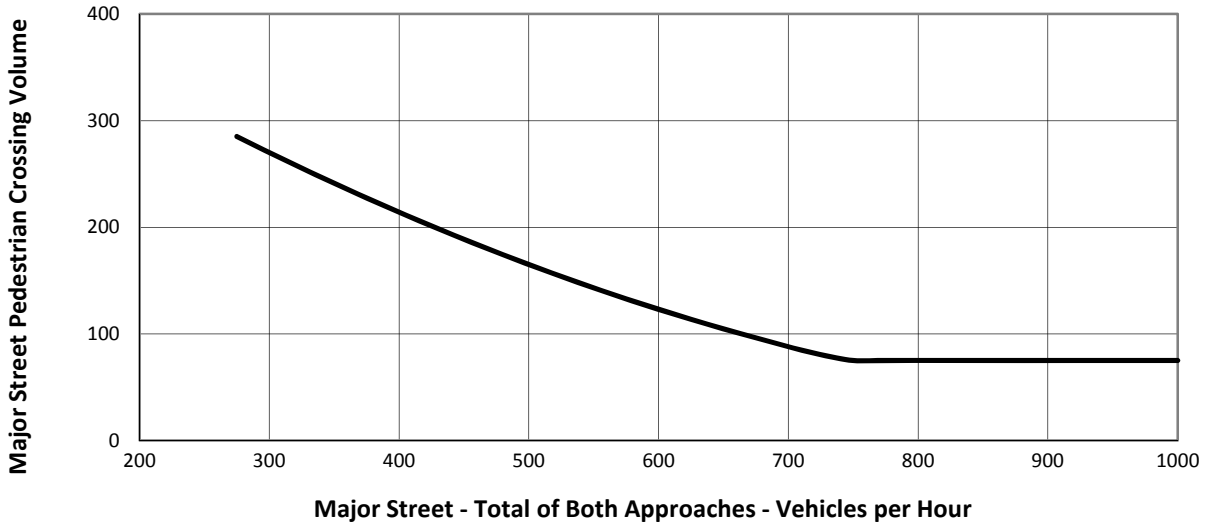
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	332
Major Street (Approach 2):	266
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	332
Major Street (Approach 2):	266
Total Major Street Volume:	598
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	124
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

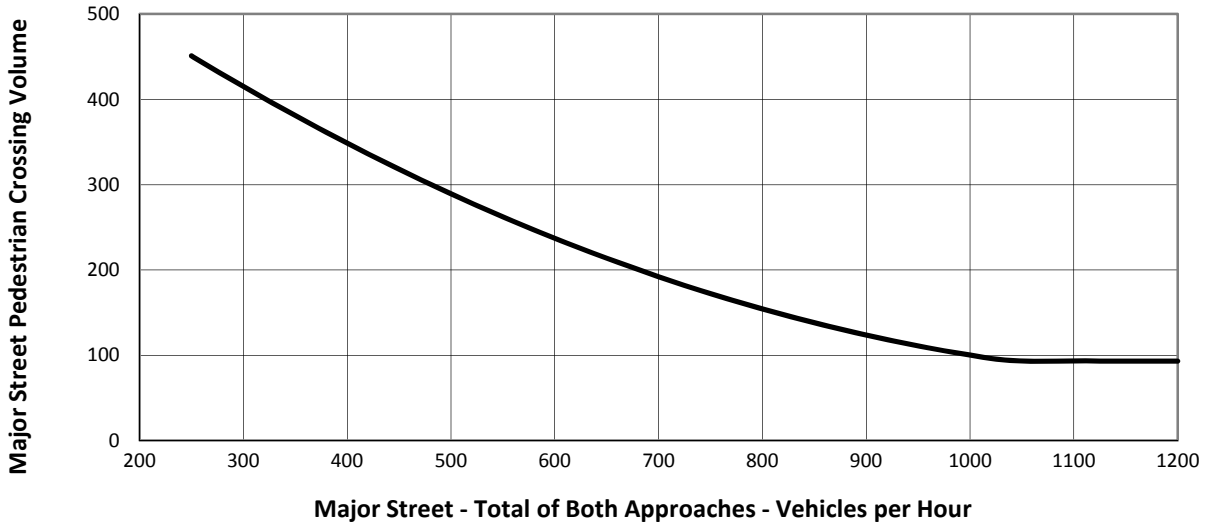
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	369
Major Street (Approach 2):	295
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	369
Major Street (Approach 2):	295
Total Major Street Volume:	664
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	207
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SAT-PM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SUN-AM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	297	270	202
Major Street (Approach 2):	274	249	186
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	202
Major Street (Approach 2):	186
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **388** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

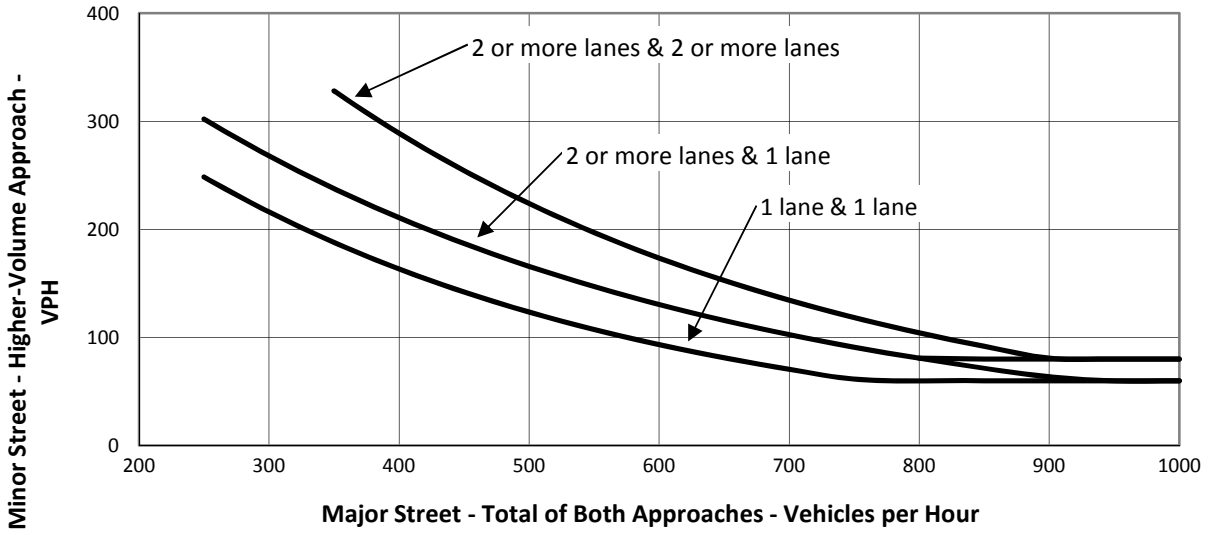
Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	270
		Major Street (Approach 2):	249
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11

[b] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	270	Minimum Major Street Volume:	330
Major Street (Approach 2):	249	Satisfied?	YES
Total Major Street Volume:	519		
		Minimum Minor Street Volume:	213
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

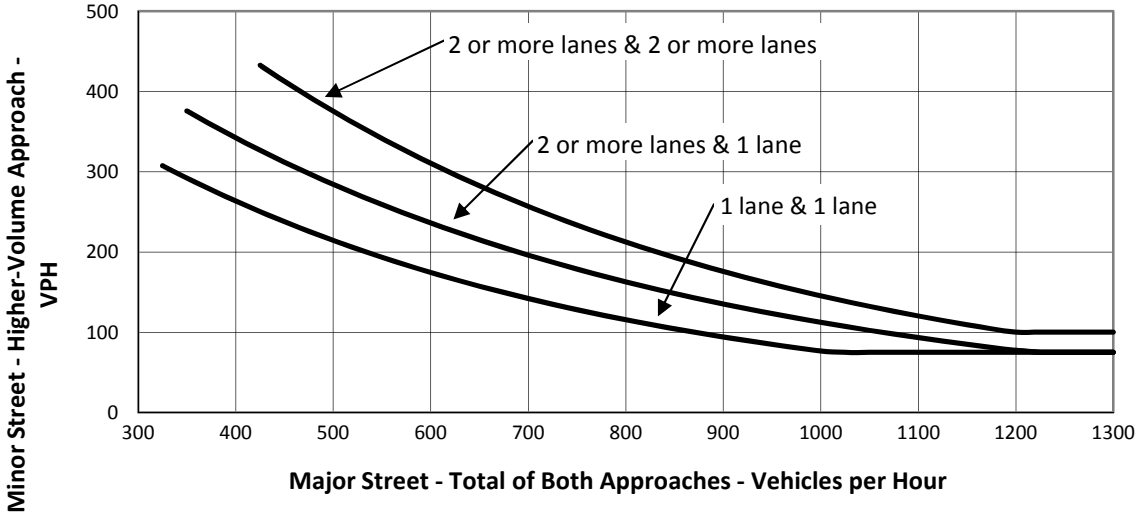
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	297
		Major Street (Approach 2):	274
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	297	Minimum Major Street Volume:	420
Major Street (Approach 2):	274	Satisfied?	YES
Total Major Street Volume:	571		
		Minimum Minor Street Volume:	328
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

Vehicles per Hour (4th Highest Hour)

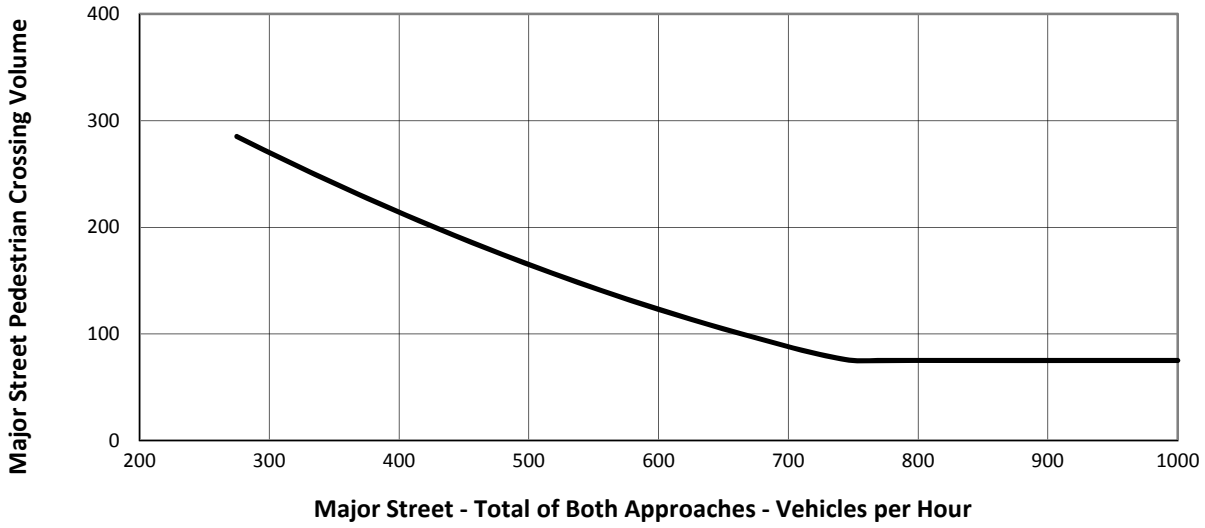
Major Street (Approach 1):	270
Major Street (Approach 2):	249
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	270
Major Street (Approach 2):	249
Total Major Street Volume:	519
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	156
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

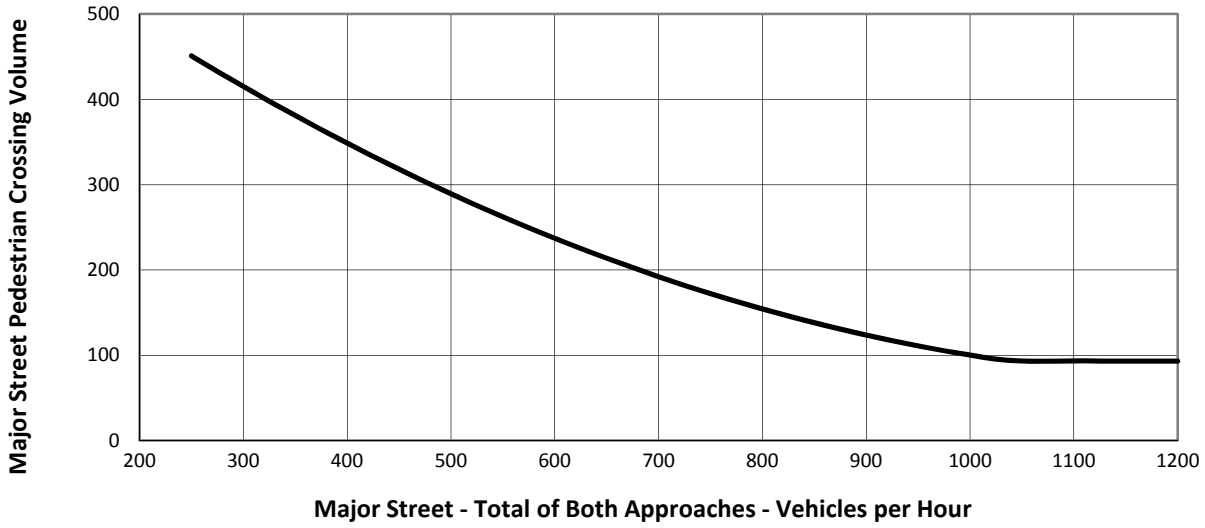
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	297
Major Street (Approach 2):	274
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	297
Major Street (Approach 2):	274
Total Major Street Volume:	571
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	251
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SUN-AM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Opening Year Plus Project Conditions (SUN-PM) - Year 2016
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	284	258	193
Major Street (Approach 2):	264	240	180
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

	Input Required
	Value is automatically generated, but can be input manually if desired.
	Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	193
Major Street (Approach 2):	180
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **373** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **373** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

OPENING YEAR PLUS PROJECT CONDITIONS (SUN-PM) - YEAR 2016

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

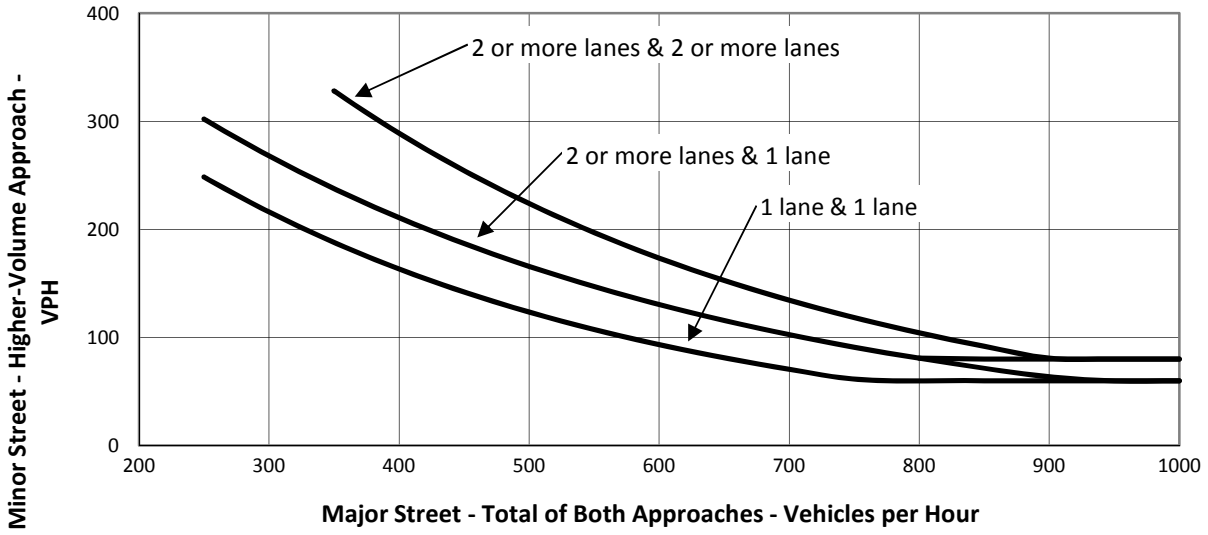
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	258
		Major Street (Approach 2):	240
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258	Minimum Major Street Volume:	330
Major Street (Approach 2):	240	Satisfied?	YES
Total Major Street Volume:	498		
		Minimum Minor Street Volume:	225
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

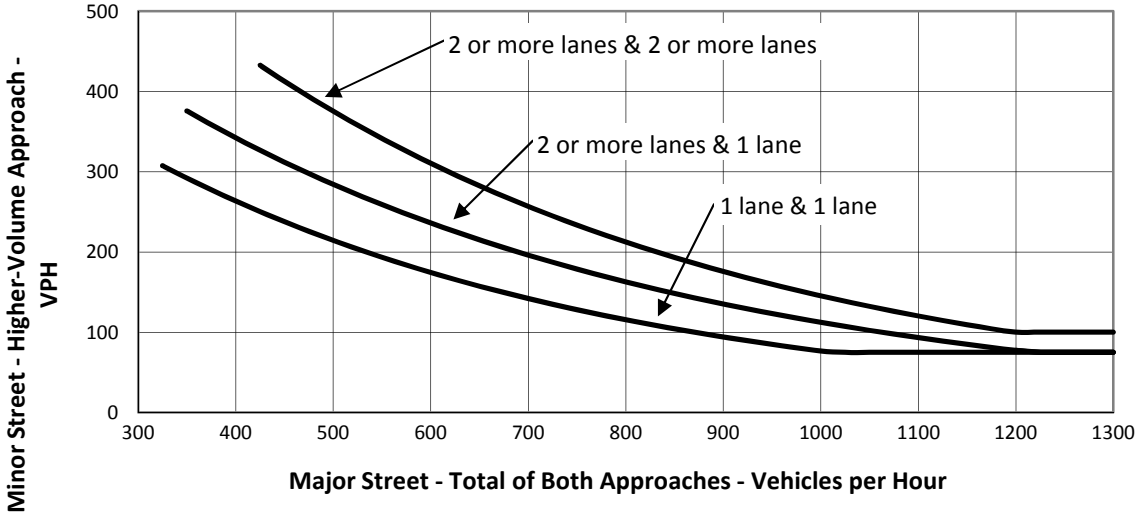
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	284
		Major Street (Approach 2):	264
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	284	Minimum Major Street Volume:	420
Major Street (Approach 2):	264	Satisfied?	YES
Total Major Street Volume:	548		
		Minimum Minor Street Volume:	343
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

