



KUNZMAN ASSOCIATES, INC.

ARROWHEAD PINE ROSE CABINS

TRAFFIC IMPACT ANALYSIS

June 16, 2016



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I. INTRODUCTION

The purpose of this report is to provide an assessment of the traffic impacts resulting from the existing Arrowhead Pine Rose Cabin project when the cabins are fully utilized and the special event spaces are fully utilized and to identify the traffic mitigation measures necessary to maintain the established level of service standard for the elements of the impacted roadway system. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with full occupancy of the development in Opening Year 2018, at which time it will be generating trips at its full potential, and for the current traffic forecast year, which is the Year 2040.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided in Appendix A.

A. Project Description

The existing development is located north of State Route 189 and west of Grandview Road in the Lake Arrowhead area of the County of San Bernardino. A vicinity map showing the project location is provided on Figure 1.

The project site is currently developed with cabin accommodations for up to 124 patrons and special event spaces that can accommodate up to 171 patrons. The project is currently in operation and generating vehicle trips. Figure 2 illustrates the project site plan.

B. Study Area

Regional access to the project site is provided by State Route 189. Local access is provided by various roadways in the vicinity of the site. The east-west roadways which will be most affected by the project are Sunset Loop, N Road, and State Route 189. The north-south roadway which will be most affected by the project is Grandview Road.

A series of scoping discussions were conducted with the County of San Bernardino and the California Department of Transportation to define the desired analysis locations for each future analysis year. In addition, the San Bernardino Associated Governments staff has also been contacted to discuss the project.

C. Analysis Methodology

The analysis of the traffic impacts from the proposed development and the assessment of the required mitigation measures were based on an evaluation of the existing and forecast traffic conditions in the vicinity of the site with and without the project. The following analysis years are considered in this report:

- Existing Conditions (2016)
- Existing Plus Project Conditions¹
- Project Opening Year Conditions (2018)
- Horizon Year Conditions (2040)

Existing intersection traffic conditions were established through weekday morning and evening peak period traffic counts obtained by Kunzman Associates, Inc. in May 2016 (see Appendix B). In addition, truck classification counts were conducted at the study area intersections. The existing percent of trucks was used in the conversion of trucks to Passenger Car Equivalent's (see Appendix C).

The County of San Bernardino Traffic Engineer and the California Department of Transportation Traffic Engineer that were consulted during the scoping agreement process of this analysis, asked that a peak season factor be calculated to factor an average month's traffic data to peak season traffic volumes. The City of Big Bear Traffic Engineer was consulted to determine what month is the peak traffic volume month of the year in this region. The peak traffic volume month in the mountain resorts area is July. The California Department of Transportation count data for both SR-173 and SR-189 within the study area were obtained. The peak month traffic data was compared to the average month traffic data. The data shows that the peak month is approximately 12.84 percent higher than the average month. The traffic counts for this analysis were not taken during the peak month of July. A base volume factor of 12.84 percent has been applied to all base traffic volumes for Existing, Existing Plus Project, Opening Year (2018) Without Project, Opening Year (2018) With Project, Year 2040 Without Project, and Year 2040 With Project traffic volumes.

Project traffic volumes for all future projections were estimated using the manual approach.

The distributions of the project trips were based on existing travel patterns calculated using existing traffic counts. This methodology was approved by the County of San Bernardino Transportation Department and the California Department of Transportation staff.

The average daily traffic volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model (SBTAM) Year 2012 and Year 2040 average daily traffic volume forecasts (see Appendix C). This difference defines the growth in traffic over the 28 year period. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between Year 2016 and Year 2040. For this purpose, linear growth between the Year 2012 base condition and the forecast Year 2040 condition was assumed. Since the increment between Year 2016 and Year 2040 is 24 years of the 28 year time frame, a factor of 0.86 (i.e., 24/28) was used.

The Year 2040 without project daily and peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model Year 2012 and Year 2040 peak hour volumes. The growth increment calculation worksheets are shown in Appendix C. Current peak hour

¹ The existing plus project conditions has been analyzed to comply with the Sunnyvale West Neighborhood Association v. City of Sunnyvale CEQA court case. This scenario assumes the full development of the proposed project and full absorption of the proposed project trips on the circulation system at the present time.

intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program Report 255. A linear programming algorithm is used to calculate individual turning movements that match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The Opening Year (2018) traffic volumes have been interpolated from the Year 2040 traffic volumes based upon a portion of the future growth increment.

Year 2040 San Bernardino Transportation Analysis Model volumes to create the new future base volumes. Project traffic is then added to the new future base volumes. Quality control checks and forecast adjustments were performed as necessary to ensure that all future traffic volume forecasts reflect a minimum of 10% growth over existing traffic volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D) based on the Highway Capacity Manual – Transportation Research Board Special Report 209. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection. The signalized intersections are considered deficient (Level of Service F) if the overall intersection critical volume to capacity ratio equals or exceeds 1.0, even if the Level of Service defined by the delay value is below the defined Level of Service standard. The volume to capacity ratio is defined as the critical volumes divided by the intersection capacity. A volume to capacity ratio greater than 1.0 implies an infinite queue.

The Level of Service analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of two seconds per phase. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all Highway Capacity Manual runs:

$$(\text{Curb to curb distance}) / (4 \text{ feet/second}) + 7 \text{ seconds}$$

For existing/existing plus project/Opening Year (2018) traffic conditions, saturation flow rates of 1,800 vehicles per hour of green for through and right turn lanes and 1,700 vehicles per lane for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes and 1,500 vehicles per lane for triple left turn lanes have been assumed for the capacity analysis.

For Year 2040 traffic conditions, saturation flow rates of 1,900 vehicles per hour of green for through and right turn lanes and 1,800 vehicles per lane for single left turn lanes, 1,700 vehicles per lane for dual left turn lanes and 1,800 vehicles per lane for double right turn lanes have been assumed for the capacity analysis.

The peak hour traffic volumes have been adjusted to peak 15 minute volumes for analysis purposes using the existing observed peak 15 minute to peak hour factors for all scenarios analyzed. Where feasible improvements in accordance with the local jurisdiction's General Plan and which result in acceptable operations cannot be identified, the Year 2040 peak hour factor has been adjusted upwards to 0.95. This is to account for the effects of congestion on peak spreading. Peak spreading refers to the tendency of traffic to spread more evenly across time as congestion increases.

The traffic mitigation needs anticipated at the time of the project opening with full occupancy and for the Year 2040 were combined into a summary of mitigation requirements and costs. The mitigation cost responsibility for the proposed development was estimated based on the percent of the increase in traffic from the existing condition to the Year 2040 that was attributed to the project generated trips.

D. Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the County of San Bernardino requirements.

1. Definition of Deficiency

The definition of an intersection deficiency has been obtained from the County of San Bernardino General Plan. The General Plan states that peak hour intersection operations of Level of Service D or better are generally acceptable. Therefore, any intersection operating at Level of Service E or F will be considered deficient.

For freeway facilities, the Congestion Management Program controls the definition of deficiency for purposes of this study. The Congestion Management Program definition of deficiency is based on maintaining a Level of Service standard of Level of Service E or better, except where an existing Level of Service F condition is identified in the Congestion Management Program document (San Bernardino County Congestion Management Program Table 2-1). A Congestion Management Program deficiency is, therefore, defined as any freeway segment operating or projected to operate at Level of Service F, unless the segment is identified explicitly in the Congestion Management Program document.

The identification of a Congestion Management Program deficiency requires further analysis in satisfaction of Congestion Management Program requirements, including:

- Evaluation of the mitigation measures required to restore traffic operations to an acceptable level with respect to Congestion Management Program Level of Service standards.

- Calculation of the project share of new traffic on the impacted Congestion Management Program facility during peak hours of traffic.
- Estimation of the cost required to implement the improvements required to restore traffic operations to an acceptable Level of Service as described above.

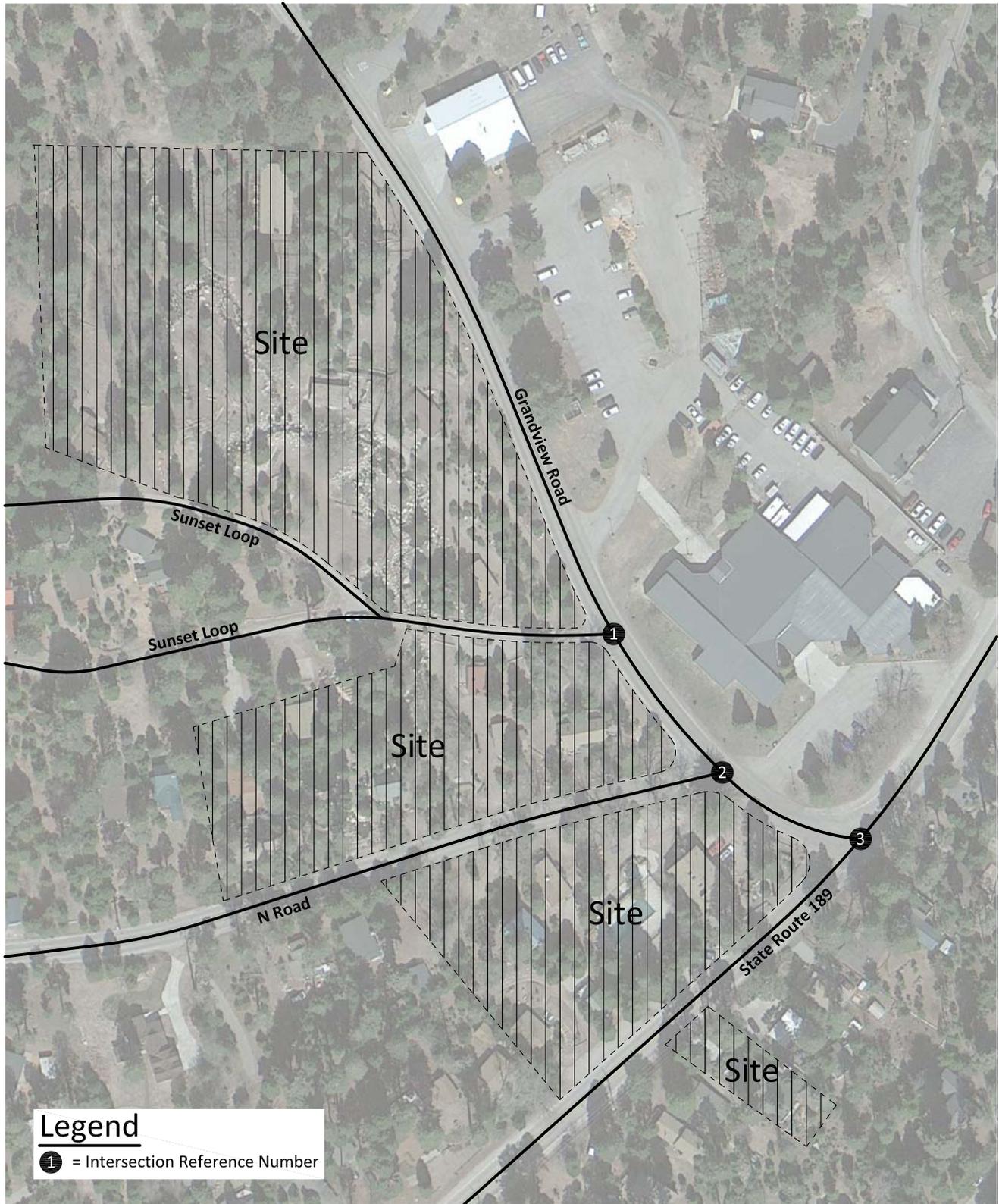
This study incorporates each of these aspects for all locations where a Congestion Management Program deficiency is identified.

2. Definition of Significant Impact

The identification of significant impacts is a requirement of the California Environmental Quality Act. The County of San Bernardino General Plan and Circulation Element have been adopted in accordance with California Environmental Quality Act requirements, and any roadway improvements within the County of San Bernardino that are consistent with these documents are not considered a significant impact, so long as the project contributes its “fair share” funding for improvements.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the County of San Bernardino General Plan cannot be constructed.

Figure 1
Project Location Map



II. EXISTING CONDITIONS

A. Existing Roadway System

Figure 3 identifies the existing conditions for study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

Regional access to the project site is provided by State Route 189. Local access is provided by various roadways in the vicinity of the site. The east-west roadways which will be most affected by the project are Sunset Loop, N Road, and State Route 189. The north-south roadway which will be most affected by the project is Grandview Road.

B. Existing Volumes

Existing intersection traffic conditions were established through morning and evening peak hour traffic counts obtained by Kunzman Associates, Inc. from May 2016 (see Appendix B) and shown on Figures 4 and 5, respectively. Explicit peak hour factors have been calculated using the data collected for this effort as well. The morning and evening peak hour traffic volumes were identified by counting the two-hour periods from 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM.

In addition, truck classification counts were conducted at the study area intersections. The existing percent of trucks were used in the conversion of trucks to Passenger Car Equivalent's (see Appendix B and C).

The traffic counts for this analysis were not taken during the peak month of July. A base volume factor of 12.84 percent has been applied to all base volumes for Existing traffic conditions.

C. Existing Level of Service

The Existing delay and Level of Service for intersections in the vicinity of the project are shown in Table 1. For Existing traffic conditions, the study area intersections currently operate within acceptable Levels of Service during the peak hours. Existing delay worksheets are provided in Appendix D.

D. Planned Transportation Improvements and Relationship to General Plan

The County of San Bernardino General Plan Circulation Element is shown on Figure 6. Existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 6. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The County of San Bernardino General Plan roadway cross-sections are shown on Figure 7.

E. Existing Transit Routes

The study area is currently served by the Mountain Transit Route 2 within the study area. The existing bus routes provided within the study area are shown on Figure 8.

F. Existing Pedestrian Facilities

Existing pedestrian facilities are shown on Figure 9.

Table 1

Existing Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.1-B	9.8-A
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.8-B	10.8-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	16.7-C	12.3-B

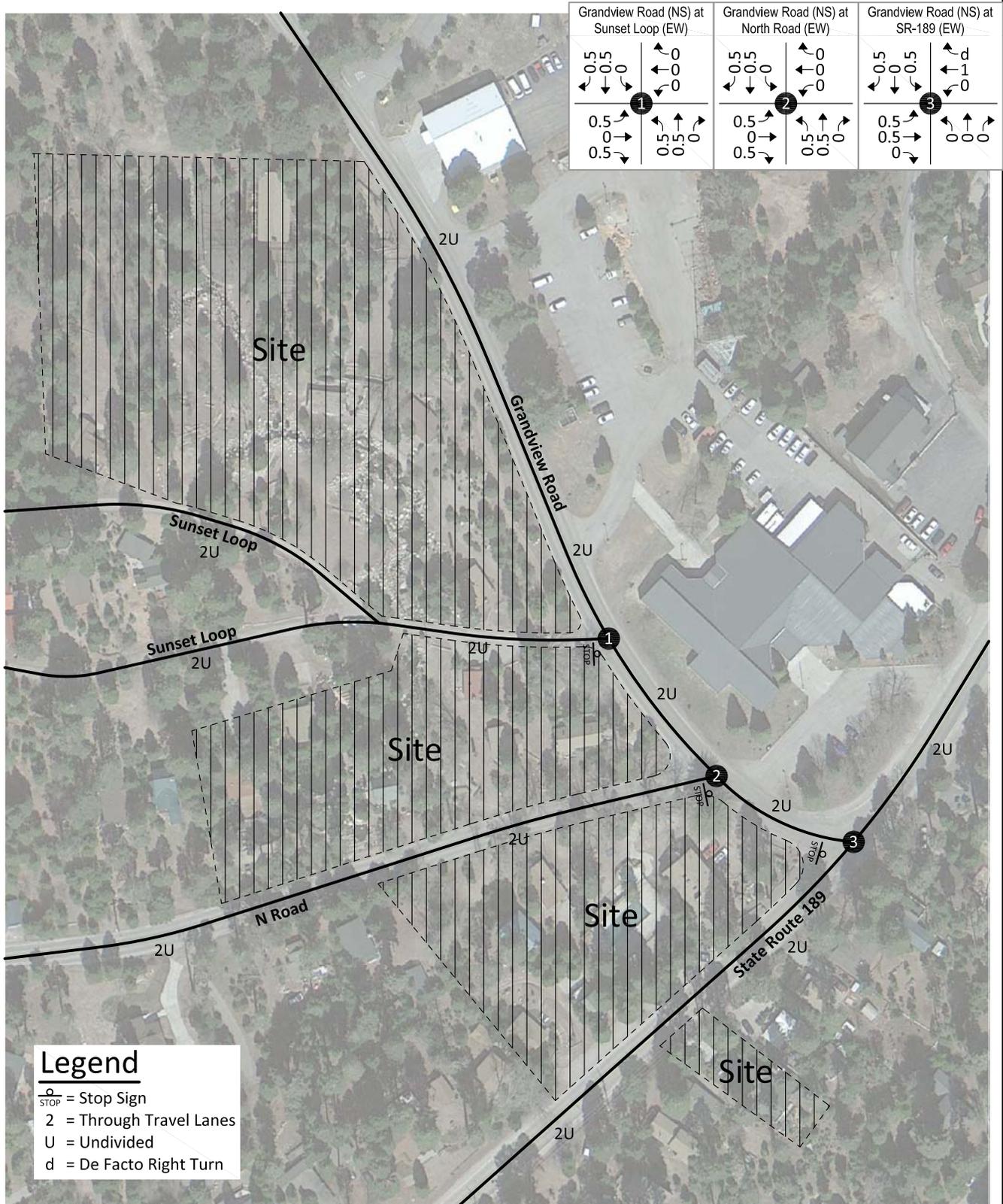
¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Figure 3
Existing Through Travel Lanes and Intersection Controls

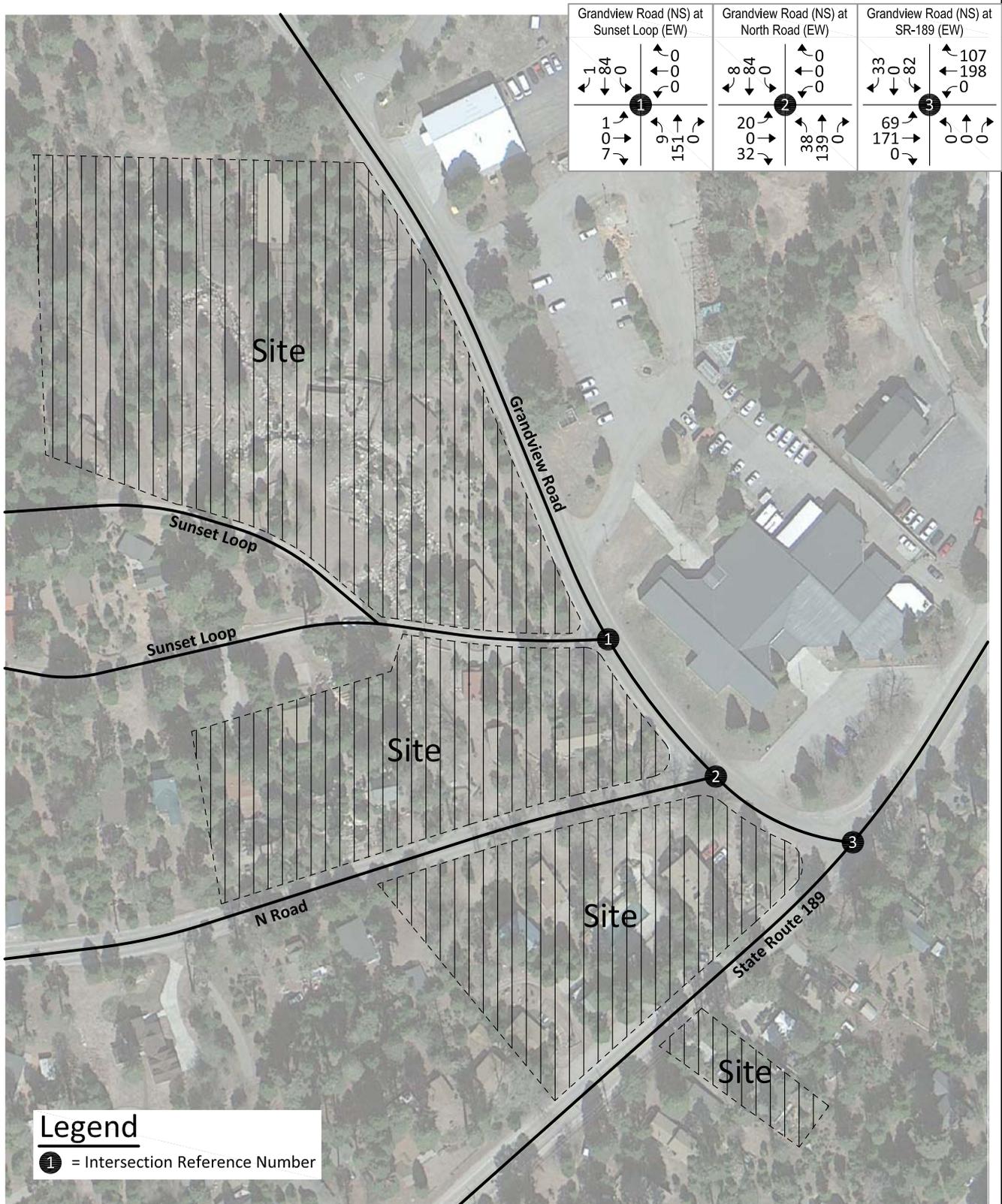


Legend

- = Stop Sign
- 2** = Through Travel Lanes
- U** = Undivided
- d** = De Facto Right Turn

Figure 4

Existing Friday Evening Peak Hour Intersection Turning Movement Volumes



Legend

① = Intersection Reference Number

Figure 5

Existing Saturday Mid-Day Peak Hour Intersection Turning Movement Volumes

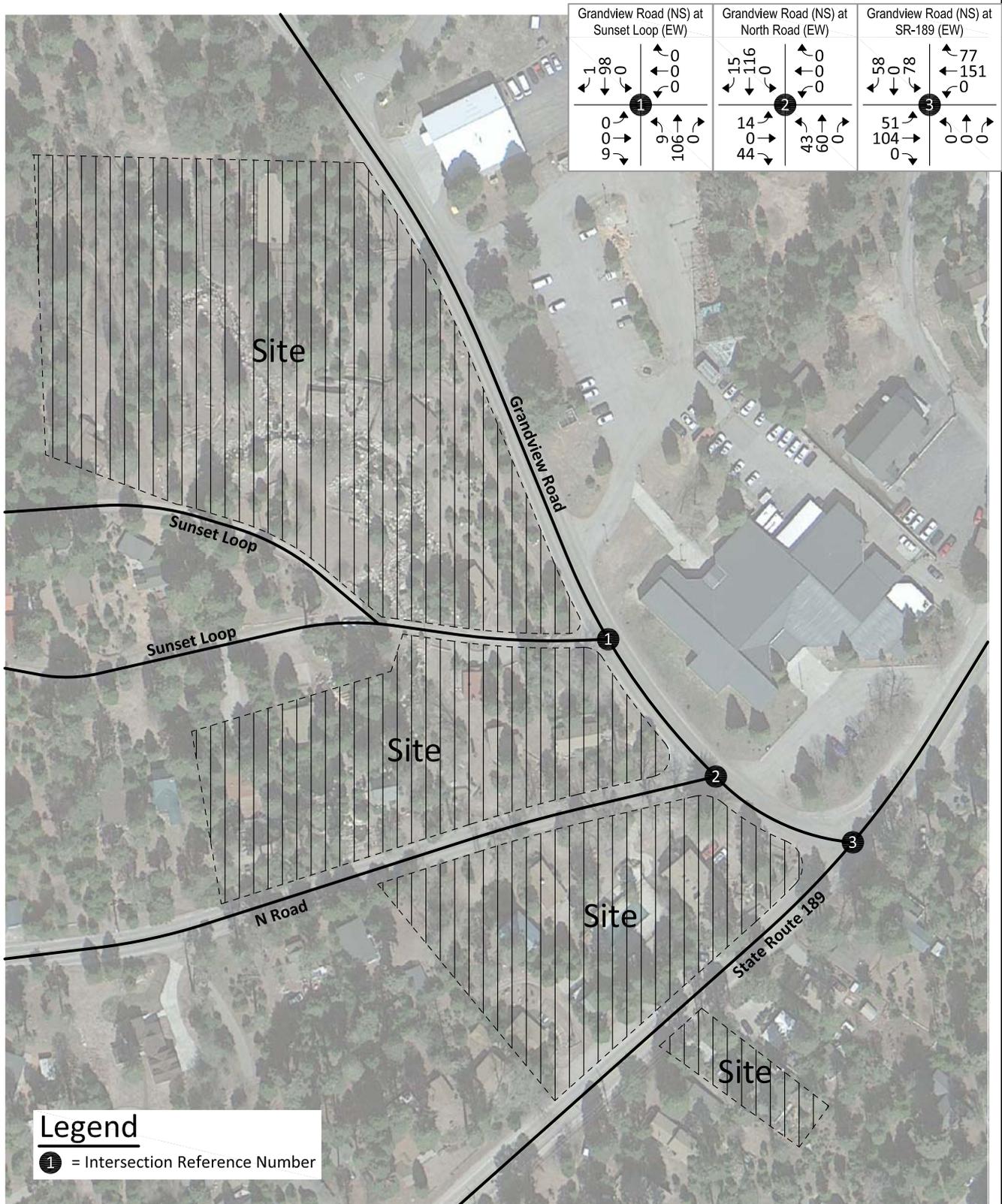
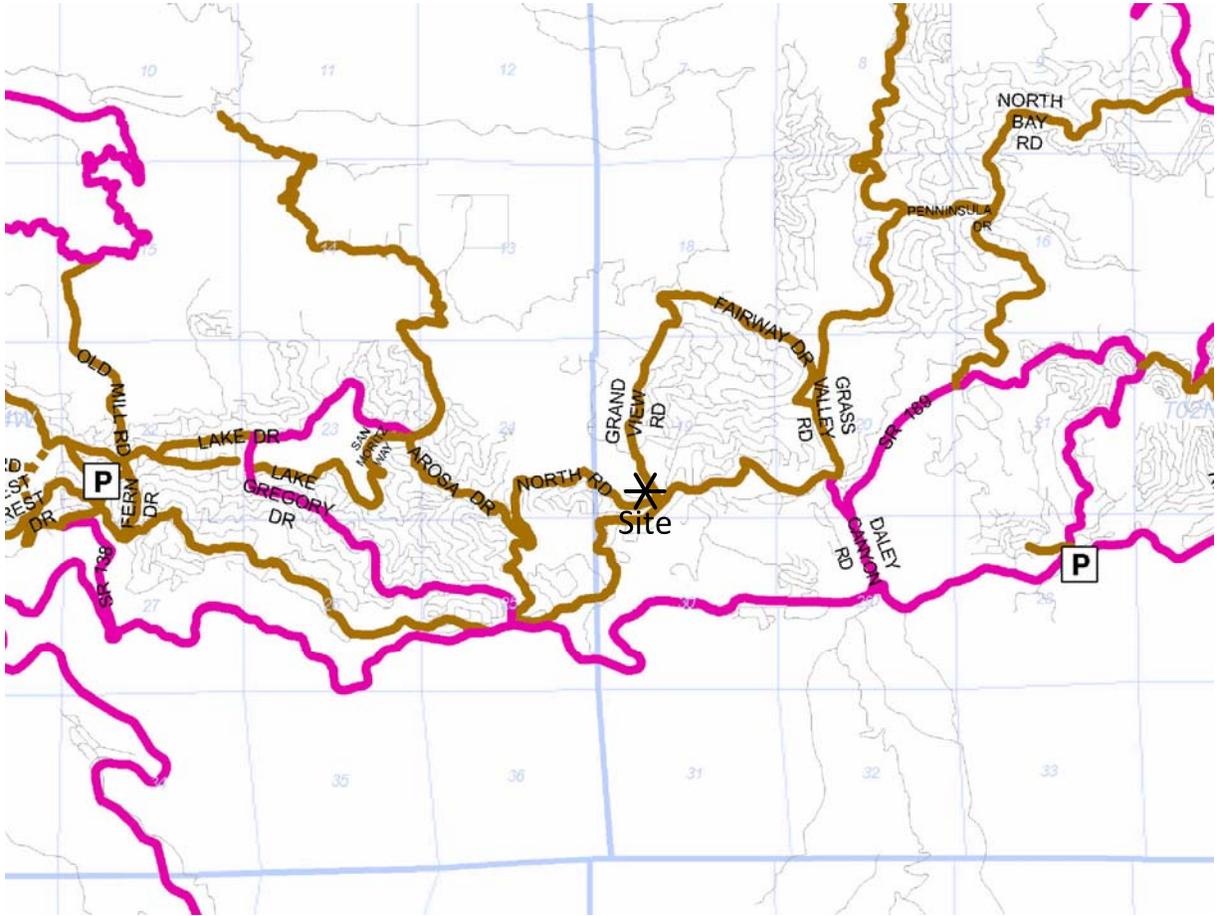


Figure 6
 County of San Bernardino General Plan Circulation Element



Legend

Existing	Proposed	
		Freeway
		Major Divided Highway
		Major Arterial Highway
		Major Highway
		Secondary Highway
		Controlled/Limited Access Collector
		Mountain Major Highway
		Mountain Secondary Highway
		State Highway (Special Standards or Conditions)
		Park & Ride Railroad
		Airport / Airfield