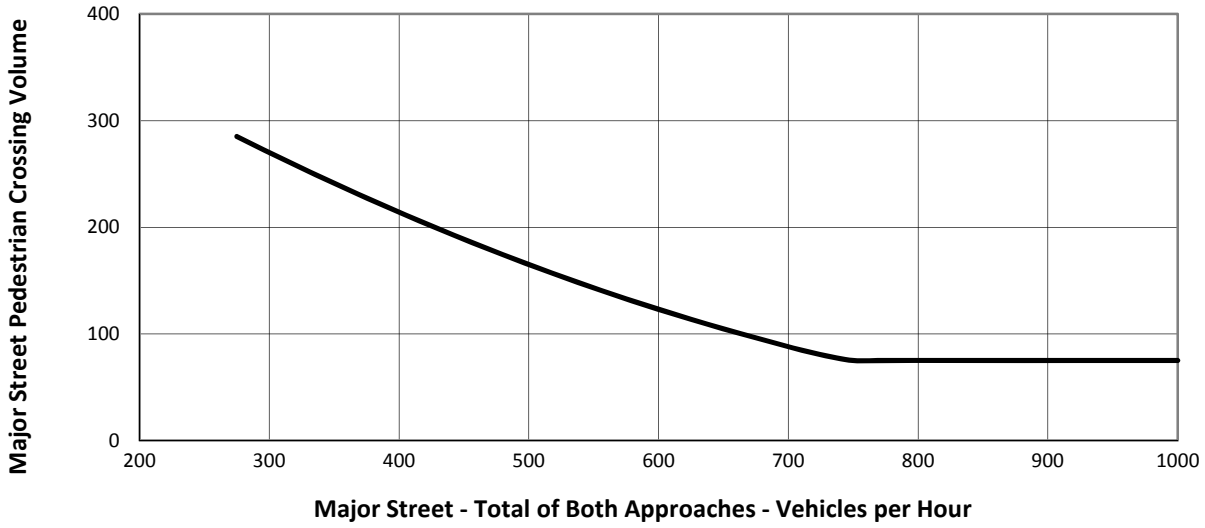
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	258
Major Street (Approach 2):	240
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	258
Major Street (Approach 2):	240
Total Major Street Volume:	498
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	166
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

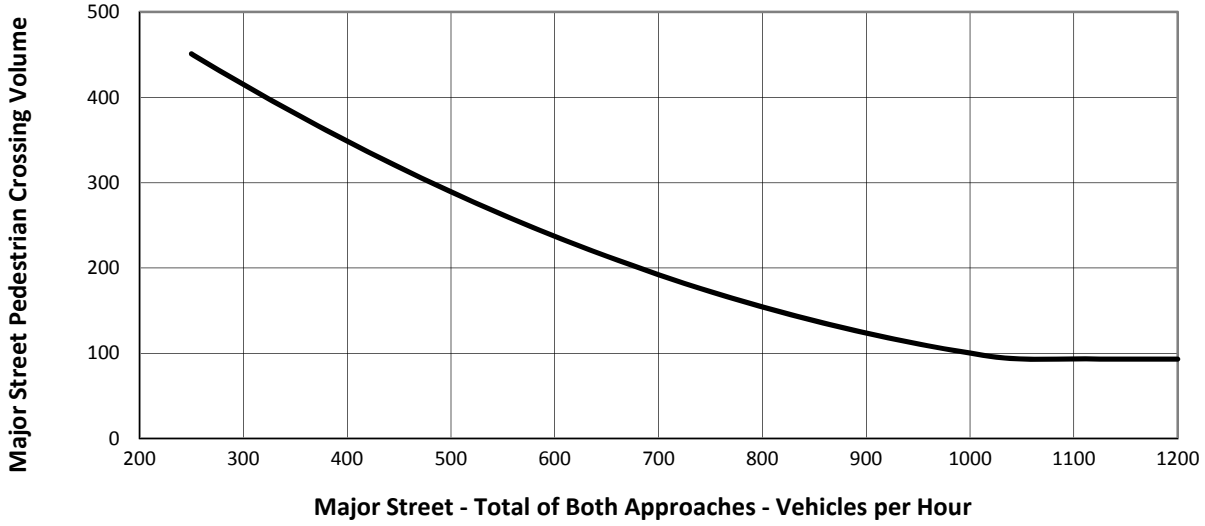
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	284
Major Street (Approach 2):	264
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	284
Major Street (Approach 2):	264
Total Major Street Volume:	548
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	263
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Opening Year Plus Project Conditions (SUN-PM) - Year 2016**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SAT-AM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	332	299	239
Major Street (Approach 2):	281	253	202
[b] Major Street Left-Turns:	50	45	36
Minor Street (Higher Volume):	12	11	9
Major Street Pedestrian Crossing Volume:	192	173	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	239
Major Street (Approach 2):	202
[a] Major Street Left-Turns:	36
Minor Street (Higher Volume):	9

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **441** Minor: **45**
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour
	Major	Minor	70%	56%	70%	56%	Major: **441** Minor: **45**
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

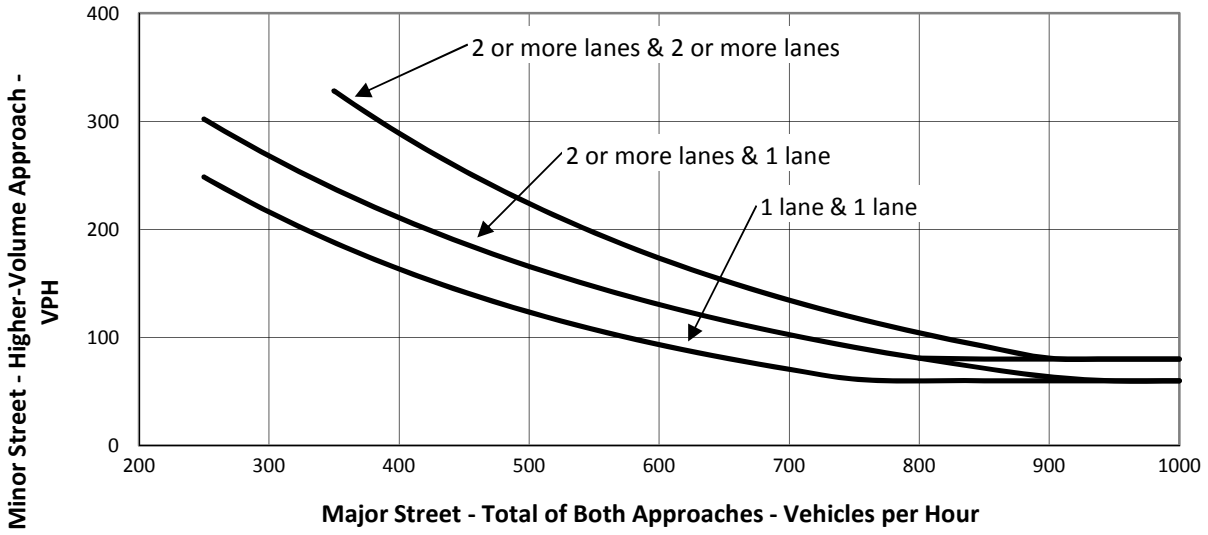
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	299
		Major Street (Approach 2):	253
Major Street Lanes:	2	[a] Major Street Left-Turns:	45
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299	Minimum Major Street Volume:	330
Major Street (Approach 2):	253	Satisfied?	YES
Total Major Street Volume:	552		
		Minimum Minor Street Volume:	196
Major Street Left Turns:	45	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	56	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

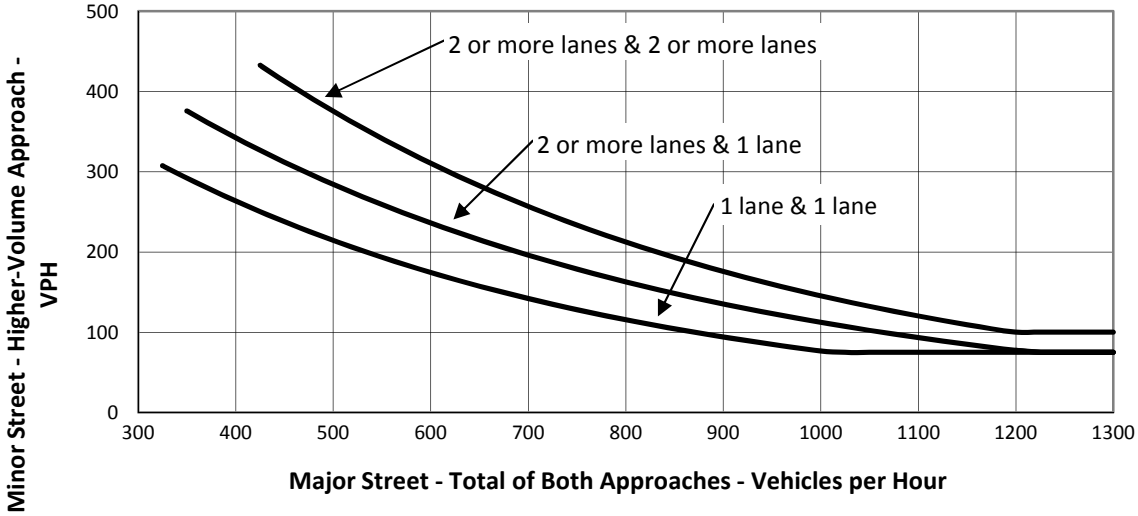
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	332
		Major Street (Approach 2):	281
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	332	Minimum Major Street Volume:	420
Major Street (Approach 2):	281	Satisfied?	YES
Total Major Street Volume:	613		
		Minimum Minor Street Volume:	303
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

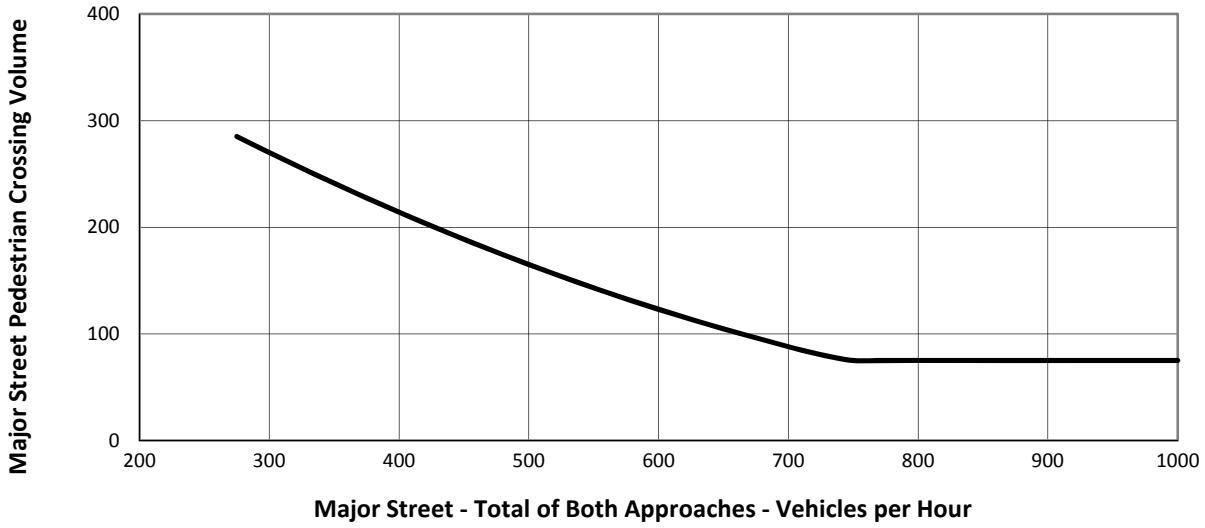
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	299
Major Street (Approach 2):	253
Major Street Pedestrian Crossing Volume:	173

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299
Major Street (Approach 2):	253
Total Major Street Volume:	552
Pedestrian Crossing Volume:	173

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	142
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

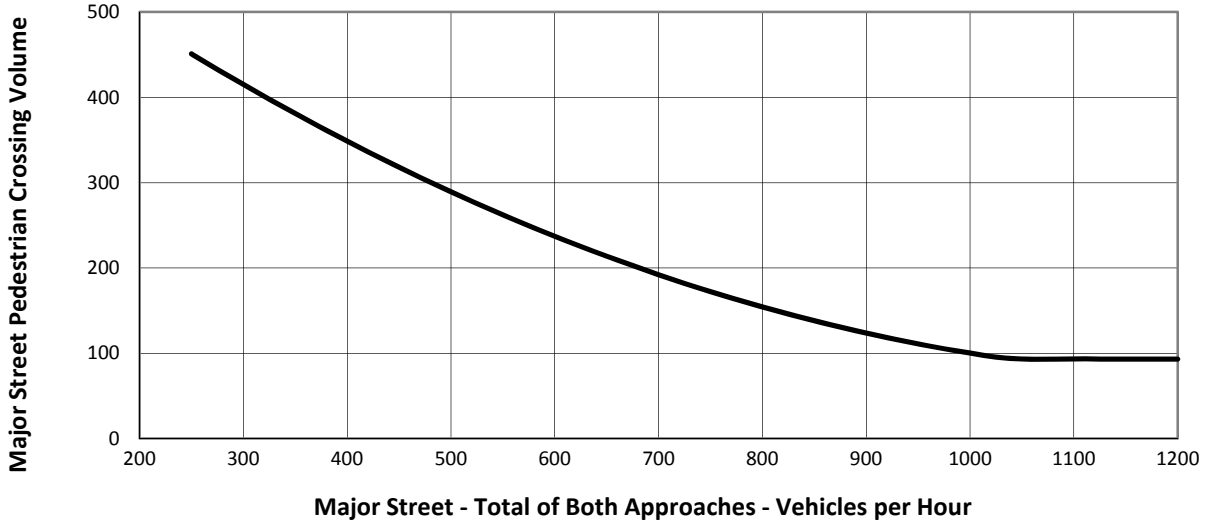
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	332
Major Street (Approach 2):	281
Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	332
Major Street (Approach 2):	281
Total Major Street Volume:	613
Pedestrian Crossing Volume:	192

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	231
Satisfied?	NO
Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SAT-AM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SAT-PM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	90%	72%
Major Street (Approach 1):	430	387	310
Major Street (Approach 2):	343	309	247
[b] Major Street Left-Turns:	29	26	21
Minor Street (Higher Volume):	68	61	49
Major Street Pedestrian Crossing Volume:	234	211	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SAT-PM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	310
Major Street (Approach 2):	247
[a] Major Street Left-Turns:	21
Minor Street (Higher Volume):	49

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **557** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **557** Minor: **70**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	YES	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

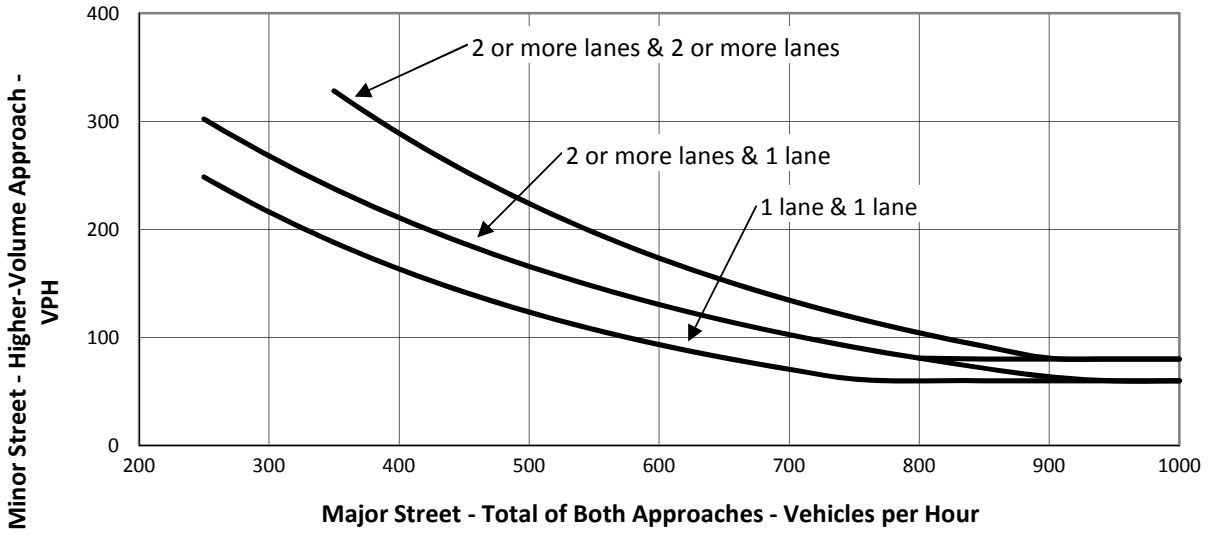
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	387
		Major Street (Approach 2):	309
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	61
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	387	Minimum Major Street Volume:	330
Major Street (Approach 2):	309	Satisfied?	YES
Total Major Street Volume:	696		
		Minimum Minor Street Volume:	136
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	61		
Total Minor Street Volume:	87	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