Figure 7 County of San Bernardino General Plan Roadway Cross-Section

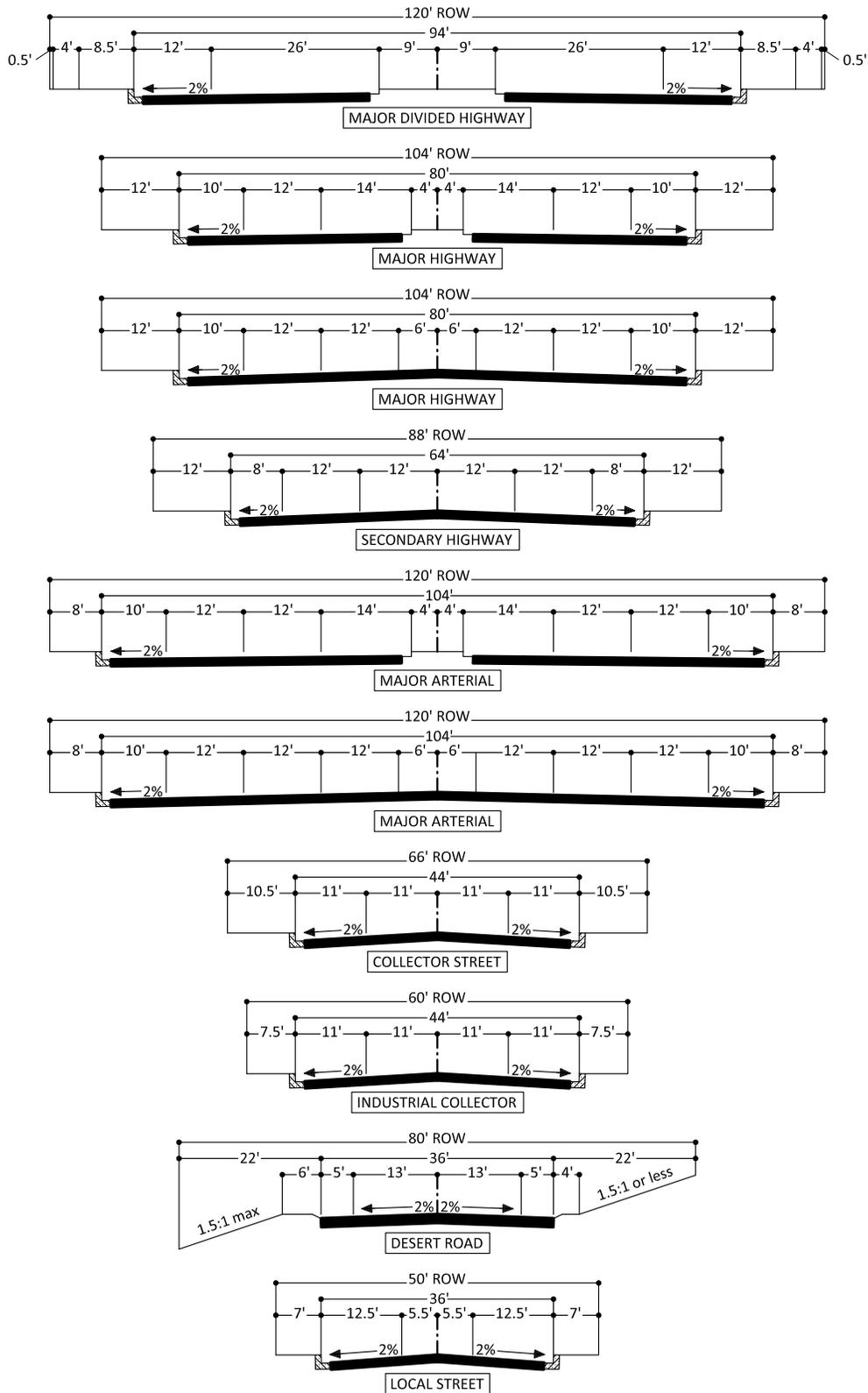


Figure 8
Existing Transit Routes

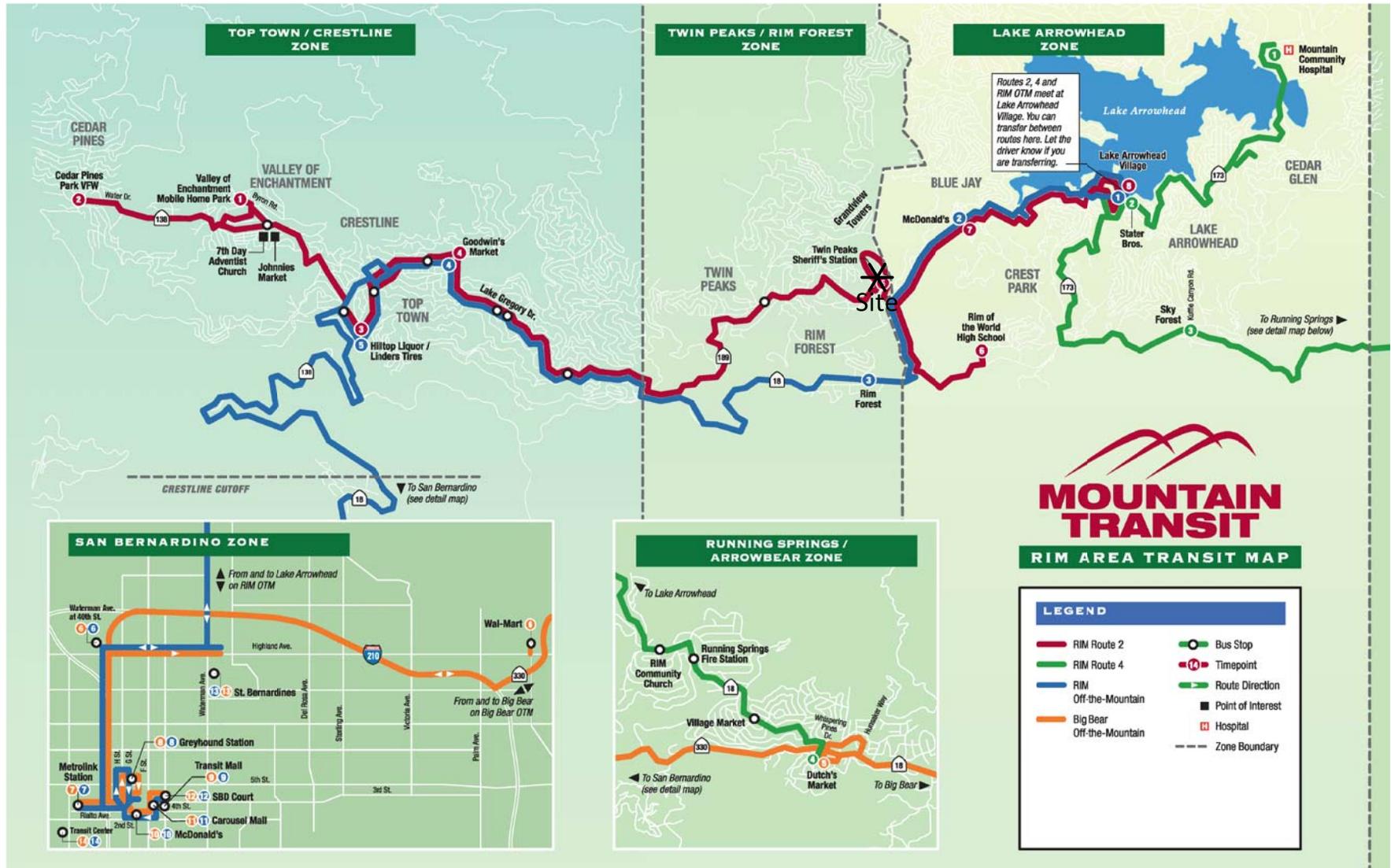
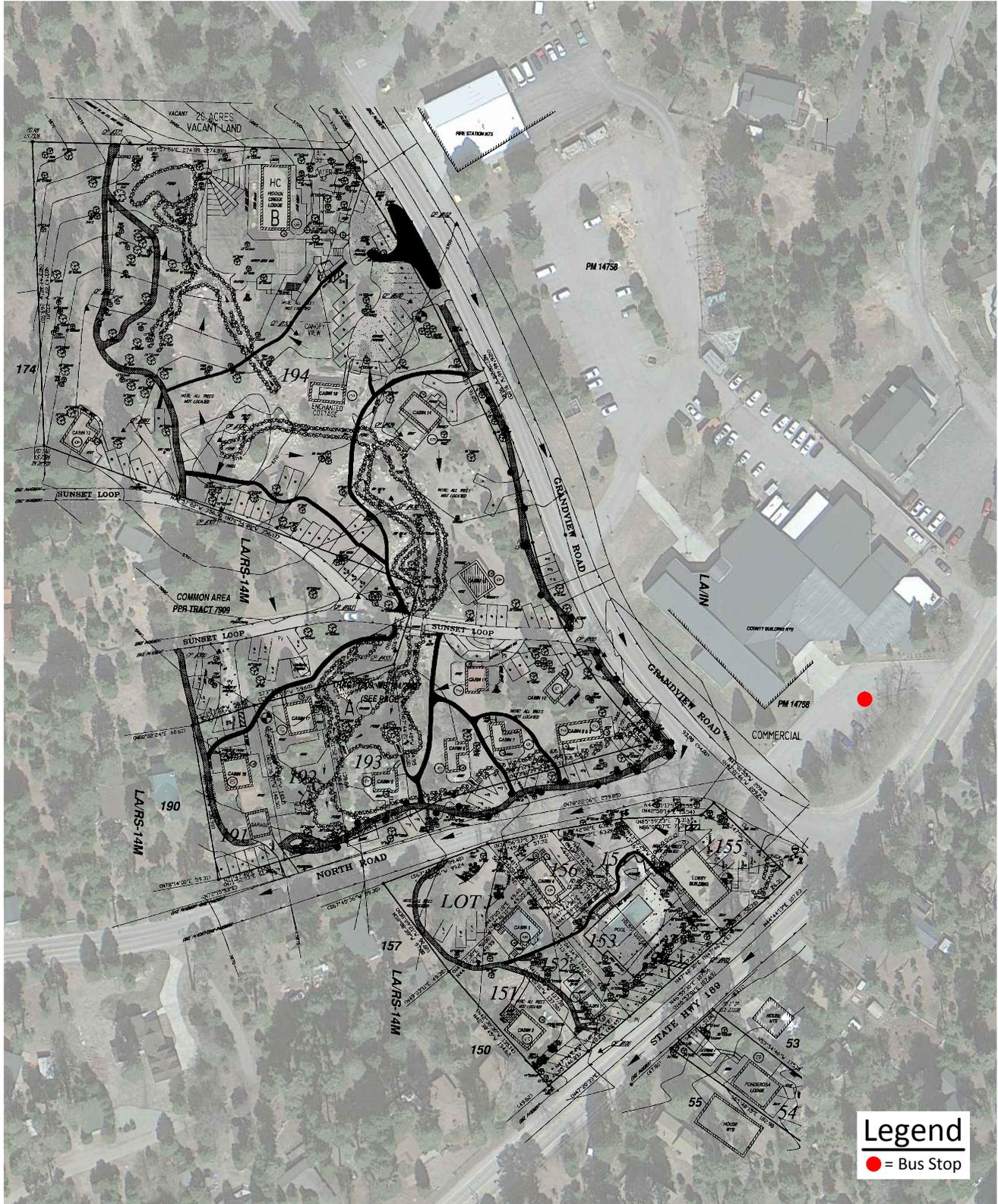


Figure 9
Existing Pedestrian Facilities



III. PROJECT TRIPS

A. Project Description

The project site is currently developed with cabin accommodations for up to 124 patrons and special event spaces that can accommodate up to 171 patrons. Access is provided to Grandview Road, Sunset Loop, N Road, and State Route 189.

B. Trip Generation

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation data was obtained from Arrowhead Pine Rose Cabins. The trip generation quantities are based on the maximum utilization of the project site. Daily trip generation for the cabins has been projected based on the maximum cabin occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 7 trips per day per vehicle. Daily trip generation for the special events is based on the maximum special event occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 2 trips per day per vehicle. For the cabins, the Friday evening peak hour is 12% of the daily traffic with a 50% Inbound/50% Outbound split and the Saturday mid-day peak hour is 25% of the daily traffic with a 50% Inbound/50% Outbound split. For the special events, the Friday evening peak hour is 50% of the daily traffic with a 90% Inbound/10% Outbound split and the Saturday mid-day peak hour is 50% of the daily traffic with an 80% Inbound/20% Outbound split.

The existing facility is projected to generate a maximum of approximately 138 vehicle trips during the Friday evening peak hour and 193 vehicle trips during the Saturday mid-day peak hour (see Table 2).

During the vehicle counts, the existing facility was partially occupied and it has been calculated that approximately 46 vehicle trips during the Friday evening peak hour and 151 vehicle trips during the Saturday mid-day peak hour were already on the surrounding street system (see Table 2).

The additional vehicle trips projected to be generated by the unoccupied project facilities is approximately 92 vehicle trips during the Friday evening peak hour and 42 vehicle trips during the Saturday mid-day peak hour (see Table 2).

C. Trip Distribution

Figures 10 to 13 contain the directional distributions of the project trips for the existing land uses.

D. Trip Assignment

Based on the identified trip generation and distributions, Friday evening and Saturday mid-day peak hour intersection turning movement volumes expected from the project are shown on Figures 14 and 15, respectively.

E. Trip Contribution Test

No analysis is required further than 5 miles from the project site. The roadway elements that must be analyzed are dependent on the analysis year. The identification of the study area, and the intersections and highway segments requiring analysis, was based on an estimate of the two-way traffic volumes on the roadway segments near the project site. All arterial segments have been included in the analysis when the anticipated project volume equals or exceeds 50 two-way trips in the peak hours. The requirement is 100 two-way peak hour trips for freeways. Figure 16 graphically depicts the project trip contribution test volumes on all of the roadway segments adjacent to the potential intersection analysis locations until the project volume contribution has clearly dropped below the 50 trip threshold and 100 trip threshold.

The project does not contribute trips greater than the freeway threshold volume of 100 two-way peak hour trips.

Table 2

Project Trip Generation¹

Description	Guests		Friday Evening			Saturday Mid-Day		
	Friday	Saturday	Inbound	Outbound	Total	Inbound	Outbound	Total
Maximum Cabin Guests ^{2, 4, 5}		124	26	26	52	54	54	108
Maximum Special Event Guests ^{3, 6, 7}		171	77	9	86	68	17	85
Maxium Total		295	103	35	138	122	71	193
Cabins Guests During Count ^{2, 4, 5, 8}	88	105	-18	-18	-36	-46	-46	-92
Special Event Guests During Count ^{3, 6, 7, 9}	20	117	-9	-1	-10	-47	-12	-59
Existing Guests Total	108	222	-27	-19	-46	-93	-58	-151
Cabin Subtotal			8	8	16	8	8	16
Special Event Subtotal			68	8	76	21	5	26
Total			76	16	92	29	13	42

¹ Trip generation data was obtained from Arrowhead Pine Rose Cabins. The trip generation numbers are based on the maximum utilization of the project site.

² Daily trip generation for the cabins is based on the maximum cabin occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 7 trips per day per vehicle.

³ Daily trip generation for the special events is based on the maximum special event occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 2 trips per day per vehicle.

⁴ For the cabins, the Friday evening peak hour is 12% of the daily traffic with a 50% Inbound/50% Outbound split.

⁵ For the cabins, the Saturday mid-day peak hour is 25% of the daily traffic with a 50% Inbound/50% Outbound split.

⁶ For the special events, the Friday evening peak hour is 50% of the daily traffic with a 90% Inbound/10% Outbound split.

⁷ For the special events, the Saturday mid-day peak hour is 50% of the daily traffic with a 80% Inbound/20% Outbound split.

⁸ The number of cabin guests occupied during the peak hour traffic counts will be deducted from the total project trip generation.

⁹ The number of special event guests present during the peak hour traffic counts will be deducted from the total project trip generation.

Figure 11
Project Inbound Trip Distribution - Cabin

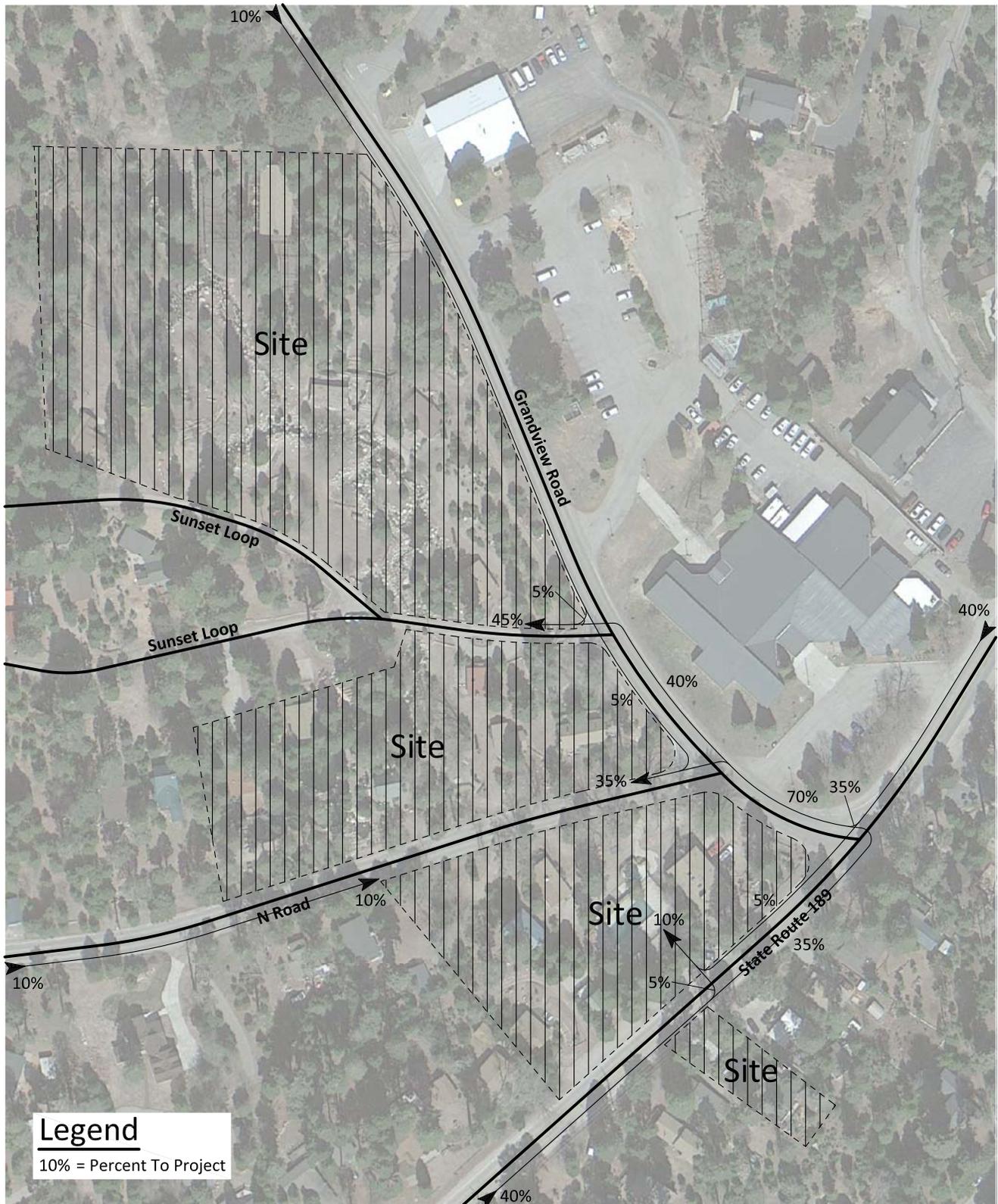


Figure 12
 Project Outbound Trip Distribution - Special Event

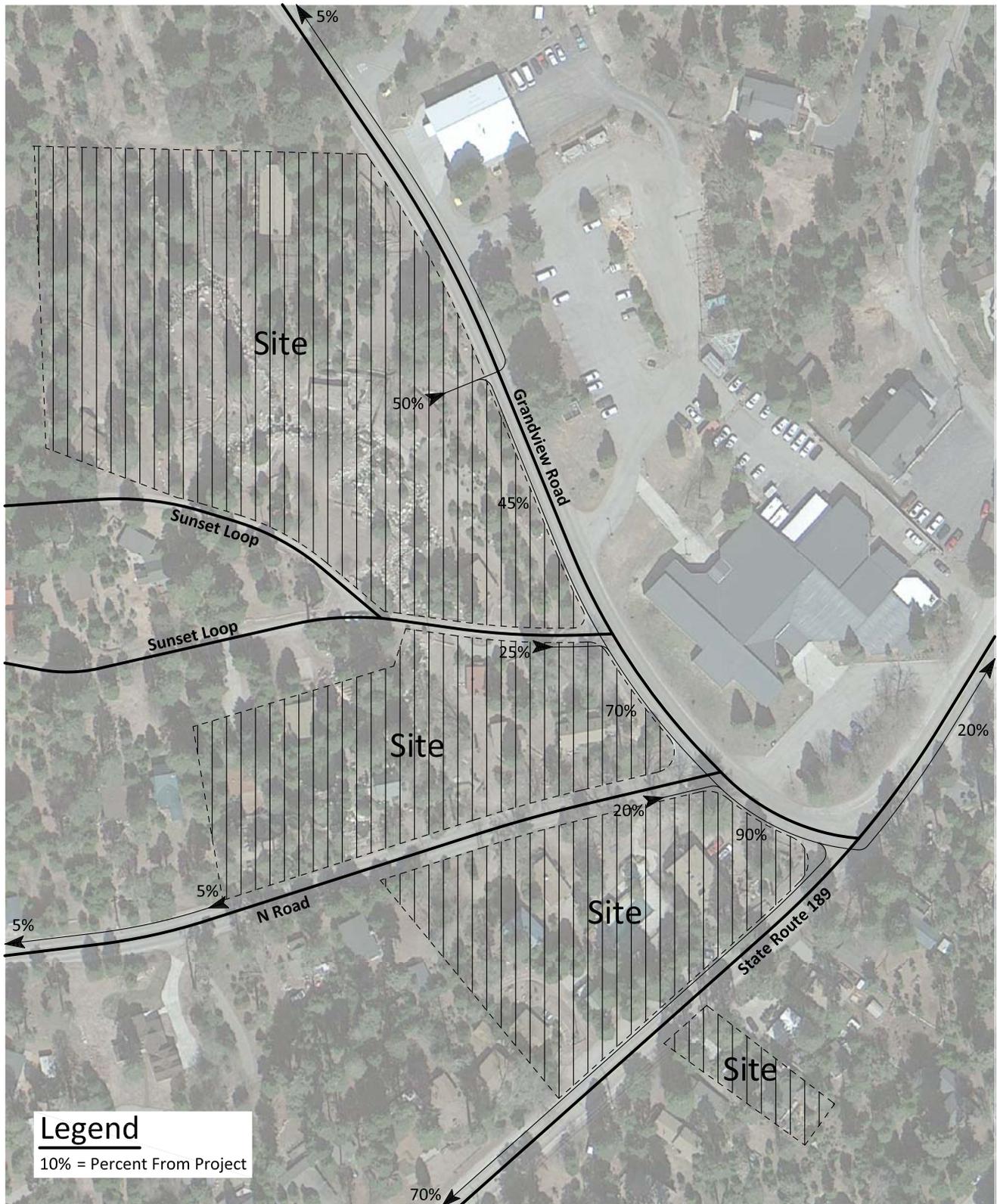


Figure 13
 Project Inbound Trip Distribution - Special Event

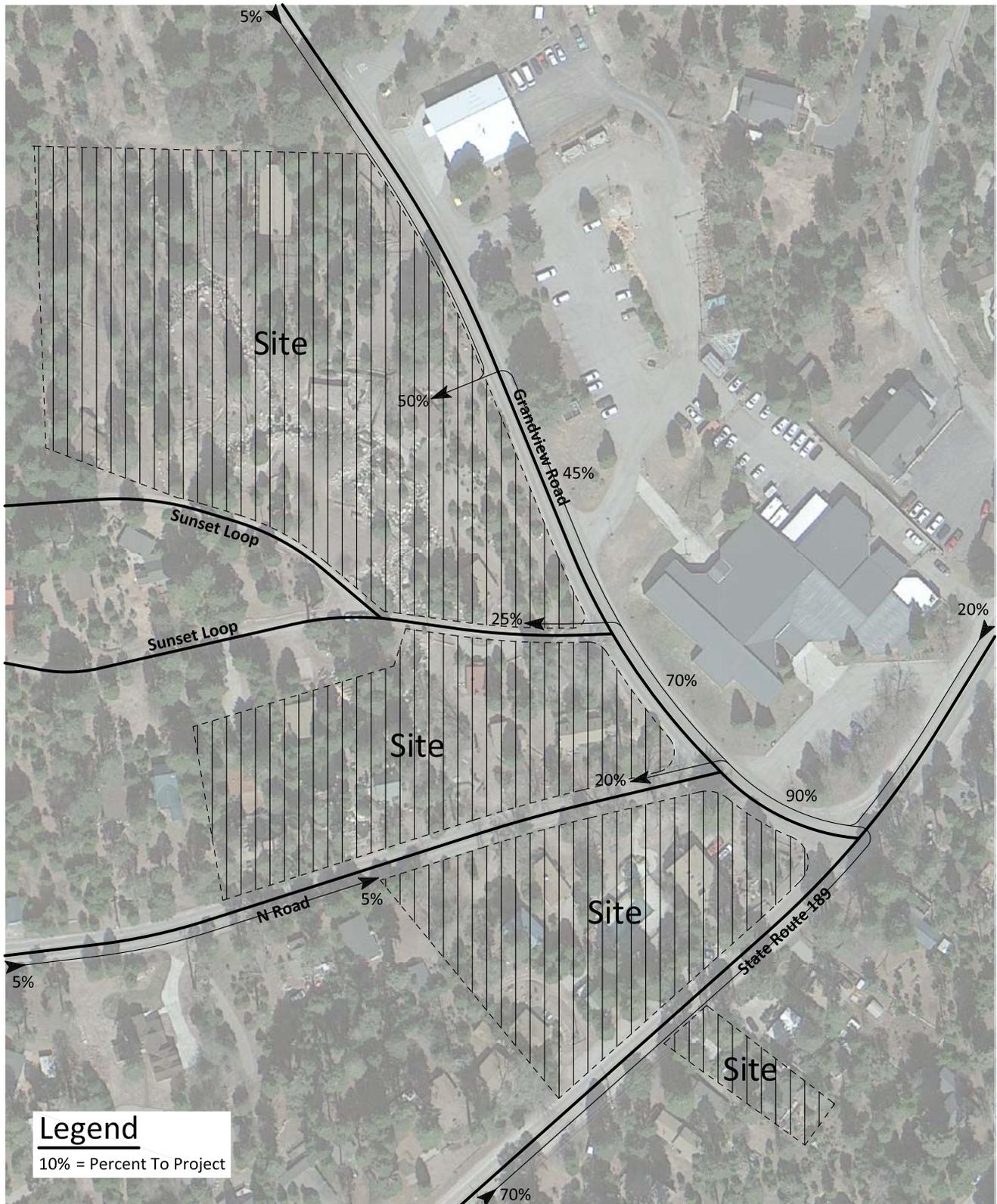


Figure 14

Project Friday Evening Peak Hour Intersection Turning Movement Volumes

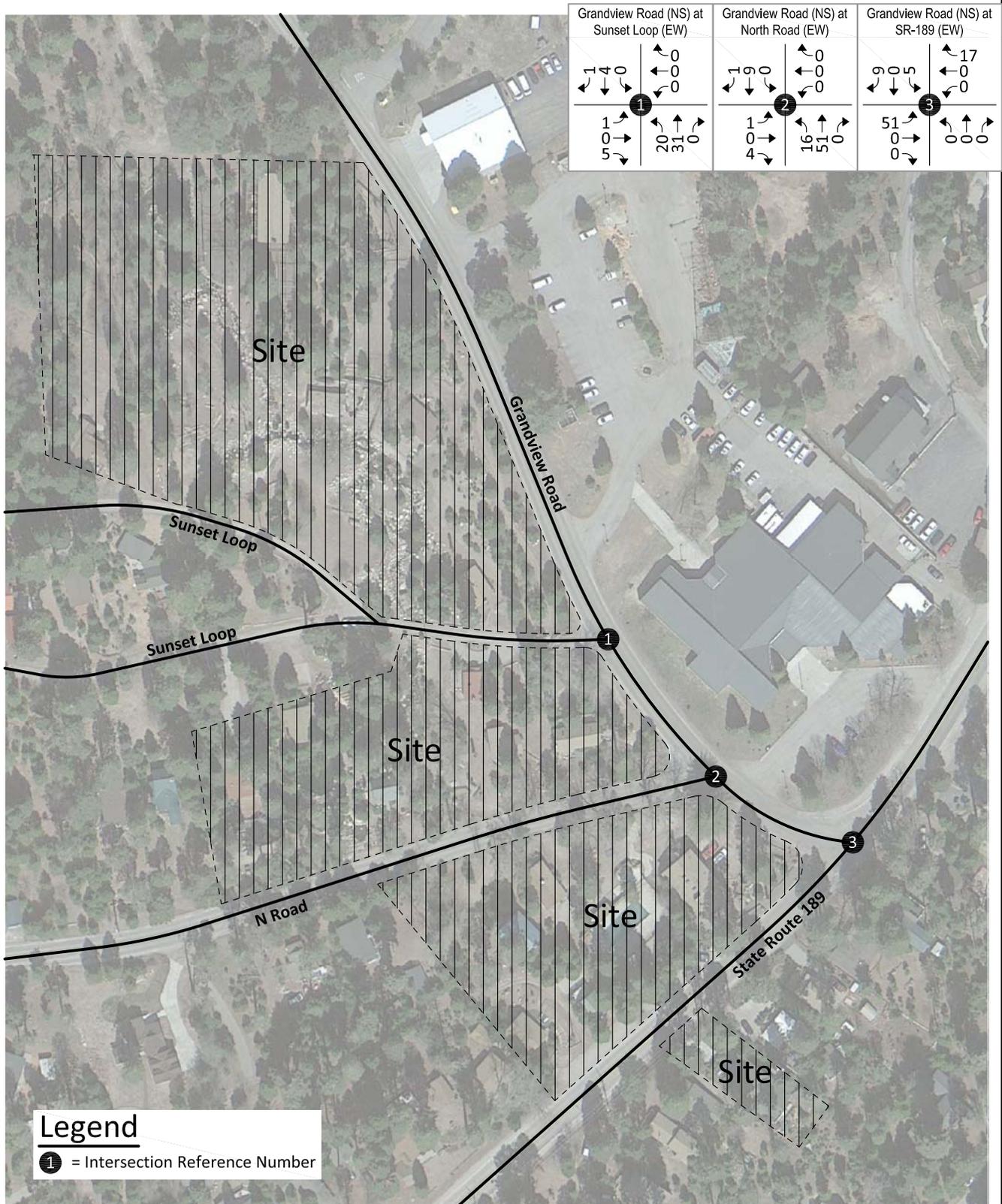


Figure 15

Project Saturday Mid-Day Peak Hour Intersection Turning Movement Volumes

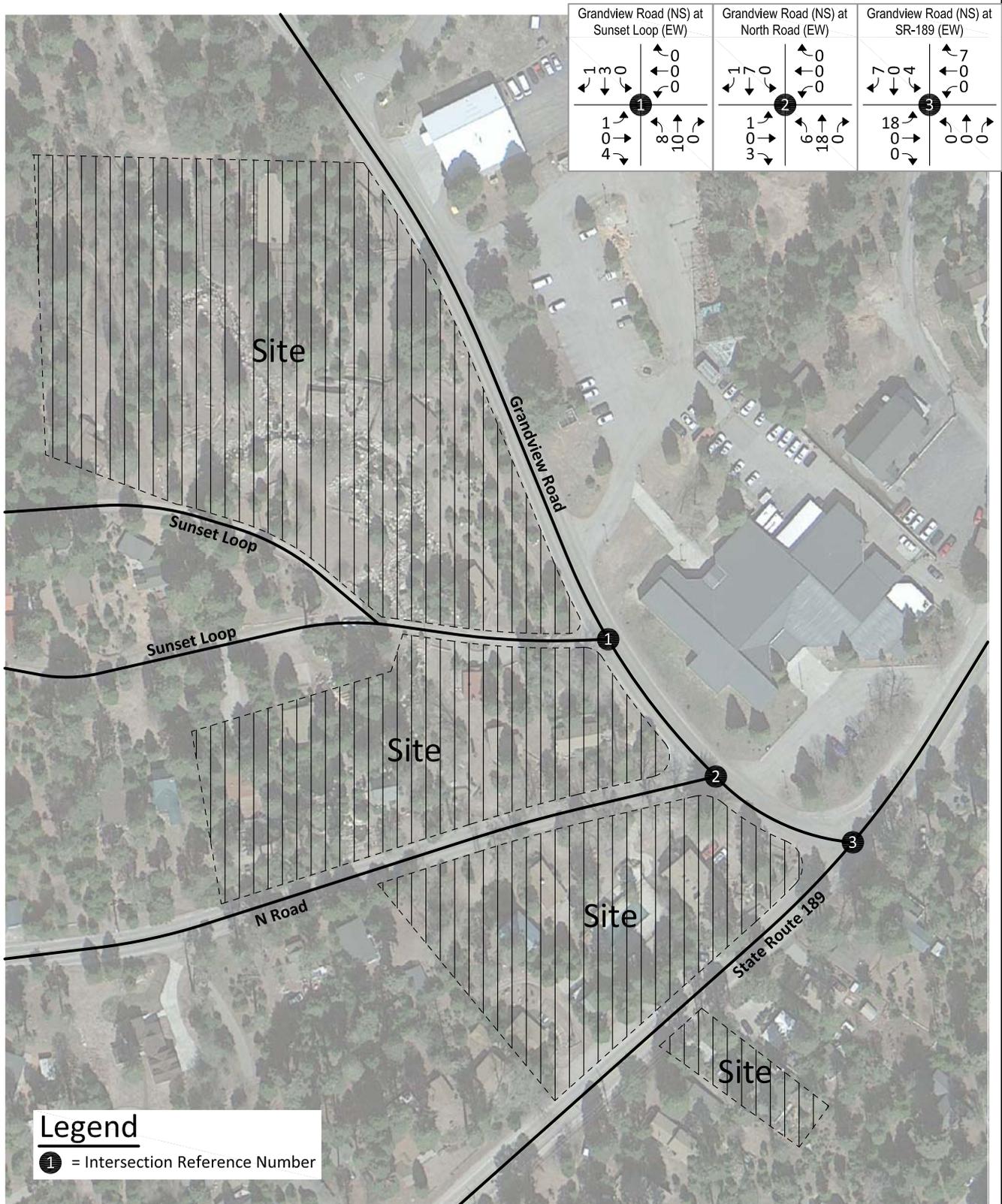
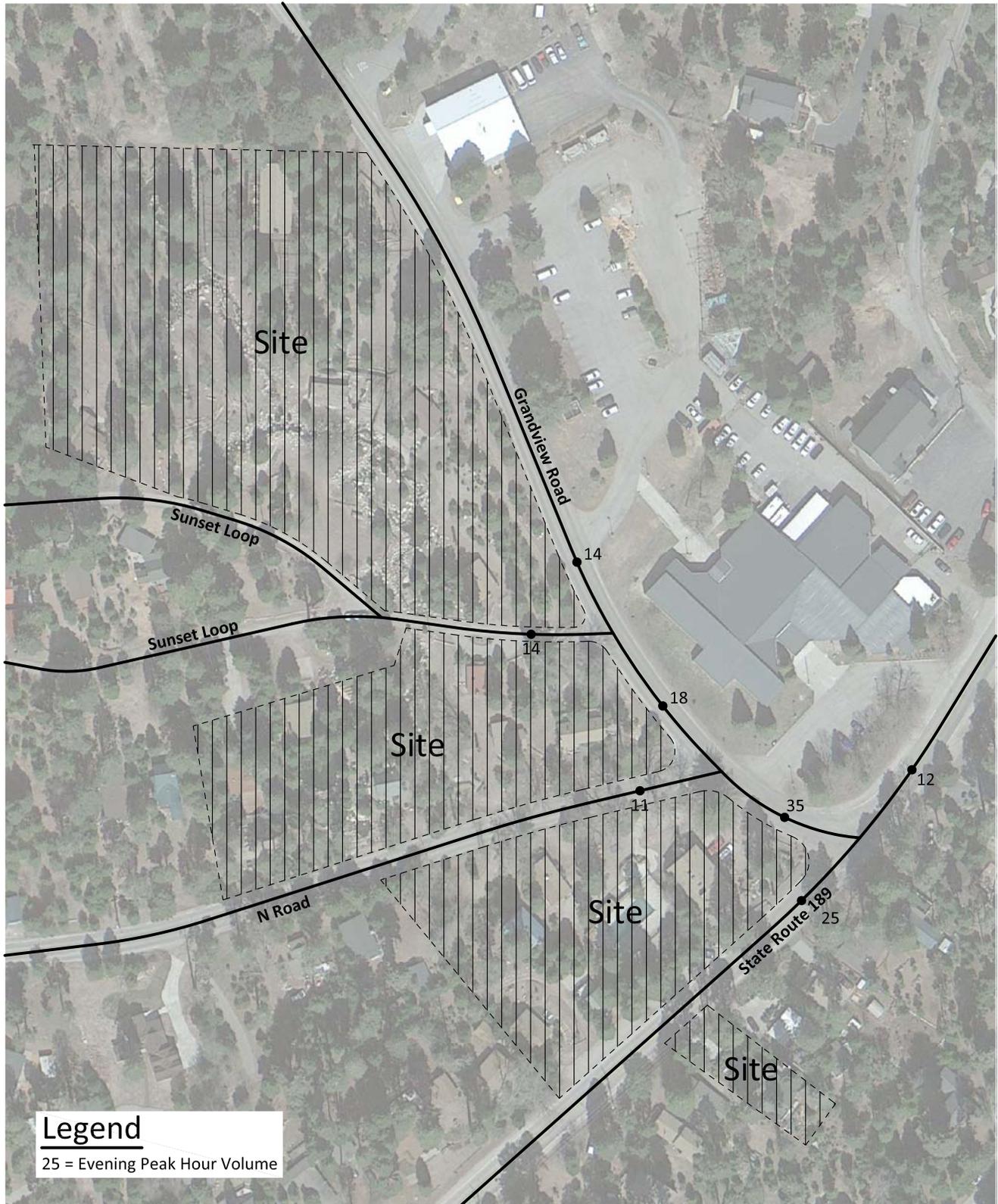


Figure 16
Project Trip Contribution Test Volumes



IV. FUTURE CONDITIONS

A. Future Volumes

As described within Section I.C., the Year 2040 average daily traffic volume forecasts with the project are developed using a growth increment process based on volumes predicted by the San Bernardino Transportation Analysis Model Year 2012 and Year 2040 traffic models. The growth increment for Year 2040 on each roadway segment is the increase in San Bernardino Transportation Analysis Model volumes from existing Year 2016 to Year 2040. The final Year 2040 roadway segment volume used for analysis purposes is then determined by adding the Year 2040 growth increment volume to the existing counted volume.

The Opening Year (2018) traffic projections have been interpolated between Year 2040 traffic volumes and existing traffic volumes utilizing a portion of the growth increment (see Section I.C.). Project traffic volumes for all future projections were estimated using the manual approach.

The traffic counts for this analysis were not taken during the peak month of July. A base volume factor of 12.84 percent has been applied to all base volumes for Existing Plus Project, Opening Year (2018) Without Project, Opening Year (2018) With Project, Year 2040 Without Project, and Year 2040 With Project traffic conditions.

B. Future Level of Service

1. Existing Plus Project

The Existing Plus Project delay and Level of Service for the study area roadway network are shown in Table 3. Table 3 shows delay values based on the geometrics at the study area intersections without and with improvements. Existing Plus Project delay calculation worksheets are provided in Appendix D. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figures 17 and 18, respectively.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

2. Opening Year (2018) Without Project

The Opening Year (2018) Without Project delay and Level of Service for the study area roadway network are shown in Table 4. Table 4 shows delay values based on the geometrics at the study area intersections without and with improvements. Opening Year (2018) Without Project delay calculation worksheets are provided in Appendix D. Opening Year (2018) Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 19 and 20, respectively.

For Opening Year (2018) Without Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

3. Opening Year (2018) With Project

The Opening Year (2018) With Project delay and Level of Service for the study area roadway network are shown in Table 5. Table 5 shows delay values based on the geometrics at the study area intersections without and with improvements. Opening Year (2018) With Project delay calculation worksheets are provided in Appendix D. Opening Year (2018) With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 21 and 22, respectively.

For Opening Year (2018) With Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

4. Year 2040 Without Project

The Year 2040 Without Project delay and Level of Service for the study area roadway network are shown in Table 6. Table 6 shows delay values based on the geometrics at the study area intersections without and with improvements. Year 2040 Without Project delay calculation worksheets are provided in Appendix D. Year 2040 Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 23 and 24, respectively.

For Year 2040 Without Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

5. Year 2040 With Project

The Year 2040 With Project delay and Level of Service for the study area roadway network are shown in Table 7. Table 7 shows delay values based on the geometrics at the study area intersections without and with improvements. Year 2040 With Project delay calculation worksheets are provided in Appendix D. Year 2040 With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 25 and 26, respectively.

For Year 2040 With Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

C. Future Traffic Signal Warrant Analysis

A traffic signal is projected to be warranted at the following study area intersection for Year 2040 Without Project traffic conditions (see Appendix E):

Grandview Road (NS) at:
State Route 189 (EW) - #3

The unsignalized intersection has been evaluated for a traffic signal using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual on Uniform Traffic Control Devices (2014 Edition).

D. Intersection Delay and Level of Service Summary

A summary of Intersection delay and Levels of Service are provided in Table 8.

Table 3

Existing Plus Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.8-B	10.1-B
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	11.7-B	11.2-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	21.5-C	12.9-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Table 4

Opening Year (2018) Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.1-B	90.9-A
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.8-B	10.9-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	17.3-C	12.5-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Table 5

Opening Year (2018) With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.8-B	10.1-B
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	11.7-B	11.3-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	22.6-C	13.2-B

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Table 6

Year 2040 Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	10.4-B	10.1-B
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	11.3-B	11.0-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	19.8-C	14.9-B
	- Without Improvements	IS	0	0	0	0.5	0	0.5	<u>1</u>	1	0	0	1	d	6.6-A	8.7-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane; **BOLD** = Improvement

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Table 7

Year 2040 With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control ³	Intersection Approach Lanes ¹												Peak Hour Delay-LOS ²	
			Northbound			Southbound			Eastbound			Westbound			Friday Evening	Saturday Mid-Day
			L	T	R	L	T	R	L	T	R	L	T	R		
Grandview Road (NS) at:																
Sunset Loop (EW) - #1	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	11.1-B	10.4-B
N Road (EW) - #2	County of San Bernardino	CSS	0.5	0.5	0	0	0.5	0.5	0.5	0	0.5	0	0	0	12.3-B	11.4-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	CSS	0	0	0	0.5	0	0.5	0.5	0.5	0	0	1	d	25.5-D	16.0-C
	- Without Improvements	IS	0	0	0	0.5	0	0.5	<u>1</u>	1	0	0	1	d	6.9-A	8.9-A

¹ When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = De Facto Lane; **BOLD** = Improvement

² Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross Street Stop

Table 8

Intersection Delay and Level of Service Summary

Intersection	Jurisdiction	Peak Hour Delay-Level of Service											
		Existing ¹		Existing Plus Project ²		Opening Year (2018)				Year 2040			
						Without Project ³		With Project ⁴		Without Project ⁵		With Project ⁶	
		Friday Evening	Saturday Mid-Day	Friday Evening	Saturday Mid-Day	Friday Evening	Saturday Mid-Day	Friday Evening	Saturday Mid-Day	Friday Evening	Saturday Mid-Day	Friday Evening	Saturday Mid-Day
Grandview Road (NS) at: Sunset Loop (EW) - #1	County of San Bernardino	10.1-B	9.8-A	10.8-B	10.1-B	10.1-B	90.9-A	10.8-B	10.1-B	10.4-B	10.1-B	11.1-B	10.4-B
N Road (EW) - #2	County of San Bernardino	10.8-B	10.8-B	11.7-B	11.2-B	10.8-B	10.9-B	11.7-B	11.3-B	11.3-B	11.0-B	12.3-B	11.4-B
State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation												
	- Without Improvements	16.7-C	12.3-B	21.5-C	12.9-B	17.3-C	12.5-B	22.6-C	13.2-B	19.8-C	14.9-B	25.5-D	16.0-C
	- With Improvements	NA	NA	NA	NA	NA	NA	NA	NA	6.6-A	8.7-A	6.9-A	8.9-A

¹ See Table 1

² See Table 3

³ See Table 4

⁴ See Table 5

⁵ See Table 6

⁶ See Table 7

Figure 17
Existing Plus Project Friday
Evening Peak Hour Intersection Turning Movement Volumes

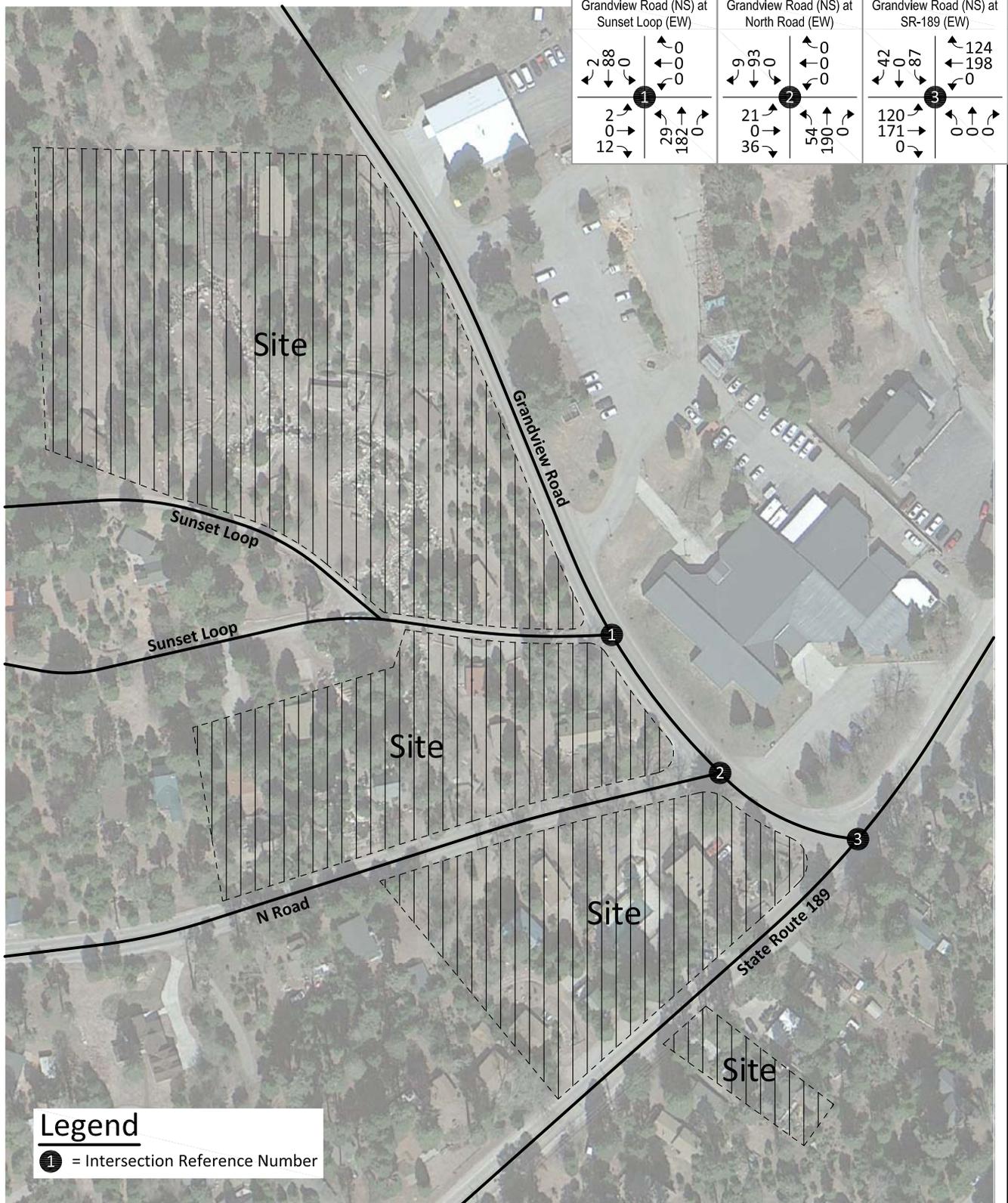
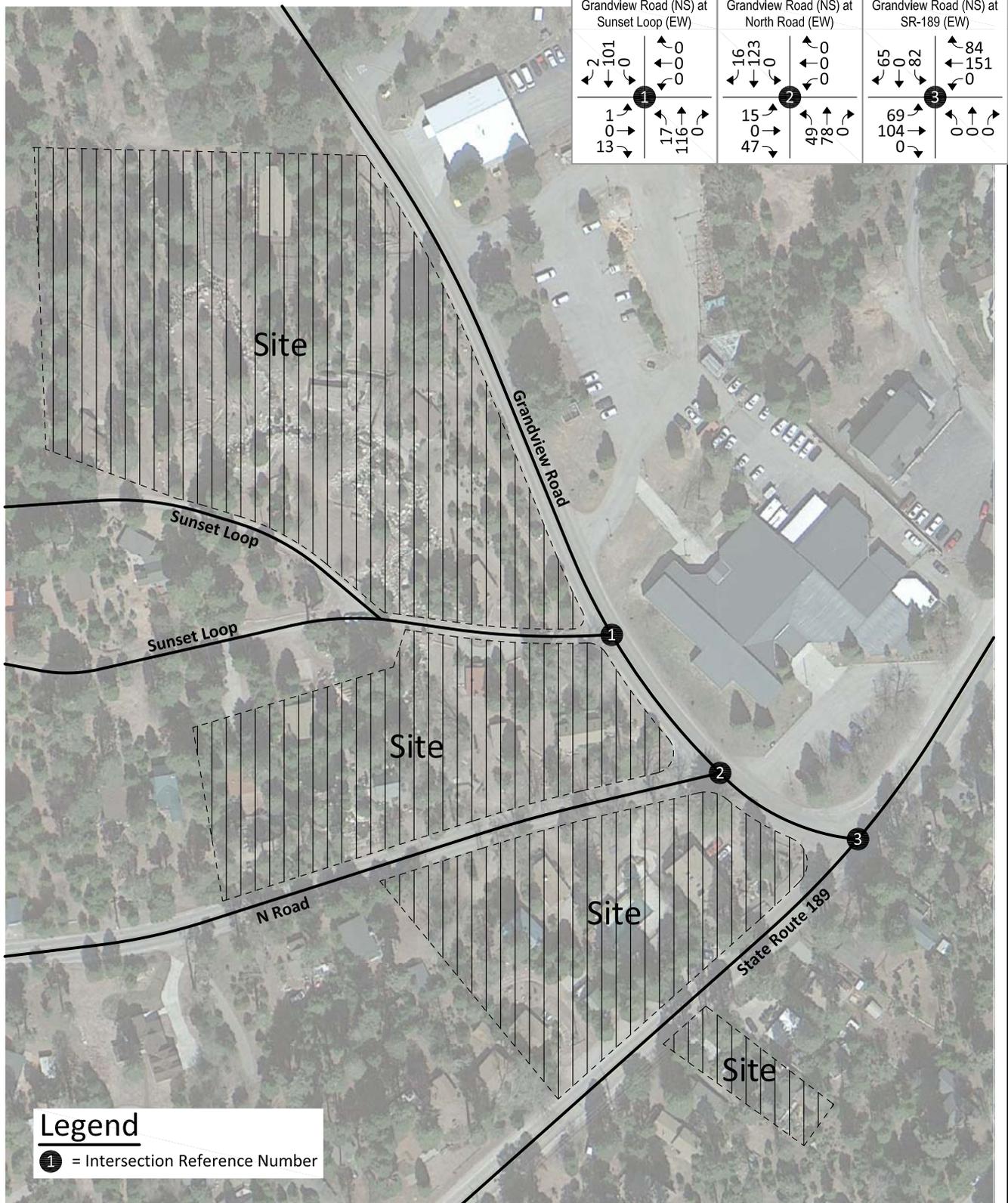


Figure 18
Existing Plus Project Saturday
Mid-Day Peak Hour Intersection Turning Movement Volumes



Legend

① = Intersection Reference Number

Figure 20
Opening Year (2018) Without Project Saturday
Mid-Day Peak Hour Intersection Turning Movement Volumes

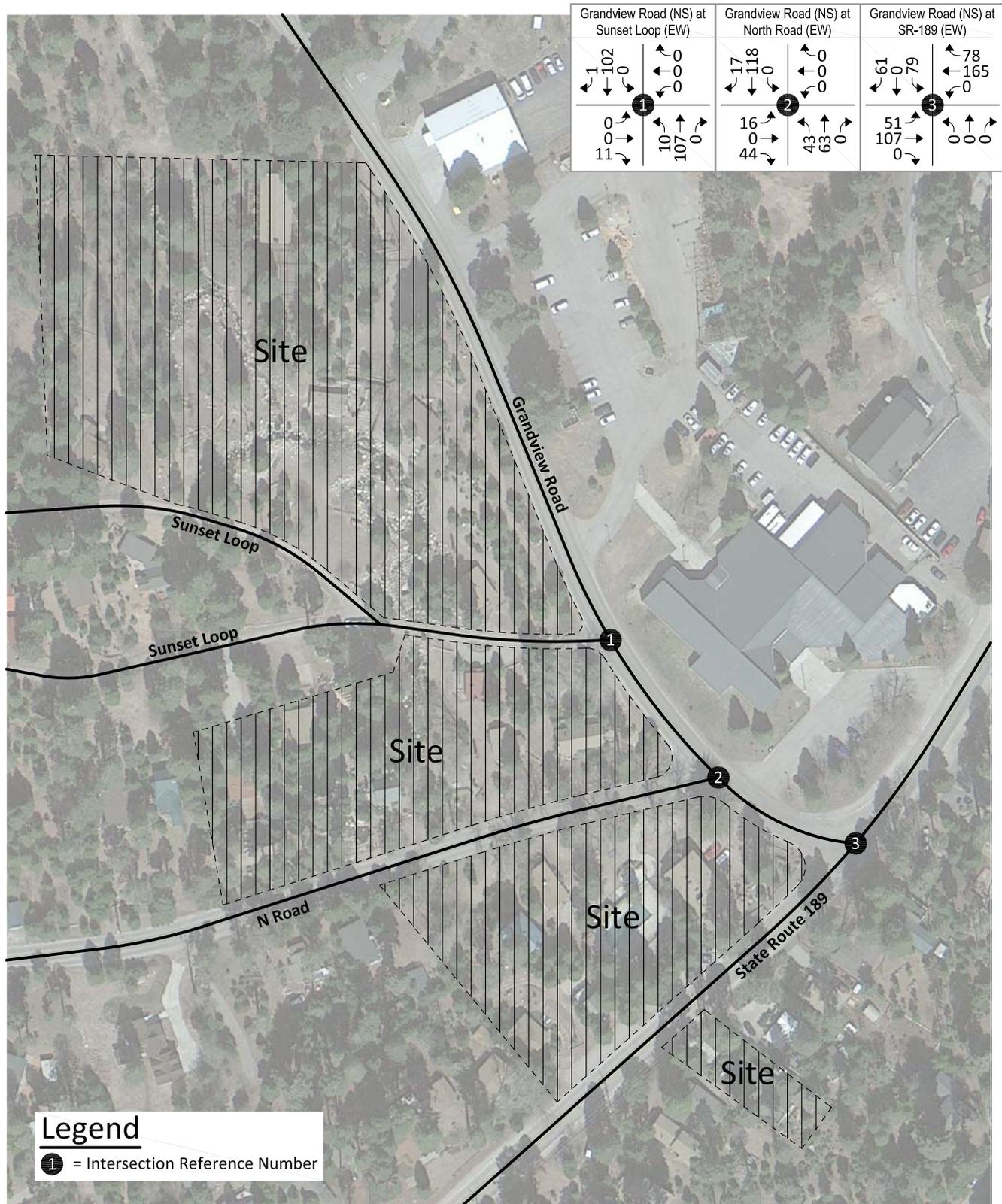
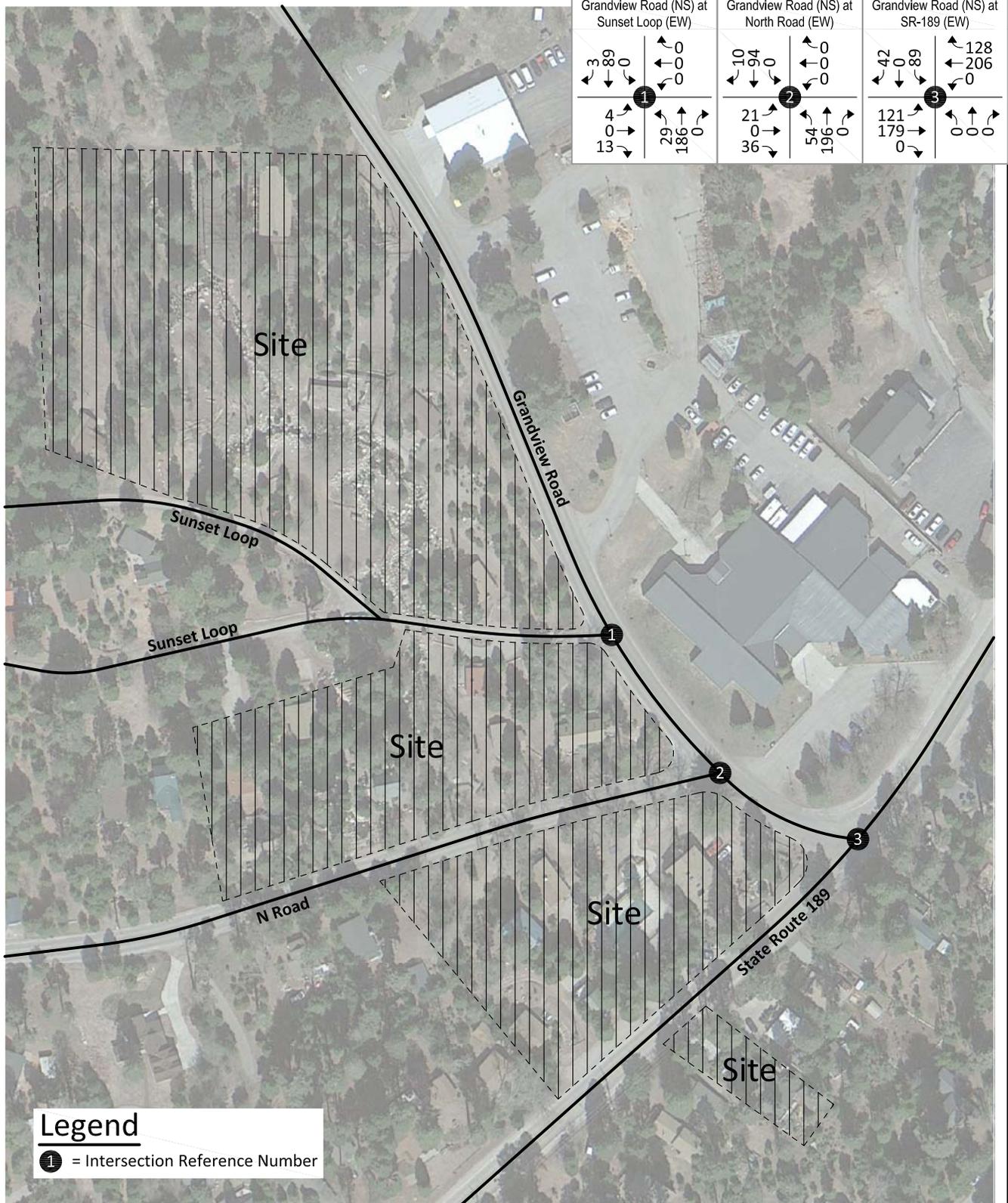


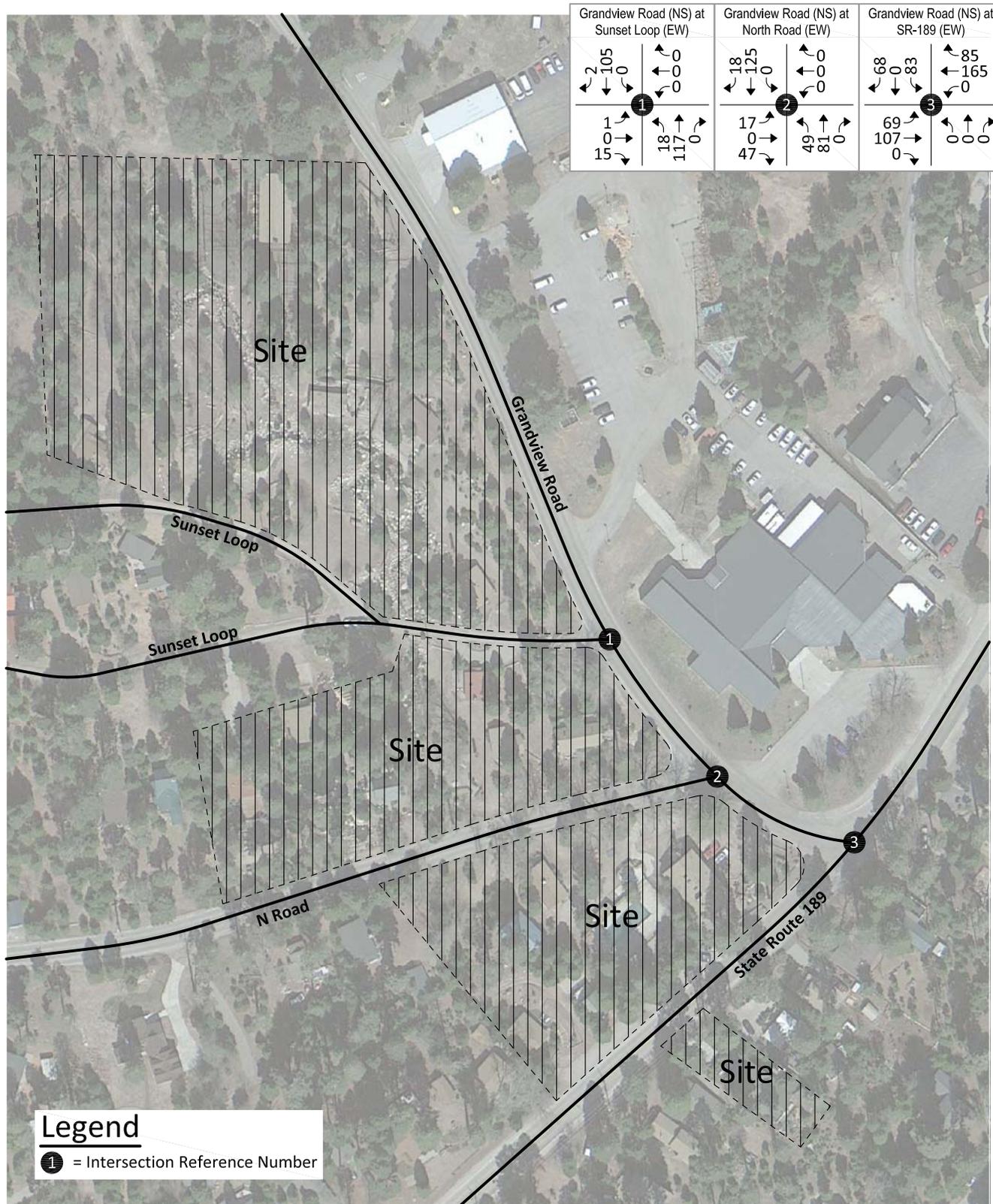
Figure 21
Opening Year (2018) With Project Friday
Evening Peak Hour Intersection Turning Movement Volumes



Legend

① = Intersection Reference Number

Figure 22
Opening Year (2018) With Project Saturday
Mid-Day Peak Hour Intersection Turning Movement Volumes



Legend

① = Intersection Reference Number

Figure 23
Year 2040 Without Project Friday
Evening Peak Hour Intersection Turning Movement Volumes

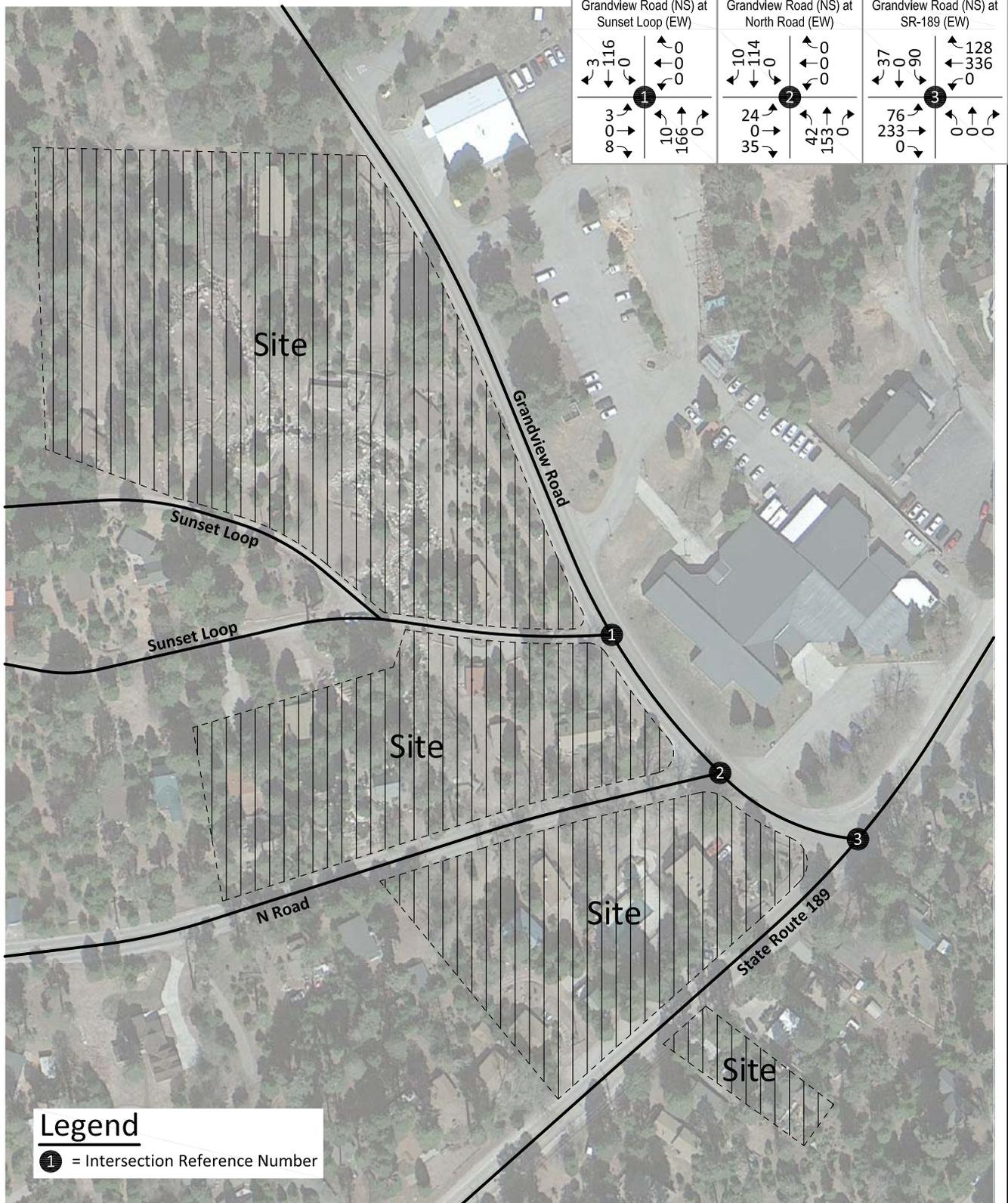


Figure 24
Year 2040 Without Project Saturday
Mid-Day Peak Hour Intersection Turning Movement Volumes

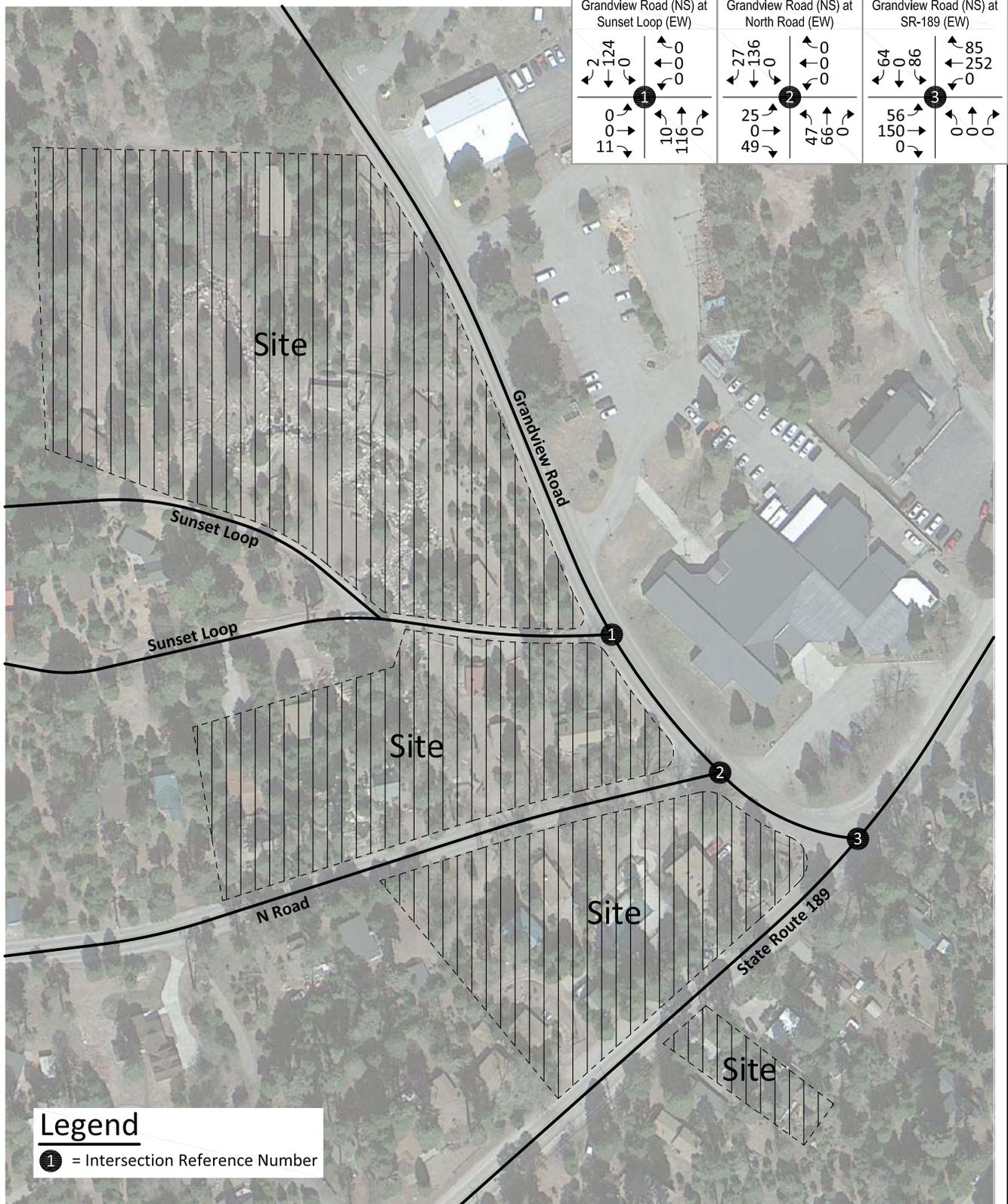


Figure 25
Year 2040 With Project Friday
Evening Peak Hour Intersection Turning Movement Volumes