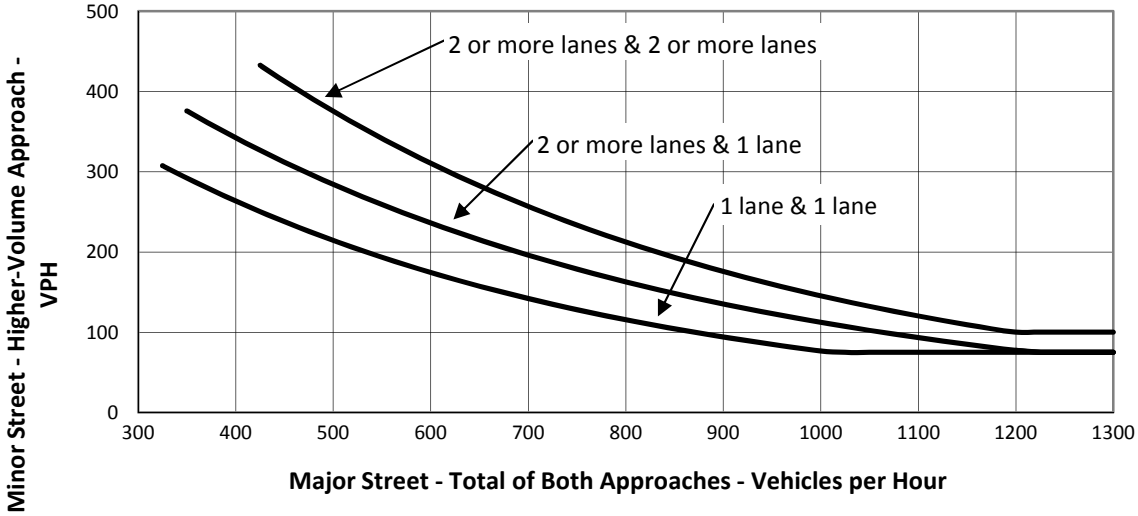
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	430
		Major Street (Approach 2):	343
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	430	Minimum Major Street Volume:	420
Major Street (Approach 2):	343	Satisfied?	YES
Total Major Street Volume:	773		
		Minimum Minor Street Volume:	224
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

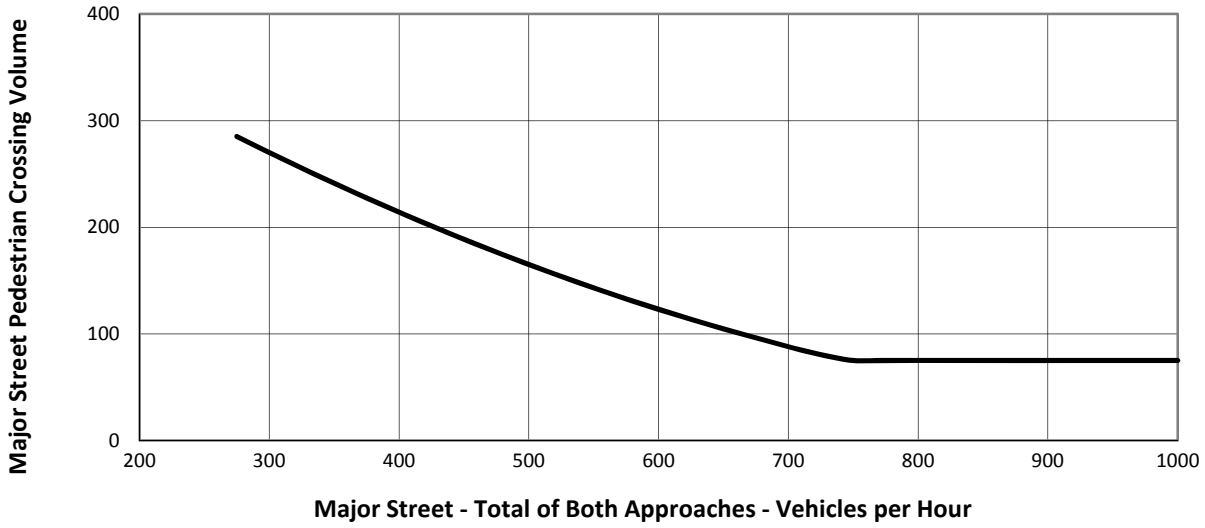
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	387
Major Street (Approach 2):	309
Major Street Pedestrian Crossing Volume:	211

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	387
Major Street (Approach 2):	309
Total Major Street Volume:	696
Pedestrian Crossing Volume:	211

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	89
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

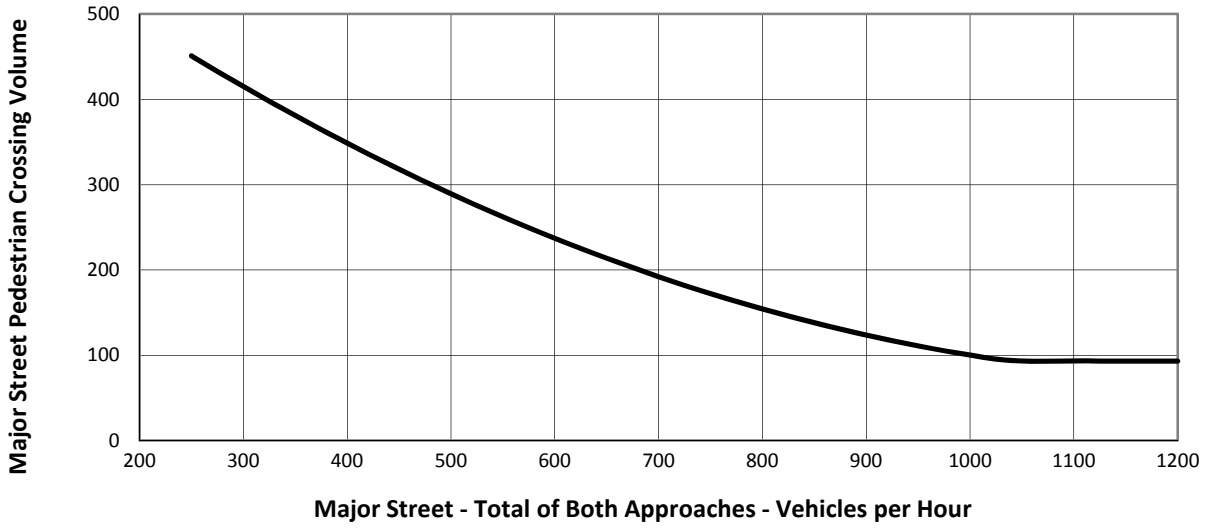
Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	430
Major Street (Approach 2):	343
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	430
Major Street (Approach 2):	343
Total Major Street Volume:	773
Pedestrian Crossing Volume:	234

Minimum Major Street Volume:	250
Satisfied?	YES
Minimum Pedestrian Volume:	164
Satisfied?	YES
Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SAT-PM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SUN-AM) - Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	342	311	233
Major Street (Approach 2):	310	282	211
[b] Major Street Left-Turns:	50	46	34
Minor Street (Higher Volume):	12	11	8
Major Street Pedestrian Crossing Volume:	192	175	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	233
Major Street (Approach 2):	211
[a] Major Street Left-Turns:	34
Minor Street (Higher Volume):	8

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **444** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **444** Minor: **42**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-AM) - YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

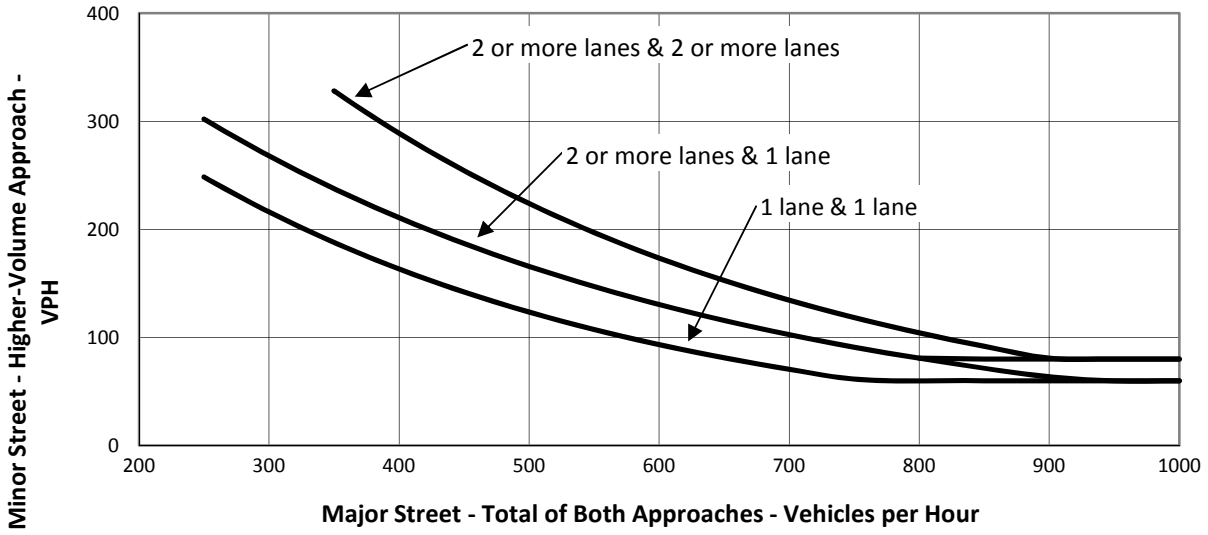
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	311
		Major Street (Approach 2):	282
Major Street Lanes:	2	[a] Major Street Left-Turns:	46
Minor Street Lanes:	2	Minor Street (Higher Volume):	11
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	311	Minimum Major Street Volume:	330
Major Street (Approach 2):	282	Satisfied?	YES
Total Major Street Volume:	593		
		Minimum Minor Street Volume:	177
Major Street Left Turns:	46	Satisfied?	NO
Minor Street (Higher Volume):	11		
Total Minor Street Volume:	57	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

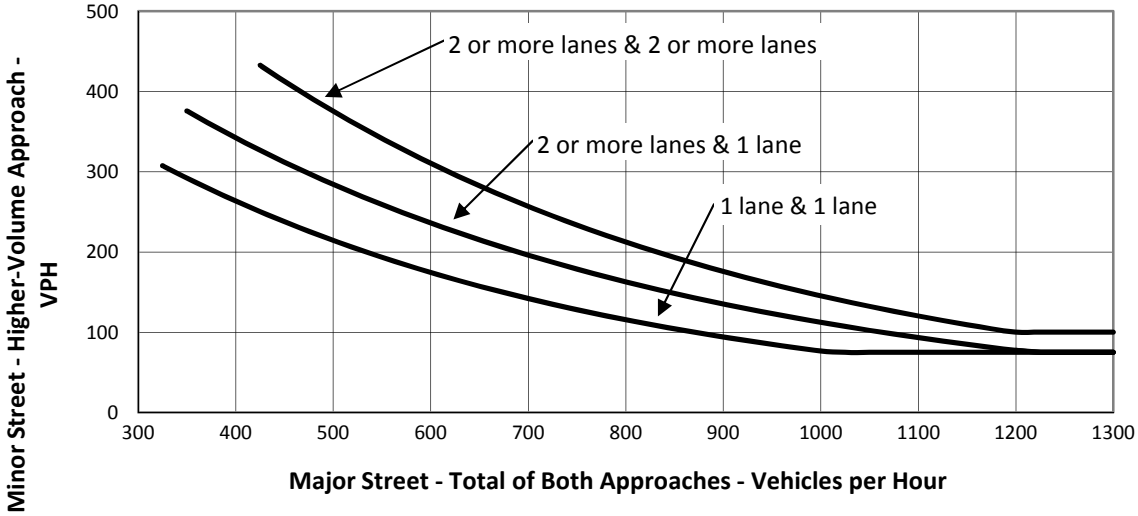
Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	342
		Major Street (Approach 2):	310
Major Street Lanes:	2	[a] Major Street Left-Turns:	50
Minor Street Lanes:	2	Minor Street (Higher Volume):	12

[b] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	342	Minimum Major Street Volume:	420
Major Street (Approach 2):	310	Satisfied?	YES
Total Major Street Volume:	652		
		Minimum Minor Street Volume:	281
Major Street Left Turns:	50	Satisfied?	NO
Minor Street (Higher Volume):	12		
Total Minor Street Volume:	62	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

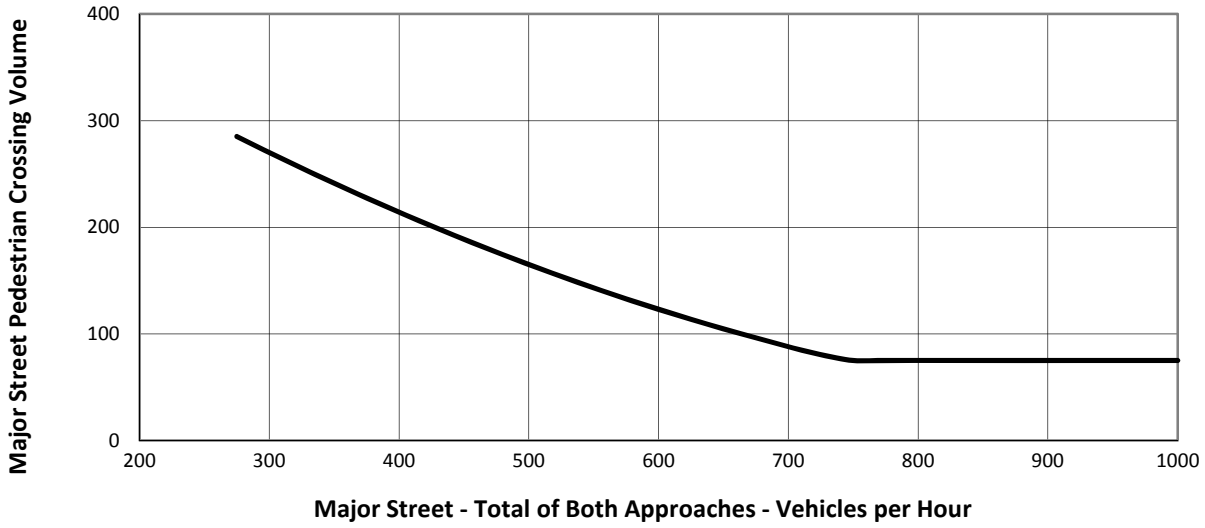
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	311
Major Street (Approach 2):	282
Major Street Pedestrian Crossing Volume:	175

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	311
Major Street (Approach 2):	282
Total Major Street Volume:	593
Pedestrian Crossing Volume:	175

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	126
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

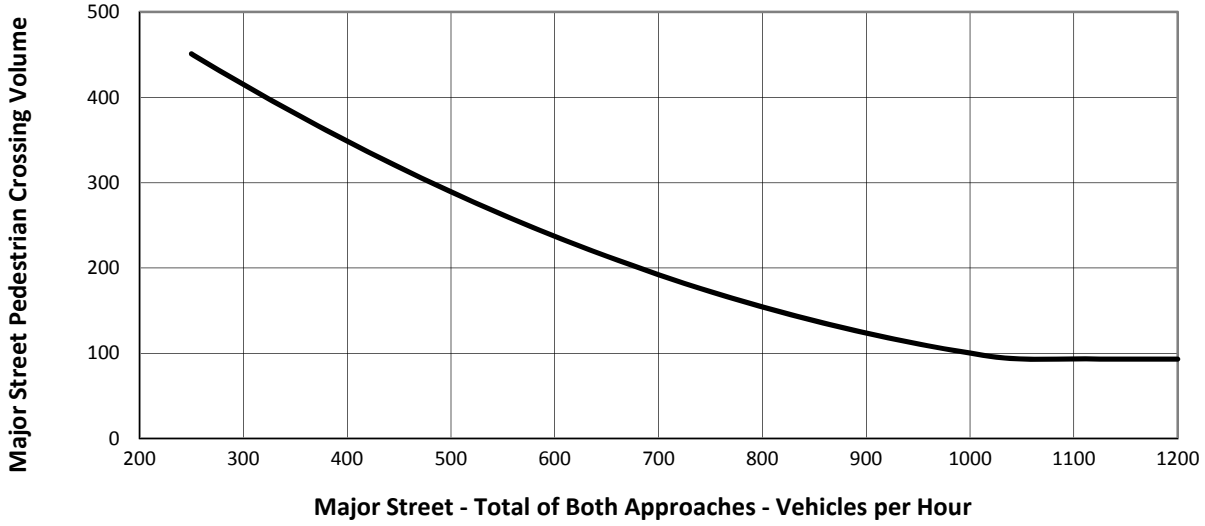
Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	342
		Major Street (Approach 2):	310
[a] Urban/Rural:	Rural		
		Major Street Pedestrian Crossing Volume:	192

Vehicles per Hour (Peak Hour)			
Major Street (Approach 1):	342	Minimum Major Street Volume:	250
Major Street (Approach 2):	310	Satisfied?	YES
Total Major Street Volume:	652		
		Minimum Pedestrian Volume:	213
Pedestrian Crossing Volume:	192	Satisfied?	NO
		Warrant 4B Satisfied?	**NO**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SUN-AM) - Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	NO
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Input Sheet

Fill in all shaded cells.

Project Name:	Skypark at Santa's Village
Analysis Scenario:	Full Build-Out Plus Project Conditions (SUN-PM)- Year 2035
Intersection Number:	5
Major Street Name:	State Route 18
Minor Street Name:	Project Driveways

Intersection Number & Name as Displayed

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Lanes:	2
Minor Street Lanes:	2
[a] Urban/Rural:	Rural

Traffic Volumes	Peak Hour	4th Highest Hour	8th Highest Hour
Hourly Factor (% of Peak Hour):	n/a	91%	68%
Major Street (Approach 1):	329	299	224
Major Street (Approach 2):	307	279	209
[b] Major Street Left-Turns:	29	26	20
Minor Street (Higher Volume):	68	62	46
Major Street Pedestrian Crossing Volume:	234	213	

Input Required

Value is automatically generated, but can be input manually if desired.

Default values. Can be altered if desired.