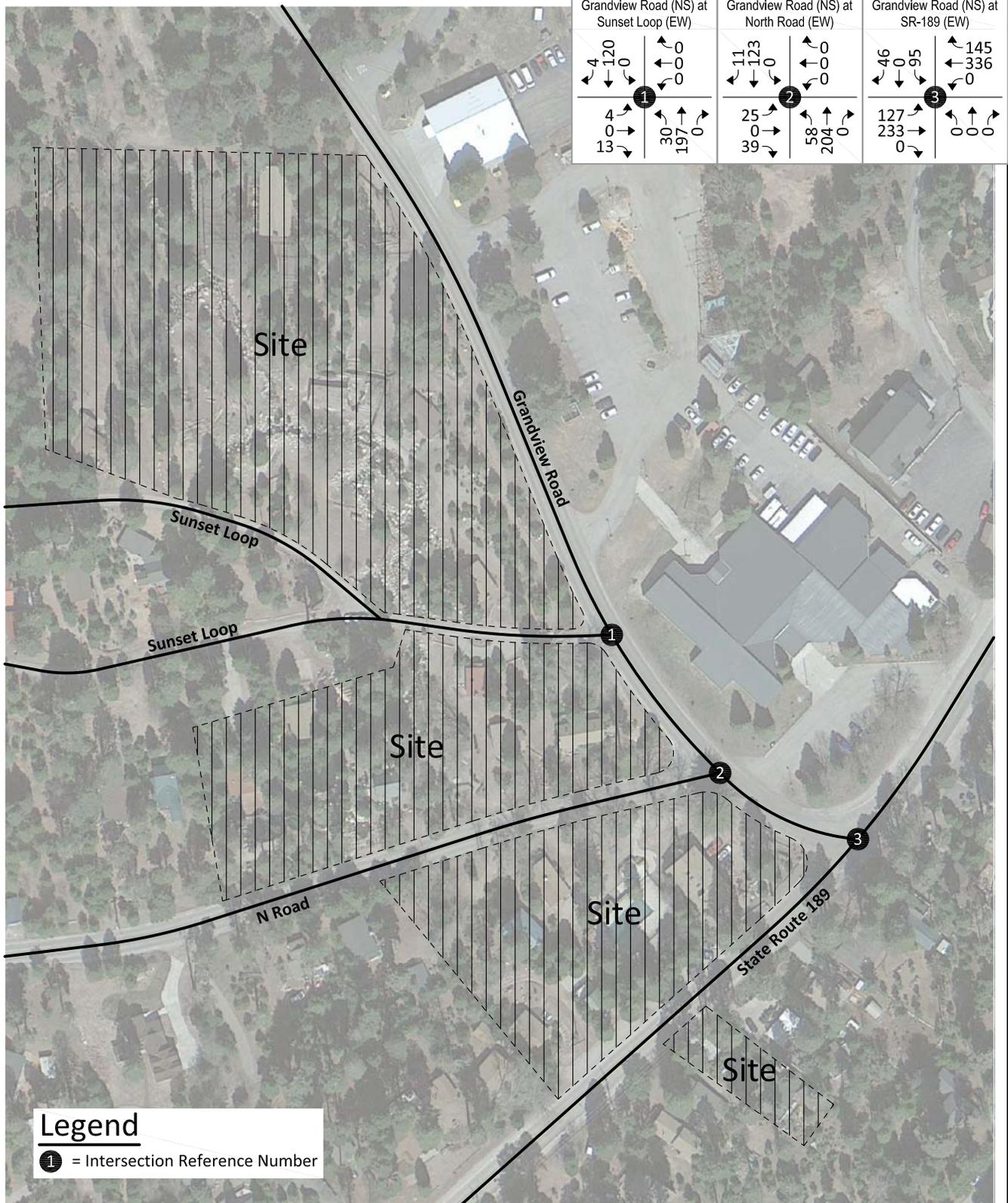
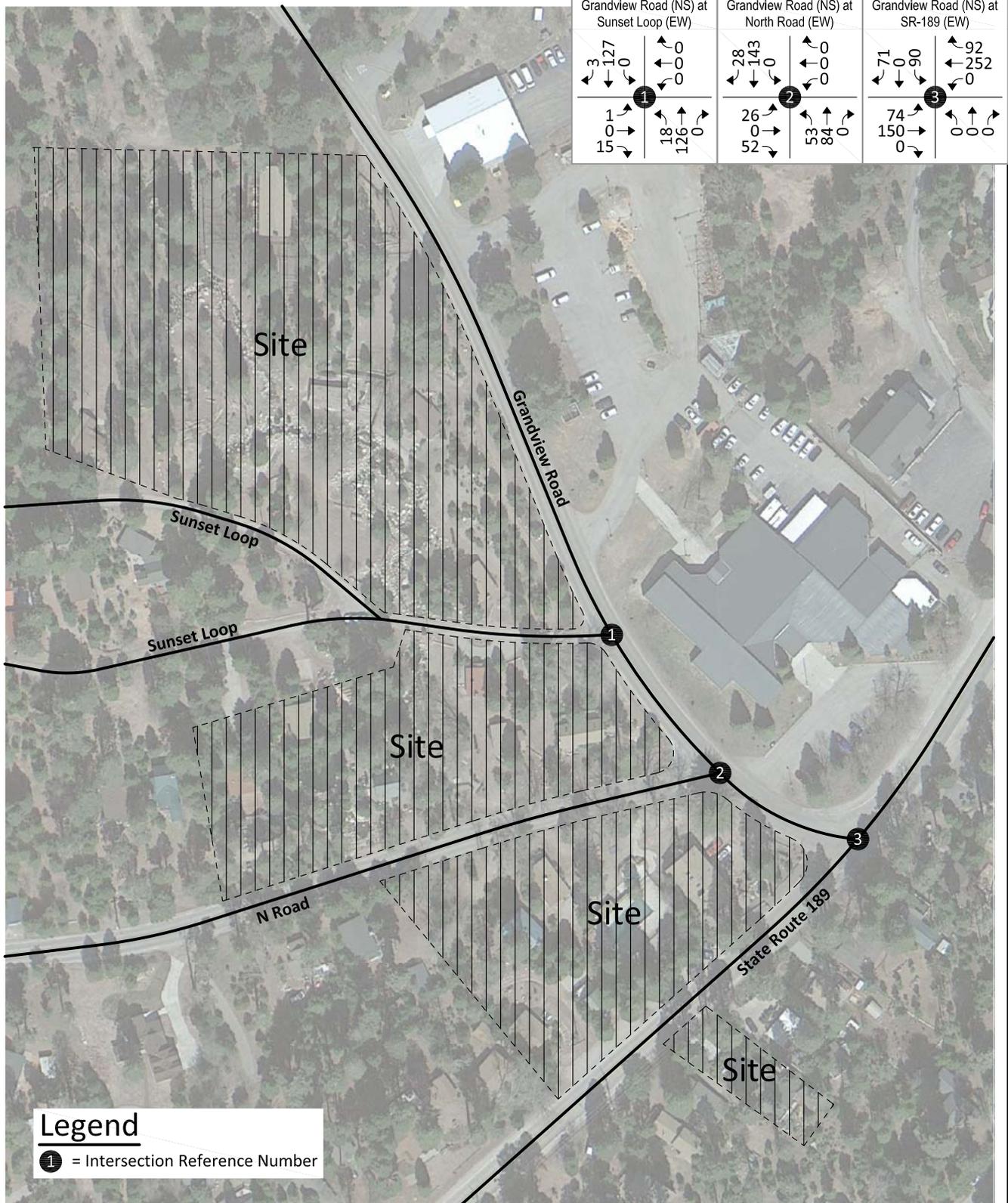


Figure 26
Year 2040 With Project Saturday
Mid-Day Peak Hour Intersection Turning Movement Volumes



Legend

① = Intersection Reference Number

V. PROJECT FAIR SHARE CONTRIBUTION

A. Required Improvement

The Improvement that will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for Year 2040 traffic conditions. The improvement was determined through the operations analysis of Section IV.

B. Project Contribution and Fair Share

The project fair share contribution has been calculated for the improvement location. The project share of cost has been based on the proportion of project peak hour traffic contributed to the improvement location relative to the total new peak hour traffic volume.

Table 9 presents a summary of improvement project cost shares at the intersection improvement location. The intersection fair share cost calculations are based on the higher of the morning and evening peak hour traffic volumes.

Based on the calculations contained in Table 9, the project is required to contribute 25.5 percent of the cost of the traffic signal improvement at the intersection of Grandview Road (NS) at State Route 189 (EW) if the County of San Bernardino and the California Department of Transportation determine that a traffic signal should be installed.

Table 9

Project Fair Share Intersection Traffic Contribution

Intersection	Jurisdiction	Peak Hour	Existing Traffic	Year 2040 With Project	Project Traffic	Total New Traffic	Project % of New Traffic
Grandview Road (NS) at: State Route 189 (EW) - #3	County of San Bernardino/California Department of Transportation	Friday Evening	660	982	82	322	25.5%
		Saturday Mid-Day	519	729	36	210	17.1%

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Summary

The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with the California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with full occupancy of the development in Year 2018, at which time it will be generating trips at its full potential.

A series of scoping discussions were conducted with the County of San Bernardino and the California Department of Transportation to define the desired analysis locations for each future analysis year. In addition, staff from the County of San Bernardino has also been contacted to discuss the project and its associated travel patterns.

The County of San Bernardino Traffic Engineer and the California Department of Transportation Traffic Engineer that was consulted during the scoping agreement process of this analysis, asked that a peak season factor be calculated to factor an average month's traffic data to peak season traffic volumes. The City of Big Bear Traffic Engineer was consulted to determine what month is the peak traffic volume month of the year in this region. The peak traffic volume month in the mountain resorts area is July. The California department of Transportation count data for both SR-173 and SR-189 within the study area was obtained. The peak month traffic data was compared to the average month traffic data. The data shows that the peak month is approximately 12.84 percent higher than the average month. The traffic counts for this analysis were not taken during the peak month of July. A base volume factor of 12.84 percent has been applied to all base volumes for Existing, Existing Plus Project, Opening Year (2018) Without Project, Opening Year (2018) With Project, Year 2040 Without Project, and Year 2040 With Project traffic conditions.

No analysis is required further than 5 miles from the project site. The roadway elements that must be analyzed are dependent on both the analysis year project Opening Year or Buildout Year (2040) and project generated traffic volumes. The identification of the study area, and the intersections and highway segments requiring analysis, was based on an estimate of the two-way traffic volumes on the roadway segments near the project site. All arterial segments have been included in the analysis when the anticipated project volume equals or exceeds 50 two-way trips in the peak hours. The requirement is 100 two-way peak hour trips for freeways.

The project does not contribute trips greater than the freeway threshold volume of 100 two-way peak hour trips.

B. Existing Conditions

Regional access to the project site is provided by State Route 189. Local access is provided by various roadways in the vicinity of the site. The east-west roadways which will be most affected by the project are Sunset Loop, N Road, and State Route 189. The north-south roadway which will be most affected by the project is Grandview Road.

For Existing traffic conditions, the study area intersections currently operate within acceptable Levels of Service during the peak hours.

C. Project Trips

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation data obtained from Arrowhead Pine Rose Cabins. The trip generation numbers are based on the maximum utilization of the project site. Daily trip generation for the cabins is based on the maximum cabin occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 7 trips per day per vehicle. Daily trip generation for the special events is based on the maximum special event occupancy, a vehicle occupancy of 2 persons per vehicle, and a total of 2 trips per day per vehicle. For the cabins, the Friday evening peak hour is 12% of the daily traffic with a 50% Inbound/50% Outbound split and the Saturday mid-day peak hour is 25% of the daily traffic with a 50% Inbound/50% Outbound split. For the special events, the Friday evening peak hour is 50% of the daily traffic with a 90% Inbound/10% Outbound split and the Saturday mid-day peak hour is 50% of the daily traffic with an 80% Inbound/20% Outbound split.

The existing facility is projected to generate a maximum of approximately 138 vehicle trips during the Friday evening peak hour and 193 vehicle trips during the Saturday mid-day peak hour (see Table 2).

During the vehicle counts, the existing facility was partially occupied and it has been calculated that approximately 46 vehicle trips during the Friday evening peak hour and 151 vehicle trips during the Saturday mid-day peak hour were already on the surrounding street system (see Table 2).

The additional vehicle trips projected to be generated by the unoccupied project facilities is approximately 92 vehicle trips during the Friday evening peak hour and 42 vehicle trips during the Saturday mid-day peak hour (see Table 2).

D. Future Conditions

An Existing Plus Project, Opening Year (2018), and Year 2040 analysis are included in this report. The traffic operations analyses are summarized in Table 8.

1. Existing Plus Project

For Existing Plus Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

2. Opening Year (2018) Without Project

For Opening Year (2018) Without Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

3. Opening Year (2018) With Project

For Opening Year (2018) With Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

4. Year 2040 Without Project

For Year 2040 Without Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

5. Year 2040 With Project

For Year 2040 With Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours.

E. Future Traffic Signal Warrant Analysis

A traffic signal is projected to be warranted at the following study area intersection for Year 2040 Without Project traffic conditions (see Appendix E):

Grandview Road (NS) at:
State Route 189 (EW) - #3

The unsignalized intersection has been evaluated for a traffic signal using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual on Uniform Traffic Control Devices (2014 Edition).

F. Recommendations

The recommendations in this section address on-site improvements, off-site improvements and the phasing of all necessary study area transportation improvements.

1. On-Site Improvements

On-site improvements and improvements adjacent to the site will be required in conjunction with the proposed development to ensure adequate circulation within the project itself (see Figure 27).

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

The site should provide sufficient parking spaces to meet County of San Bernardino parking code requirements in order to service on-site parking demand.

2. Off-Site Improvements

As is the case for any roadway design, the County of San Bernardino should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Participate in the phased construction of off-site traffic signals through payment of traffic signal mitigation fees. The traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.

Figure 27
Circulation Recommendations

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

The site should provide sufficient parking spaces to meet County of San Bernardino parking code requirements in order to service on-site parking demand.

As is the case for any roadway design, the County of San Bernardino should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Participate in the phased construction of off-site traffic signals through payment of traffic signal mitigation fees. The traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.



APPENDICES

Appendix A – Glossary of Transportation Terms

Appendix B – Traffic Count Worksheets

Appendix C – Future Growth Increment Calculation Worksheets

Appendix D – Explanation and Calculation of Intersection Delay

Appendix E – Traffic Signal Warrant Worksheet

APPENDIX A

Glossary of Transportation Terms

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

Traffic Count Worksheets

INTERSECTION TURNING MOVEMENT COUNTS

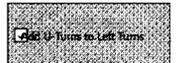
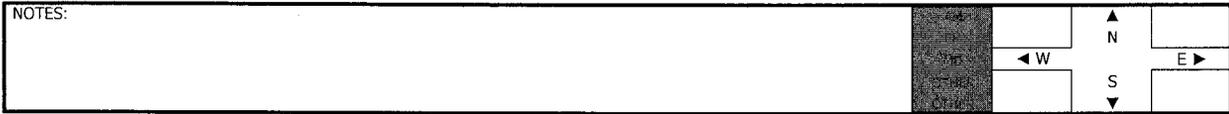
PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:
Sat, May 14, 16

LOCATION:
NORTH & SOUTH:
EAST & WEST:

Lake Arrowhead
Grandview
North

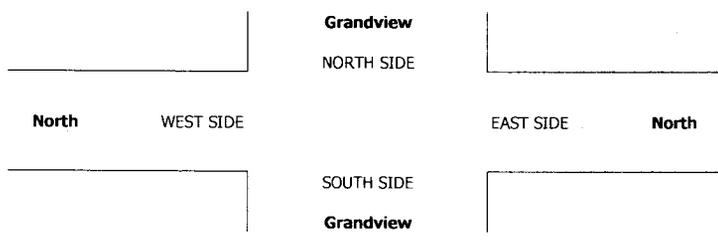
PROJECT #: SC0941
LOCATION #: 2
CONTROL: STOP E



LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	
10:00 AM	3	16	0	0	15	3	4	0	8	0	0	0	49
10:15 AM	8	18	0	0	15	1	0	0	7	0	0	0	49
10:30 AM	4	12	0	0	15	2	2	0	9	0	0	0	44
10:45 AM	11	12	0	0	26	3	2	0	12	0	0	0	66
11:00 AM	6	12	0	0	27	3	0	0	11	0	0	0	59
11:15 AM	7	11	0	0	23	3	4	0	5	0	0	0	53
11:30 AM	13	17	0	0	24	3	5	0	10	0	0	0	72
11:45 AM	1	28	0	0	19	2	3	0	8	0	0	0	61
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	53	126	0	0	164	20	20	0	70	0	0	0	453
APPROACH %	30%	70%	0%	0%	89%	11%	22%	0%	78%	0%	0%	0%	
APP/DEPART	179	/	146	184	/	235	90	/	0	0	/	72	0
BEGIN PEAK HR	10:45 AM												
VOLUMES	37	52	0	0	100	12	11	0	38	0	0	0	250
APPROACH %	42%	58%	0%	0%	89%	11%	22%	0%	78%	0%	0%	0%	
PEAK HR FACTOR	0.742												
APP/DEPART	89	/	63	112	/	139	49	/	0	0	/	48	0
12:00 PM	4	19	0	0	14	3	5	0	10	0	0	0	55
12:15 PM	8	16	0	0	26	3	2	0	7	0	0	0	62
12:30 PM	7	22	0	0	23	0	1	0	7	0	0	0	60
12:45 PM	8	17	0	0	24	0	4	0	6	0	0	0	59
1:00 PM	11	22	0	0	18	2	2	0	9	0	0	0	64
1:15 PM	7	16	0	0	20	1	2	0	8	0	0	0	54
1:30 PM	8	12	0	0	10	2	2	0	9	0	0	0	43
1:45 PM	10	22	0	0	15	1	2	0	5	0	0	0	55
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	63	146	0	0	150	12	20	0	61	0	0	0	452
APPROACH %	30%	70%	0%	0%	93%	7%	25%	0%	75%	0%	0%	0%	
APP/DEPART	209	/	165	162	/	212	81	/	0	0	/	75	0
BEGIN PEAK HR	12:15 PM												
VOLUMES	34	77	0	0	91	5	9	0	29	0	0	0	245
APPROACH %	31%	69%	0%	0%	95%	5%	24%	0%	76%	0%	0%	0%	
PEAK HR FACTOR	0.841												
APP/DEPART	111	/	86	96	/	121	38	/	0	0	/	38	0

U-TURNS				
NB X	SB X	EB X	WB X	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	1	0	2



	ALL PED AND BIKE				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
10:00 AM	0	0	0	0	0
10:15 AM	0	0	0	0	0
10:30 AM	0	0	0	0	0
10:45 AM	0	0	0	0	0
11:00 AM	0	0	0	0	0
11:15 AM	0	0	0	0	0
11:30 AM	0	0	0	0	0
11:45 AM	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

	PEDESTRIAN CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
10:00 AM	0	0	0	0	0
10:15 AM	0	0	0	0	0
10:30 AM	0	0	0	0	0
10:45 AM	0	0	0	0	0
11:00 AM	0	0	0	0	0
11:15 AM	0	0	0	0	0
11:30 AM	0	0	0	0	0
11:45 AM	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

	BICYCLE CROSSINGS				
	NS	SS	ES	WS	TOTAL
10:00 AM	0	0	0	0	0
10:15 AM	0	0	0	0	0
10:30 AM	0	0	0	0	0
10:45 AM	0	0	0	0	0
11:00 AM	0	0	0	0	0
11:15 AM	0	0	0	0	0
11:30 AM	0	0	0	0	0
11:45 AM	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

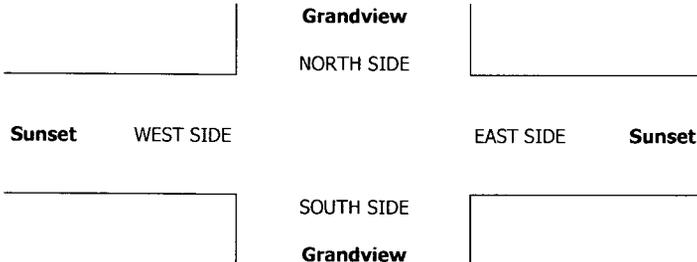
PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview Sunset	PROJECT #: LOCATION #: CONTROL:	SC0941 1 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X		NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	
BEGIN PEAK HR	7:00 AM																		
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000						
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:15 PM	1	1	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0
	4:30 PM	0	2	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	
	4:45 PM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	
	5:00 PM	0	2	0	0	2	0	0	0	1	0	0	5	0	0	0	0	0	
	5:15 PM	0	1	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	
	5:30 PM	0	3	0	0	2	0	0	0	0	0	0	5	0	0	0	0	0	
	5:45 PM	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	
	VOLUMES	2	9	0	0	10	0	0	0	2	0	0	23	0	0	0	0	0	
APPROACH %	18%	82%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%		
APP/DEPART	11	/	9	10	/	12	2	/	0	0	/	2	0	/	0	0	/	0	
BEGIN PEAK HR	4:45 PM																		
VOLUMES	0	6	0	0	8	0	0	0	1	0	0	15	0	0	0	0	0	0	
APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.500			1.000			0.250			0.000			0.750						
APP/DEPART	6	/	6	8	/	9	1	/	0	0	/	0	0	/	0	0	/	0	



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview Sunset	PROJECT #: LOCATION #: CONTROL:	SC0941 1 SIGNAL
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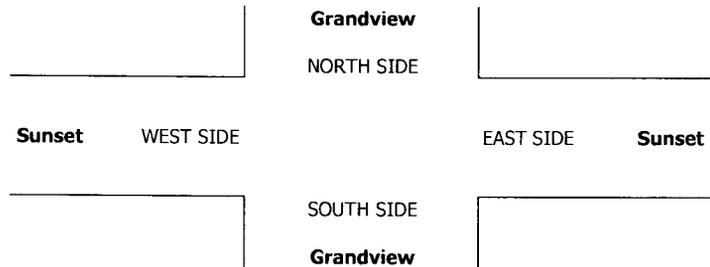
CLASS 5:	NOTES:		
RV			

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		NB	SB	EB	WB	TTL

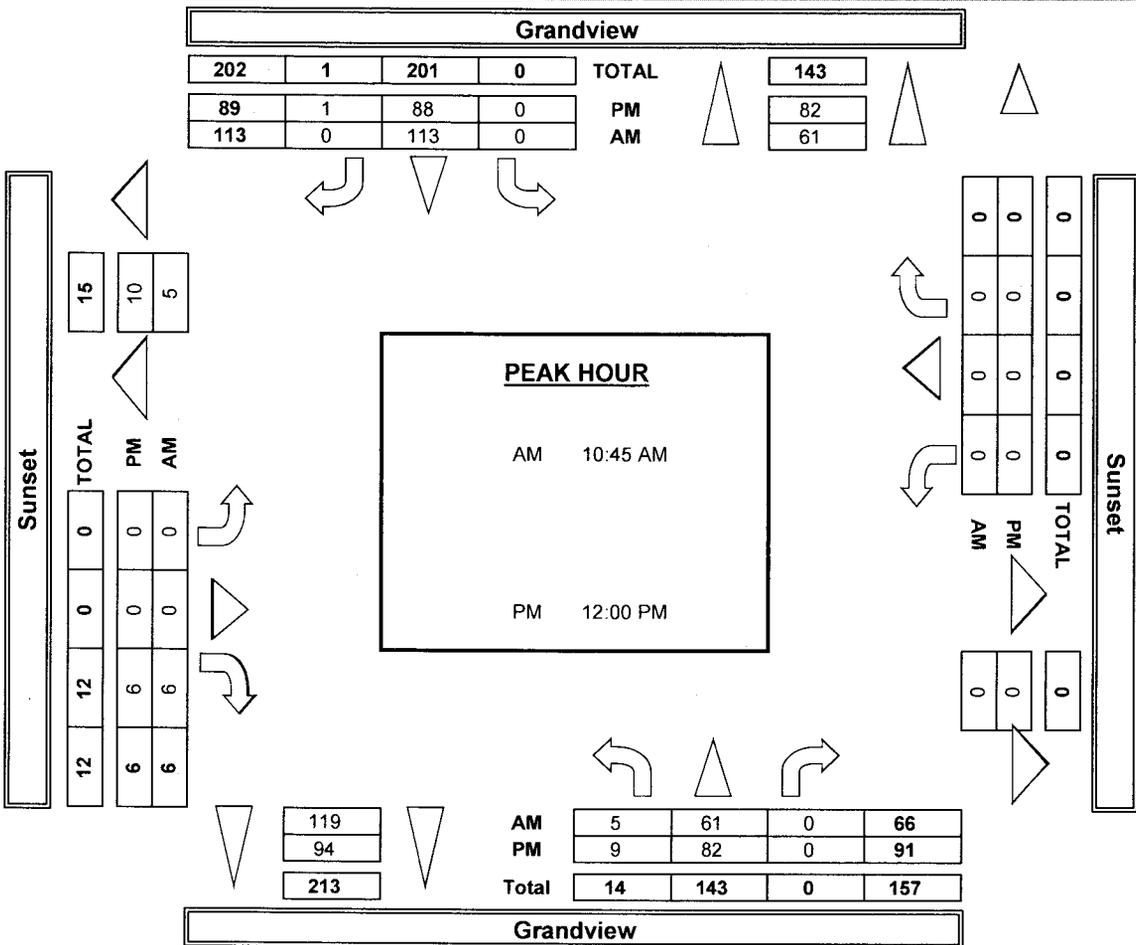
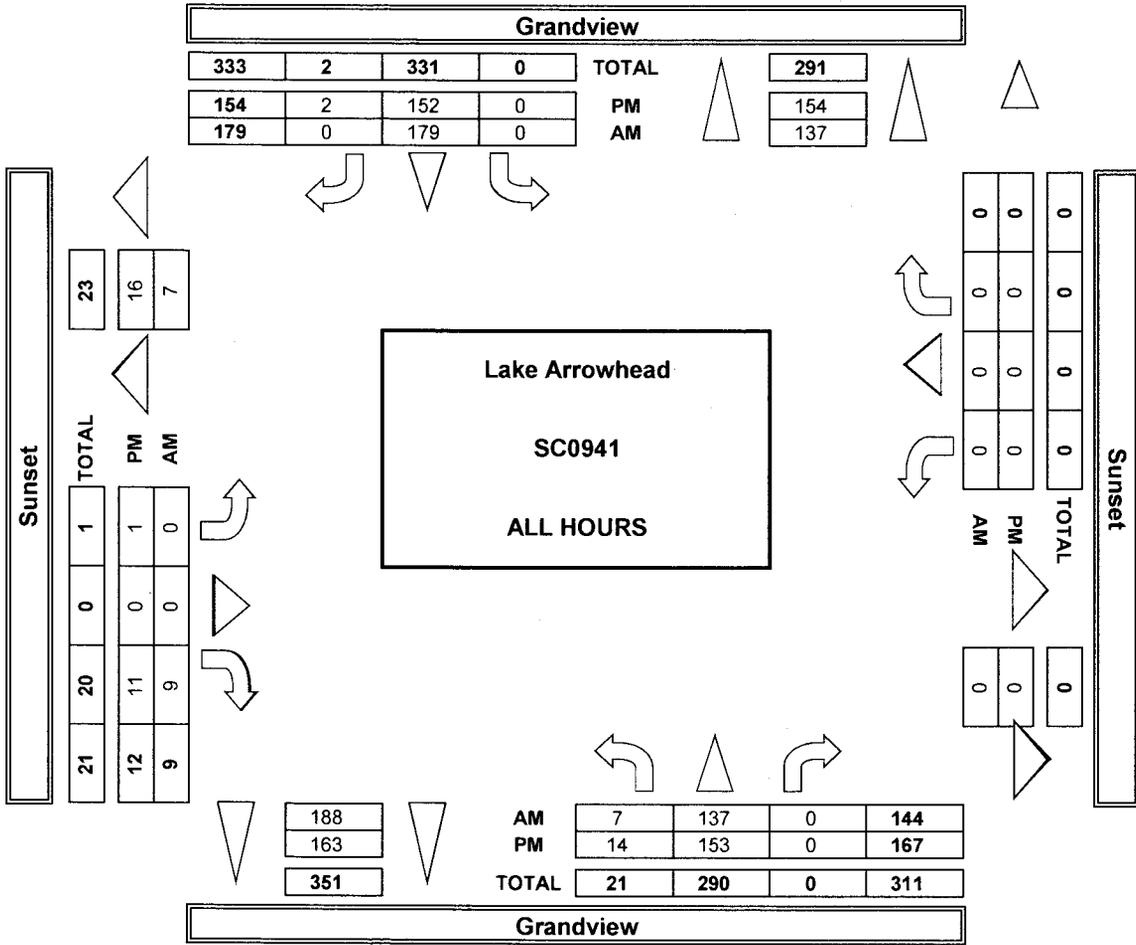
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	
BEGIN PEAK HR	7:00 AM																		
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000						
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	
BEGIN PEAK HR	3:00 PM																		
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000						
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview Sunset	PROJECT #: LOCATION #: CONTROL:	SC0941 1 SIGNAL
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CLASS 1: PASSENGER VEHICLES	NOTES:	
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			Sunset			Sunset			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	18	0	0	15	0	0	1	0	0	0	34	0	0	0	0	0
	10:15 AM	1	19	0	0	19	0	0	0	0	0	0	39	0	0	0	0	0
	10:30 AM	0	12	0	0	12	0	0	1	0	0	0	25	0	0	0	0	0
	10:45 AM	0	19	0	0	31	0	0	0	0	0	0	50	0	0	0	0	0
	11:00 AM	0	11	0	0	29	0	0	3	0	0	0	43	0	0	0	0	0
	11:15 AM	2	12	0	0	24	0	0	2	0	0	0	40	0	0	0	0	0
	11:30 AM	2	18	0	0	24	0	0	1	0	0	0	45	0	0	0	0	0
	11:45 AM	1	24	0	0	15	0	0	0	0	0	0	40	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

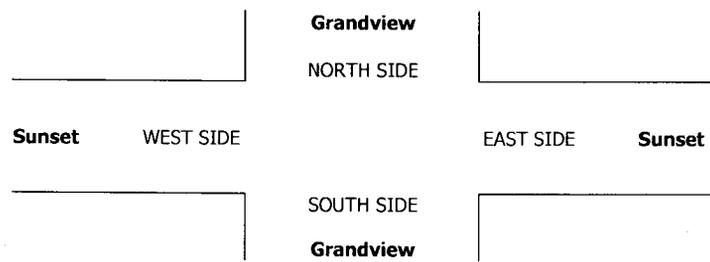
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	6	133	0	0	169	0	0	0	8	0	0	0	316
APPROACH %	4%	96%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	
APP/DEPART	139	/	133	169	/	177	8	/	0	0	/	6	0
BEGIN PEAK HR	10:45 AM												
VOLUMES	4	60	0	0	108	0	0	0	6	0	0	0	178
APPROACH %	6%	94%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	
PEAK HR FACTOR	0.800												
APP/DEPART	64	/	60	108	/	114	6	/	0	0	/	4	0

PM	12:00 PM	0	29	0	0	18	0	0	1	0	0	0	48	0	0	0	0	0
	12:15 PM	4	13	0	0	22	1	0	2	0	0	0	42	0	0	0	0	0
	12:30 PM	1	19	0	0	21	0	0	3	0	0	0	44	0	0	0	0	0
	12:45 PM	3	16	0	0	23	0	0	0	0	0	0	42	0	0	0	0	0
	1:00 PM	0	23	0	0	21	0	1	2	0	0	0	47	0	0	0	0	0
	1:15 PM	4	13	0	0	17	0	0	2	0	0	0	36	0	0	0	0	0
	1:30 PM	0	12	0	0	11	1	0	0	0	0	0	24	0	0	0	0	0
	1:45 PM	1	19	0	0	12	0	0	1	0	0	0	33	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	13	144	0	0	145	2	1	0	11	0	0	0	316
APPROACH %	8%	92%	0%	0%	99%	1%	8%	0%	92%	0%	0%	0%	
APP/DEPART	157	/	145	147	/	156	12	/	0	0	/	15	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	8	77	0	0	84	1	0	0	6	0	0	0	176
APPROACH %	9%	91%	0%	0%	99%	1%	0%	0%	100%	0%	0%	0%	
PEAK HR FACTOR	0.733												
APP/DEPART	85	/	77	85	/	90	6	/	0	0	/	9	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview Sunset	PROJECT #: LOCATION #: CONTROL:	SC0941 1 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>Sunset</small>			WESTBOUND <small>Sunset</small>			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	10:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
	11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	11:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0
	11:30 AM	1	0	0	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0
	11:45 AM	0	1	0	0	4	0	0	0	1	0	0	0	6	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