[a] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

At an intersection with a high-volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

Source: Section 4C of CA MUTCD

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM)- YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 1, Eight-Hour Vehicular Volume

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

Major Street Lanes: 2
Minor Street Lanes: 2

[b] Urban/Rural: Rural

Vehicles per Hour (8th Highest Hour)

Major Street (Approach 1):	224
Major Street (Approach 2):	209
[a] Major Street Left-Turns:	20
Minor Street (Higher Volume):	46

CONDITION A - MINIMUM VEHICULAR VOLUME

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **433** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	350	280	105	84	
	2 +	1	420	336	105	84	Condition A Satisfied?
→	2 +	2 +	420	336	140	112	**NO**
	1	2 +	350	280	140	112	

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

	Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)		Vehicles per hour on higher-volume minor street approach (one direction only)		Vehicles per Hour Major: **433** Minor: **66**
	Major	Minor	70%	56%	70%	56%	
	1	1	525	420	53	42	
	2 +	1	630	504	53	42	Condition B Satisfied?
→	2 +	2 +	630	504	70	56	**NO**
	1	2 +	525	420	70	56	

80% COMBINATION - BOTH CONDITION A AND CONDITION B 80% SATISFIED

Condition A 80% satisfied?	NO		
Condition B 80% satisfied?	NO	80% Combination Satisfied?	**NO**

[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

FULL BUILD-OUT PLUS PROJECT CONDITIONS (SUN-PM)- YEAR 2035

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 2, Four-Hour Vehicular Volume

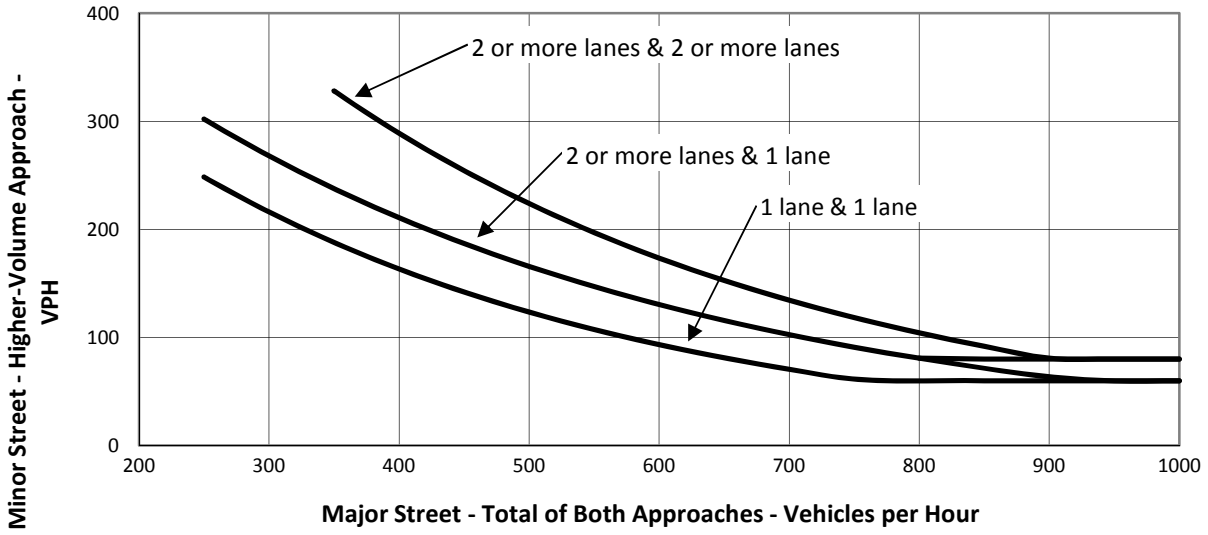
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (4th Highest Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	299
		Major Street (Approach 2):	279
Major Street Lanes:	2	[a] Major Street Left-Turns:	26
Minor Street Lanes:	2	Minor Street (Higher Volume):	62
[b] Urban/Rural:	Rural		

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299	Minimum Major Street Volume:	330
Major Street (Approach 2):	279	Satisfied?	YES
Total Major Street Volume:	578		
		Minimum Minor Street Volume:	184
Major Street Left Turns:	26	Satisfied?	NO
Minor Street (Higher Volume):	62		
Total Minor Street Volume:	88	Warrant 2 Satisfied?	**NO**

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 3, Peak Hour

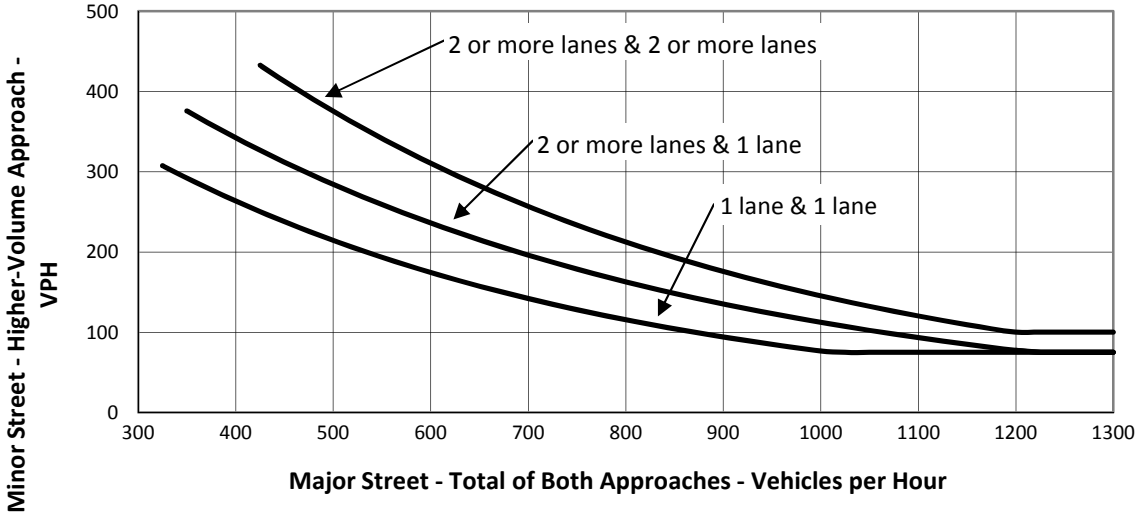
5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name:	State Route 18	Vehicles per Hour (Peak Hour)	
Minor Street Name:	Project Driveways	Major Street (Approach 1):	329
		Major Street (Approach 2):	307
Major Street Lanes:	2	[a] Major Street Left-Turns:	29
Minor Street Lanes:	2	Minor Street (Higher Volume):	68
[b] Urban/Rural:	Rural		

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	420
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	636		
		Minimum Minor Street Volume:	290
Major Street Left Turns:	29	Satisfied?	NO
Minor Street (Higher Volume):	68		
Total Minor Street Volume:	97	Warrant 3 Satisfied?	**NO**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor) [c]



[a] Major street left-turn volume is added to minor street volume if a protected left-turn signal phase is proposed.

[b] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[c] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4A, Pedestrian Volume (4th Highest Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

[a] Urban/Rural: Rural

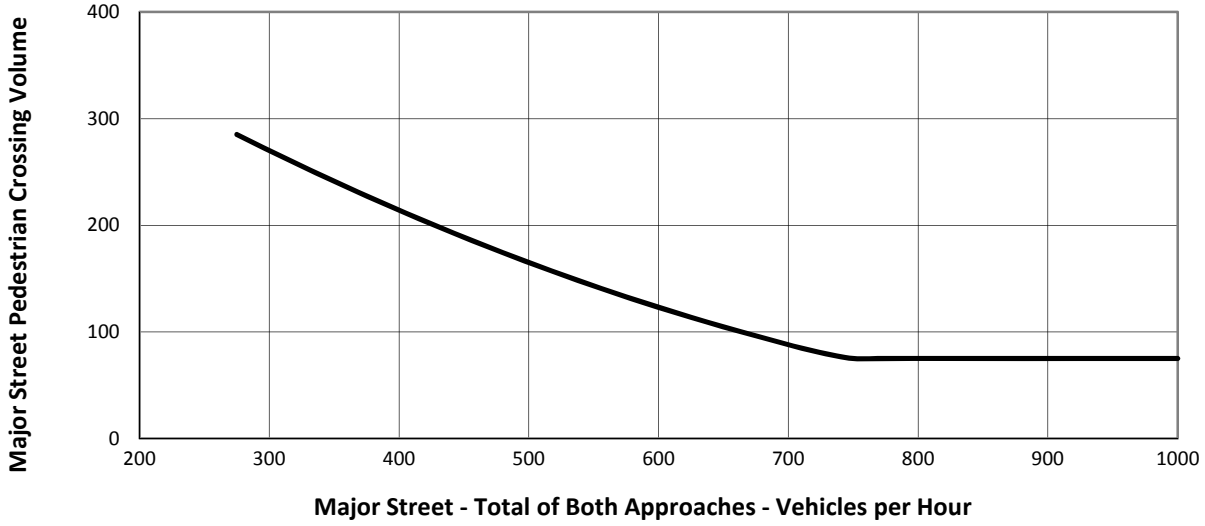
Vehicles per Hour (4th Highest Hour)	
Major Street (Approach 1):	299
Major Street (Approach 2):	279
Major Street Pedestrian Crossing Volume:	213

Vehicles per Hour (4th Highest Hour)

Major Street (Approach 1):	299
Major Street (Approach 2):	279
Total Major Street Volume:	578
Pedestrian Crossing Volume:	213

Minimum Major Street Volume:	275
Satisfied?	YES
Minimum Pedestrian Volume:	132
Satisfied?	YES
Warrant 4A Satisfied?	**YES**

Figure 4C-6. Warrant 4A, Pedestrian Four-Hour Volume (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Skypark at Santa's Village

Traffic Signal Warrant Analysis
Warrant 4B, Pedestrian Volume (Peak Hour)

5. STATE ROUTE 18 & PROJECT DRIVEWAYS

Major Street Name: State Route 18
Minor Street Name: Project Driveways

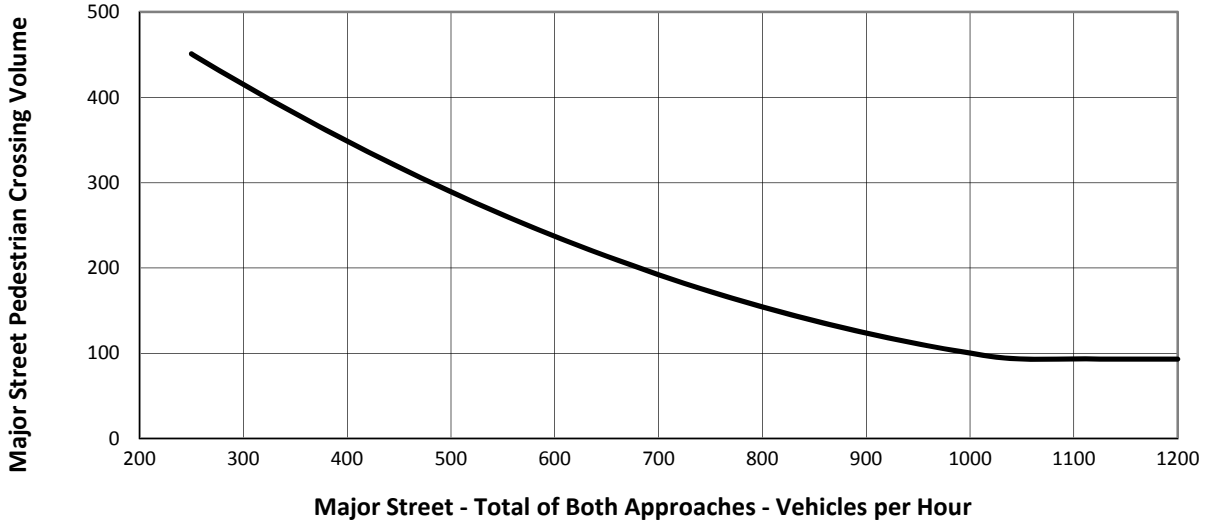
[a] Urban/Rural: Rural

Vehicles per Hour (Peak Hour)	
Major Street (Approach 1):	329
Major Street (Approach 2):	307
Major Street Pedestrian Crossing Volume:	234

Vehicles per Hour (Peak Hour)

Major Street (Approach 1):	329	Minimum Major Street Volume:	250
Major Street (Approach 2):	307	Satisfied?	YES
Total Major Street Volume:	636		
		Minimum Pedestrian Volume:	220
Pedestrian Crossing Volume:	234	Satisfied?	YES
		Warrant 4B Satisfied?	**YES**

Figure 4C-8. Warrant 4B, Pedestrian Peak Hour (70% Factor) [b]



[a] Setting to "Rural" reduces minimum test volumes to approximately 70% of "Urban" test volumes. This may be used when major street speed exceeds 40 mph or in an isolated community of less than 10,000 residents.

[b] From *California Manual on Uniform Traffic Control Devices, 2014 Edition;* Caltrans.

Traffic Signal Warrant Analysis Summary

Project Name: **Skypark at Santa's Village**
Analysis Scenario: **Full Build-Out Plus Project Conditions (SUN-PM)- Year 2035**

Intersection Number: **5**
Major Street Name: **State Route 18**
Minor Street Name: **Project Driveways**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Warrant 4A - Pedestrian Four-Hour Volume	YES
Warrant 4B - Pedestrian Peak Hour Volume	YES
Any Warrant Satisfied?	**YES**

Attachment D – Level of Service Worksheet

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	165	26	0	19	227	28	0	3	0	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	43	179	28	0	21	247	30	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9	9.9	8.5
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	86%	0%	89%	0%	0%
Vol Right, %	0%	100%	0%	14%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	191	19	255	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	165	0	227	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	43	208	21	277	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.006	0.005	0.063	0.266	0.03	0.355	0.008	0.008
Departure Headway (Hd)	6.32	5.109	5.207	4.611	5.188	4.61	6.314	5.103
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	569	704	680	768	683	771	570	705
Service Time	4.022	2.811	3.003	2.406	2.976	2.398	4.016	2.805
HCM Lane V/C Ratio	0.005	0.004	0.063	0.271	0.031	0.359	0.007	0.007
HCM Control Delay	9.1	7.8	8.4	9.1	8.1	10	9.1	7.8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0	0.2	1.1	0.1	1.6	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.4
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	318	15	0	11	257	16	0	21	0	15
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	346	16	0	12	279	17	0	23	0	16
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	12.7	11.5	9.3
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	95%	0%	94%	0%	0%
Vol Right, %	0%	100%	0%	5%	0%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	333	11	273	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	318	0	257	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	23	16	25	362	12	297	25	35
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.043	0.025	0.039	0.509	0.019	0.422	0.047	0.054
Departure Headway (Hd)	6.803	5.587	5.595	5.06	5.666	5.122	6.767	5.551
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	523	635	638	709	630	700	526	640
Service Time	4.593	3.375	3.344	2.809	3.418	2.874	4.551	3.334
HCM Lane V/C Ratio	0.044	0.025	0.039	0.511	0.019	0.424	0.048	0.055
HCM Control Delay	9.9	8.5	8.6	13	8.5	11.6	9.9	8.7
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	2.9	0.1	2.1	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	25	0	35
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	9.2
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	189	26	0	19	235	28	0	3	0	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	43	205	28	0	21	255	30	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9.2	10	8.5
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	88%	0%	89%	0%	0%
Vol Right, %	0%	100%	0%	12%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	215	19	263	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	189	0	235	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	43	234	21	286	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.006	0.005	0.063	0.3	0.03	0.367	0.008	0.008
Departure Headway (Hd)	6.395	5.184	5.212	4.626	5.201	4.625	6.39	5.178
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	563	694	679	767	680	766	563	695
Service Time	4.097	2.886	3.01	2.423	2.996	2.42	4.092	2.88
HCM Lane V/C Ratio	0.005	0.004	0.063	0.305	0.031	0.373	0.007	0.007
HCM Control Delay	9.1	7.9	8.4	9.4	8.2	10.1	9.1	7.9
HCM Lane LOS	A	A	A	A	A	B	A	A
HCM 95th-tile Q	0	0	0.2	1.3	0.1	1.7	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.4
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	234	15	0	11	227	16	0	21	0	15
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	254	16	0	12	247	17	0	23	0	16
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	10.6	10.6	9
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	94%	0%	93%	0%	0%
Vol Right, %	0%	100%	0%	6%	0%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	249	11	243	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	234	0	227	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	23	16	25	271	12	264	25	35
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.041	0.024	0.039	0.377	0.019	0.369	0.045	0.051
Departure Headway (Hd)	6.504	5.291	5.553	5.008	5.573	5.025	6.473	5.26
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	548	672	644	717	642	716	551	677
Service Time	4.272	3.058	3.292	2.747	3.313	2.764	4.237	3.024
HCM Lane V/C Ratio	0.042	0.024	0.039	0.378	0.019	0.369	0.045	0.052
HCM Control Delay	9.6	8.2	8.5	10.8	8.4	10.7	9.5	8.3
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	1.8	0.1	1.7	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	25	0	35
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.8
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	167	26	0	19	229	28	0	3	0	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	43	182	28	0	21	249	30	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9	9.9	8.5
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	87%	0%	89%	0%	0%
Vol Right, %	0%	100%	0%	13%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	193	19	257	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	167	0	229	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	43	210	21	279	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.006	0.005	0.063	0.269	0.03	0.358	0.008	0.008
Departure Headway (Hd)	6.33	5.119	5.209	4.613	5.188	4.611	6.324	5.113
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	569	703	679	768	682	771	569	704
Service Time	4.032	2.821	3.005	2.409	2.978	2.4	4.026	2.815
HCM Lane V/C Ratio	0.005	0.004	0.063	0.273	0.031	0.362	0.007	0.007
HCM Control Delay	9.1	7.8	8.4	9.1	8.1	10	9.1	7.9
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0	0.2	1.1	0.1	1.6	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.4
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	321	15	0	11	260	16	0	21	0	15
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	349	16	0	12	283	17	0	23	0	16
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	12.8	11.6	9.3
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	96%	0%	94%	0%	0%
Vol Right, %	0%	100%	0%	4%	0%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	336	11	276	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	321	0	260	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	23	16	25	365	12	300	25	35
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.043	0.025	0.039	0.514	0.019	0.427	0.047	0.054
Departure Headway (Hd)	6.818	5.601	5.598	5.064	5.668	5.125	6.782	5.566
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	521	633	638	709	629	699	525	638
Service Time	4.609	3.392	3.347	2.813	3.421	2.877	4.568	3.35
HCM Lane V/C Ratio	0.044	0.025	0.039	0.515	0.019	0.429	0.048	0.055
HCM Control Delay	9.9	8.5	8.6	13.1	8.5	11.7	9.9	8.7
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	3	0.1	2.1	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	25	0	35
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	9.2
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	191	26	0	19	237	28	0	3	0	3
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	43	208	28	0	21	258	30	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9.3	10.1	8.5
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	88%	0%	89%	0%	0%
Vol Right, %	0%	100%	0%	12%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	217	19	265	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	191	0	237	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	43	236	21	288	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.006	0.005	0.063	0.303	0.03	0.37	0.008	0.008
Departure Headway (Hd)	6.405	5.193	5.213	4.628	5.202	4.627	6.4	5.188
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	562	693	679	764	680	766	562	694
Service Time	4.107	2.896	3.011	2.426	2.998	2.422	4.102	2.89
HCM Lane V/C Ratio	0.005	0.004	0.063	0.309	0.031	0.376	0.007	0.007
HCM Control Delay	9.1	7.9	8.4	9.5	8.2	10.2	9.2	7.9
HCM Lane LOS	A	A	A	A	A	B	A	A
HCM 95th-tile Q	0	0	0.2	1.3	0.1	1.7	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.5
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	236	15	0	11	229	16	0	21	0	15
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	257	16	0	12	249	17	0	23	0	16
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	10.6	10.6	9
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	94%	0%	93%	0%	0%
Vol Right, %	0%	100%	0%	6%	0%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	251	11	245	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	236	0	229	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	23	16	25	273	12	266	25	35
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.041	0.024	0.039	0.38	0.019	0.372	0.045	0.051
Departure Headway (Hd)	6.514	5.301	5.555	5.011	5.575	5.027	6.483	5.27
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	671	644	718	641	714	550	675
Service Time	4.282	3.068	3.294	2.749	3.315	2.766	4.247	3.034
HCM Lane V/C Ratio	0.042	0.024	0.039	0.38	0.019	0.373	0.045	0.052
HCM Control Delay	9.6	8.2	8.5	10.8	8.4	10.7	9.6	8.3
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	1.8	0.1	1.7	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	25	0	35
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.8
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	198	26	0	19	272	28	0	3	0	3
Peak Hour Factor	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	40	198	26	0	19	272	28	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9.1	10.2	8.5
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	88%	0%	91%	0%	0%
Vol Right, %	0%	100%	0%	12%	0%	9%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	224	19	300	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	198	0	272	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	40	224	19	300	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.005	0.004	0.058	0.288	0.027	0.385	0.007	0.007
Departure Headway (Hd)	6.396	5.184	5.216	4.634	5.192	4.625	6.39	5.178
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	563	695	679	766	682	768	563	695
Service Time	4.096	2.884	3.009	2.426	2.977	2.41	4.09	2.878
HCM Lane V/C Ratio	0.005	0.004	0.059	0.292	0.028	0.391	0.007	0.007
HCM Control Delay	9.1	7.9	8.3	9.3	8.1	10.3	9.1	7.9
HCM Lane LOS	A	A	A	A	A	B	A	A
HCM 95th-tile Q	0	0	0.2	1.2	0.1	1.8	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.4
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	382	15	0	11	308	16	0	21	0	15
Peak Hour Factor	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	23	382	15	0	11	308	16	0	21	0	15
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	13.8	12.2	9.5
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	96%	0%	95%	0%	0%
Vol Right, %	0%	100%	0%	4%	0%	5%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	397	11	324	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	382	0	308	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	21	15	23	397	11	324	23	32
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.04	0.024	0.036	0.559	0.017	0.462	0.044	0.05
Departure Headway (Hd)	6.933	5.715	5.597	5.068	5.672	5.134	6.898	5.68
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	513	620	638	711	629	700	515	625
Service Time	4.728	3.508	3.344	2.815	3.424	2.886	4.688	3.469
HCM Lane V/C Ratio	0.041	0.024	0.036	0.558	0.017	0.463	0.045	0.051
HCM Control Delay	10	8.7	8.6	14.1	8.5	12.3	10	8.8
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	3.5	0.1	2.4	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	23	0	32
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	9.3
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	227	26	0	19	282	28	0	3	0	3
Peak Hour Factor	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	40	227	26	0	19	282	28	0	3	0	3
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	9.5	10.5	8.6
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	90%	0%	91%	0%	0%
Vol Right, %	0%	100%	0%	10%	0%	9%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	3	40	253	19	310	4	5
LT Vol	3	0	40	0	19	0	4	0
Through Vol	0	0	0	227	0	282	0	0
RT Vol	0	3	0	26	0	28	0	5
Lane Flow Rate	3	3	40	253	19	310	4	5
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.005	0.004	0.058	0.327	0.027	0.4	0.007	0.007
Departure Headway (Hd)	6.484	5.271	5.221	4.648	5.206	4.642	6.478	5.266
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	555	683	678	764	680	766	556	684
Service Time	4.184	2.971	3.017	2.443	2.999	2.435	4.178	2.966
HCM Lane V/C Ratio	0.005	0.004	0.059	0.331	0.028	0.405	0.007	0.007
HCM Control Delay	9.2	8	8.3	9.7	8.1	10.6	9.2	8
HCM Lane LOS	A	A	A	A	A	B	A	A
HCM 95th-tile Q	0	0	0.2	1.4	0.1	1.9	0	0

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	0	5
Peak Hour Factor	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	4	0	5
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.5
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	23	281	15	0	11	272	16	0	21	0	15
Peak Hour Factor	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	23	281	15	0	11	272	16	0	21	0	15
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	11	11	9.1
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	0%	0%	95%	0%	94%	0%	0%
Vol Right, %	0%	100%	0%	5%	0%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	15	23	296	11	288	23	32
LT Vol	21	0	23	0	11	0	23	0
Through Vol	0	0	0	281	0	272	0	0
RT Vol	0	15	0	15	0	16	0	32
Lane Flow Rate	21	15	23	296	11	288	23	32
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.039	0.022	0.035	0.412	0.017	0.402	0.042	0.048
Departure Headway (Hd)	6.604	5.39	5.549	5.011	5.569	5.028	6.573	5.359
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	540	660	644	716	642	714	543	664
Service Time	4.374	3.159	3.29	2.752	3.311	2.77	4.34	3.125
HCM Lane V/C Ratio	0.039	0.023	0.036	0.413	0.017	0.403	0.042	0.048
HCM Control Delay	9.6	8.3	8.5	11.2	8.4	11.1	9.6	8.4
HCM Lane LOS	A	A	A	B	A	B	A	A
HCM 95th-tile Q	0.1	0.1	0.1	2	0.1	1.9	0.1	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	23	0	32
Peak Hour Factor	0.92	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	23	0	32
Number of Lanes	0	1	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	2
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.9
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	165	26	19	227	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	179	28	21	247	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	312	407	64	362	421	51	841	0	791	843	0	791
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	982	1490	233	1047	1544	188	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	207	21	0	277	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	982	0	1724	1047	0	1732	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.0	0.7	0.0	5.5	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.1	0.0	4.0	4.6	0.0	5.5	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.14	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	470	362	0	473	841	0	791	843	0	791
V/C Ratio(X)	0.14	0.00	0.44	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	437	0	689	495	0	693	841	0	791	843	0	791
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	12.0	13.9	0.0	12.6	4.5	0.0	4.5	4.5	0.0	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	1.9	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.9	0.0	12.7	14.0	0.0	13.7	4.5	0.0	4.5	4.5	0.0	4.5
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		250			298			6			9	
Approach Delay, s/veh		13.2			13.8			4.5			4.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.1		14.9		25.1		14.9
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.1		2.1		7.5
Green Ext Time (p_c), s		0.0		1.8		0.0		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	318	15	11	257	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	346	16	12	279	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	331	502	23	286	493	30	778	0	750	796	0	750
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.00	0.50	0.50	0.00	0.50
Sat Flow, veh/h	965	1674	77	909	1647	100	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	362	12	0	296	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	965	0	1751	909	0	1747	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	7.3	0.5	0.0	5.7	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	6.6	0.0	7.3	7.8	0.0	5.7	0.9	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	525	286	0	524	778	0	750	796	0	750
V/C Ratio(X)	0.08	0.00	0.69	0.04	0.00	0.57	0.03	0.00	0.02	0.03	0.00	0.05
Avail Cap(c_a), veh/h	428	0	700	378	0	699	778	0	750	796	0	750
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	12.4	15.8	0.0	11.8	5.3	0.0	5.0	5.2	0.0	5.1
Incr Delay (d2), s/veh	0.1	0.0	1.8	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.8	0.1	0.0	2.9	0.1	0.0	0.1	0.2	0.0	0.2
LnGrp Delay(d),s/veh	14.7	0.0	14.2	15.9	0.0	12.8	5.4	0.0	5.1	5.3	0.0	5.2
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		387			308			39			60	
Approach Delay, s/veh		14.2			12.9			5.3			5.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		16.0		24.0		16.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.9		9.3		2.6		9.8
Green Ext Time (p_c), s		0.3		2.3		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	189	26	19	235	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	205	28	21	255	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	314	425	58	351	433	51	833	0	781	835	0	781
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.52	0.00	0.52	0.52	0.00	0.52
Sat Flow, veh/h	975	1520	208	1022	1550	182	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	233	21	0	285	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	975	0	1728	1022	0	1733	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.5	0.7	0.0	5.7	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.3	0.0	4.5	5.2	0.0	5.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	482	351	0	484	833	0	781	835	0	781
V/C Ratio(X)	0.14	0.00	0.48	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	432	0	691	474	0	693	833	0	781	835	0	781
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.0	14.2	0.0	12.4	4.6	0.0	4.6	4.6	0.0	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.2	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.8	0.0	12.8	14.2	0.0	13.6	4.6	0.0	4.6	4.6	0.0	4.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		276			306			6			9	
Approach Delay, s/veh		13.2			13.6			4.6			4.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.8		15.2		24.8		15.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.3		2.1		7.7
Green Ext Time (p_c), s		0.0		1.9		0.0		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	234	15	11	227	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	254	16	12	247	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	304	422	27	299	419	29	831	0	815	850	0	815
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.54	0.00	0.54	0.54	0.00	0.54
Sat Flow, veh/h	994	1643	103	988	1633	112	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	270	12	0	264	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	994	0	1746	988	0	1745	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	5.4	0.4	0.0	5.3	0.4	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.2	0.0	5.4	5.9	0.0	5.3	0.8	0.0	0.2	0.6	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	448	299	0	448	831	0	815	850	0	815
V/C Ratio(X)	0.08	0.00	0.60	0.04	0.00	0.59	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	446	0	699	441	0	698	831	0	815	850	0	815
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	13.1	15.6	0.0	13.0	4.5	0.0	4.2	4.4	0.0	4.3
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.1	0.0	1.2	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.3	0.0	2.8	0.1	0.0	2.6	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.4	15.7	0.0	14.3	4.5	0.0	4.3	4.4	0.0	4.4
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		295			276			39			60	
Approach Delay, s/veh		14.5			14.3			4.4			4.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.7		14.3		25.7		14.3
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		8.2		2.6		7.9
Green Ext Time (p_c), s		0.3		2.1		0.3		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	167	26	19	229	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	182	28	21	249	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	312	410	63	361	424	51	839	0	789	841	0	789
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	980	1494	230	1044	1546	186	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	210	21	0	279	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	980	0	1724	1044	0	1732	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.0	0.7	0.0	5.6	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.2	0.0	4.0	4.7	0.0	5.6	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.13	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	473	361	0	475	839	0	789	841	0	789
V/C Ratio(X)	0.14	0.00	0.44	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	436	0	690	493	0	693	839	0	789	841	0	789
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	12.0	13.9	0.0	12.6	4.5	0.0	4.5	4.5	0.0	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.0	0.2	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.9	0.0	12.7	14.0	0.0	13.7	4.5	0.0	4.5	4.5	0.0	4.5
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		253			300			6			9	
Approach Delay, s/veh		13.2			13.7			4.5			4.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		15.0		25.0		15.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.2		2.1		7.6
Green Ext Time (p_c), s		0.0		1.8		0.0		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	321	15	11	260	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	349	16	12	283	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	331	505	23	286	497	30	776	0	748	794	0	748
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.00	0.50	0.50	0.00	0.50
Sat Flow, veh/h	962	1674	77	906	1648	99	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	365	12	0	300	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	962	0	1751	906	0	1747	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	7.4	0.5	0.0	5.8	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	6.7	0.0	7.4	7.8	0.0	5.8	0.9	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	528	286	0	527	776	0	748	794	0	748
V/C Ratio(X)	0.08	0.00	0.69	0.04	0.00	0.57	0.03	0.00	0.02	0.03	0.00	0.05
Avail Cap(c_a), veh/h	425	0	700	376	0	699	776	0	748	794	0	748
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	12.3	15.8	0.0	11.8	5.4	0.0	5.1	5.2	0.0	5.1
Incr Delay (d2), s/veh	0.1	0.0	1.9	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.8	0.1	0.0	2.9	0.1	0.0	0.1	0.2	0.0	0.2
LnGrp Delay(d),s/veh	14.7	0.0	14.2	15.8	0.0	12.8	5.4	0.0	5.1	5.3	0.0	5.3
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		390			312			39			60	
Approach Delay, s/veh		14.2			12.9			5.3			5.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.9		16.1		23.9		16.1
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.9		9.4		2.6		9.8
Green Ext Time (p_c), s		0.3		2.4		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	191	26	19	237	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	43	208	28	21	258	30	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	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	314	428	58	351	436	51	831	0	779	833	0	779
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.52	0.00	0.52	0.52	0.00	0.52
Sat Flow, veh/h	972	1523	205	1020	1552	181	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	43	0	236	21	0	288	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	972	0	1729	1020	0	1733	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.6	0.0	4.5	0.7	0.0	5.7	0.0	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	7.3	0.0	4.5	5.2	0.0	5.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	486	351	0	487	831	0	779	833	0	779
V/C Ratio(X)	0.14	0.00	0.49	0.06	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	430	0	691	472	0	693	831	0	779	833	0	779
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.0	14.2	0.0	12.4	4.7	0.0	4.6	4.7	0.0	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	2.3	0.2	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	15.8	0.0	12.7	14.2	0.0	13.5	4.7	0.0	4.6	4.7	0.0	4.7
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		279			309			6			9	
Approach Delay, s/veh		13.2			13.6			4.7			4.7	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.8		15.2		24.8		15.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.1		9.3		2.1		7.7
Green Ext Time (p_c), s		0.0		1.9		0.0		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	236	15	11	229	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	25	257	16	12	249	17	23	0	16	25	0	35
Adj No. of Lanes	1	1	0	1	1	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	304	424	26	299	422	29	830	0	813	849	0	813
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.54	0.00	0.54	0.54	0.00	0.54
Sat Flow, veh/h	992	1644	102	986	1634	112	1224	0	1500	1245	0	1500
Grp Volume(v), veh/h	25	0	273	12	0	266	23	0	16	25	0	35
Grp Sat Flow(s),veh/h/ln	992	0	1747	986	0	1745	1224	0	1500	1245	0	1500
Q Serve(g_s), s	0.9	0.0	5.5	0.4	0.0	5.3	0.4	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.2	0.0	5.5	5.9	0.0	5.3	0.8	0.0	0.2	0.6	0.0	0.4
Prop In Lane	1.00		0.06	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	451	299	0	450	830	0	813	849	0	813
V/C Ratio(X)	0.08	0.00	0.61	0.04	0.00	0.59	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	444	0	699	439	0	698	830	0	813	849	0	813
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	13.0	15.7	0.0	13.0	4.5	0.0	4.2	4.4	0.0	4.3
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.1	0.0	1.2	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.3	0.0	2.8	0.1	0.0	2.7	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.4	15.7	0.0	14.2	4.5	0.0	4.3	4.4	0.0	4.4
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		298			278			39			60	
Approach Delay, s/veh		14.5			14.3			4.4			4.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.7		14.3		25.7		14.3
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		8.2		2.6		7.9
Green Ext Time (p_c), s		0.3		2.1		0.3		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	198	26	19	272	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	40	198	26	19	272	28	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	434	57	326	446	46	842	0	835	844	0	835
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.56	0.00	0.56	0.56	0.00	0.56
Sat Flow, veh/h	962	1529	201	1031	1574	162	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	40	0	224	19	0	300	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	962	0	1729	1031	0	1736	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.9	0.0	5.3	0.8	0.0	7.5	0.1	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	9.4	0.0	5.3	6.1	0.0	7.5	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	490	326	0	492	842	0	835	844	0	835
V/C Ratio(X)	0.15	0.00	0.46	0.06	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	462	0	830	529	0	833	842	0	835	844	0	835
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	14.7	17.3	0.0	15.5	5.0	0.0	4.9	5.0	0.0	4.9
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	0.0	2.6	0.2	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	19.8	0.0	15.4	17.3	0.0	16.7	5.0	0.0	4.9	5.0	0.0	5.0
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		264			319			6			9	
Approach Delay, s/veh		16.1			16.8			5.0			5.0	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.8		18.2		31.8		18.2
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		18.0		24.0		18.0		24.0
Max Q Clear Time (g_c+I1), s		2.1		11.4		2.1		9.5
Green Ext Time (p_c), s		0.0		2.8		0.0		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	382	15	11	308	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	23	382	15	11	308	16	21	0	15	23	0	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	534	21	283	527	27	759	0	725	776	0	725
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	941	1687	66	880	1663	86	1227	0	1500	1246	0	1500
Grp Volume(v), veh/h	23	0	397	11	0	324	21	0	15	23	0	32
Grp Sat Flow(s),veh/h/ln	941	0	1753	880	0	1749	1227	0	1500	1246	0	1500
Q Serve(g_s), s	0.8	0.0	8.0	0.4	0.0	6.2	0.4	0.0	0.2	0.4	0.0	0.5
Cycle Q Clear(g_c), s	7.1	0.0	8.0	8.4	0.0	6.2	0.8	0.0	0.2	0.6	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	332	0	555	283	0	554	759	0	725	776	0	725
V/C Ratio(X)	0.07	0.00	0.71	0.04	0.00	0.58	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	410	0	701	356	0	700	759	0	725	776	0	725
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	12.1	15.8	0.0	11.5	5.7	0.0	5.4	5.6	0.0	5.5
Incr Delay (d2), s/veh	0.1	0.0	2.5	0.1	0.0	1.0	0.1	0.0	0.1	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	4.3	0.1	0.0	3.1	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	14.5	0.0	14.6	15.9	0.0	12.4	5.7	0.0	5.4	5.6	0.0	5.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		420			335			36			55	
Approach Delay, s/veh		14.6			12.6			5.6			5.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		23.3		16.7		23.3		16.7
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.8		10.0		2.6		10.4
Green Ext Time (p_c), s		0.2		2.4		0.2		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	227	26	19	282	28	3	0	3	4	0	5
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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	40	227	26	19	282	28	3	0	3	4	0	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	454	52	316	461	46	831	0	822	833	0	822
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.55	0.00	0.55	0.55	0.00	0.55
Sat Flow, veh/h	953	1555	178	1004	1580	157	1257	0	1500	1260	0	1500
Grp Volume(v), veh/h	40	0	253	19	0	310	3	0	3	4	0	5
Grp Sat Flow(s),veh/h/ln	953	0	1733	1004	0	1737	1257	0	1500	1260	0	1500
Q Serve(g_s), s	1.9	0.0	6.1	0.8	0.0	7.7	0.1	0.0	0.0	0.1	0.0	0.1
Cycle Q Clear(g_c), s	9.6	0.0	6.1	6.9	0.0	7.7	0.1	0.0	0.0	0.1	0.0	0.1
Prop In Lane	1.00		0.10	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	506	316	0	507	831	0	822	833	0	822
V/C Ratio(X)	0.15	0.00	0.50	0.06	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	455	0	832	504	0	834	831	0	822	833	0	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	14.7	17.5	0.0	15.3	5.2	0.0	5.1	5.1	0.0	5.1
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	0.0	3.0	0.2	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	19.6	0.0	15.4	17.6	0.0	16.5	5.2	0.0	5.1	5.2	0.0	5.1
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		293			329			6			9	
Approach Delay, s/veh		16.0			16.5			5.1			5.1	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.4		18.6		31.4		18.6
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		18.0		24.0		18.0		24.0
Max Q Clear Time (g_c+I1), s		2.1		11.6		2.1		9.7
Green Ext Time (p_c), s		0.0		3.0		0.0		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	281	15	11	272	16	21	0	15	23	0	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	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	23	281	15	11	272	16	21	0	15	23	0	32
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	448	24	297	446	26	818	0	795	835	0	795
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.53	0.00	0.53	0.53	0.00	0.53
Sat Flow, veh/h	972	1660	89	965	1650	97	1227	0	1500	1246	0	1500
Grp Volume(v), veh/h	23	0	296	11	0	288	21	0	15	23	0	32
Grp Sat Flow(s),veh/h/ln	972	0	1749	965	0	1748	1227	0	1500	1246	0	1500
Q Serve(g_s), s	0.8	0.0	5.9	0.4	0.0	5.8	0.3	0.0	0.2	0.4	0.0	0.4
Cycle Q Clear(g_c), s	6.6	0.0	5.9	6.4	0.0	5.8	0.7	0.0	0.2	0.5	0.0	0.4
Prop In Lane	1.00		0.05	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	0	472	297	0	472	818	0	795	835	0	795
V/C Ratio(X)	0.08	0.00	0.63	0.04	0.00	0.61	0.03	0.00	0.02	0.03	0.00	0.04
Avail Cap(c_a), veh/h	429	0	700	423	0	699	818	0	795	835	0	795
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	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	12.8	15.6	0.0	12.8	4.7	0.0	4.5	4.6	0.0	4.5
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.1	0.0	1.3	0.1	0.0	0.0	0.1	0.0	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(-26165%),veh/ln	0.2	0.0	3.1	0.1	0.0	2.9	0.1	0.0	0.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	15.8	0.0	14.2	15.7	0.0	14.0	4.8	0.0	4.5	4.7	0.0	4.6
LnGrp LOS	B		B	B		B	A		A	A		A
Approach Vol, veh/h		319			299			36			55	
Approach Delay, s/veh		14.3			14.1			4.6			4.6	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.2		14.8		25.2		14.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		2.7		8.6		2.5		8.4
Green Ext Time (p_c), s		0.2		2.2		0.3		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	250	298	6	9
Demand Flow Rate, veh/h	256	304	6	9
Vehicles Circulating, veh/h	25	47	231	276
Vehicles Exiting, veh/h	260	190	50	75
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.5	6.1	4.1	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	256	304	6	9
Cap Entry Lane, veh/h	1102	1078	897	857
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	250	298	6	9
Cap Entry, veh/h	1078	1057	897	857
V/C Ratio	0.232	0.282	0.007	0.010
Control Delay, s/veh	5.5	6.1	4.1	4.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	387	308	39	60
Demand Flow Rate, veh/h	395	314	39	62
Vehicles Circulating, veh/h	37	48	403	320
Vehicles Exiting, veh/h	344	394	28	42
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.1	6.3	5.3	5.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	395	314	39	62
Cap Entry Lane, veh/h	1089	1077	755	821
Entry HV Adj Factor	0.980	0.982	1.000	0.968
Flow Entry, veh/h	387	308	39	60
Cap Entry, veh/h	1067	1058	755	794
V/C Ratio	0.363	0.292	0.052	0.076
Control Delay, s/veh	7.1	6.3	5.3	5.3
LOS	A	A	A	A
95th %tile Queue, veh	2	1	0	0