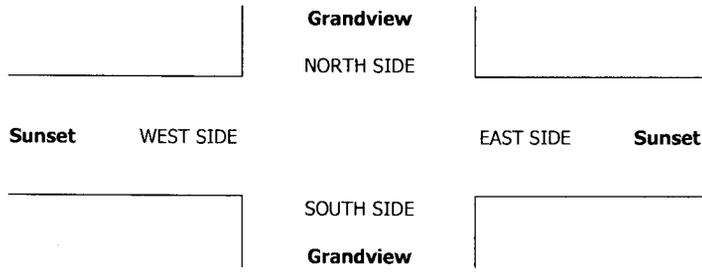
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	1	4	0	0	10	0	0	0	1	0	0	0	16
APPROACH %	20%	80%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	
APP/DEPART	5	/	4	10	/	11	1	/	0	0	/	1	0
BEGIN PEAK HR	11:00 AM												
VOLUMES	1	2	0	0	8	0	0	0	1	0	0	0	12
APPROACH %	33%	67%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	
PEAK HR FACTOR	0.750			0.500			0.250			0.000			0.500
APP/DEPART	3	/	2	8	/	9	1	/	0	0	/	1	0

PM	12:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0
	12:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0
	12:30 PM	1	3	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0
	12:45 PM	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	1:00 PM	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
	1:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0
	1:30 PM	0	2	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0
	1:45 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	1	9	0	0	7	0	0	0	0	0	0	0	17
APPROACH %	10%	90%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	10	/	9	7	/	7	0	/	0	0	/	1	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	1	5	0	0	4	0	0	0	0	0	0	0	10
APPROACH %	17%	83%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.375			1.000			0.000			0.000			0.500
APP/DEPART	6	/	5	4	/	4	0	/	0	0	/	1	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:
5/14/16
SATURDAY

LOCATION: Lake Arrowhead
NORTH & SOUTH: Grandview
EAST & WEST: Sunset

PROJECT #: SC0941
LOCATION #: 1
CONTROL: SIGNAL

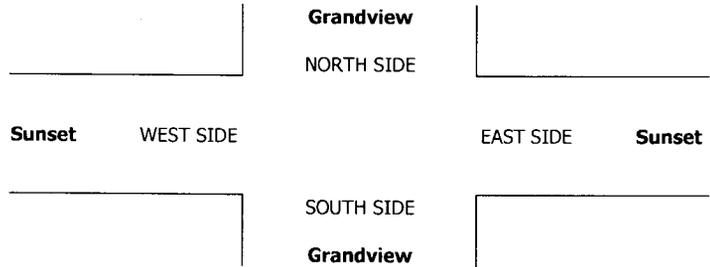
CLASS 3:	NOTES:		▲ N	
3-AXLE TRUCKS			◀ W	E ▶
			S	
			▼	

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			Sunset			Sunset			
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	10:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	12:00 PM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview Sunset	PROJECT #: LOCATION #: CONTROL:	SC0941 1 SIGNAL
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CLASS 6: BUSES	NOTES:		▲ N ◀ W E ▶ S ▼
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			Sunset			Sunset			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	

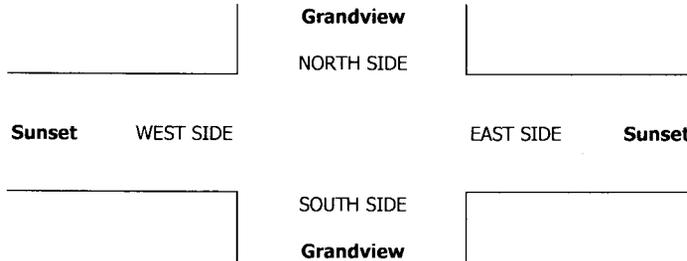
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	10:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

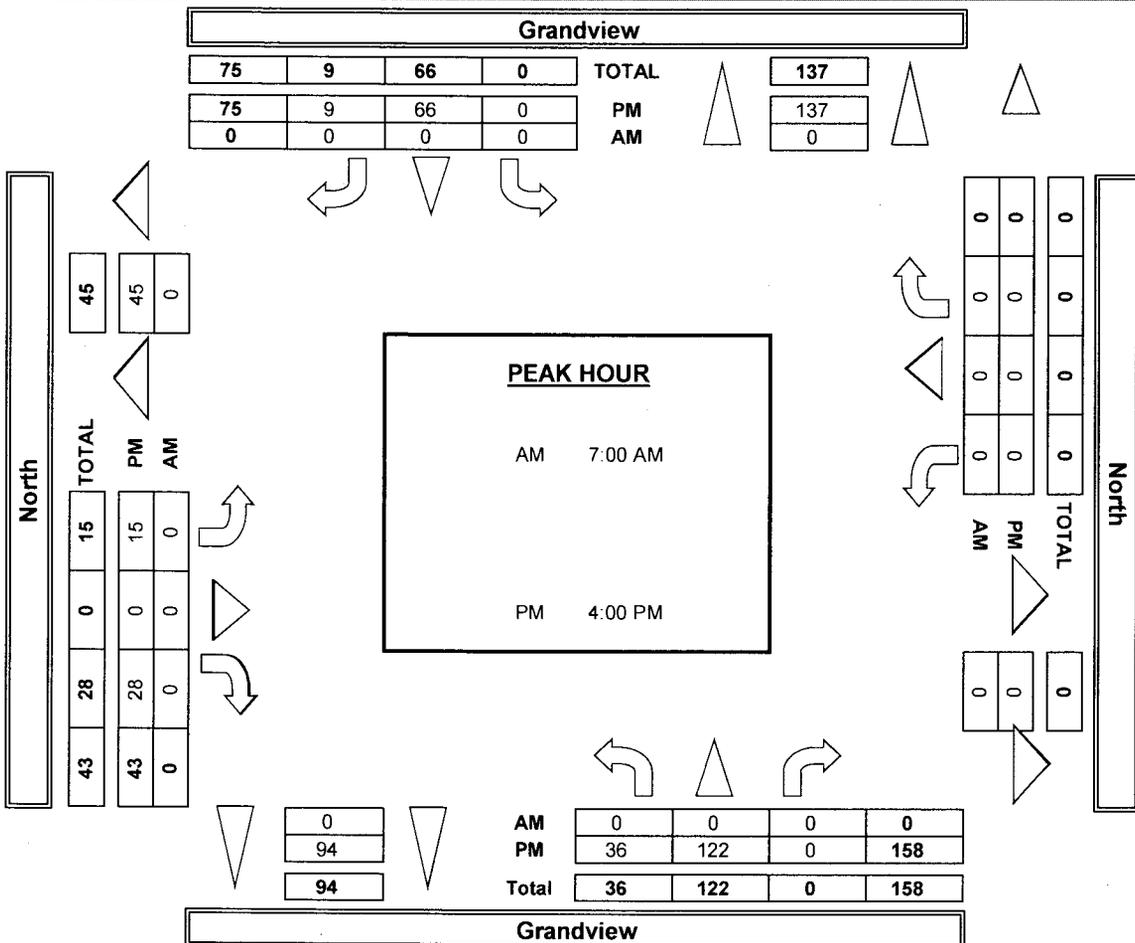
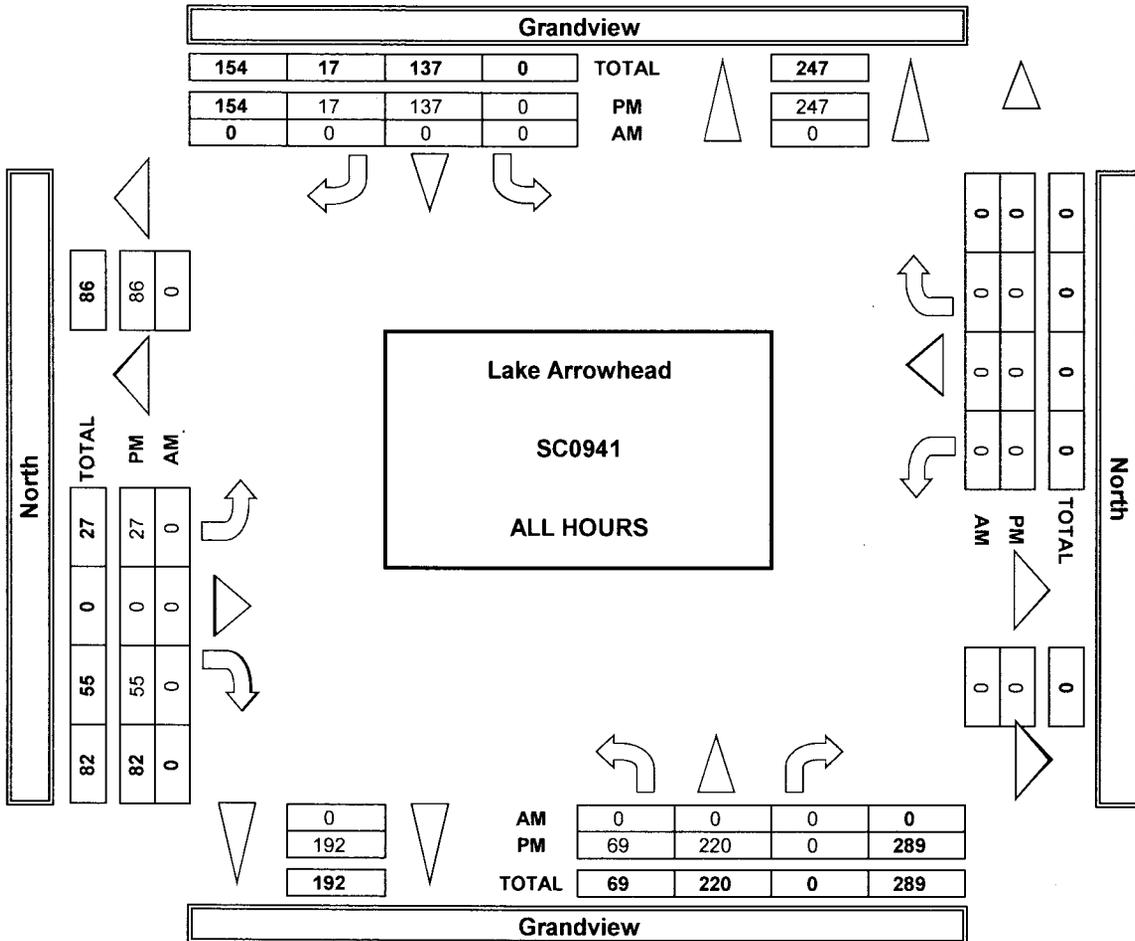
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE:
5/13/16
FRIDAY

LOCATION:
NORTH & SOUTH: Lake Arrowhead
EAST & WEST: Grandview
North

PROJECT #: SC0941
LOCATION #: 2
CONTROL: STOP E

CLASS 1:	NOTES:				
PASSENGER VEHICLES		▲ N	◀ W	E ▶	▼ S

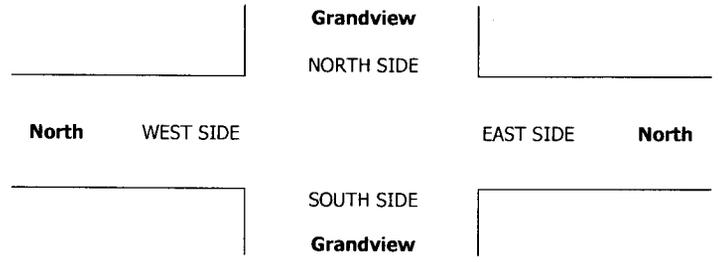
LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			North			North			
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	7:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	6	28	0	0	22	2	6	0	6	0	0	0	70
	4:15 PM	9	27	0	0	15	2	5	0	7	0	0	0	65
	4:30 PM	10	26	0	0	11	3	4	0	7	0	0	0	61
	4:45 PM	7	34	0	0	18	0	3	0	5	0	0	0	67
	5:00 PM	8	29	0	0	18	2	3	0	6	0	0	0	66
	5:15 PM	12	20	0	0	13	0	1	0	7	0	0	0	53
	5:30 PM	7	25	0	0	17	3	2	0	6	0	0	0	60
	5:45 PM	6	21	0	0	13	3	3	0	7	0	0	0	53
	VOLUMES	65	210	0	0	127	15	27	0	51	0	0	0	495
APPROACH %	24%	76%	0%	0%	89%	11%	35%	0%	65%	0%	0%	0%		
APP/DEPART	275	/	237	142	/	178	78	/	0	0	/	80	0	
BEGIN PEAK HR	4:00 PM													
VOLUMES	32	115	0	0	66	7	18	0	25	0	0	0	263	
APPROACH %	22%	78%	0%	0%	90%	10%	42%	0%	58%	0%	0%	0%		
PEAK HR FACTOR	0.896			0.760			0.896			0.000			0.939	
APP/DEPART	147	/	133	73	/	91	43	/	0	0	/	39	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>North</small>			WESTBOUND <small>North</small>			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	

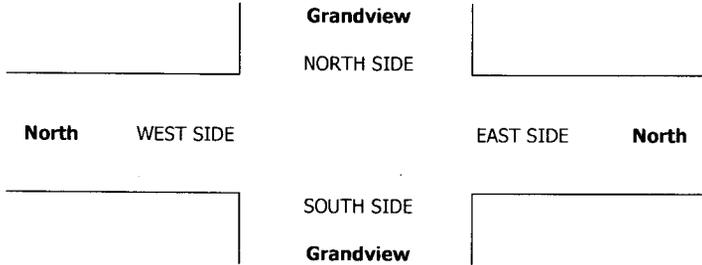
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	7:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	4:15 PM	1	1	0	0	1	0	0	0	0	0	0	0	3
	4:30 PM	0	1	0	0	1	0	0	0	2	0	0	0	4
	4:45 PM	0	3	0	0	1	0	0	0	0	0	0	0	4
	5:00 PM	1	1	0	0	1	2	0	0	1	0	0	0	6
	5:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	2
5:30 PM	2	3	0	0	2	0	0	0	1	0	0	0	8	
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	4	10	0	0	9	2	0	0	4	0	0	0	29
APPROACH %	29%	71%	0%	0%	82%	18%	0%	0%	100%	0%	0%	0%	
APP/DEPART	14	/	10	11	/	13	4	/	0	0	/	6	0
BEGIN PEAK HR	4:45 PM												
VOLUMES	3	8	0	0	5	2	0	0	2	0	0	0	20
APPROACH %	27%	73%	0%	0%	71%	29%	0%	0%	100%	0%	0%	0%	
PEAK HR FACTOR	0.550			0.583			0.500			0.000			0.625
APP/DEPART	11	/	8	7	/	7	2	/	0	0	/	5	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: SC0941 LOCATION #: 2 CONTROL: STOP E
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>North</small>			WESTBOUND <small>North</small>			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	

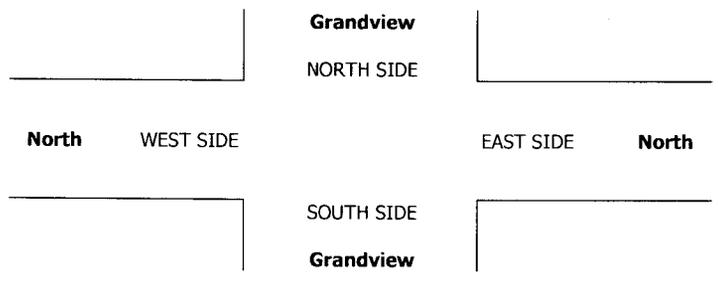
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	7:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	3:00 PM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0



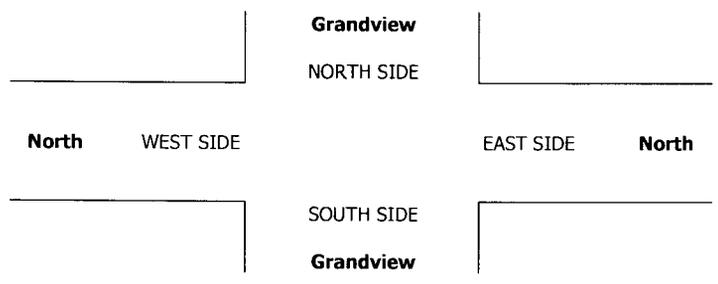
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 5: RV	NOTES:	
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Grandview			Grandview			North			North				NB	SB	EB	WB	TTL
LANES:	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X						
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	7:00 AM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	0.000				
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	3:00 PM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	0.000				
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 6: BUSES	NOTES:		▲ N ◀ W E ▶ S ▼
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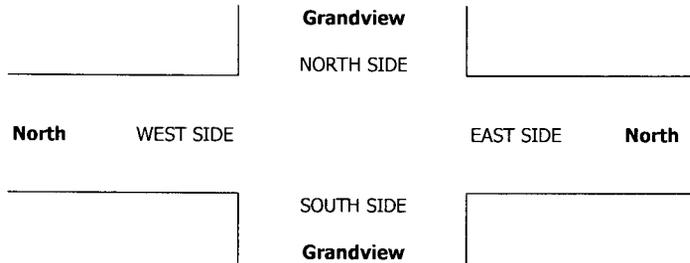
LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			North			North			
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

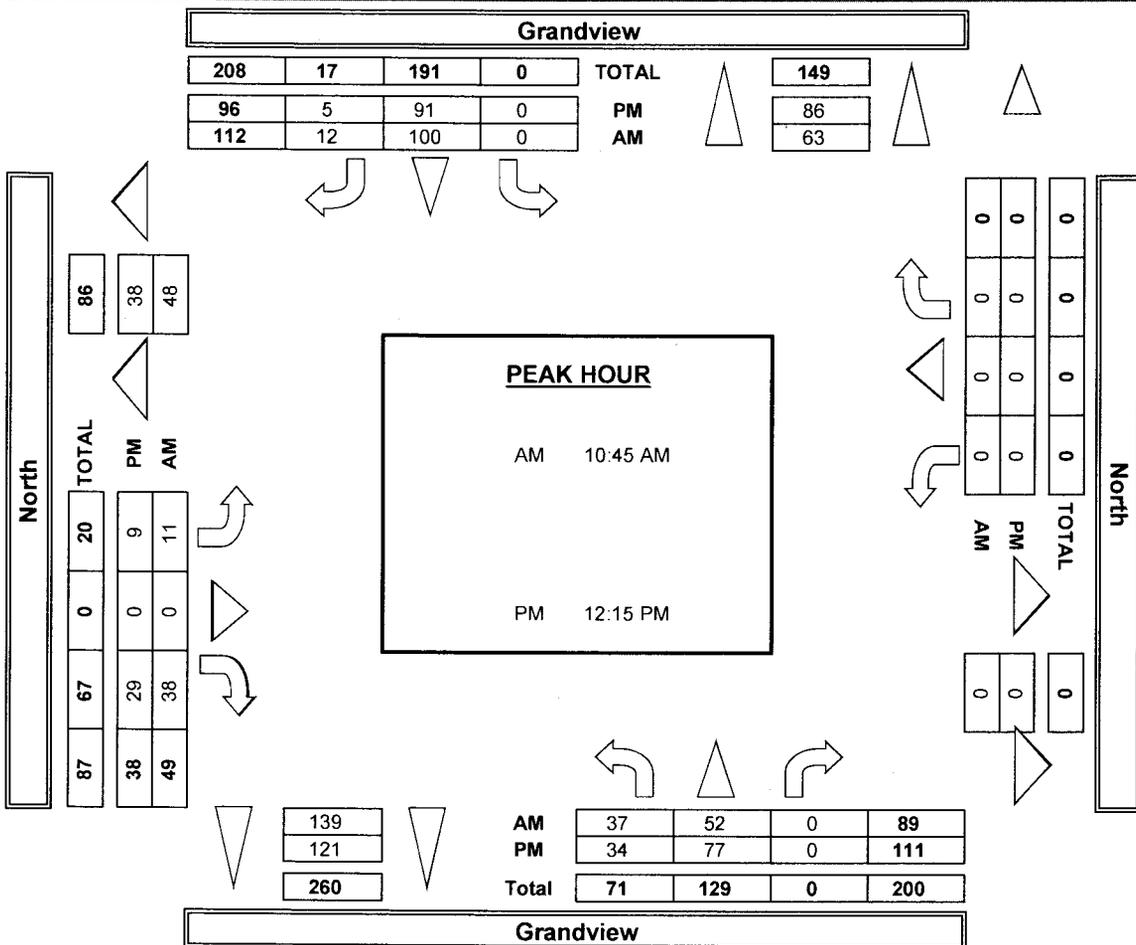
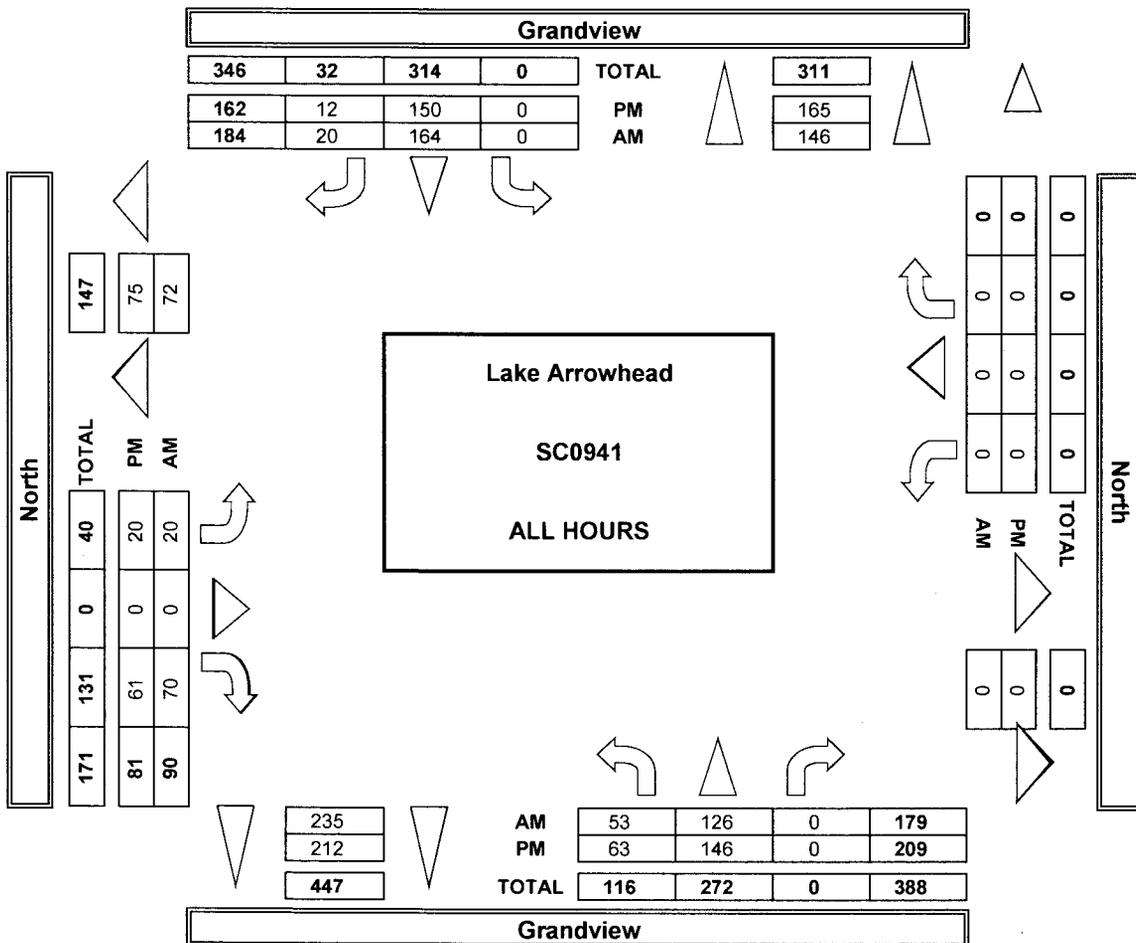
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	7:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	1	0	0	0	0	0	0	0	1	
APPROACH %	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	1	/	1	0	/	0	0	/	0	0	
BEGIN PEAK HR	3:15 PM													
VOLUMES	0	0	0	0	1	0	0	0	0	0	0	0	1	
APPROACH %	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.250			0.000			0.000			0.250	
APP/DEPART	0	/	0	1	/	1	0	/	0	0	/	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	
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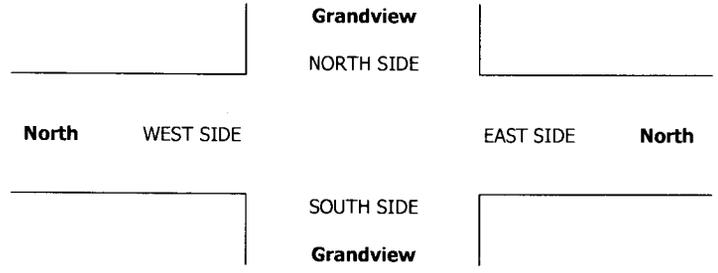
LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	
	10:15 AM	0	1	0	0	0	0	0	0	0	0	0	1	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	1	0	0	0	0	0	0	1	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	1	0	0	2	0	0	0	0	0	0	3	
	11:30 AM	1	0	0	0	2	1	1	0	1	0	0	6	
	11:45 AM	0	0	0	0	3	1	1	0	1	0	0	6	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	1	3	0	0	9	2	2	0	2	0	0	19	
	APPROACH %	25%	75%	0%	0%	82%	18%	50%	0%	50%	0%	0%	0%	
APP/DEPART	4	/	5	11	/	11	4	/	0	0	/	3	0	
BEGIN PEAK HR	11:00 AM													
VOLUMES	1	1	0	0	7	2	2	0	2	0	0	0	15	
APPROACH %	50%	50%	0%	0%	78%	22%	50%	0%	50%	0%	0%	0%	0%	
PEAK HR FACTOR	0.500				0.563				0.500				0.625	
APP/DEPART	2	/	3	9	/	9	4	/	0	0	/	3	0	
PM	12:00 PM	0	1	0	0	1	0	2	0	0	0	0	5	
	12:15 PM	0	1	0	0	1	0	1	0	0	0	0	3	
	12:30 PM	2	3	0	0	1	0	0	0	0	0	0	6	
	12:45 PM	1	1	0	0	1	0	0	0	0	0	0	3	
	1:00 PM	0	1	0	0	1	0	0	0	1	0	0	3	
	1:15 PM	2	0	0	0	1	0	0	0	0	0	0	3	
	1:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	
	1:45 PM	0	1	0	0	0	0	0	0	0	0	0	1	
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	5	9	0	0	7	0	1	0	4	0	0	0	26
	APPROACH %	36%	64%	0%	0%	100%	0%	20%	0%	80%	0%	0%	0%	0%
APP/DEPART	14	/	10	7	/	11	5	/	0	0	/	5	0	
BEGIN PEAK HR	12:00 PM													
VOLUMES	3	6	0	0	4	0	1	0	3	0	0	0	17	
APPROACH %	33%	67%	0%	0%	100%	0%	25%	0%	75%	0%	0%	0%	0%	
PEAK HR FACTOR	0.450				1.000				0.333				0.708	
APP/DEPART	9	/	7	4	/	7	4	/	0	0	/	3	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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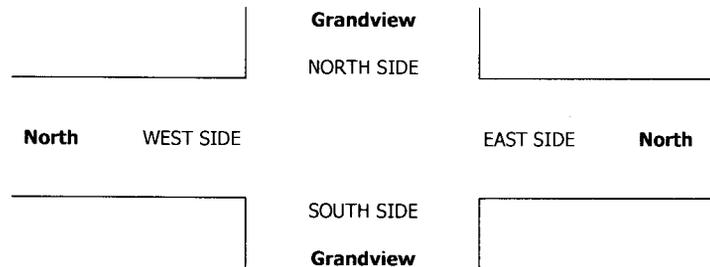
CLASS 3: 3-AXLE TRUCKS	NOTES:	
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X		NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	10:00 AM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	12:00 PM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	
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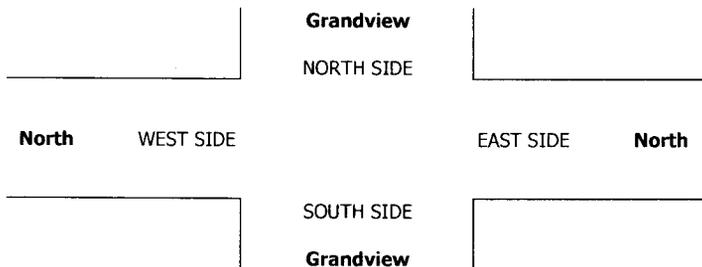
LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>North</small>			WESTBOUND <small>North</small>			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	10:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	12:00 PM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: Lake Arrowhead EAST & WEST: Grandview North	PROJECT #: SC0941 LOCATION #: 2 CONTROL: STOP E
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CLASS 5: RV	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>North</small>			WESTBOUND <small>North</small>			TOTAL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	

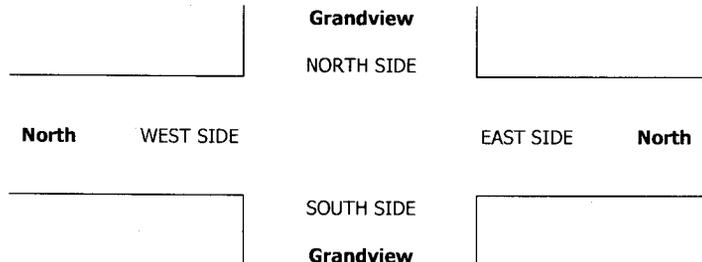
U-TURNS

NB	SB	EB	WB	TTL
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AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	10:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	12:00 PM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview North	PROJECT #: LOCATION #: CONTROL:	SC0941 2 STOP E
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CLASS 6: BUSES	NOTES:			▲ N ◀ W E ▶ S ▼
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Grandview			Grandview			North			North				NB	SB	EB	WB	TTL
	NL 0	NT 1	NR X	SL X	ST 1	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X						

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

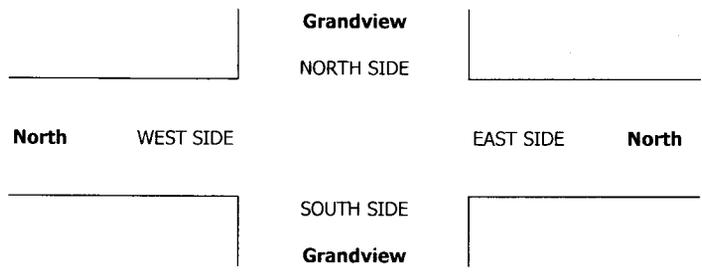
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	10:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

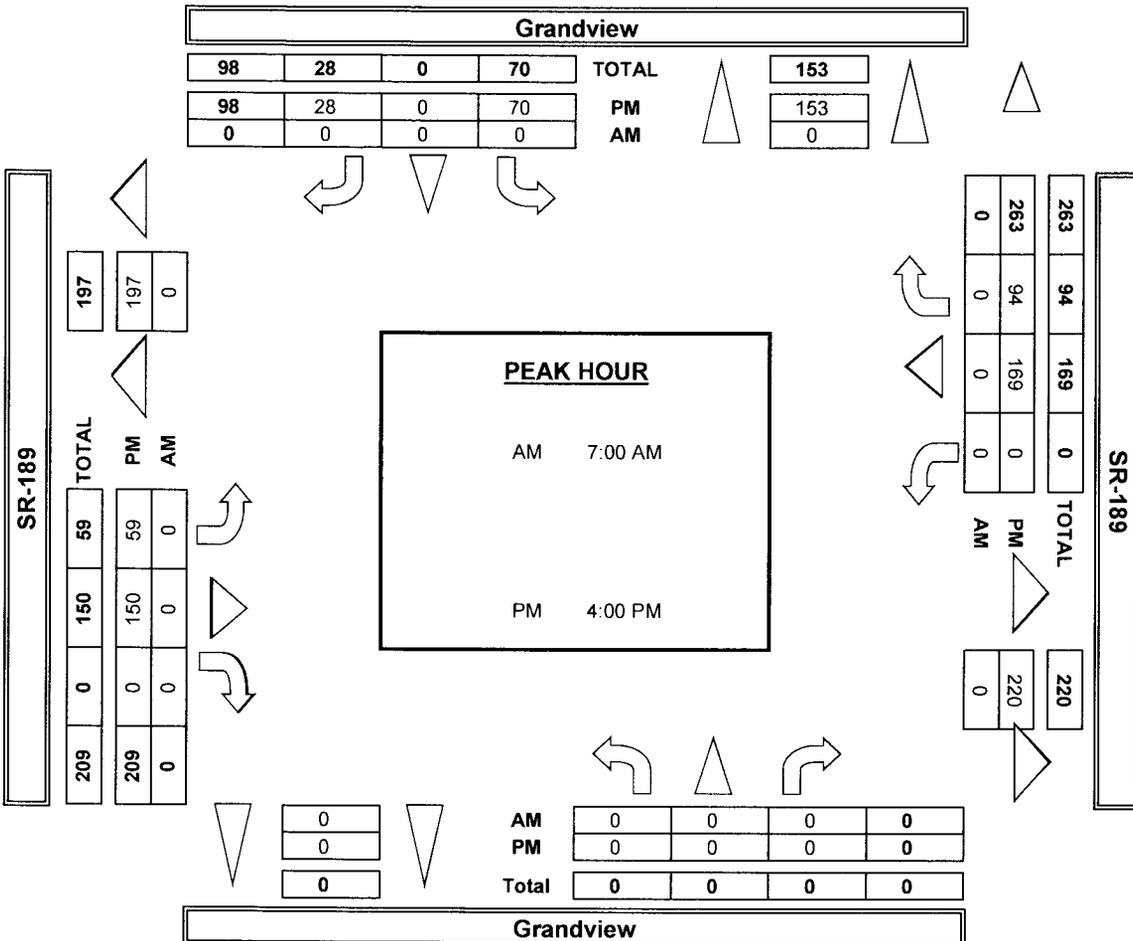
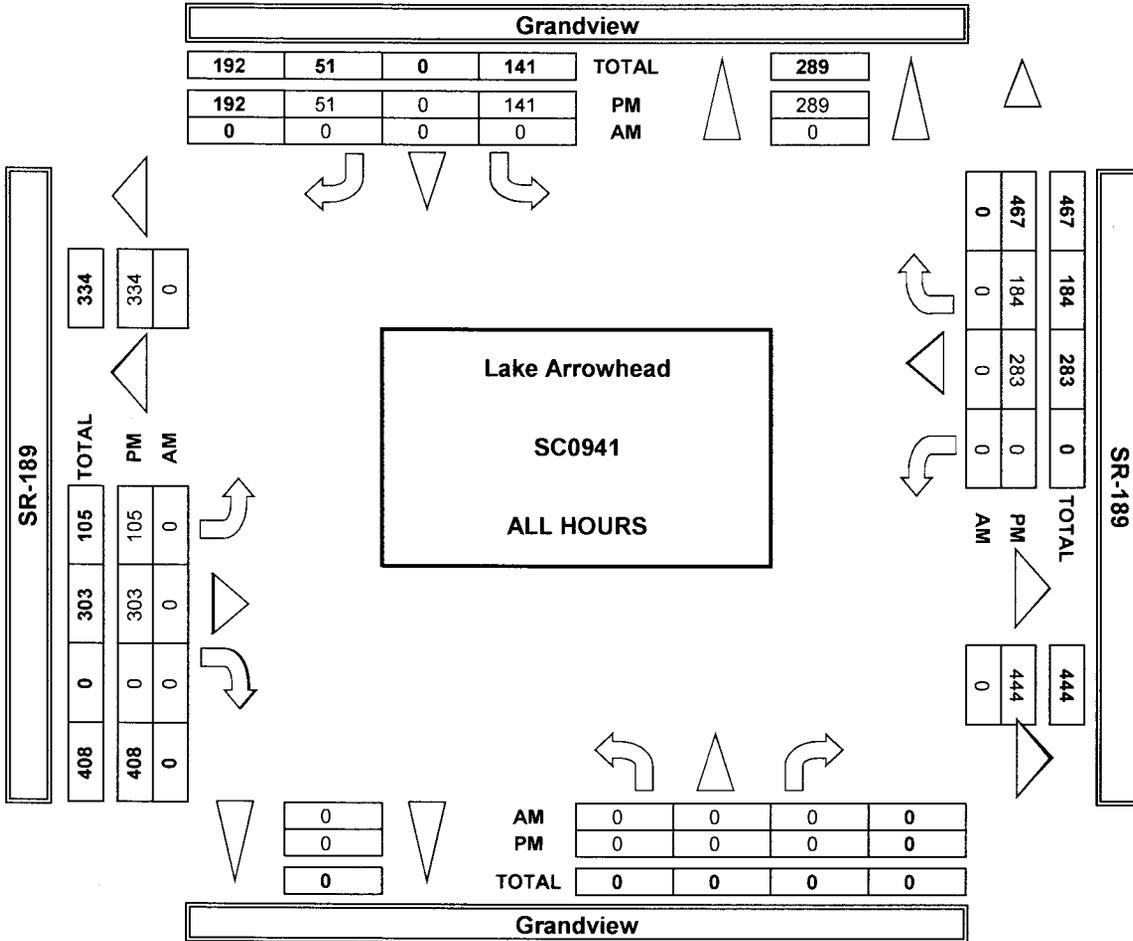
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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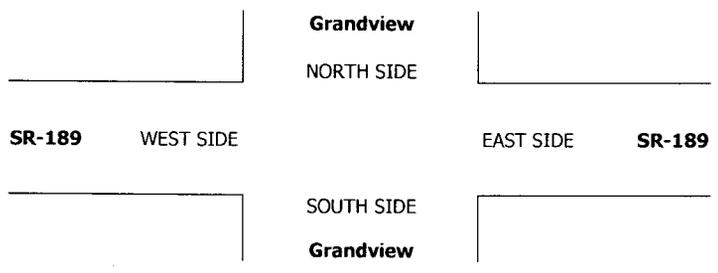
CLASS 1: PASSENGER VEHICLES	NOTES:		▲ N ◀ W E ▶ S ▼
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Grandview			Grandview			SR-189			SR-189				NB	SB	EB	WB	TTL
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0						

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	7:00 AM														
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000		
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	20	0	11	16	40	0	0	62	18	167	0
	4:15 PM	0	0	0	16	0	7	15	36	0	0	41	25	140	0
	4:30 PM	0	0	0	13	0	1	10	34	0	0	19	26	103	0
	4:45 PM	0	0	0	16	0	7	15	38	0	0	37	23	136	0
	5:00 PM	0	0	0	16	0	6	14	44	0	0	27	21	128	0
	5:15 PM	0	0	0	14	0	5	8	37	0	0	31	25	120	0
	5:30 PM	0	0	0	19	0	7	10	33	0	0	26	25	120	0
	5:45 PM	0	0	0	17	0	3	10	34	0	0	19	14	97	0
VOLUMES	0	0	0	131	0	47	98	296	0	0	262	177	1,011	0	
APPROACH %	0%	0%	0%	74%	0%	26%	25%	75%	0%	0%	60%	40%			
APP/DEPART	0	/	275	178	/	0	394	/	427	439	/	309	0	0	
BEGIN PEAK HR	4:00 PM														
VOLUMES	0	0	0	65	0	26	56	148	0	0	159	92	546	0	
APPROACH %	0%	0%	0%	71%	0%	29%	27%	73%	0%	0%	63%	37%			
PEAK HR FACTOR	0.000			0.734			0.911			0.784			0.817		
APP/DEPART	0	/	148	91	/	0	204	/	213	251	/	185	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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INTERSECTION TURNING MOVEMENT COUNTS

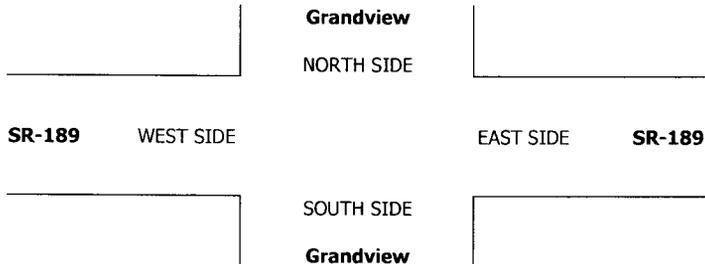
PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 3: 3-AXLE TRUCKS	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>SR-189</small>			WESTBOUND <small>SR-189</small>			TOTAL	U-TURNS				
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0		NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
BEGIN PEAK HR	7:00 AM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	/	0	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	
	4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	2	/	2	0	0	0	0	0	
BEGIN PEAK HR	3:30 PM																	
VOLUMES	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.500			0.500					
APP/DEPART	0	/	0	0	/	0	0	/	0	2	/	2	0	0	0	0	0	



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	
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LANES:	NORTHBOUND <small>Grandview</small>			SOUTHBOUND <small>Grandview</small>			EASTBOUND <small>SR-189</small>			WESTBOUND <small>SR-189</small>			TOTAL
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	

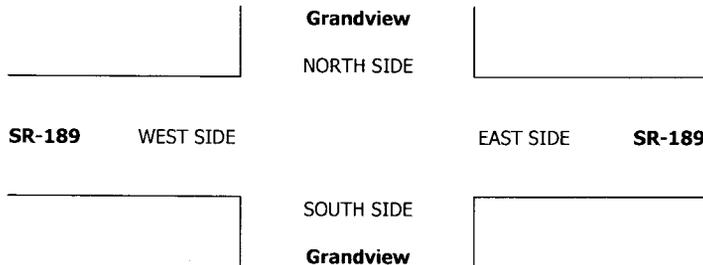
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	7:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	3:00 PM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/13/16 FRIDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 6: BUSES	NOTES:			▲ N ◀ W E ▶ S ▼
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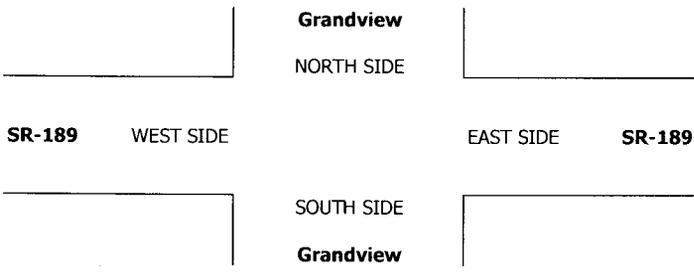
LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			SR-189			SR-189			
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0	

U-TURNS				
NB	SB	EB	WB	TTL

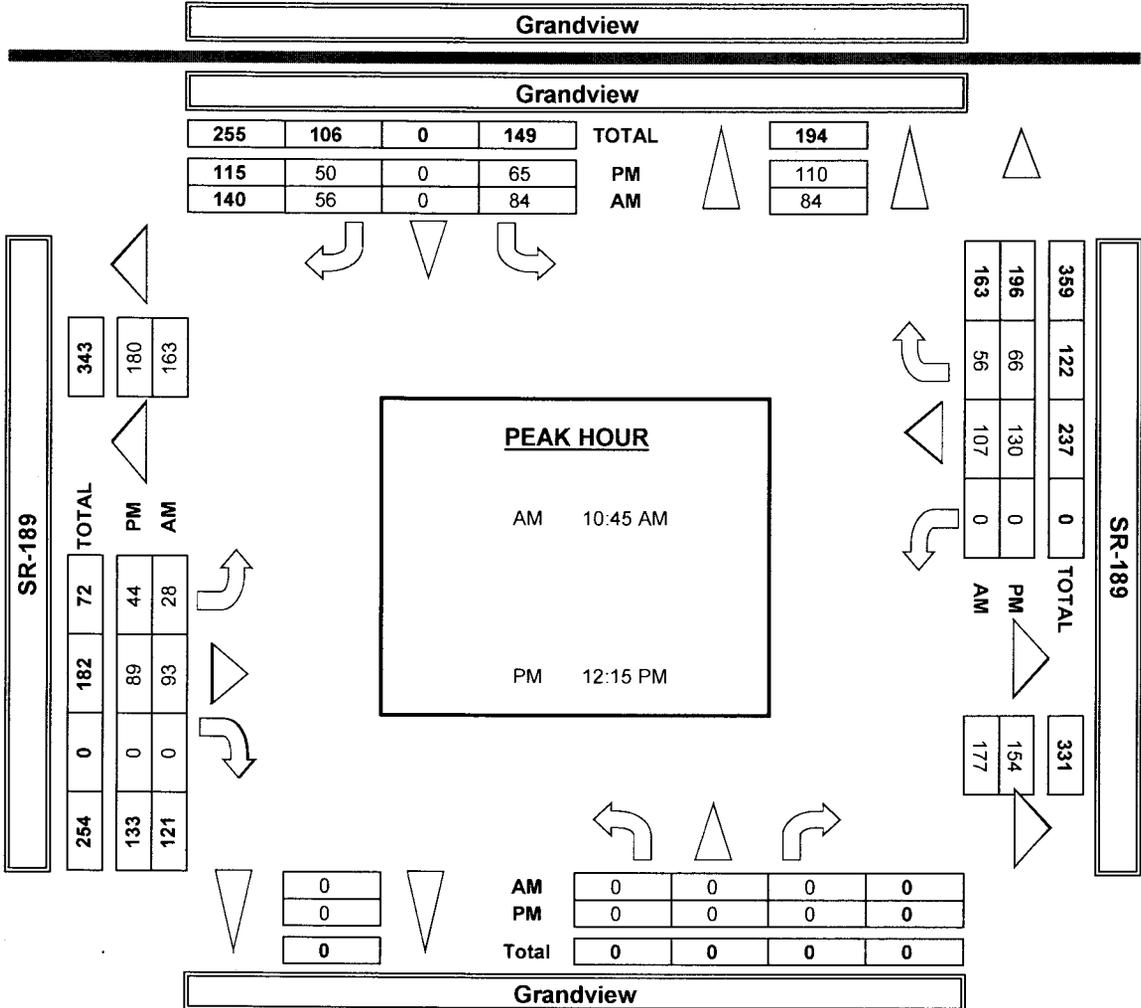
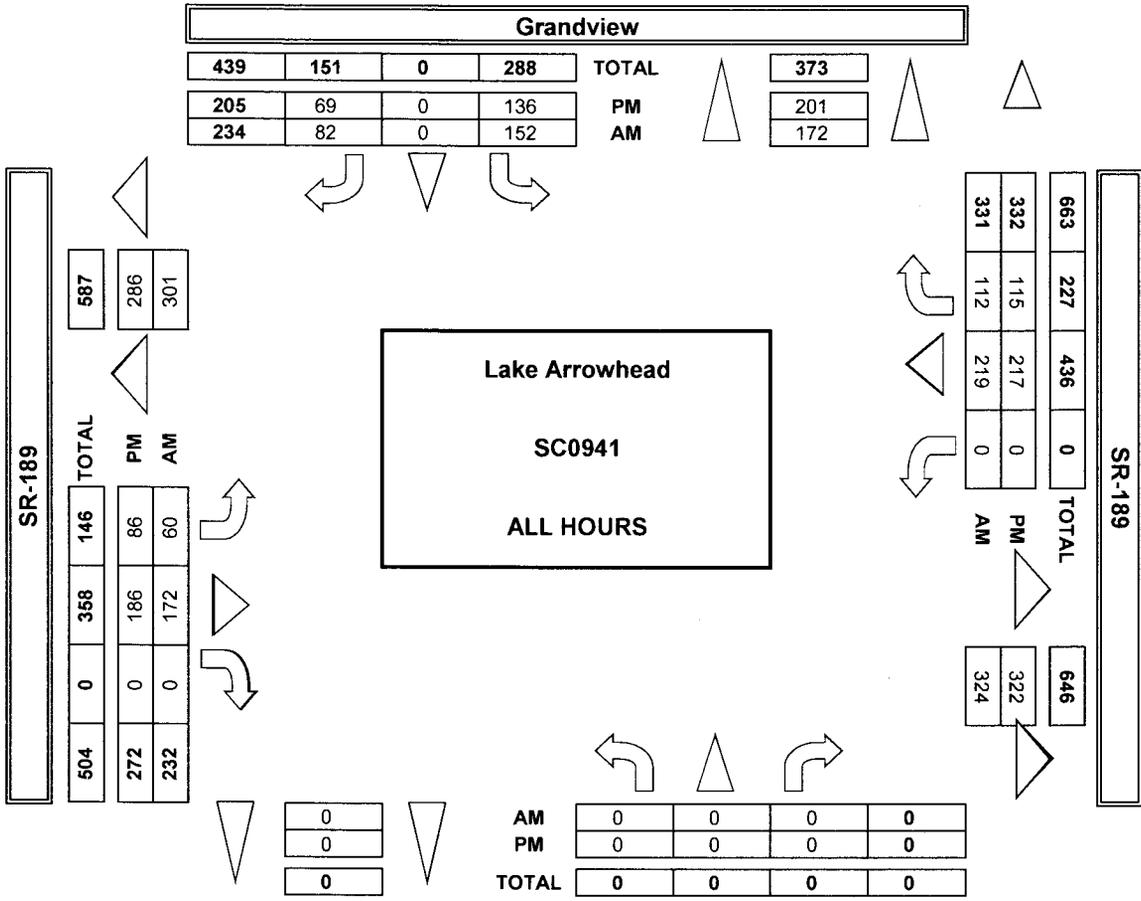
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	7:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	1	0	0	0	0	0	0	0	0	1
APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	1	/	0	0	/	1	0	/	0	0	
BEGIN PEAK HR	3:15 PM													
VOLUMES	0	0	0	1	0	0	0	0	0	0	0	0	1	
APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.250			0.000			0.000			0.250	
APP/DEPART	0	/	0	1	/	0	0	/	1	0	/	0	0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0



AimTD LLC
TURNING MOVEMENT COUNTS



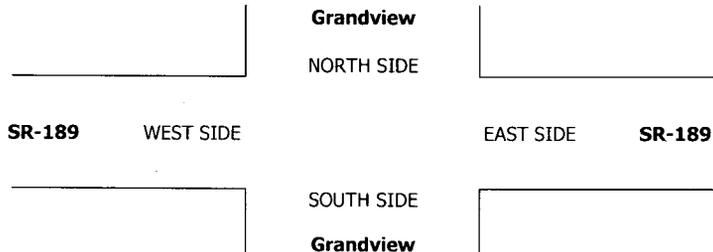
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 1: PASSENGER VEHICLES	NOTES:	
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LANES:	NORTHBOUND Grandview			SOUTHBOUND Grandview			EASTBOUND SR-189			WESTBOUND SR-189			TOTAL	U-TURNS						
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0		NB	SB	EB	WB	TTL		
	AM	10:00 AM	0	0	0	20	0	3	3	18	0	0		30	14	88	0	0	0	0
	10:15 AM	0	0	0	12	0	9	8	19	0	0	28	16	92	0	0	0	0	0	
	10:30 AM	0	0	0	19	0	4	4	15	0	0	22	13	77	0	0	0	0	0	
	10:45 AM	0	0	0	22	0	19	8	21	0	0	28	14	112	0	0	0	0	0	
	11:00 AM	0	0	0	22	0	12	4	24	0	0	26	14	102	0	0	0	0	0	
	11:15 AM	0	0	0	15	0	10	3	21	0	0	27	10	86	0	0	0	0	0	
	11:30 AM	0	0	0	17	0	15	12	22	0	0	21	15	102	0	0	0	0	0	
	11:45 AM	0	0	0	14	0	9	15	17	0	0	26	12	93	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	0	0	0	141	0	81	57	157	0	0	208	108	752	0	0	0	0	0	
	APPROACH %	0%	0%	0%	64%	0%	36%	27%	73%	0%	0%	66%	34%							
	APP/DEPART	0	/	165	222	/	0	214	/	298	316	/	289	0						
	BEGIN PEAK HR	10:45 AM																		
	VOLUMES	0	0	0	76	0	56	27	88	0	0	102	53	402						
	APPROACH %	0%	0%	0%	58%	0%	42%	23%	77%	0%	0%	66%	34%							
	PEAK HR FACTOR	0.000			0.805			0.846			0.923			0.897						
	APP/DEPART	0	/	80	132	/	0	115	/	164	155	/	158	0						
	12:00 PM	0	0	0	19	0	4	10	24	0	0	14	12	83	0	0	0	0	0	
	12:15 PM	0	0	0	14	0	13	12	16	0	0	31	13	99	0	0	0	0	0	
	12:30 PM	0	0	0	13	0	15	11	27	0	0	30	13	109	0	0	0	0	0	
	12:45 PM	0	0	0	16	0	13	10	20	0	0	32	14	105	0	0	0	0	0	
	1:00 PM	0	0	0	15	0	8	10	21	0	0	30	22	106	0	0	0	0	0	
	1:15 PM	0	0	0	22	0	4	10	27	0	0	20	12	95	0	0	0	0	0	
	1:30 PM	0	0	0	11	0	9	6	22	0	0	21	7	76	0	0	0	0	0	
	1:45 PM	0	0	0	14	0	2	16	18	0	0	26	11	87	0	0	0	0	0	
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	VOLUMES	0	0	0	124	0	68	85	175	0	0	204	104	760						
	APPROACH %	0%	0%	0%	65%	0%	35%	33%	67%	0%	0%	66%	34%							
	APP/DEPART	0	/	189	192	/	0	260	/	299	308	/	272	0						
	BEGIN PEAK HR	12:15 PM																		
	VOLUMES	0	0	0	58	0	49	43	84	0	0	123	62	419						
	APPROACH %	0%	0%	0%	54%	0%	46%	34%	66%	0%	0%	66%	34%							
	PEAK HR FACTOR	0.000			0.922			0.836			0.889			0.961						
	APP/DEPART	0	/	105	107	/	0	127	/	142	185	/	172	0						



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 2: 2-AXLE WORK VEHICLES/ TRUCKS	NOTES:	
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			SR-189			SR-189			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	X	X	X	0	X	0	0	1	X	X	1	0	

U-TURNS				
NB	SB	EB	WB	TTL
0	0	0	0	0

AM	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
10:00 AM	0	0	0	1	0	0	1	4	0	0	0	0	6
10:15 AM	0	0	0	0	0	0	0	3	0	0	3	0	6
10:30 AM	0	0	0	0	0	0	1	1	0	0	1	1	4
10:45 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
11:00 AM	0	0	0	2	0	0	1	2	0	0	1	0	6
11:15 AM	0	0	0	3	0	0	0	0	0	0	1	1	5
11:30 AM	0	0	0	3	0	0	0	1	0	0	2	2	8
11:45 AM	0	0	0	2	0	1	0	1	0	0	1	0	5
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

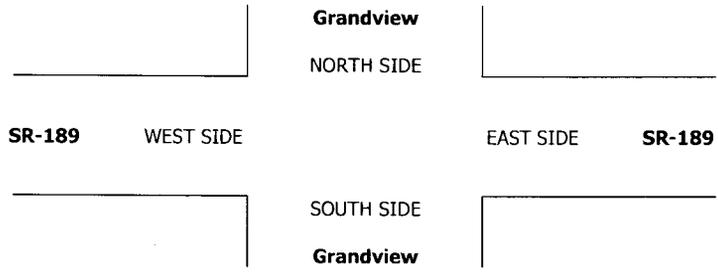
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	11	0	1	3	14	0	0	10	4	43
APPROACH %	0%	0%	0%	92%	0%	8%	18%	82%	0%	0%	71%	29%	
APP/DEPART	0	/	7	12	/	0	17	/	25	14	/	11	0
BEGIN PEAK HR	11:00 AM												
VOLUMES	0	0	0	10	0	1	1	4	0	0	5	3	24
APPROACH %	0%	0%	0%	91%	0%	9%	20%	80%	0%	0%	63%	38%	
PEAK HR FACTOR	0.000			0.917			0.417			0.500			0.750
APP/DEPART	0	/	4	11	/	0	5	/	14	8	/	6	0

PM	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
12:00 PM	0	0	0	3	0	0	0	1	0	0	3	1	8
12:15 PM	0	0	0	2	0	1	0	0	0	0	4	0	7
12:30 PM	0	0	0	1	0	0	1	1	0	0	1	3	7
12:45 PM	0	0	0	2	0	0	0	2	0	0	1	1	6
1:00 PM	0	0	0	2	0	0	0	2	0	0	1	0	5
1:15 PM	0	0	0	1	0	0	0	2	0	0	0	2	5
1:30 PM	0	0	0	0	0	0	0	2	0	0	1	1	4
1:45 PM	0	0	0	0	0	0	0	1	0	0	1	2	4
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	11	0	1	1	11	0	0	12	10	46
APPROACH %	0%	0%	0%	92%	0%	8%	8%	92%	0%	0%	55%	45%	
APP/DEPART	0	/	11	12	/	0	12	/	22	22	/	13	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	0	0	0	8	0	1	1	4	0	0	9	5	28
APPROACH %	0%	0%	0%	89%	0%	11%	20%	80%	0%	0%	64%	36%	
PEAK HR FACTOR	0.000			0.750			0.625			0.875			0.875
APP/DEPART	0	/	6	9	/	0	5	/	12	14	/	10	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: SC0941 LOCATION #: 3 CONTROL: SIGNAL
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CLASS 4: 4 OR MORE AXLE TRUCKS	NOTES:	
--	---------------	--

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			SR-189			SR-189			
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0	

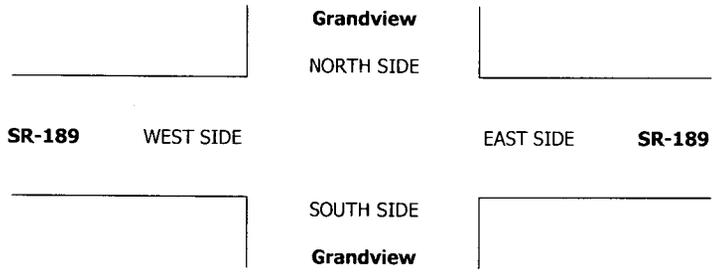
U-TURNS

NB	SB	EB	WB	TTL
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AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	
BEGIN PEAK HR	10:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	
BEGIN PEAK HR	12:00 PM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

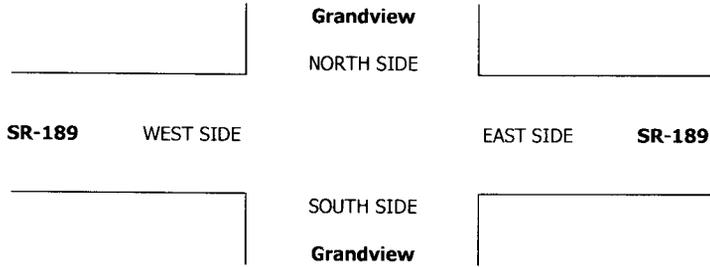
DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
CLASS 5: RV	NOTES:			

LANES:	NORTHBOUND Grandview			SOUTHBOUND Grandview			EASTBOUND SR-189			WESTBOUND SR-189			TOTAL
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	10:00 AM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	
BEGIN PEAK HR	12:00 PM													
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0	

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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: 5/14/16 SATURDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Lake Arrowhead Grandview SR-189	PROJECT #: LOCATION #: CONTROL:	SC0941 3 SIGNAL
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CLASS 6:	NOTES:				
BUSES			▲ N		E ►
			◄ W		
			S ▼		

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Grandview			Grandview			SR-189			SR-189			
	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 0	ET 1	ER X	WL X	WT 1	WR 0	

U-TURNS				
NB	SB	EB	WB	TTL

AM	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

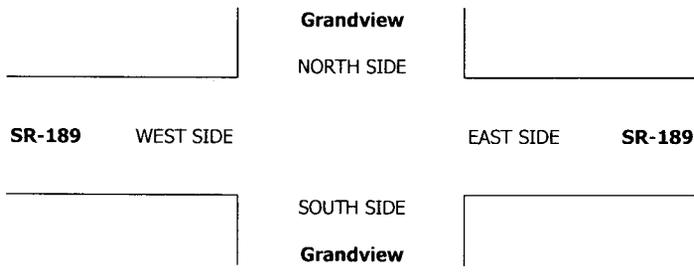
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0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0
BEGIN PEAK HR	10:00 AM												
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.000			0.000			0.000
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0

PM	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:30 PM	0	0	0	1	0	0	0	0	0	0	0	1	2
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
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0	0	0	0	0
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0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	1	0	0	0	0	0	0	0	1	2
APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%	
APP/DEPART	0	/	1	1	/	0	0	/	1	1	/	0	0
BEGIN PEAK HR	12:45 PM												
VOLUMES	0	0	0	1	0	0	0	0	0	0	0	1	2
APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%	
PEAK HR FACTOR	0.000			0.250			0.000			0.250			0.250
APP/DEPART	0	/	1	1	/	0	0	/	1	1	/	0	0



APPENDIX C

Future Growth Increment Calculation Worksheets

Grandview (NS) / Sunset Loop (EW) - #1

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL
NORTH BOUND	LEFT	8	SOUTH LEG		NORTH BOUND	LEFT	8	SOUTH LEG	
	THRU	134	IN ...	140		THRU	94	IN ...	100
	RIGHT	0	OUT ...	80		RIGHT	0	OUT ...	100
SOUTH BOUND	LEFT	0	NORTH LEG		SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	74	IN ...	80		THRU	87	IN ...	90
	RIGHT	1	OUT ...	140		RIGHT	1	OUT ...	90
EAST BOUND	LEFT	1	WEST LEG		EAST BOUND	LEFT	0	WEST LEG	
	THRU	0	IN ...	10		THRU	0	IN ...	10
	RIGHT	6	OUT ...	10		RIGHT	8	OUT ...	10
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0

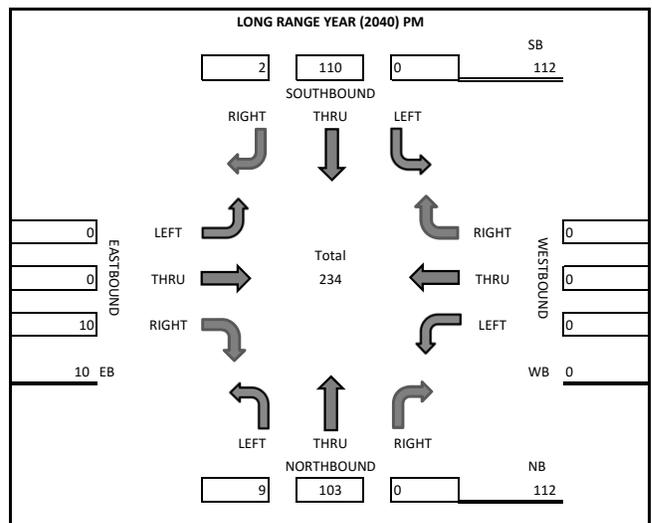
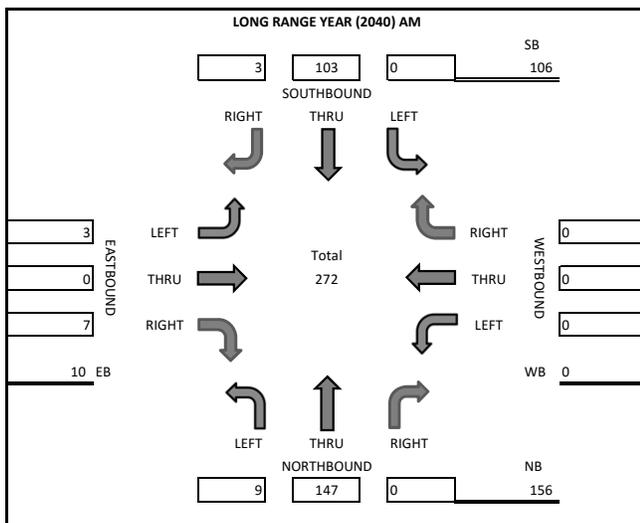
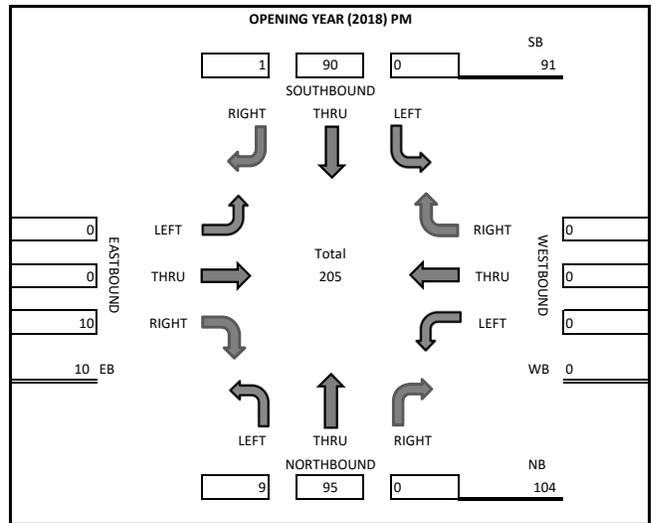
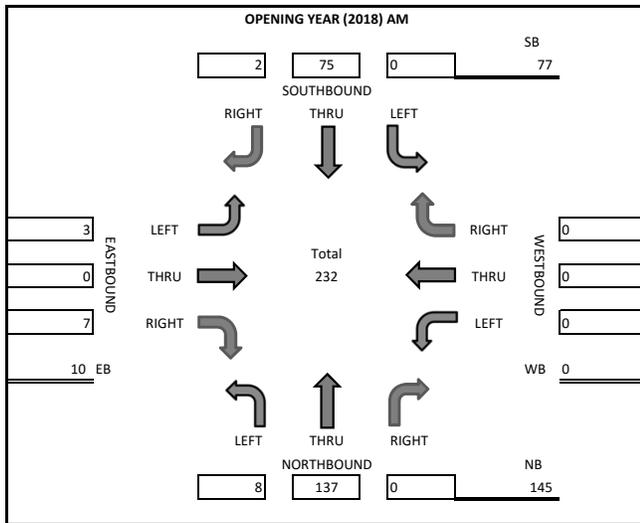
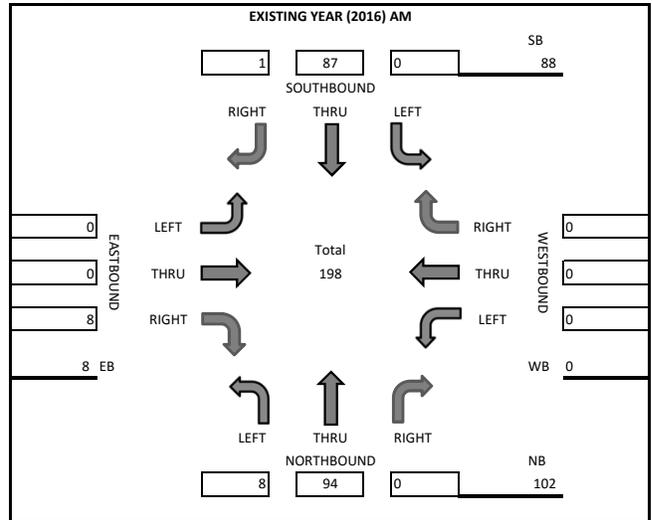
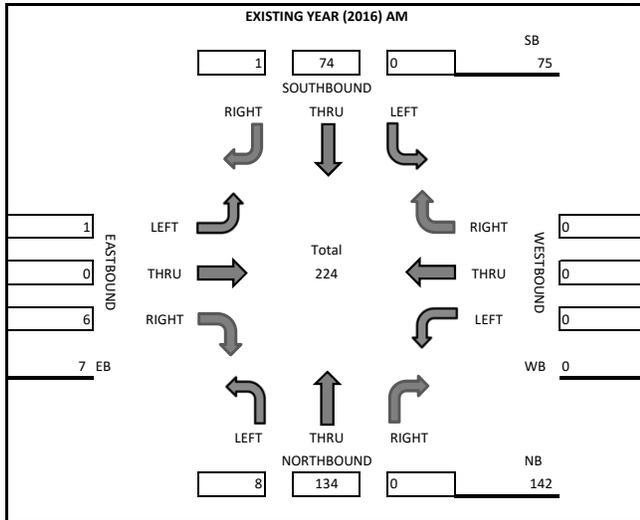
YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	8	8	NORTH LEG	NORTH BOUND	LEFT	8	9	NORTH LEG
	THRU	134	137	RATIO -		THRU	94	95	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH BOUND	LEFT	0	0	SOUTH LEG	SOUTH BOUND	LEFT	0	0	SOUTH LEG
	THRU	74	75	RATIO -		THRU	87	90	RATIO -
	RIGHT	1	2	ADT 0		RIGHT	1	1	ADT 0
EAST BOUND	LEFT	1	3	EAST LEG	EAST BOUND	LEFT	0	0	EAST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	6	7	ADT 0		RIGHT	8	10	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0