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	276	306	6	9
Demand Flow Rate, veh/h	282	312	6	9
Vehicles Circulating, veh/h	25	47	257	284
Vehicles Exiting, veh/h	268	216	50	75
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.8	6.2	4.2	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	282	312	6	9
Cap Entry Lane, veh/h	1102	1078	874	851
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	276	306	6	9
Cap Entry, veh/h	1078	1057	874	851
V/C Ratio	0.256	0.289	0.007	0.011
Control Delay, s/veh	5.8	6.2	4.2	4.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	295	276	39	60
Demand Flow Rate, veh/h	301	281	39	62
Vehicles Circulating, veh/h	37	48	309	287
Vehicles Exiting, veh/h	311	300	28	42
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.0	5.9	4.8	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	301	281	39	62
Cap Entry Lane, veh/h	1089	1077	830	848
Entry HV Adj Factor	0.980	0.982	1.000	0.968
Flow Entry, veh/h	295	276	39	60
Cap Entry, veh/h	1067	1058	830	821
V/C Ratio	0.276	0.261	0.047	0.073
Control Delay, s/veh	6.0	5.9	4.8	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	253	300	6	9
Demand Flow Rate, veh/h	259	306	6	9
Vehicles Circulating, veh/h	25	47	234	278
Vehicles Exiting, veh/h	262	193	50	75
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.5	6.2	4.1	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	259	306	6	9
Cap Entry Lane, veh/h	1102	1078	894	856
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	253	300	6	9
Cap Entry, veh/h	1078	1057	894	856
V/C Ratio	0.235	0.284	0.007	0.011
Control Delay, s/veh	5.5	6.2	4.1	4.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	390	312	39	60
Demand Flow Rate, veh/h	398	318	39	62
Vehicles Circulating, veh/h	37	48	406	324
Vehicles Exiting, veh/h	348	397	28	42
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.1	6.3	5.3	5.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	398	318	39	62
Cap Entry Lane, veh/h	1089	1077	753	817
Entry HV Adj Factor	0.980	0.982	1.000	0.968
Flow Entry, veh/h	390	312	39	60
Cap Entry, veh/h	1067	1058	753	791
V/C Ratio	0.366	0.295	0.052	0.076
Control Delay, s/veh	7.1	6.3	5.3	5.3
LOS	A	A	A	A
95th %tile Queue, veh	2	1	0	0

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	279	309	6	9
Demand Flow Rate, veh/h	285	315	6	9
Vehicles Circulating, veh/h	25	47	260	287
Vehicles Exiting, veh/h	271	219	50	75
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.8	6.3	4.2	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	285	315	6	9
Cap Entry Lane, veh/h	1102	1078	871	848
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	279	309	6	9
Cap Entry, veh/h	1078	1057	871	848
V/C Ratio	0.259	0.292	0.007	0.011
Control Delay, s/veh	5.8	6.3	4.2	4.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	5.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	298	278	39	60
Demand Flow Rate, veh/h	304	283	39	62
Vehicles Circulating, veh/h	37	48	312	289
Vehicles Exiting, veh/h	313	303	28	42
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.1	5.9	4.8	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	304	283	39	62
Cap Entry Lane, veh/h	1089	1077	827	846
Entry HV Adj Factor	0.980	0.982	1.000	0.968
Flow Entry, veh/h	298	278	39	60
Cap Entry, veh/h	1067	1058	827	819
V/C Ratio	0.279	0.263	0.047	0.073
Control Delay, s/veh	6.1	5.9	4.8	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	264	319	6	9
Demand Flow Rate, veh/h	270	325	6	9
Vehicles Circulating, veh/h	23	44	247	299
Vehicles Exiting, veh/h	285	209	46	70
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.6	6.4	4.1	4.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	270	325	6	9
Cap Entry Lane, veh/h	1104	1081	883	838
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	264	319	6	9
Cap Entry, veh/h	1080	1060	883	838
V/C Ratio	0.245	0.301	0.007	0.011
Control Delay, s/veh	5.6	6.4	4.1	4.4
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	420	335	36	55
Demand Flow Rate, veh/h	428	341	36	56
Vehicles Circulating, veh/h	34	44	436	346
Vehicles Exiting, veh/h	368	428	26	39
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.5	6.5	5.4	5.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	428	341	36	56
Cap Entry Lane, veh/h	1092	1081	731	799
Entry HV Adj Factor	0.982	0.982	1.000	0.982
Flow Entry, veh/h	420	335	36	55
Cap Entry, veh/h	1073	1062	731	785
V/C Ratio	0.392	0.315	0.049	0.070
Control Delay, s/veh	7.5	6.5	5.4	5.3
LOS	A	A	A	A
95th %tile Queue, veh	2	1	0	0

Intersection	
Intersection Delay, s/veh	6.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	293	329	6	9
Demand Flow Rate, veh/h	300	336	6	9
Vehicles Circulating, veh/h	23	44	277	310
Vehicles Exiting, veh/h	296	239	46	70
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.9	6.5	4.3	4.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	300	336	6	9
Cap Entry Lane, veh/h	1104	1081	857	829
Entry HV Adj Factor	0.978	0.980	1.000	1.000
Flow Entry, veh/h	293	329	6	9
Cap Entry, veh/h	1080	1060	857	829
V/C Ratio	0.272	0.311	0.007	0.011
Control Delay, s/veh	5.9	6.5	4.3	4.4
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	319	299	36	55
Demand Flow Rate, veh/h	325	304	36	56
Vehicles Circulating, veh/h	34	44	333	309
Vehicles Exiting, veh/h	331	325	26	39
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.3	6.1	4.9	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	325	304	36	56
Cap Entry Lane, veh/h	1092	1081	810	830
Entry HV Adj Factor	0.983	0.982	1.000	0.982
Flow Entry, veh/h	319	299	36	55
Cap Entry, veh/h	1073	1062	810	815
V/C Ratio	0.298	0.281	0.044	0.068
Control Delay, s/veh	6.3	6.1	4.9	5.1
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Attachment E – Cost Benefit Analysis Spreadsheet

Intersection Control Evaluation
Collision Cost Analysis and B/C

-- Fill in tan boxes along with 'Area' --

County	Rte	Postmile	Location Description
SBd	18	26.4	Santa's Village Access Rd

Area
- (●) Rural
- ( ) Suburban
- ( ) Urban

Intersection Types:
- F - Four-Legged
- M - Multi-Legged
- S - Offsett -Tee
- Y - "Y" Wye

Existing Condition	# of Years for Analysis	Rate Group
Stop Control (Minor Leg), Type F, M or S	20	I2

Existing ADT (x1000)		Future ADT (x1000)			
Mainline	Cross St	Mainline	Cross St	Average ADT	VCF
3.9	0.1	4.8	1.0	4.9	1.23

Est. Capital Cost (x1000) for Desired Improvement

Desired Improvement	Const	R/W	Total
Yield Control (Roundabout 1-Lane)	$ 2,269	$ -	$ 2,269
Yield Control (Roundabout 2-Lane)			$ -
Traffic Signal, Type F, M or S	$ 1,973	$ -	$ 1,973
All Way Stop, Type F, M or S	$ 1,665	$ -	$ 1,665

Existing Collision Data

Number of Years	3	Total Collisions	3
Injury	2	PDO	1
Fatal	0	Fat + Inj	2

	Collision Cost (x1000)					B/C
	Existing Condition		Desired Improvement		Projected Savings	
1	Stop Control (Minor Leg), Type F, M or S	$7,375	Yield Control (Roundabout 1-Lane)	$377	$6,998	3.08
2	Stop Control (Minor Leg), Type F, M or S	$7,375	Yield Control (Roundabout 2-Lane)	$942	$6,433	0.00
3	Stop Control (Minor Leg), Type F, M or S	$7,375	Traffic Signal, Type F, M or S	$3,232	$4,143	2.10
4	Stop Control (Minor Leg), Type F, M or S	$7,375	All Way Stop, Type F, M or S	$3,291	$4,084	2.45

NOTE: Only average collision costs are used for calculation purposes.

Attachment F – Preliminary Project Cost Estimates

PRELIMINARY PROJECT COST ESTIMATE SUMMARY
SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	
Program Code	

PROJECT DESCRIPTION:

Limits

Proposed Improvement (Scope)

Alternative 3 - Four-Way Stop Controled

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 1,365,000
TOTAL STRUCTURE ITEMS	$ 300,000
SUBTOTAL CONSTRUCTION COSTS	$ 1,665,000
TOTAL RIGHT OF WAY ITEMS	$ 0
PROJECT DEVELOPMENT SUPPORT	$ 249,750
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 1,914,750

Reviewed by Project Manager _____ Date: _____
(Signature)

Approved by Project Engineer _____ Date: _____
(Signature)

Phone No. _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Imported Borrow	12,000	CY	$ 25.00	$ 300,000	
Clearing & Grubbing	1	LS	$ 10,000.00	$ 10,000	
Develop Water Supply	1	LS	$ 8,000.00	$ 8,000	
Remove Concrete (Driveway)	644	SY	$ 25.00	$ 16,089	
Tree Removal	20	EA	$ 1,000.00	$ 20,000	
				Subtotal Earthwork	$ 354,089
Section 2 Pavement Structural Section					
HMA (Type A)	2,533	TON	$ 85.00	$ 215,264	
AB (Class 2)	1,956	CY	$ 35.00	$ 68,447	
PCC Sidewalk	1,469	SF	$ 10.00	$ 14,690	
				Subtotal Pavement Structural Section	$ 298,401
Section 3 Drainage					
Remove Pipe	22	LF	$ 50.00	$ 1,100	
Drainage Inlet	2	EA	$ 4,000.00	$ 8,000	
24" RCP Pipe	26	LF	$ 150.00	$ 3,900	
				Subtotal Drainage	$ 13,000
Section 4 Specialty Items					
Midwest Guardrail System	1,253	LF	$ 47.00	$ 58,891	
Construction Site BMPs	1	LS	$ 50,000.00	$ 50,000	
Yellow Thermoplastic Stripe Disposal	3,256	LF	$ 2.00	$ 6,512	
Pavement Delineation Removal	3,250	LF	$ 0.50	$ 1,625	
Time Related Overhead	1	LS	$ 25,000.00	$ 25,000	
Resident Engineer Office Space	1	LS	$ 30,000.00	$ 30,000	
				Subtotal Specialty Items	$ 172,028

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 5 Traffic Items

Traffic Signal Poles		EA	$	50,000.00	$		
Traffic Delineation Items (Enhanced)	7,005	LF	$	1.50	$	10,508	
Thermoplastic Pavement Marking (Enhanced)	612	SF	$	5.00	$	3,060	
Relocate Roadside Sign		EA	$	500.00	$		
Traffic Control	1	LS	$	25,000.00	$	25,000	
						Subtotal Traffic Items $	38,568

TOTAL SECTIONS 1 thru 5 $ 876,086

II. ROADSIDE ITEMS

Section 6 Planting and Irrigation

Trees, Shrubs, Groundcover and Mulch		SF	$		$		
Soil Preparation		SF	$		$		
Irrigation Modification		SF	$		$		
Relocate Existing Irrigation		LS	$		$		
Tree Mitigation		LS	$		$		
Erosion Control (Hydroseed)	1	LS	$	10,000.00	$	10,000	
						Subtotal Planting and Irrigation $	10,000

Section 7 Roadside Management and Safety

Vegatation Control Treatments			$		$	
Gore Area Pavement			$		$	
Miscellaneous Paving			$		$	
Slope Protection			$		$	
Side Slopes/Embankment Slopes			$		$	
Off-Freeway Access (gates, stairways, etc.)			$		$	
Roadside Facilities (Vista Points, Transit, Park and Ride, etc.)			$		$	
					Subtotal Roadside Management and Safety $	

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 8 Minor Items				Item Cost	Section Cost
Subtotal Sections 1 thru 7	$ 886,086	x 10%	= $	88,609	
			TOTAL MINOR ITEMS		$ 88,609
Section 9 Roadway Mobilization					
Subtotal Sections 1 thru 8	$ 974,694	x 10%	= $	97,469	
			TOTAL ROADWAY MOBILIZATION		$ 97,469
Section 10 Roadway Additions					
Supplemental Work:	$ 974,694	x 5%	= $	48,735	
					$ 48,735
Contingencies:	$ 974,694	x 25%	= $	243,674	
					$ 243,674
			TOTAL ROADWAY ADDITIONS		$ 292,408
			TOTAL ROADWAY ITEMS		**$ 1,364,572**
					(Subtotal Sections 1 thru 8)
					USE $ 1,365,000

Estimate Prepared By _____ Phone No. _____ Date _____

Estimate Checked By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

III. STRUCTURE ITEMS

	Bridge Name	Structure cost		
Bridge Costs		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
Cost Per ft^2 (incl. 10% mobilization and 25% contingency)	$	$	$	
Total Cost for Structure	$	$	$	$

Structure Name	Walls		
Structure Type	Retaining Walls at STA 18+00 to 21+00 (Approx)		
Bldg Improvements			
		1	
Cost (incl. 10% mobilization)		$ 300,000.00	
Total Cost for Structure			$ 300,000

SUBTOTAL STRUCTURES ITEMS $ 300,000
(Sum of Total Cost for Structures)

Railroad Related Costs: $
$

SUBTOTAL RAILROAD ITEMS $

TOTAL STRUCTURES ITEMS $ 300,000
(Sum of Structures Items plus Railroad Items)
USE $ 300,000

Estimate Prepared By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route 08-SB-18
PM
EA

IV. RIGHT OF WAY ITEMS

	Current Value (Future Use)	Escalation Rate/year	Escalated Value
A. TCE	$		$
B. Mitigation acquisition & credits	$		$
C. Project Development Permit Fees	$		$
D. Utility Relocation	$		$
E. Relocation Assistance	$		$
F. Clearance/Demolition	$		$
G. Title and Escrow Fees	$		$

TOTAL RIGHT OF WAY $
(Current Value)

TOTAL RIGHT OF WAY ITEMS $
(Escalated Value)

ROUNDED $

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) **2020**

F. Construction Contract Work

Brief Description of Work:

Right of Way Branch Cost Estimate for Work $

COMMENTS:

Estimate Prepared By Phone No. Date

PRELIMINARY PROJECT COST ESTIMATE SUMMARY
SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	
Program Code	

PROJECT DESCRIPTION:

Limits

Proposed Improvement (Scope)

Alternative 4 - Traffic Signal Controled

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 1,673,000
TOTAL STRUCTURE ITEMS	$ 300,000
SUBTOTAL CONSTRUCTION COSTS	$ 1,973,000
TOTAL RIGHT OF WAY ITEMS	$ 0
PROJECT DEVELOPMENT SUPPORT	$ 295,950
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 2,268,950

Reviewed by Project Manager _____ Date: _____
(Signature)

Approved by Project Engineer _____ Date: _____
(Signature)

Phone No. _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Imported Borrow	12,000	CY	$ 25.00	$ 300,000	
Clearing & Grubbing	1	LS	$ 10,000.00	$ 10,000	
Develop Water Supply	1	LS	$ 8,000.00	$ 8,000	
Remove Concrete (Driveway)	644	SY	$ 25.00	$ 16,089	
Tree Removal	20	EA	$ 1,000.00	$ 20,000	
				Subtotal Earthwork	$ 354,089
Section 2 Pavement Structural Section					
HMA (Type A)	2,533	TON	$ 85.00	$ 215,264	
AB (Class 2)	1,956	CY	$ 35.00	$ 68,447	
PCC Sidewalk	1,469	SF	$ 10.00	$ 14,690	
				Subtotal Pavement Structural Section	$ 298,401
Section 3 Drainage					
Remove Pipe	22	LF	$ 50.00	$ 1,100	
Drainage Inlet	2	EA	$ 4,000.00	$ 8,000	
24" RCP Pipe	26	LF	$ 150.00	$ 3,900	
				Subtotal Drainage	$ 13,000
Section 4 Specialty Items					
Midwest Guardrail System	1,253	LF	$ 47.00	$ 58,891	
Construction Site BMPs	1	LS	$ 50,000.00	$ 50,000	
Yellow Thermoplastic Stripe Disposal	3,256	LF	$ 2.00	$ 6,512	
Pavement Delineation Removal	3,250	LF	$ 0.50	$ 1,625	
Time Related Overhead	1	LS	$ 25,000.00	$ 25,000	
Resident Engineer Office Space	1	LS	$ 30,000.00	$ 30,000	
				Subtotal Specialty Items	$ 172,028

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 5 Traffic Items

Traffic Signal Poles	4	EA	$ 50,000.00	$ 200,000	
Traffic Delineation Items (Enhanced)	7,005	LF	$ 1.50	$ 10,508	
Thermoplastic Pavement Marking (Enhanced)	612	SF	$ 5.00	$ 3,060	
Relocate Roadside Sign		EA	$ 500.00	$	
Traffic Control	1	LS	$ 25,000.00	$ 25,000	
				Subtotal Traffic Items $	238,568

TOTAL SECTIONS 1 thru 5 $ 1,076,086

II. ROADSIDE ITEMS

Section 6 Planting and Irrigation

Trees, Shrubs, Groundcover and Mulch		SF	$	$	
Soil Preparation		SF	$	$	
Irrigation Modification		SF	$	$	
Relocate Existing Irrigation		LS	$	$	
Tree Mitigation		LS	$	$	
Erosion Control (Hydroseed)	1	LS	$ 10,000.00	$ 10,000	
				Subtotal Planting and Irrigation $	10,000

Section 7 Roadside Management and Safety

Vegatation Control Treatments			$	$	
Gore Area Pavement			$	$	
Miscellaneous Paving			$	$	
Slope Protection			$	$	
Side Slopes/Embankment Slopes			$	$	
Off-Freeway Access (gates, stairways, etc.)			$	$	
Roadside Facilities (Vista Points, Transit, Park and Ride, etc.)			$	$	
				Subtotal Roadside Management and Safety $	

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 8 Minor Items				Item Cost	Section Cost
Subtotal Sections 1 thru 7	$ 1,086,086	x 10%	= $	108,609	
			TOTAL MINOR ITEMS		$ 108,609
Section 9 Roadway Mobilization					
Subtotal Sections 1 thru 8	$ 1,194,694	x 10%	= $	119,469	
			TOTAL ROADWAY MOBILIZATION		$ 119,469
Section 10 Roadway Additions					
Supplemental Work:	$ 1,194,694	x 5%	= $	59,735	
					$ 59,735
Contingencies:	$ 1,194,694	x 25%	= $	298,674	
					$ 298,674
			TOTAL ROADWAY ADDITIONS		$ 358,408
			TOTAL ROADWAY ITEMS		**$ 1,672,572**
					(Subtotal Sections 1 thru 8)
			USE		**$ 1,673,000**

Estimate Prepared By _____ Phone No. _____ Date _____

Estimate Checked By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

III. STRUCTURE ITEMS

	Bridge Name	Structure cost		
Bridge Costs		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
Cost Per ft^2 (incl. 10% mobilization and 25% contingency)	$	$	$	
Total Cost for Structure	$	$	$	$

Structure Name	Walls		
Structure Type	Retaining Walls at STA 18+00 to 21+00 (Approx)		
Bldg Improvements			
		1	
Cost (incl. 10% mobilization)		$ 300,000.00	
Total Cost for Structure			$ 300,000

SUBTOTAL STRUCTURES ITEMS $ 300,000
(Sum of Total Cost for Structures)

Railroad Related Costs: $
$

SUBTOTAL RAILROAD ITEMS $

TOTAL STRUCTURES ITEMS $ 300,000
(Sum of Structures Items plus Railroad Items)
USE $ 300,000

Estimate Prepared By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route 08-SB-18
PM
EA

IV. RIGHT OF WAY ITEMS

	Current Value (Future Use)	Escalation Rate/year	Escalated Value
A. TCE	$		$
B. Mitigation acquisition & credits	$		$
C. Project Development Permit Fees	$		$
D. Utility Relocation	$		$
E. Relocation Assistance	$		$
F. Clearance/Demolition	$		$
G. Title and Escrow Fees	$		$

TOTAL RIGHT OF WAY $
(Current Value)

TOTAL RIGHT OF WAY ITEMS $
(Escalated Value)

ROUNDED $

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) **2020**

F. Construction Contract Work

Brief Description of Work:

Right of Way Branch Cost Estimate for Work $

COMMENTS:

Estimate Prepared By Phone No. Date

PRELIMINARY PROJECT COST ESTIMATE SUMMARY
SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	
Program Code	

PROJECT DESCRIPTION:

Limits

Proposed Improvement (Scope)

Alternative 5 - Roundabout

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 1,969,000
TOTAL STRUCTURE ITEMS	$ 300,000
SUBTOTAL CONSTRUCTION COSTS	$ 2,269,000
TOTAL RIGHT OF WAY ITEMS	$ 0
PROJECT DEVELOPMENT SUPPORT	$ 340,350
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 2,609,350

Reviewed by Project Manager _____ Date: _____
(Signature)

Approved by Project Engineer _____ Date: _____
(Signature)

Phone No. _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Imported Borrow	18,000	CY	$ 25.00	$ 450,000	
Clearing & Grubbing	1	LS	$ 10,000.00	$ 10,000	
Develop Water Supply	1	LS	$ 8,000.00	$ 8,000	
Remove Concrete (Driveway)	644	SY	$ 25.00	$ 16,089	
Tree Removal	30	EA	$ 1,000.00	$ 30,000	
				Subtotal Earthwork	$ 514,089
Section 2 Pavement Structural Section					
HMA (Type A)	2,716	TON	$ 85.00	$ 230,878	
AB (Class 2)	2,439	CY	$ 35.00	$ 85,349	
PCC Sidewalk	3,451	SF	$ 10.00	$ 34,510	
PCC Median	14,473	SF	$ 10.00	$ 144,730	
				Subtotal Pavement Structural Section	$ 350,737
Section 3 Drainage					
Remove Pipe	22	LF	$ 50.00	$ 1,100	
Drainage Inlet	2	EA	$ 4,000.00	$ 8,000	
24" RCP Pipe	26	LF	$ 150.00	$ 3,900	
				Subtotal Drainage	$ 13,000
Section 4 Specialty Items					
Midwest Guardrail System	1,862	LF	$ 47.00	$ 87,514	
Construction Site BMPs	1	LS	$ 50,000.00	$ 50,000	
Yellow Thermoplastic Stripe Disposal	3,256	LF	$ 2.00	$ 6,512	
Pavement Delineation Removal	3,250	LF	$ 0.50	$ 1,625	
Time Related Overhead	1	LS	$ 25,000.00	$ 25,000	
Resident Engineer Office Space	1	LS	$ 30,000.00	$ 30,000	
				Subtotal Specialty Items	$ 200,651

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 5 Traffic Items

Traffic Lighting	1	LS	$ 100,000.00	$ 100,000	
Sidewalk Lighting	1	LS	$ 50,000.00	$ 50,000	
Traffic Delineation Items (Enhanced)	7,399	LF	$ 1.50	$ 11,099	
Thermoplastic Pavement Marking (Enhanced)	756	SF	$ 5.00	$ 3,780	
Relocate Roadside Sign		EA	$ 500.00	$	
Traffic Control	1	LS	$ 25,000.00	$ 25,000	
				Subtotal Traffic Items $	189,879

TOTAL SECTIONS 1 thru 5 $ 1,268,355

II. ROADSIDE ITEMS

Section 6 Planting and Irrigation

Trees, Shrubs, Groundcover and Mulch		SF	$	$	
Soil Preparation		SF	$	$	
Irrigation Modification		SF	$	$	
Relocate Existing Irrigation		LS	$	$	
Tree Mitigation		LS	$	$	
Erosion Control (Hydroseed)	1	LS	$ 10,000.00	$ 10,000	
				Subtotal Planting and Irrigation $	10,000

Section 7 Roadside Management and Safety

Vegatation Control Treatments			$	$	
Gore Area Pavement			$	$	
Miscellaneous Paving			$	$	
Slope Protection			$	$	
Side Slopes/Embankment Slopes			$	$	
Off-Freeway Access (gates, stairways, etc.)			$	$	
Roadside Facilities (Vista Points, Transit, Park and Ride, etc.)			$	$	
				Subtotal Roadside Management and Safety $	

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

Section 8 Minor Items				Item Cost	Section Cost
Subtotal Sections 1 thru 7	$ 1,278,355	x 10%	= $	127,836	
			TOTAL MINOR ITEMS		$ 127,836
Section 9 Roadway Mobilization					
Subtotal Sections 1 thru 8	$ 1,406,191	x 10%	= $	140,619	
			TOTAL ROADWAY MOBILIZATION		$ 140,619
Section 10 Roadway Additions					
Supplemental Work:	$ 1,406,191	x 5%	= $	70,310	
					$ 70,310
Contingencies:	$ 1,406,191	x 25%	= $	351,548	
					$ 351,548
			TOTAL ROADWAY ADDITIONS		$ 421,857
			TOTAL ROADWAY ITEMS		**$ 1,968,667**
					(Subtotal Sections 1 thru 8)
			USE		**$ 1,969,000**

Estimate Prepared By _____ Phone No. _____ Date _____

Estimate Checked By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

III. STRUCTURE ITEMS

	Bridge Name	Structure cost		
Bridge Costs		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
		$		
Cost Per ft^2 (incl. 10% mobilization and 25% contingency)	$	$	$	
Total Cost for Structure	$	$	$	$

Structure Name	Walls		
Structure Type	Retaining Walls at STA 18+00 to 21+00 (Approx)		
Bldg Improvements			
		1	
Cost (incl. 10% mobilization)		$ 300,000.00	
Total Cost for Structure			$ 300,000

SUBTOTAL STRUCTURES ITEMS $ 300,000
(Sum of Total Cost for Structures)

Railroad Related Costs: $
$

SUBTOTAL RAILROAD ITEMS $

TOTAL STRUCTURES ITEMS $ 300,000
(Sum of Structures Items plus Railroad Items)
USE $ 300,000

Estimate Prepared By _____ Phone No. _____ Date _____

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

SANTA'S VILLAGE

District-County-Route	08-SB-18
PM	
EA	

IV. RIGHT OF WAY ITEMS

	Current Value (Future Use)	Escalation Rate/year	Escalated Value
A. TCE	$		$
B. Mitigation acquisition & credits	$		$
C. Project Development Permit Fees	$		$
D. Utility Relocation	$		$
E. Relocation Assistance	$		$
F. Clearance/Demolition	$		$
G. Title and Escrow Fees	$		$

TOTAL RIGHT OF WAY $ _____
(Current Value)

TOTAL RIGHT OF WAY ITEMS $ _____
(Escalated Value)

ROUNDED $ _____

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) **2020**

F. Construction Contract Work

Brief Description of Work:

_____

_____

_____

_____

Right of Way Branch Cost Estimate for Work $ _____

COMMENTS:

Estimate Prepared By _____ Phone No. _____ Date _____

Appendix H

Responses to Comments

Responses to County of San Bernardino Comments

COUNTY OF SAN BERNARDINO –
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING DIVISION
(909) 387-8186

REVIEW SUBMITTAL NUMBER. : 2nd Submittal		**PROJECT : Traffic Study Dated Dec 2015 for Skypark at Santa's Village**
REVIEWER: Ed Petre	**2nd Reviewer:**	**LOCATION: On SR-18 near Kuffel Canyon Road (APN: 0332-212-02); Project Number P201500051**
REVIEW TYPE: ☒ LAND DEV. ☐ PERMITS ☐ OTHER		**CONSULTANT: GIBSON TRANSPORTATION CONSULTING, INC.**
DATE: January 20, 2016	**RETURN DATE:**	**CONTACT INFO: Hassan Ahmed, 213-683-0088**

No.	Page	Comment	Initial Disp.	Response	Final Disp.	LS or NDC
1	General	The final traffic study shall be signed and stamped by a Registered Engineer in the State of California.	C	Stamped.		
2	Appendix G	Fair share calculations shall be based on the same volumes that identified mitigation was needed.	C	Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required. Therefore, fair share contributions are not required.		
3	Figure 12	Will the 50' pocket lengths be adequate for truck deliveries or buses to the site? Also, it appears that the 125' transition to the bay taper is not adequate for the speed limit along this roadway. Please verify.	NCR	Figure 12 is already updated to address this comment.		

DESIGNERS INITIAL DISPOSITION CODES: **C** = Will Comply **D** = Discuss **N** = No Change **A** = Agency Action
REVIEWERS FINAL DISPOSITION CODES: **D** = Done or Approved **NC**= Not Complied **NCR** = No Change Required
LS =Revise in Later Submittal **NDC =** Revise Immediately

COUNTY OF SAN BERNARDINO –
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING DIVISION
(909) 387-8186

REVIEW SUBMITTAL NUMBER. : 1ST Submittal		**PROJECT : Traffic Study Dated February 2015 for Skypark at Santa's Village**
REVIEWER: Ed Petre	**2nd Reviewer: Eloy Ruvalcaba**	**LOCATION: On SR-18 near Kuffel Canyon Road (APN: 0332-212-02); Project Number P201500051**
REVIEW TYPE: ☒ LAND DEV. ☐ PERMITS ☐ OTHER		**CONSULTANT: GIBSON TRANSPORTATION CONSULTING, INC.**
DATE: March 23, 2015	**RETURN DATE:**	**CONTACT INFO: Hassan Ahmed, 213-683-0088**

No.	Page	Comment	Initial Disp.	Response	Final Disp.	LS or NDC
1	General	The final traffic study shall be signed and stamped by a Registered Engineer in the State of California.	C	Will stamp the final draft of the traffic study.		
2	Page 1 – Chapter 1	For clarity, it should be stated that this report was established in conjunction with the **Interim** County's Traffic Impact Study Guidelines. The Guidelines were never approved.	C	Updated on Page 1, Chapter 1.		
3	Figure 2A, 3A and 4A	For intersection 1 during the PM peak hour, the study is showing an improvement in the LOS during the Build-out conditions compared to the existing and opening year conditions. Why?	C	Updated.		
4	Table 7A, 7B, 8A and 8B	Table headings "Existing" and "Existing Plus Project" are incorrect. The headings should match the appropriate conditions such as "Opening Year Plus Project".	C	Updated.		
5	Table 7A	Intersection 3 during the PM peak hour under existing conditions should be an LOS C, not B. Additional changes may need to be corrected on other tables because of this change.	C	Updated.		
6	Table 8B	Intersection 3 LOS's are incorrect. They should be all C. Additional changes may need to be corrected on other tables because of this change.	C	Updated.		
7	Page 57	The study identifies that two intersections meets signal warrants. Caltrans recommends a fair share contribution for the two intersections.	D	Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required. Therefore, fair share contributions are not required.		
8	Figure 12	Will the 50' pocket lengths be adequate for truck deliveries or buses to the site? Also, it appears that the 125' transition to the bay taper is not adequate for the speed limit along this roadway. Please	D	Updated in Figure 12. The storage for the left turn lanes at the proposed signalized intersection are in		

DESIGNERS INITIAL DISPOSITION CODES: **C** = Will Comply **D** = Discuss **N** = No Change **A** = Agency Action
REVIEWERS FINAL DISPOSITION CODES: **D** = Done or Approved **NC**= Not Complied **NCR** = No Change Required
LS =Revise in Later Submittal **NDC =** Revise Immediately

		verify.		excess of the storage required by the HCM 2010 analysis and in excess of the Caltrans minimum design lengths. The transition and taper lengths have been adjusted to meet Highway Design Manual requirements for a 55 mph roadway. Appropriate paperwork will be filed with Caltrans to request an exception to the full standard shoulder width standards.		
9	Figure 13 and 14	The site distance appears to be based on 35 mph. It appears that this roadway is posted 45 mph at this location. Please verify.	C	The intersection in question is proposed for signalization. A 55 mph sight (the actual speed limit per information provided by Caltrans) distance study has been included for the right turns on red leaving both sides of the Project driveways and is presented in Figure 13.		
10	General	It doesn't appear that there was a section in the report stating how many pedestrians are anticipated to support the crossing. Why?	C	Updated on Page 60, Chapter 11.		
11	General	Also, please see Caltrans comments dated March 9, 2015.	C	Noted.		