Grandview (NS) / Sunset Loop (EW) - #1
FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH BOUND	LEFT THRU RIGHT	8 134 0	SOUTH LEG IN ... OUT ...	 140 110	NORTH BOUND	LEFT THRU RIGHT	8 94 0	SOUTH LEG IN ... OUT ...	 100 120
SOUTH BOUND	LEFT THRU RIGHT	0 74 1	NORTH LEG IN ... OUT ...	 110 150	SOUTH BOUND	LEFT THRU RIGHT	0 87 1	NORTH LEG IN ... OUT ...	 110 100
EAST BOUND	LEFT THRU RIGHT	1 0 6	WEST LEG IN ... OUT ...	 10 10	EAST BOUND	LEFT THRU RIGHT	0 0 8	WEST LEG IN ... OUT ...	 10 10
WEST BOUND	LEFT THRU RIGHT	0 0 0	EAST LEG IN ... OUT ...	 0 0	WEST BOUND	LEFT THRU RIGHT	0 0 0	EAST LEG IN ... OUT ...	 0 0

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT THRU RIGHT	8 134 0	9 147 0	NORTH LEG RATIO - ADT 0	NORTH BOUND	LEFT THRU RIGHT	8 94 0	9 103 0	NORTH LEG RATIO - ADT 0
SOUTH BOUND	LEFT THRU RIGHT	0 74 1	0 103 3	SOUTH LEG RATIO - ADT 0	SOUTH BOUND	LEFT THRU RIGHT	0 87 1	0 110 2	SOUTH LEG RATIO - ADT 0
EAST BOUND	LEFT THRU RIGHT	1 0 6	3 0 7	EAST LEG RATIO - ADT 0	EAST BOUND	LEFT THRU RIGHT	0 0 8	0 0 10	EAST LEG RATIO - ADT 0
WEST BOUND	LEFT THRU RIGHT	0 0 0	0 0 0	WEST LEG RATIO - ADT 0	WEST BOUND	LEFT THRU RIGHT	0 0 0	0 0 0	WEST LEG RATIO - ADT 0

Grandview (NS) / Sunset Loop (EW) - #1



Grandview (NS) / N Road (EW) - #2											
MORNING PEAK HOUR						EVENING PEAK HOUR					
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS): 2016						EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS): 2016					
EXISTING PEAK HOUR COUNT YEAR (AUTOS): 2016						EXISTING PEAK HOUR COUNT YEAR (AUTOS): 2016					
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCES): 2016						EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCES): 2016					
PCE FACTORS BY AXLE: 2: 1.5 3: 2.0 4+: 3.0						PCE FACTORS BY AXLE: 2: 1.5 3: 2.0 4+: 3.0					
TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES): 2016						TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES): 2016					
EXISTING PEAK PERIOD MODEL YEAR (AUTO): 2012						EXISTING PEAK PERIOD MODEL YEAR (AUTO): 2012					
EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCES): 2012						EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCES): 2012					
EXISTING PEAK HOUR MODEL YEAR (PCES): PHF FOR CARS: 0.38 PHF FOR TRUCKS: 0.333						EXISTING PEAK HOUR MODEL YEAR (PCES): PHF FOR CARS: 0.28 PHF FOR TRUCKS: 0.25					
FUTURE PEAK PERIOD MODEL YEAR (AUTO): 2040						FUTURE PEAK PERIOD MODEL YEAR (AUTO): 2040					
FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCES): 2040						FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCES): 2040					
FUTURE PEAK HOUR MODEL YEAR (PCES): PHF FOR CARS: 0.38 PHF FOR TRUCKS: 0.333						FUTURE PEAK HOUR MODEL YEAR (PCES): PHF FOR CARS: 0.28 PHF FOR TRUCKS: 0.25					
RAW GROWTH (PCES): 2012 TO 2040 CONVERSION OF TRUCKS TO: 2040 FACTOR = 1.00						RAW GROWTH (PCES): 2012 TO 2040 CONVERSION OF TRUCKS TO: 2040 FACTOR = 1.00					
ADJUSTED GROWTH (PCES): 2012 TO 2040 10 MINIMUM GROWTH %						ADJUSTED GROWTH (PCES): 2012 TO 2040 10 MINIMUM GROWTH %					
PRORATED GROWTH (PCES): 2016 TO 2040 24 YEARS						PRORATED GROWTH (PCES): 2016 TO 2040 24 YEARS					
NEW PROJECTED VOLUMES (PCES): 2040						NEW PROJECTED VOLUMES (PCES): 2040					
YEAR 2018 GROWTH: 2016 TO 2018 2 YEARS						YEAR 2018 GROWTH: 2016 TO 2018 2 YEARS					
INITIAL YEAR 2018 VOLUMES: 2018						INITIAL YEAR 2018 VOLUMES: 2018					
BALANCED YEAR 2018 VOLUMES: 2018						BALANCED YEAR 2018 VOLUMES: 2018					

Grandview (NS) / N Road (EW) - #2

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL
NORTH BOUND	LEFT	34	SOUTH LEG		NORTH BOUND	LEFT	38	SOUTH LEG	
	THRU	123	IN ...	160		THRU	53	IN ...	90
	RIGHT	0	OUT ...	100		RIGHT	0	OUT ...	140
SOUTH BOUND	LEFT	0	NORTH LEG		SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	74	IN ...	80		THRU	103	IN ...	120
	RIGHT	7	OUT ...	150		RIGHT	13	OUT ...	70
EAST BOUND	LEFT	18	WEST LEG		EAST BOUND	LEFT	12	WEST LEG	
	THRU	0	IN ...	50		THRU	0	IN ...	50
	RIGHT	28	OUT ...	40		RIGHT	39	OUT ...	50
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0

YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	34	34	NORTH LEG	NORTH BOUND	LEFT	38	38	NORTH LEG
	THRU	123	128	RATIO -		THRU	53	56	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH BOUND	LEFT	0	0	SOUTH LEG	SOUTH BOUND	LEFT	0	0	SOUTH LEG
	THRU	74	75	RATIO -		THRU	103	104	RATIO -
	RIGHT	7	8	ADT 0		RIGHT	13	15	ADT 0
EAST BOUND	LEFT	18	18	EAST LEG	EAST BOUND	LEFT	12	14	EAST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	28	28	ADT 0		RIGHT	39	39	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0

Grandview (NS) / N Road (EW) - #2

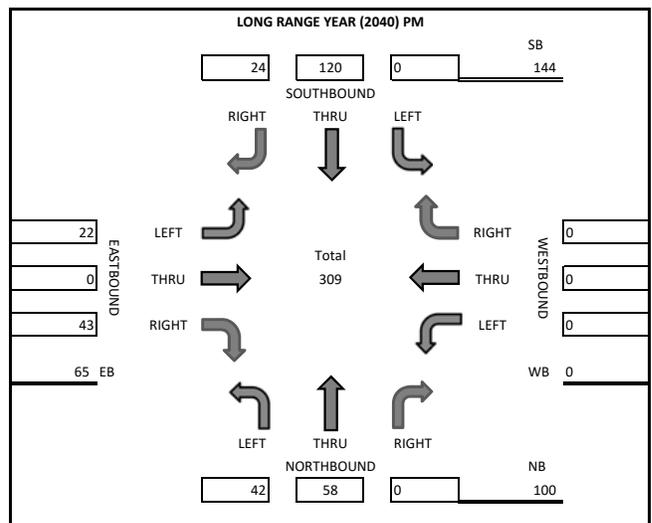
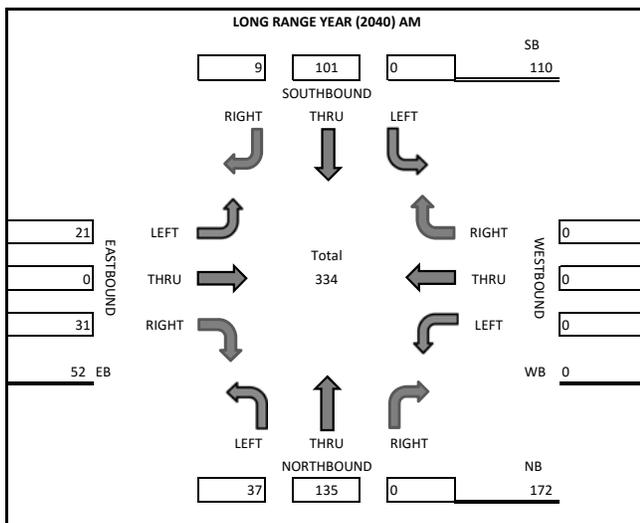
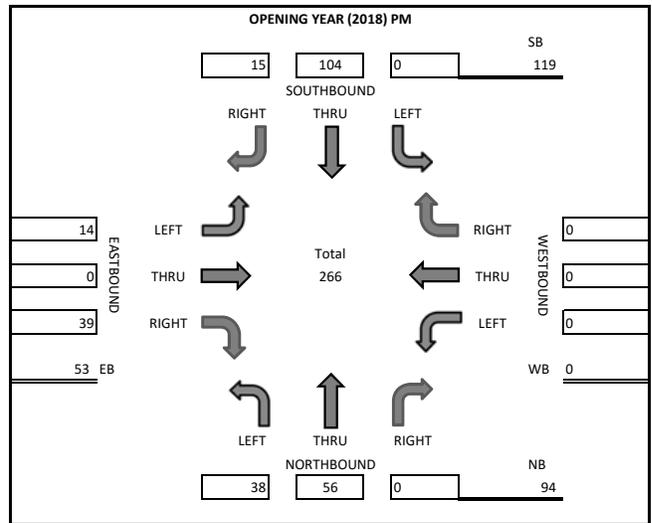
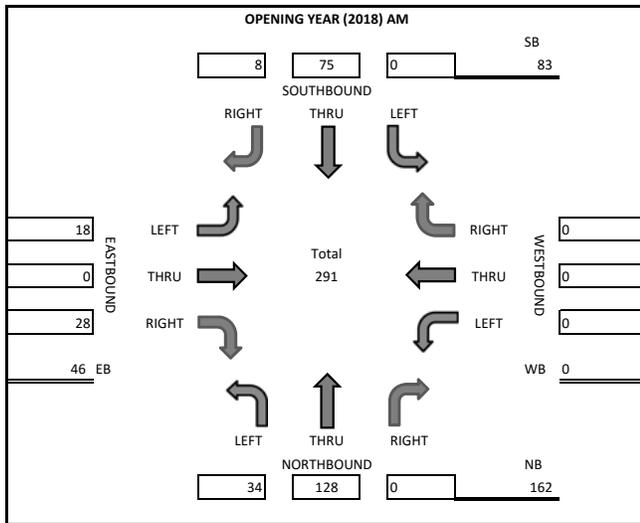
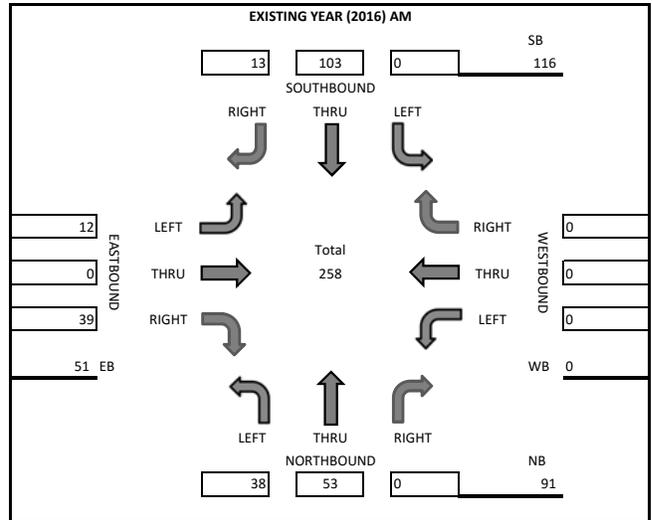
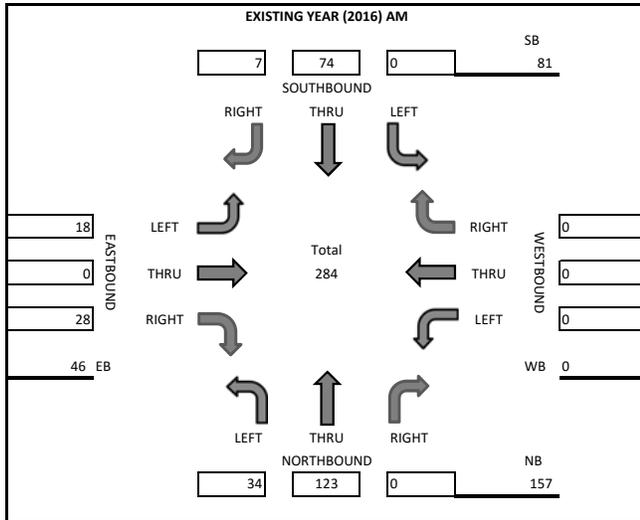
FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH BOUND	LEFT	34	SOUTH LEG		NORTH BOUND	LEFT	38	SOUTH LEG	
	THRU	123	IN ...	160		THRU	53	IN ...	90
	RIGHT	0	OUT ...	130		RIGHT	0	OUT ...	160
SOUTH BOUND	LEFT	0	NORTH LEG		SOUTH BOUND	LEFT	0	NORTH LEG	
	THRU	74	IN ...	110		THRU	103	IN ...	140
	RIGHT	7	OUT ...	150		RIGHT	13	OUT ...	80
EAST BOUND	LEFT	18	WEST LEG		EAST BOUND	LEFT	12	WEST LEG	
	THRU	0	IN ...	50		THRU	0	IN ...	60
	RIGHT	28	OUT ...	40		RIGHT	39	OUT ...	60
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	34	37	NORTH LEG	NORTH BOUND	LEFT	38	42	NORTH LEG
	THRU	123	135	RATIO -		THRU	53	58	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH BOUND	LEFT	0	0	SOUTH LEG	SOUTH BOUND	LEFT	0	0	SOUTH LEG
	THRU	74	101	RATIO -		THRU	103	120	RATIO -
	RIGHT	7	9	ADT 0		RIGHT	13	24	ADT 0
EAST BOUND	LEFT	18	21	EAST LEG	EAST BOUND	LEFT	12	22	EAST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	28	31	ADT 0		RIGHT	39	43	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0

Grandview (NS) / N Road (EW) - #2



COUNTS

Grandview (NS) / Highway 189 (EW) - #3									
MORNING PEAK HOUR					EVENING PEAK HOUR				
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS): 2016					EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS): 2016				
	56	26	0	65		43	49	0	58
	148	>	<	150		84	>	<	123
	0	v	<	0		0	v	<	0
			<				<		
			>				>		
			0	0			0	0	0
EXISTING PEAK HOUR COUNT YEAR (AUTOS): 2016					EXISTING PEAK HOUR COUNT YEAR (AUTOS): 2016				
		91	148			107	105		
	185	<	IN =	546 < 251		172	<	IN =	419 < 185
	204	>	OUT =	546 > 213		127	>	OUT =	419 > 142
			v					v	
			0	0				0	0
EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE):					EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE):				
		3	0	8		2	0	11	
	5	>	<	3		2	>	<	6
	3	v	<	16		8	v	<	11
	0	v	<	0		0	v	<	0
PCE FACTORS BY AXLE: 2: 1.5 3: 2.0 4+: 3.0					PCE FACTORS BY AXLE: 2: 1.5 3: 2 4+: 3.0				
TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCE): 2016					TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCE): 2016				
		29	0	73		51	0	69	
	61	>	<	95		45	>	<	68
	151	>	<	175		92	>	<	134
	0	v	<	0		0	v	<	0
			<				<		
			>				>		
			0	0			0	0	0
EXISTING PEAK PERIOD MODEL YEAR (AUTO): 2012					EXISTING PEAK PERIOD MODEL YEAR (AUTO): 2012				
		256	192			256	192		
	1388	<	IN =	2589 < 1132		1388	<	IN =	2589 < 1132
	1201	>	OUT =	2589 > 1009		1201	>	OUT =	2589 > 1009
			v					v	
			0	0				0	0
EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE): 2012					EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE): 2012				
		0	0			0	0		
	0	<	IN =	0 < 0		0	<	IN =	0 < 0
	0	>	OUT =	0 > 0		0	>	OUT =	0 > 0
			v					v	
			0	0				0	0
EXISTING PEAK HOUR MODEL YEAR (PCE): PHF FOR CARS: 0.38 PHF FOR TRUCKS: 0.333					EXISTING PEAK HOUR MODEL YEAR (PCE): PHF FOR CARS: 0.28 PHF FOR TRUCKS: 0.25				
		97	73			72	54		
	527	<	IN =	984 < 430		389	<	IN =	725 < 317
	456	>	OUT =	984 > 383		336	>	OUT =	725 > 283
			v					v	
			0	0				0	0
FUTURE PEAK PERIOD MODEL YEAR (AUTO): 2040					FUTURE PEAK PERIOD MODEL YEAR (AUTO): 2040				
		185	204			185	204		
	1792	<	IN =	3193 < 1606		1792	<	IN =	3193 < 1606
	1402	>	OUT =	3194 > 1198		1402	>	OUT =	3194 > 1198
			v					v	
			0	0				0	0
FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE): 2040					FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE): 2040				
		0	0			0	0		
	0	<	IN =	0 < 0		0	<	IN =	0 < 0
	0	>	OUT =	0 > 0		0	>	OUT =	0 > 0
			v					v	
			0	0				0	0
FUTURE PEAK HOUR MODEL YEAR (PCE): PHF FOR CARS: 0.38 PHF FOR TRUCKS: 0.333					FUTURE PEAK HOUR MODEL YEAR (PCE): PHF FOR CARS: 0.28 PHF FOR TRUCKS: 0.25				
		70	78			52	57		
	681	<	IN =	1213 < 610		502	<	IN =	894 < 450
	533	>	OUT =	1214 > 455		393	>	OUT =	894 > 335
			v					v	
			0	0				0	0
RAW GROWTH (PCE): 2012 TO 2040 CONVERSION OF TRUCKS TO: FACTOR = 1.00					RAW GROWTH (PCE): 2012 TO 2040 CONVERSION OF TRUCKS TO: FACTOR = 1.00				
		-27	5			-20	3		
	154	<	<	180		113	<	<	133
	76	>	>	72		56	>	>	53
			v					v	
			0	0				0	0
ADJUSTED GROWTH (PCE): 2012 TO 2040 10 MINIMUM GROWTH %					ADJUSTED GROWTH (PCE): 2012 TO 2040 10 MINIMUM GROWTH %				
		10	20			10	10		
	150	<	IN =	270 < 180		110	<	IN =	200 < 130
	80	>	OUT =	240 > 70		60	>	OUT =	170 > 50
			v					v	
			0	0				0	0
PRORATED GROWTH (PCE): 2016 TO 2040 24 YEARS					PRORATED GROWTH (PCE): 2016 TO 2040 24 YEARS				
		10	20			10	10		
	130	<	<	150		90	<	<	110
	70	>	>	60		50	>	>	40
			v					v	
			0	0				0	0
NEW PROJECTED VOLUMES (PCE): 2040					NEW PROJECTED VOLUMES (PCE): 2040				
		110	180			130	120		
	330	<	<	420		280	<	<	310
	280	>	>	280		190	>	>	200
			v					v	
			0	0				0	0
YEAR 2018 GROWTH: 2 YEARS					YEAR 2018 GROWTH: 2 YEARS				
		0	0			0	0		
	10	<	<	10		10	<	<	10
	10	>	>	10		0	>	>	0
			v					v	
			0	0				0	0
INITIAL YEAR 2018 VOLUMES: 2018					INITIAL YEAR 2018 VOLUMES: 2018				
		100	160			120	110		
	210	<	IN =	600 < 280		200	<	IN =	470 < 210
	220	>	OUT =	600 > 230		140	>	OUT =	470 > 160
			v					v	
			0	0				0	0
BALANCED YEAR 2018 VOLUMES: 2018					BALANCED YEAR 2018 VOLUMES: 2018				
		100	160			120	110		
	210	<	IN =	600 < 280		200	<	IN =	470 < 210
	220	>	OUT =	600 > 230		140	>	OUT =	470 > 160
			v					v	
			0	0				0	0
ADT BY LEG: 2040					ADT BY LEG: 2040				
		0				0			
	0	W	LEG	E 0		0	W	LEG	E 0
			S					S	
			0					0	
ADT BY LEG: 2018					ADT BY LEG: 2018				
		0				0			
	0	W	LEG	E 0		0	W	LEG	E 0
			S					S	
			0					0	

OY OUTPUT

**Grandview (NS) / Highway 189 (EW) - #3
FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255**

YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2018 TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG		NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	73	NORTH LEG		SOUTH BOUND	LEFT	69	NORTH LEG	
	THRU	0	IN ...	100		THRU	0	IN ...	120
	RIGHT	29	OUT ...	160		RIGHT	51	OUT ...	110
EAST BOUND	LEFT	61	WEST LEG		EAST BOUND	LEFT	45	WEST LEG	
	THRU	151	IN ...	220		THRU	92	IN ...	140
	RIGHT	0	OUT ...	210		RIGHT	0	OUT ...	200
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	175	IN ...	280		THRU	134	IN ...	210
	RIGHT	95	OUT ...	230		RIGHT	68	OUT ...	160

YEAR 2018 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2018 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	0	0	NORTH LEG	NORTH BOUND	LEFT	0	0	NORTH LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH BOUND	LEFT	73	74	SOUTH LEG	SOUTH BOUND	LEFT	69	70	SOUTH LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	29	29	ADT 0		RIGHT	51	54	ADT 0
EAST BOUND	LEFT	61	62	EAST LEG	EAST BOUND	LEFT	45	45	EAST LEG
	THRU	151	158	RATIO -		THRU	92	95	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	175	182	RATIO -		THRU	134	146	RATIO -
	RIGHT	95	98	ADT 0		RIGHT	68	69	ADT 0

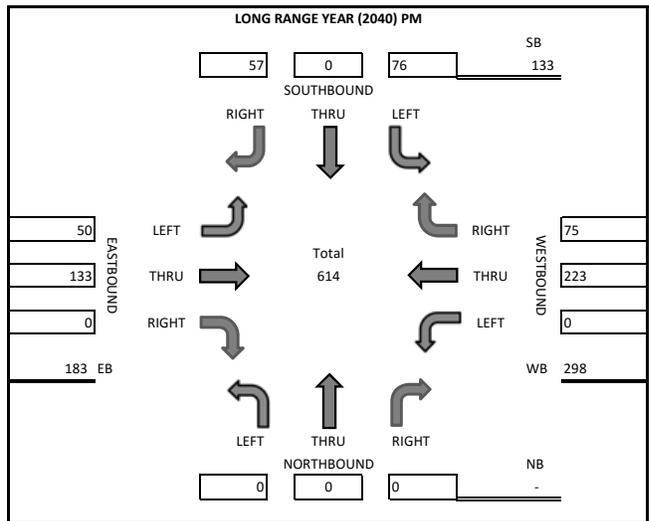
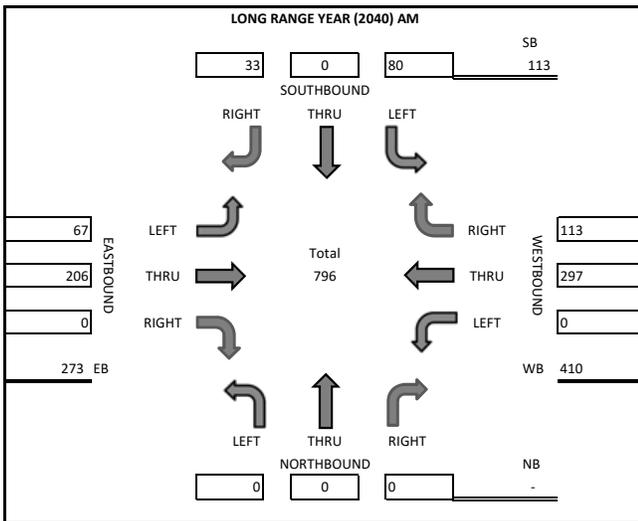
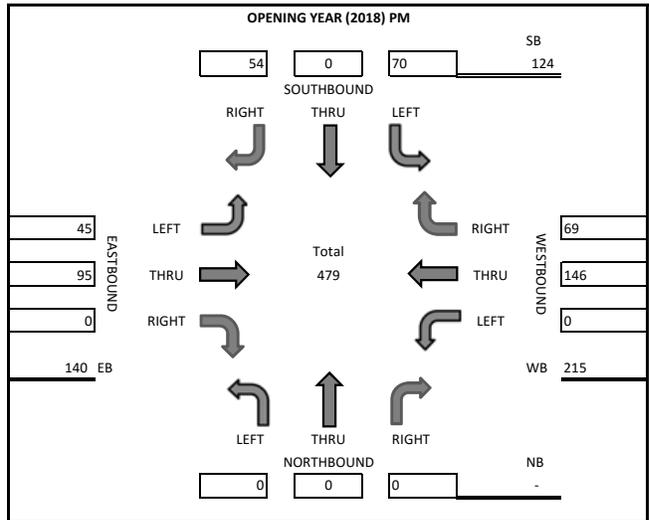
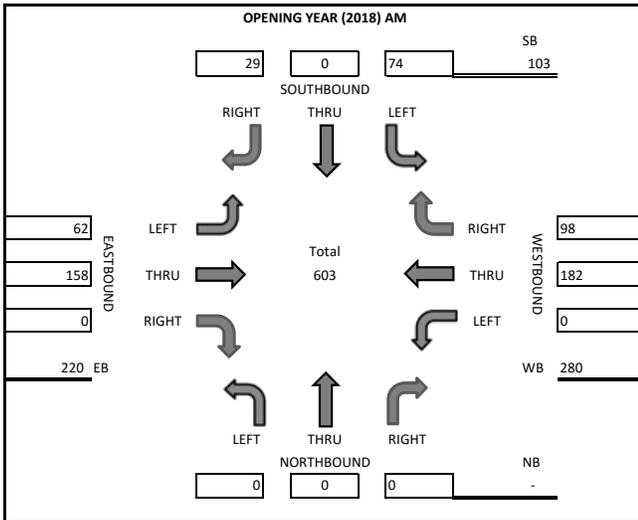
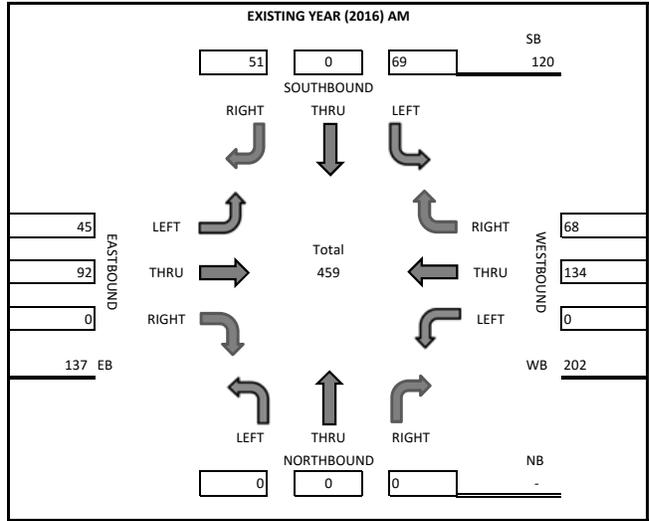
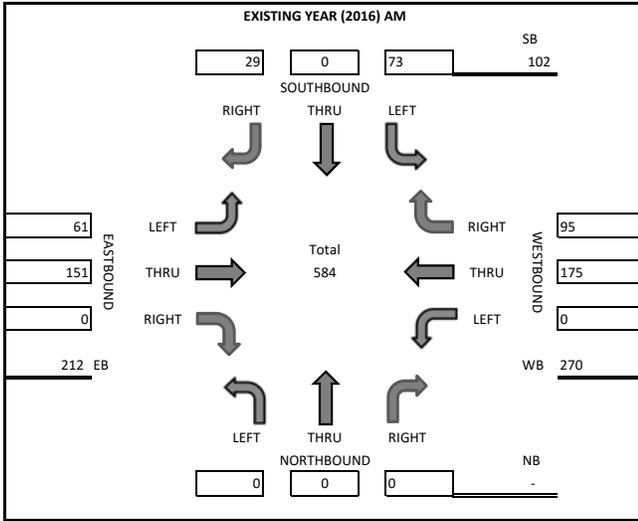
LR OUTPUT

Grandview (NS) / Highway 189 (EW) - #3
 FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
 NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG		NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	73	NORTH LEG		SOUTH BOUND	LEFT	69	NORTH LEG	
	THRU	0	IN ...	110		THRU	0	IN ...	130
	RIGHT	29	OUT ...	180		RIGHT	51	OUT ...	120
EAST BOUND	LEFT	61	WEST LEG		EAST BOUND	LEFT	45	WEST LEG	
	THRU	151	IN ...	280		THRU	92	IN ...	190
	RIGHT	0	OUT ...	330		RIGHT	0	OUT ...	280
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	175	IN ...	420		THRU	134	IN ...	310
	RIGHT	95	OUT ...	280		RIGHT	68	OUT ...	200

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	0	0	NORTH LEG	NORTH BOUND	LEFT	0	0	NORTH LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH BOUND	LEFT	73	80	SOUTH LEG	SOUTH BOUND	LEFT	69	76	SOUTH LEG
	THRU	0	0	RATIO -		THRU	0	0	RATIO -
	RIGHT	29	33	ADT 0		RIGHT	51	57	ADT 0
EAST BOUND	LEFT	61	67	EAST LEG	EAST BOUND	LEFT	45	50	EAST LEG
	THRU	151	206	RATIO -		THRU	92	133	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	175	297	RATIO -		THRU	134	223	RATIO -
	RIGHT	95	113	ADT 0		RIGHT	68	75	ADT 0

Grandview (NS) / Highway 189 (EW) - #3



APPENDIX D

Explanation and Calculation of Intersection Delay

EXPLANATION AND CALCULATION OF INTERSECTION LEVEL OF SERVICE USING DELAY METHODOLOGY

The levels of service at the unsignalized and signalized intersections are calculated using the delay methodology in the Highway Capacity Manual. This methodology views an intersection as consisting of several lane groups. A lane group is a set of lanes serving a movement. If there are two northbound left turn lanes, then the lane group serving the northbound left turn movement has two lanes. Similarly, there may be three lanes in the lane group serving the northbound through movement, one lane in the lane group serving the northbound right turn movement, and so forth. It is also possible for one lane to serve two lane groups. A shared lane might result in there being 1.5 lanes in the northbound left turn lane group and 2.5 lanes in the northbound through lane group.

For each lane group, there is a capacity. That capacity is calculated by multiplying the number of lanes in the lane group times a theoretical maximum lane capacity per lane time's 12 adjustment factors.

Each of the 12 adjustment factors has a value of approximately 1.00. A value less than 1.00 is generally assigned when a less than desirable condition occurs.