DESIGNERS INITIAL DISPOSITION CODES: **C** = Will Comply **D** = Discuss **N** = No Change **A** = Agency Action
REVIEWERS FINAL DISPOSITION CODES: **D** = Done or Approved **NC**= Not Complied **NCR** = No Change Required
LS =Revise in Later Submittal **NDC =** Revise Immediately

Responses to Caltrans Comments

Responses to Caltrans Comments

Gibson Transportation Consulting, Inc. was asked to respond to the comments presented by Caltrans in its March 9, 2015 letter to the County of San Bernardino, a copy of which is provided in the Attachment.

COMMENT 1

The updated and complete Signal Warrant Analysis is presented in Appendix F of the Traffic Impact Study. Based on discussions with the County, it was determined that since there is no significant impact at any of the study intersections in question, no mitigation is required.

COMMENT 2

As discussed in Chapter 11 and shown in Figure 12 of the Traffic Impact Study, the main intersection serving the two project parking lots will be signalized and left-turn lanes will be provided in both directions on SR 18. A pedestrian crosswalk will be striped across SR 18 and pedestrian push buttons will be included in the signal design.

COMMENT 3

The updated layout of the intersection of Project Driveways & SR 18 is provided in Figure 12 of the Traffic Impact Study. The *2010 Highway Capacity Manual* (Transportation Research Board, 2010) capacity calculations for the signalized driveway show a queue of less than one car per cycle length for left turns and the proposed design provides adequate storage for the left turn lane. Likewise, the deceleration and taper lengths for the left-turn lanes meet design requirements in *Highway Design Manual, 6th Edition* (California Department of Transportation, June 21, 2013). Appropriate paperwork will be filed with Caltrans for the proposed exception to the shoulder widths proposed.

COMMENT 4

2010 Highway Capacity Manual was utilized for the analysis presented in the Traffic Impact Study.

COMMENT 5

A Passenger Car Equivalency factor of 4.5 was applied to 10% of the existing volumes to take into account the 10% truck traffic on SR 18 near the Project Site.

Additional Caltrans comments, dated February 17, 2016 and May 4, 2016, are also attached for reference.

Attachment

Caltrans Comment Letters

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING (MS 722)
464 WEST 4th STREET, 6th FLOOR
SAN BERNARDINO, CA 92401-1400
PHONE (909) 383-4557
FAX (909) 383-5936
TTY 711
www.dot.ca.gov/dist8

Serious Drought.
Help save water!

March 9, 2015

File: 08-SBd-18-PM 26.3

Kevin White
Senior Planner
County of San Bernardino
385 North Arrowhead Avenue
San Bernardino, CA 92415-0182

Subject: Skypark at Santa's Village – Traffic Impact Analysis dated February 2015

Dear Mr. White:

The California Department of Transportation (Caltrans) has reviewed the Traffic Impact Analysis (TIA) dated February 2015 for the Skypark at Santa's Village Project. The proposed project is located on State Route 18 (SR-18) east of Kuffel Canyon Road, between post miles 26.28 to 26.4, in the community of Skyforest. The project proposes to construct a theme park facility, which will include several recreational and retail facilities, a 70-space campground, and two parking lots (one on the north and one on the south side of SR-18).

As the owner and operator of the State Highway System, it is our responsibility to coordinate and consult with local jurisdictions when proposed development may impact our facilities. As the responsible agency under the California Environmental Quality Act, it is also our responsibility to make recommendations to offset associated impacts with the proposed project.

We offer the following comments for your consideration:

Traffic Operations

1. The traffic signal warrants for the intersections of SR-18 & Daley Canyon Road and SR-18 & SR-173 were met under all scenarios. The County of San Bernardino should ensure the collection of the project fair share contributions toward the traffic signals. The traffic signal warrant analysis for the proposed intersection should follow the California Manual of Uniform Traffic Control Devices 2014 Edition, which can be found at: http://www.dot.ca.gov/hq/traffops/engineering/mutcd/ca_mutcd2014.htm

2. The right-in and right-out movements at the proposed intersection are acceptable. The left-in movements into both proposed driveways are acceptable with the improvements of an added left-turn pocket in both directions on SR-18. In Figure 12 of Page 60, the proposed intersection configuration includes a crosswalk on SR-18 connecting the northern project driveway to the southern project driveway. We do not recommend left-out movements onto SR-18 from the proposed driveways without the installation of a traffic signal. We also do not recommend through movements between the proposed driveways, across SR-18, without a traffic signal.

3. The storage length of the left-turn pockets on SR-18 at the project driveways should accommodate the left-turn volumes. For more information on storage, deceleration and bay taper lengths, please refer to the Highway Design Manual, which can be found at: http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm

Forecasting

4. Please confirm that there are no significant differences between utilizing the HCM 2000 and HCM 2010 in generating the LOS calculations.

5. Based on Caltrans Traffic Census data, SR-18 near the project site experiences at least 10% truck traffic on average. Please provide an explanation of how truck volumes are incorporated into the traffic impact analysis.

If you have any questions regarding this letter, please contact Rena Tang at (909) 806-3927 or myself at (909) 383-4557.

Sincerely,

Mark Roberts

MARK ROBERTS
Office Chief
Intergovernmental Review, Community and Regional Planning

Cc: *Ed Petre, County of San Bernardino Dept of Public Works - Traffic Division*
Haissam Yahya, Caltrans Traffic Operations
Maria Sole Aranguiz, Caltrans Forecasting

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING (MS 722)
464 WEST 4th STREET, 6th FLOOR
SAN BERNARDINO, CA 92401-1400
PHONE (909) 383-4557
FAX (909) 383-5936
TTY 711
www.dot.ca.gov/dist8

Serious Drought.
Help save water!

February 17, 2016 **File: 08-SBd-18-PM 26.3**

Heidi Duron
Supervising Planner
County of San Bernardino – Land Use Services
385 North Arrowhead Avenue
San Bernardino, CA 92415-0182

Subject: Skypark at Santa's Village – Revised Traffic Impact Analysis dated December 2015

Dear Ms. Duron:

The California Department of Transportation (Caltrans) has reviewed the Revised Traffic Impact Analysis (TIA) dated December 2015 for the Skypark at Santa's Village Project. The proposed project is located on State Route 18 (SR-18) east of Kuffel Canyon Road, between post miles 26.28 to 26.4, in the community of Skyforest. The project proposes to construct a theme park facility, which will include several recreational and retail facilities, a 70-space campground, and two parking lots (one on the north and one on the south side of SR-18).

All previous comments on the Skypark at Santa's Village project have been addressed in the Revised TIA. We concur with the proposed project mitigations which include a four-way traffic signal at SR-18 and Project Driveways, pedestrian treatments (striped crosswalk markings and pedestrian push buttons) at the proposed signalized intersection, and left-turn lanes on SR-18.

We offer the following additional comment for your consideration:

1. Where approaching speeds exceed 50 mph, please install a yellow flashing beacon with Signal Ahead (W3-3) sign for both traveling directions in advance of the new traffic signal control. The W3-3 sign must conform to the Manual of Uniform Traffic Control Devices (MUTCD). Attached is the W3-3 sign specifications, which can also be found in the Federal Highway Administration MUTCD Standard Highway Signs (2004 Edition).

This concludes the Local Development – Intergovernmental Review (LD-IGR) process and the project may proceed to Encroachment Permits.

An Encroachment Permit is required for any work or activity performed within, under, or over State Right of Way. All proposed roadway geometrics and driveway access specifications shall be reviewed during the Encroachment Permit process. More information regarding application requirements is available at:

Caltrans Office of Encroachment Permits
464 West Fourth Street, MS 619
San Bernardino, CA 92401-1400
http://www.dot.ca.gov/hq/traffops/developserv/permits/

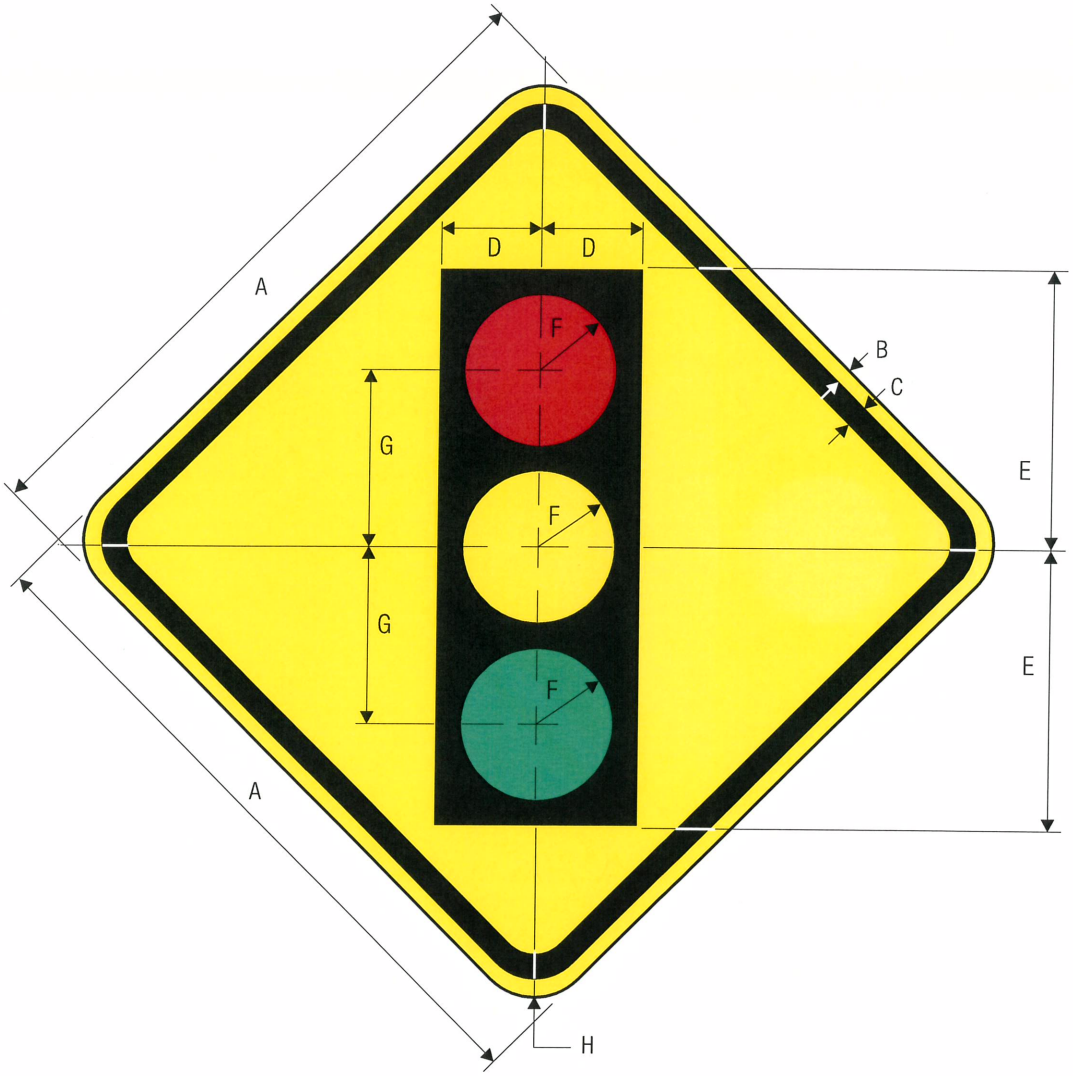
If you have any questions regarding this letter, please contact Rena Tang at (909) 806-3927 or myself at (909) 383-4557.

Sincerely,

MARK ROBERTS
Office Chief
Intergovernmental Review, Community and Regional Planning

Enclosure:
Federal Highway Administration MUTCD Standard Highway Signs, 2004 Edition, Page 2-24

cc:
Ed Petre, Eloy Ruvalcaba – County of San Bernardino, Dept of Public Works
Haissam Yahya, Rithy Sar – Caltrans Division of Traffic Operations
Maria Sole Aranguiz, Jenny Chan – Caltrans Office of Forecasting
Terri Kasinga, David Knudsen – Caltrans Office of Public Affairs
Anthony Ng – Caltrans Division of Design
Bill Johnson – Skypark at Santa's Village Developer
Pat Gibson, Hassan Ahmed – Gibson Transportation Consulting, Inc.



W3-3

SIGNAL AHEAD

A	B	C	D	E	F	G	H
18	.375	.625	3	8	2.25	5	1.5
30	.5	.75	5	13.75	3.75	8.75	1.875
36	.625	.875	5.75	15.75	4.25	10	2.25
48	.75	1.25	7.5	20	5	12.5	3

WARNING SIGN COLORS:

TOP CIRCLE – RED (RETROREFLECTIVE)
BOTTOM CIRCLE – GREEN (RETROREFLECTIVE)
BACKGROUND – YELLOW (RETROREFLECTIVE)

TTC SIGN COLORS:

TOP CIRCLE – RED (RETROREFLECTIVE)
BOTTOM CIRCLE – GREEN (RETROREFLECTIVE)
BACKGROUND – ORANGE (RETROREFLECTIVE)

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DISTRICT DIRECTOR
464 WEST FOURTH STREET, MS 1201
SAN BERNARDINO, CA 92401-1400
MAIN (909) 383-4561
DIRECT (909) 383-4055
FAX (909) 383-6239
TTY 711
www.dot.ca.gov/dist8

Serious drought. Help save water!

May 4, 2016

Kevin White
Senior Planner
County of San Bernardino – Land Use Services
385 North Arrowhead Avenue
San Bernardino, CA 92415-0182

Dear Mr. White:

The California Department of Transportation (Caltrans) has reviewed the Revised Traffic Impact Analysis (TIA) dated December 2015 for the Skypark at Santa's Village Project. The proposed project is located on State Route 18 (SR-18), east of Kuffel Canyon Road, between post miles 26.28 to 26.4, in the community of Skyforest. The project proposes to construct a theme park facility, which will include several recreational and retail facilities, a 70-space campground, and two parking lots (one on the north and one on the south side of SR-18).

Caltrans, the County of San Bernardino, and the project development team conducted a collaborative meeting on April 27, 2016, and concluded the following:

1. We concur with the project mitigation measures proposed for the intersection of SR-18 and the Project Driveways, which include a four-way traffic signal, pedestrian treatments (striped crosswalk markings and pedestrian push buttons), and left-turn lanes.

2. Advance warning devices should be installed to inform motorists of the new traffic signal control. Please install the Signal Ahead (W3-3) sign with a yellow flashing beacon for both traveling directions on SR-18. The Signal Ahead sign shall conform to the Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (MUTCD) Standard Highway Signs and Markings Book (2004 Edition).

3. Per the Revised TIA dated December 2015, four study intersections meet warrants for improved or modified intersection controls.

This concludes the Local Development – Intergovernmental Review (LD-IGR) process and the project may proceed to Encroachment Permits. All proposed roadway geometrics and driveway

access specifications shall be reviewed during the Encroachment Permit process. More information regarding application requirements is available at:

Caltrans Office of Encroachment Permits
464 West Fourth Street, MS 619
San Bernardino, CA 92401-1400
Phone: (909) 383-4526
http://www.dot.ca.gov/hq/traffops/developserv/permits/

Sincerely,

for JOHN BULINSKI
District Director

cc:
Ed Petre, Eloy Ruvalcaba, Dr. Mohammad Qureshi – County of San Bernardino Department of Public Works, Traffic Division
Heidi Duron, Gia Kim – County of San Bernardino Department of Land Use Services
Ray Desselle, Mark Roberts, Rena Tang – Caltrans Division of Planning
Catalino Pining, Haissam Yahya, Rithy Sar – Caltrans Division of Traffic Operations
Dr. Ramakrishna R. Tadi, John B. Mutyaba – Caltrans Office of Encroachment Permits
Maria Sole Aranguiz, Jenny Chan – Caltrans Office of Forecasting
Terri Kasinga, David Knudsen, Philip Havins – Caltrans Office of Public Affairs
Anthony Ng – Caltrans Division of Design
Bill Johnson – Skypark at Santa's Village Developer
Pat Gibson, Hassan Ahmed – Gibson Transportation Consulting, Inc.