The 12 adjustment factors are as follows:

1. Peak hour factor (to account for peaking within the peak hour)
2. Lane utilization factor (to account for not all lanes loading equally)
3. Lane width
4. Percent of heavy trucks
5. Approach grade
6. Parking
7. Bus stops at intersections
8. Area type (CBD or other)
9. Right turns
10. Left turns

11. Pedestrian activity
12. Signal progression

The maximum theoretical lane capacity and the 12 adjustment factors for it are all unknowns for which approximate estimates have been recommended in the Highway Capacity Manual. For the most part, the recommended values are not based on statistical analysis but rather on educated estimates. However, it is possible to use the delay method and get reasonable results as will be discussed below.

Once the lane group volume is known and the lane group capacity is known, a volume to capacity ratio can be calculated for the lane group.

With a volume to capacity ratio calculated, average delay per vehicle in a lane group can be estimated. The average delay per vehicle in a lane group is calculated using a complex formula provided by the Highway Capacity Manual, which can be simplified and described as follows:

Delay per vehicle in a lane group is a function of the following:

1. Cycle length
2. Amount of red time faced by a lane group
3. Amount of yellow time for that lane group
4. The volume to capacity ratio of the lane group

The average delay per vehicle for each lane group is calculated, and eventually an overall average delay for all vehicles entering the intersection is calculated. This average delay per vehicle is then used to judge Level of Service. The Level of Services are defined in the table that follows this discussion.

Experience has shown that when a maximum lane capacity of 1,900 vehicles per hour is used (as recommended in the Highway Capacity Manual), little or no yellow time penalty is used, and none of the 12 penalty factors are applied, calculated delay is realistic. The delay calculation for instance assumes that yellow time is totally unused. Yet experience shows that most of the yellow time is used.

An idiosyncrasy of the delay methodology is that it is possible to add traffic to an intersection and reduce the average total delay per vehicle. If the average total delay is 30 seconds per vehicle for all vehicles traveling through an intersection, and traffic is added to a movement that has an average total delay of 15 seconds per vehicle, then the overall average total delay is reduced.

The delay calculation for a lane group is based on a concept that the delay is a function of the amount of unused capacity available. As the volume approaches capacity and there is no more unused capacity available, then the delay rapidly increases. Delay is not proportional to volume, but rather increases rapidly as the unused capacity approaches zero.

Because delay is not linearly related to volumes, the delay does not reflect how close an intersection is to overloading. If an intersection is operating at Level of Service C and has an average total delay of 18 seconds per vehicle, you know very little as to what percent the traffic can increase before Level of Service E is reached.

LEVEL OF SERVICE DESCRIPTION¹

Level Of Service	Description	Average Total Delay Per Vehicle (Seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

¹ Source: [Highway Capacity Manual](#) Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Existing

Arrowhead Pine Rose Cabins

Vistro File: J:\...\E Friday.vistro
 Report File: J:\...\E Fri.pdf

Scenario 1: Existing - Friday Evening
 6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.001	10.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.032	10.8	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.243	16.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	134	74	1	1	6
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	151	84	1	1	7
Peak Hour Factor	0.9237	0.9237	0.9237	0.9237	0.9237	0.9237
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	41	23	0	0	2
Total Analysis Volume [veh/h]	10	163	91	1	1	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.39	0.00	0.00	0.00	10.08	8.74
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.39	0.39	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft]	9.64	9.64	0.00	0.00	0.73	0.73
d_A, Approach Delay [s/veh]	0.43		0.00		8.89	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	34	123	74	7	18	28
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	139	84	8	20	32
Peak Hour Factor	0.9583	0.9583	0.9583	0.9583	0.9583	0.9583
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	36	22	2	5	8
Total Analysis Volume [veh/h]	40	145	88	8	21	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.03
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	10.76	9.02
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.42	0.42	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft]	10.44	10.44	0.00	0.00	5.27	5.27
d_A, Approach Delay [s/veh]	1.61		0.00		9.69	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.45					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.243

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	73	29	61	151	175	95
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	33	69	171	198	107
Peak Hour Factor	0.8143	0.8143	0.8143	0.8143	0.8143	0.8143
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	10	21	52	61	33
Total Analysis Volume [veh/h]	101	41	85	210	243	131
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

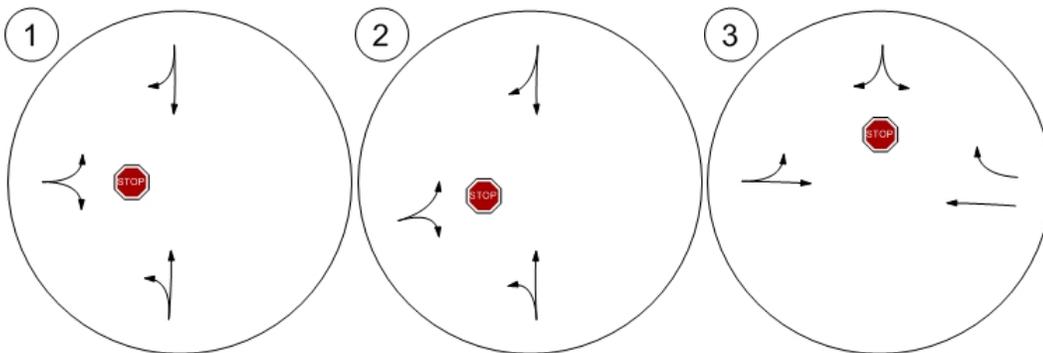
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.05	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.72	12.57	8.24	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.21	1.21	0.97	0.97	0.00	0.00
95th-Percentile Queue Length [ft]	30.34	30.34	24.36	24.36	0.00	0.00
d_A, Approach Delay [s/veh]	15.52		2.37		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.58					
Intersection LOS	C					

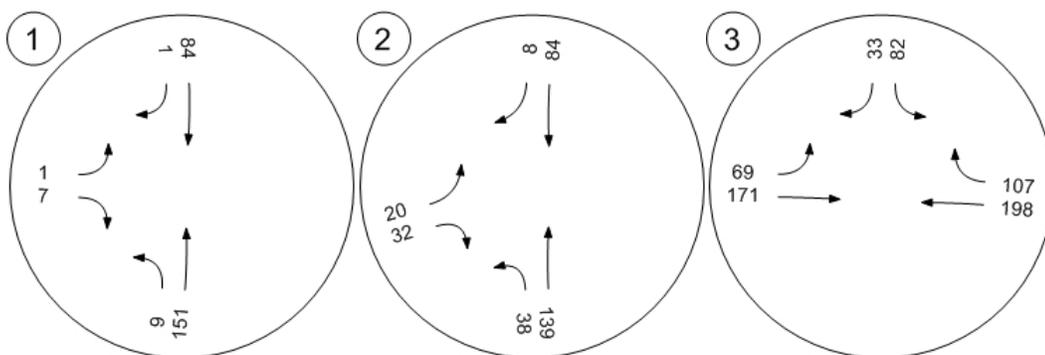
Study Intersections



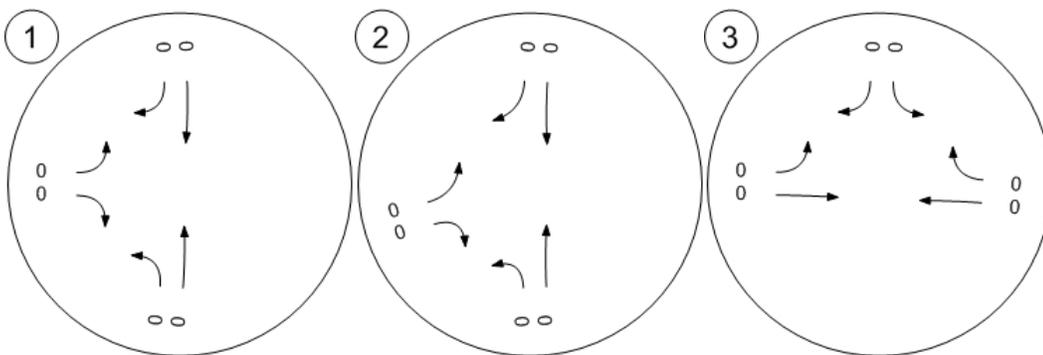
Lane Configuration and Traffic Control



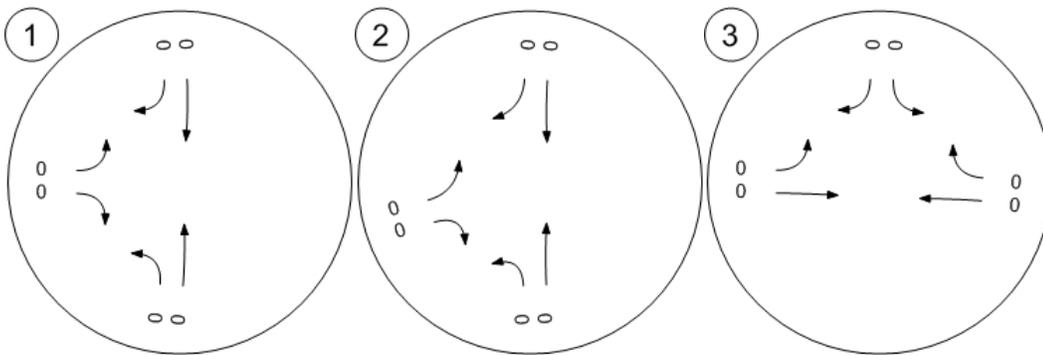
Traffic Volume - Base Volume



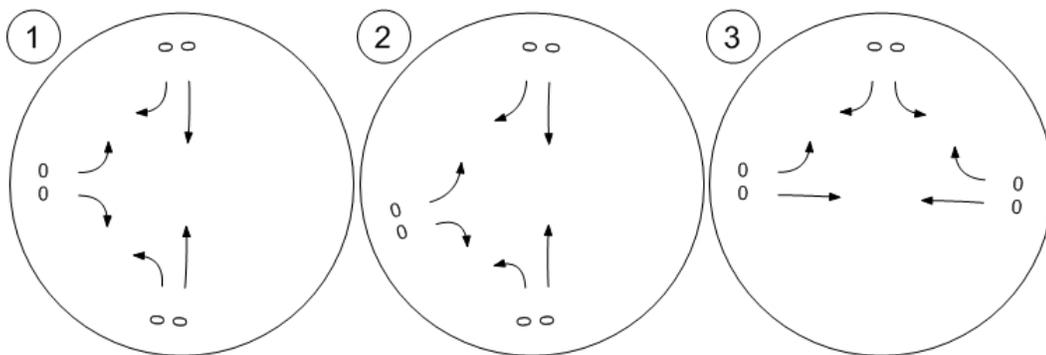
Traffic Volume - In-Process Volume



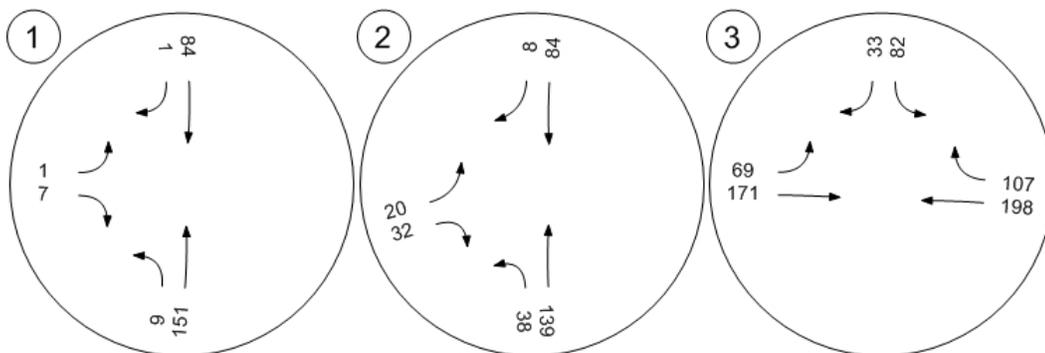
Traffic Volume - Net New Site Trips



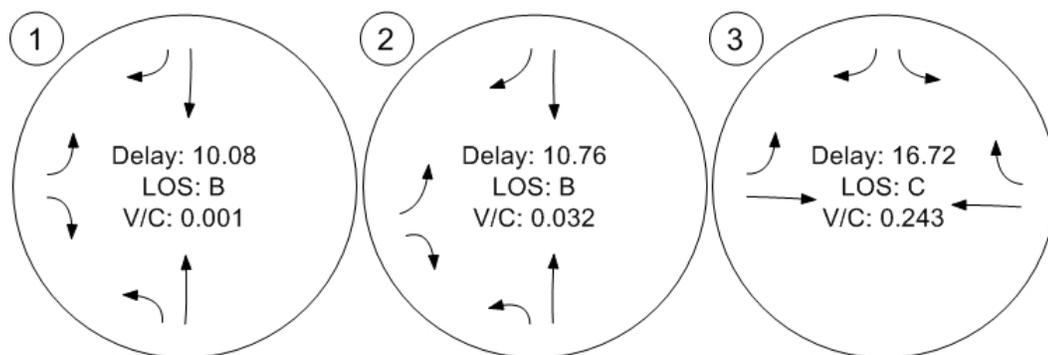
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Arrowhead Pine Rose Cabins

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Report File: J:\...\E Sat.pdf

Scenario 1: Existing - Saturday Mid-Day

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.000	9.8	A
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.024	10.8	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.135	12.3	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	94	87	1	0	8
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	106	98	1	0	9
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	28	26	0	0	2
Total Analysis Volume [veh/h]	10	112	104	1	0	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	0.00	9.84	8.81
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.27	0.27	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft]	6.63	6.63	0.00	0.00	0.79	0.79
d_A, Approach Delay [s/veh]	0.61		0.00		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.68					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↻	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	38	53	103	13	12	39
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	60	116	15	14	44
Peak Hour Factor	0.8680	0.8680	0.8680	0.8680	0.8680	0.8680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	17	33	4	4	13
Total Analysis Volume [veh/h]	50	69	134	17	16	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.02	0.06
d_M, Delay for Movement [s/veh]	7.59	0.00	0.00	0.00	10.83	9.33
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.27	0.27	0.00	0.00	0.26	0.26
95th-Percentile Queue Length [ft]	6.73	6.73	0.00	0.00	6.53	6.53
d_A, Approach Delay [s/veh]	3.19		0.00		9.69	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.05					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.135

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	69	51	45	92	134	68
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	58	51	104	151	77
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	15	13	27	39	20
Total Analysis Volume [veh/h]	82	61	53	109	158	80
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

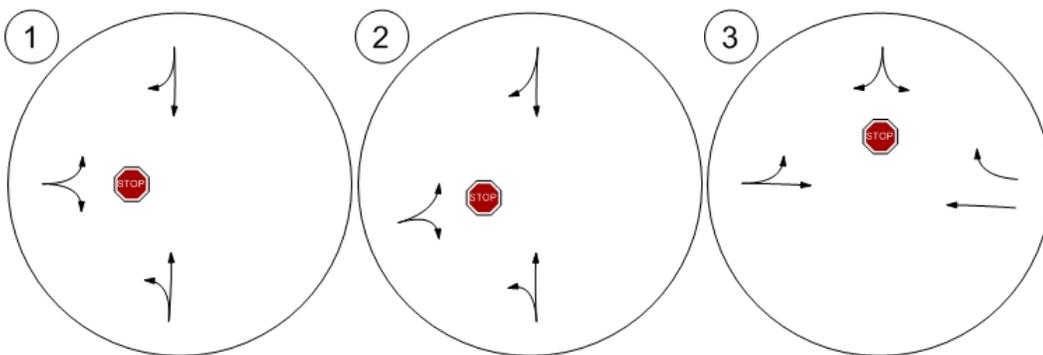
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.07	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.26	10.34	7.80	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.76	0.76	0.41	0.41	0.00	0.00
95th-Percentile Queue Length [ft]	18.99	18.99	10.28	10.28	0.00	0.00
d_A, Approach Delay [s/veh]	11.44		2.55		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.77					
Intersection LOS	B					

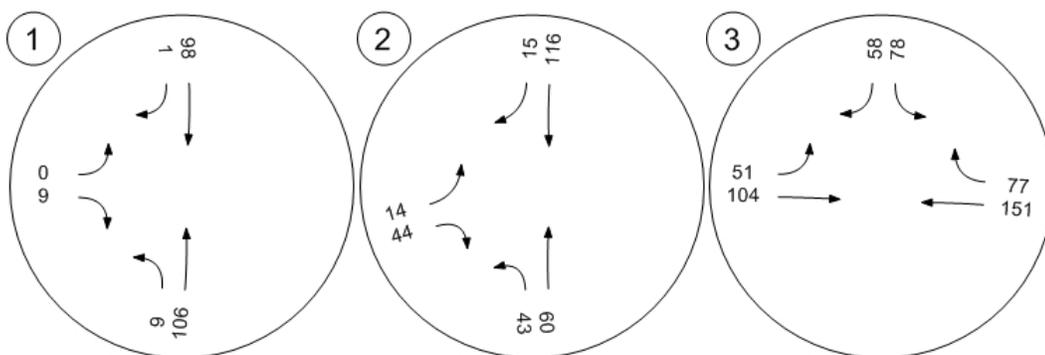
Study Intersections



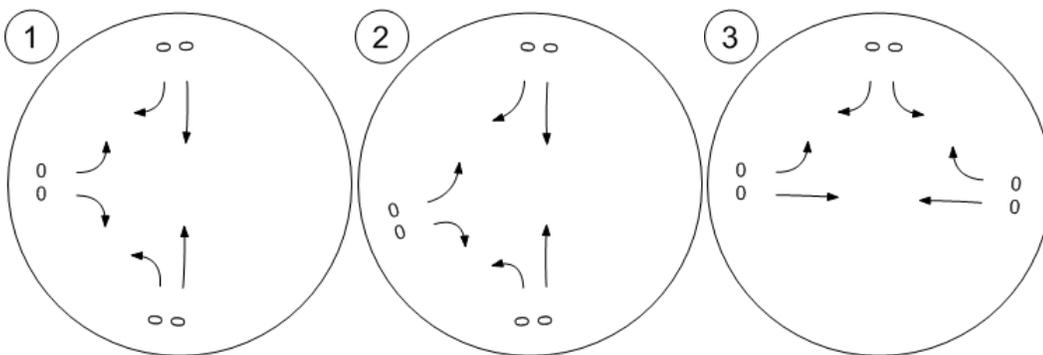
Lane Configuration and Traffic Control



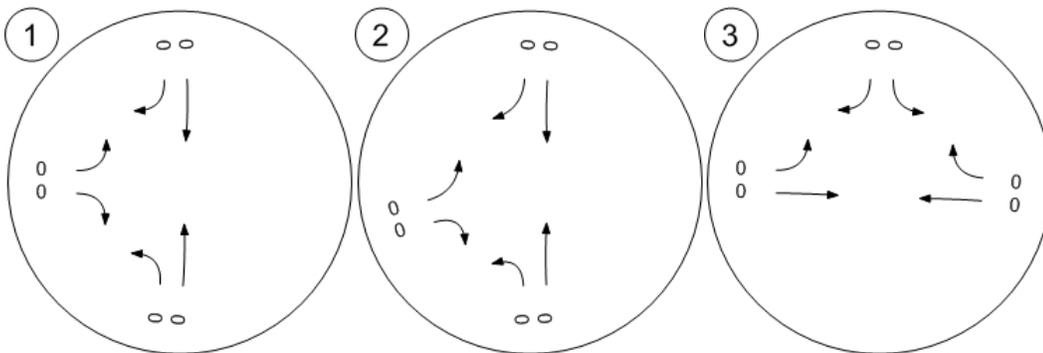
Traffic Volume - Base Volume



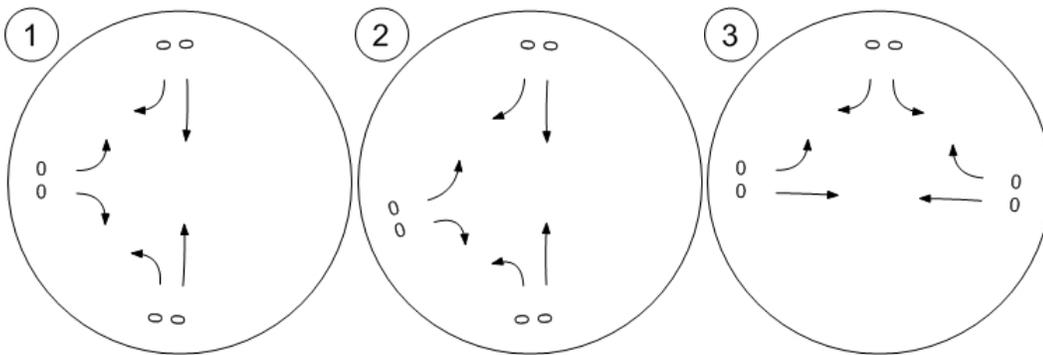
Traffic Volume - In-Process Volume



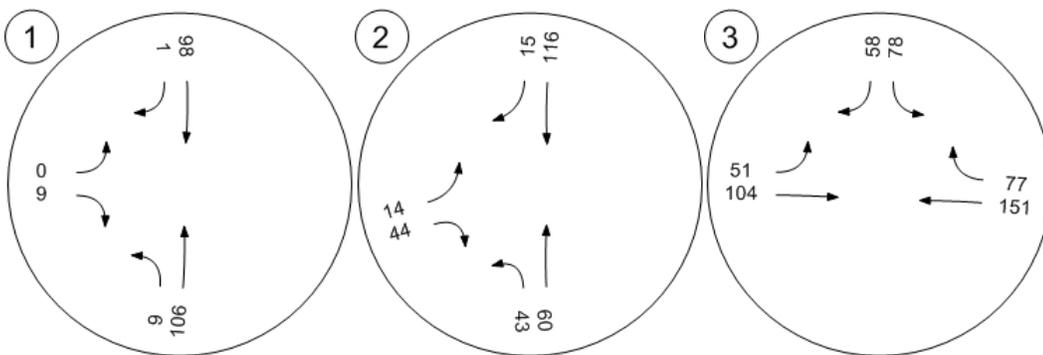
Traffic Volume - Net New Site Trips



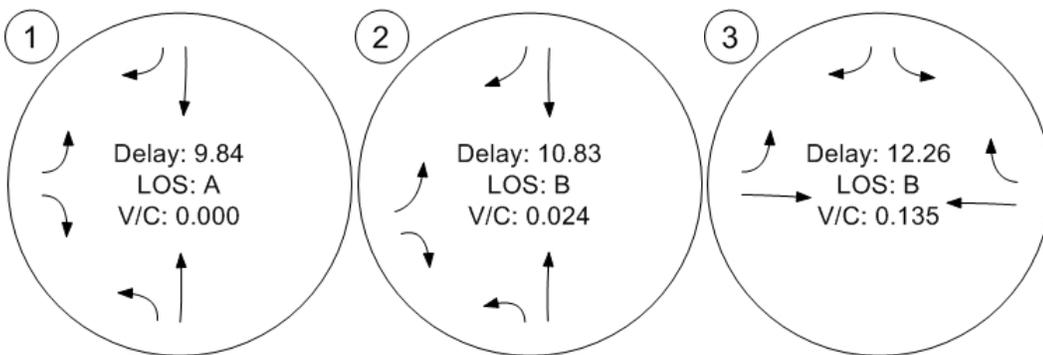
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Existing Plus Project

Arrowhead Pine Rose Cabins

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Scenario 2: Existing Plus Project - Friday Evening

Report File: J:\...\EP Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.003	10.8	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.038	11.7	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.326	21.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	134	74	1	1	6
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	31	4	1	1	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	182	88	2	2	12
Peak Hour Factor	0.9237	0.9237	0.9237	0.9237	0.9237	0.9237
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	49	24	1	1	3
Total Analysis Volume [veh/h]	31	197	95	2	2	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.44	0.00	0.00	0.00	10.76	8.79
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.53	0.53	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft]	13.30	13.30	0.00	0.00	1.27	1.27
d_A, Approach Delay [s/veh]	1.01		0.00		9.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.038

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↳		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	34	123	74	7	18	28
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	51	9	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	190	93	9	21	36
Peak Hour Factor	0.9583	0.9583	0.9583	0.9583	0.9583	0.9583
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	50	24	2	5	9
Total Analysis Volume [veh/h]	56	198	97	9	22	38
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.04	0.04
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	0.00	11.65	9.15
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.61	0.61	0.00	0.00	0.25	0.25
95th-Percentile Queue Length [ft]	15.26	15.26	0.00	0.00	6.32	6.32
d_A, Approach Delay [s/veh]	1.65		0.00		10.07	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.44					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	21.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.326

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	73	29	61	151	175	95
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	51	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	42	120	171	198	124
Peak Hour Factor	0.8143	0.8143	0.8143	0.8143	0.8143	0.8143
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	13	37	52	61	38
Total Analysis Volume [veh/h]	107	52	147	210	243	152
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

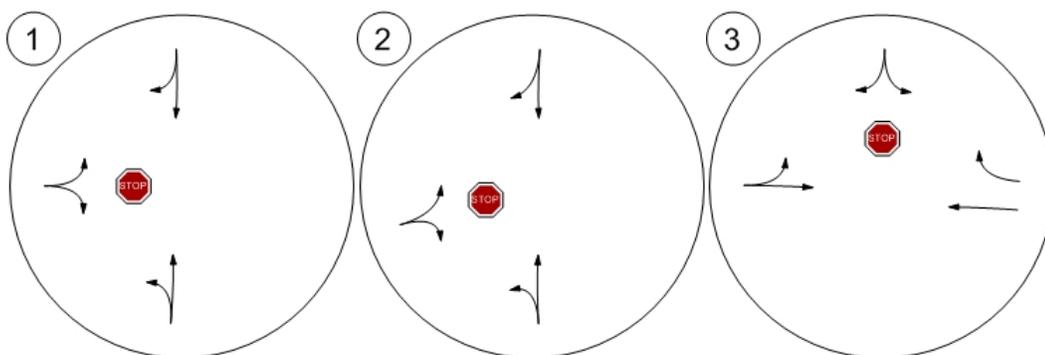
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.06	0.13	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	21.50	15.05	8.50	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	1.82	1.82	1.29	1.29	0.00	0.00
95th-Percentile Queue Length [ft]	45.39	45.39	32.34	32.34	0.00	0.00
d_A, Approach Delay [s/veh]	19.39		3.50		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.76					
Intersection LOS	C					

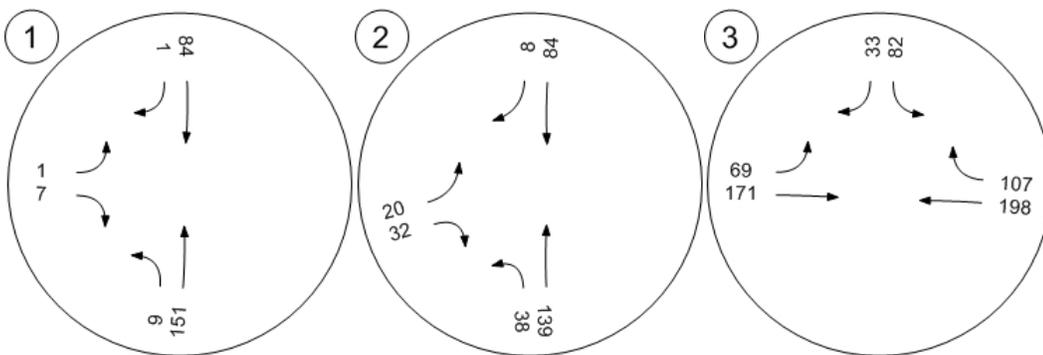
Study Intersections



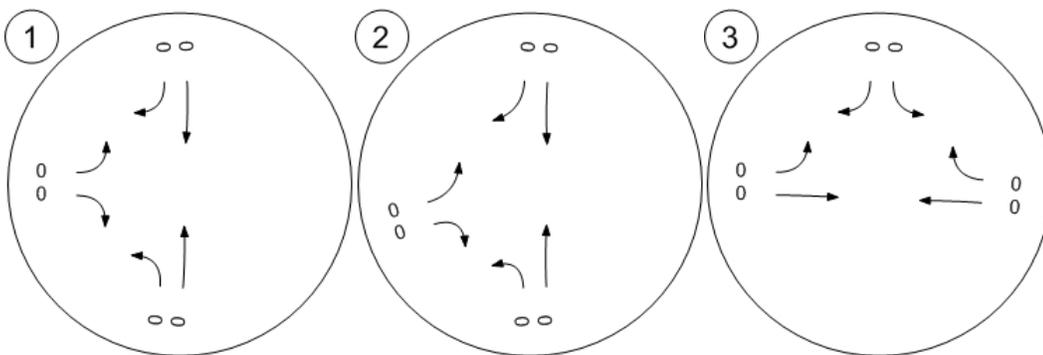
Lane Configuration and Traffic Control



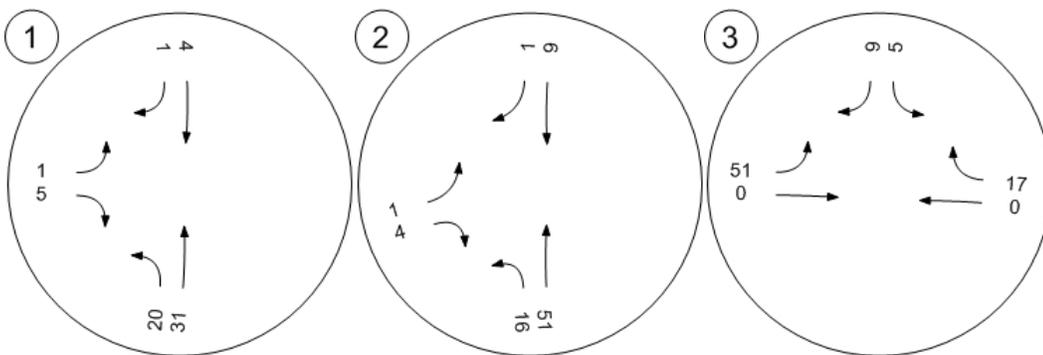
Traffic Volume - Base Volume



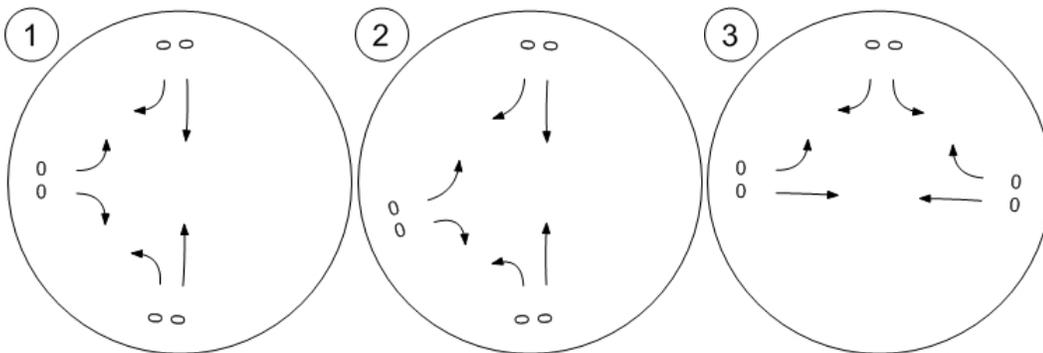
Traffic Volume - In-Process Volume



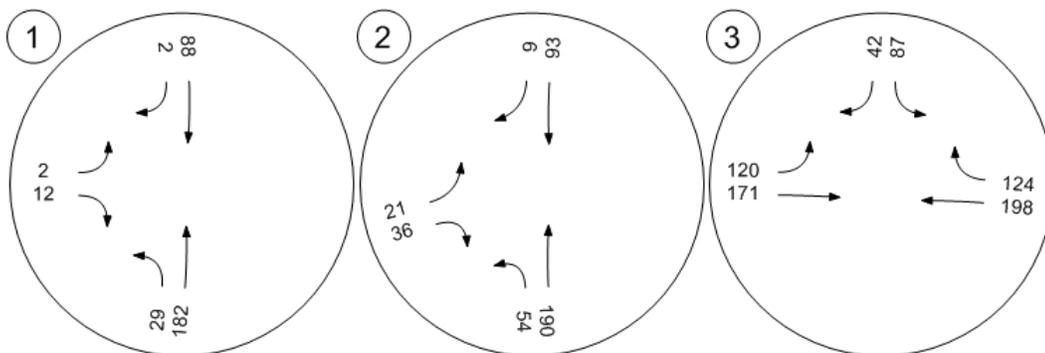
Traffic Volume - Net New Site Trips



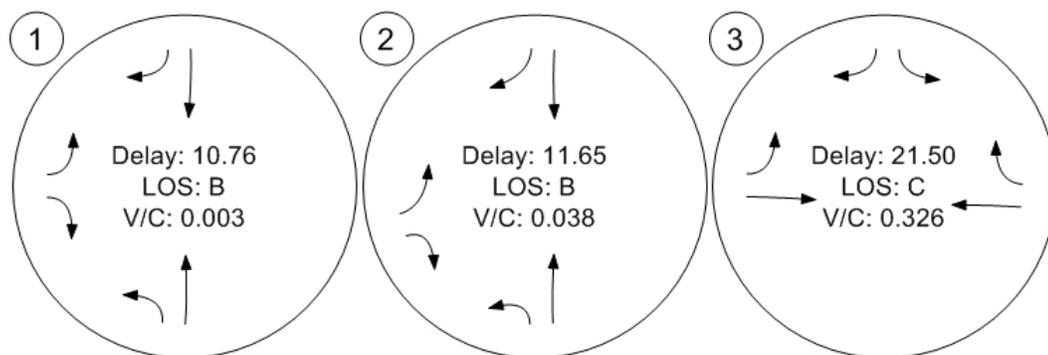
Traffic Volume - Other Volume



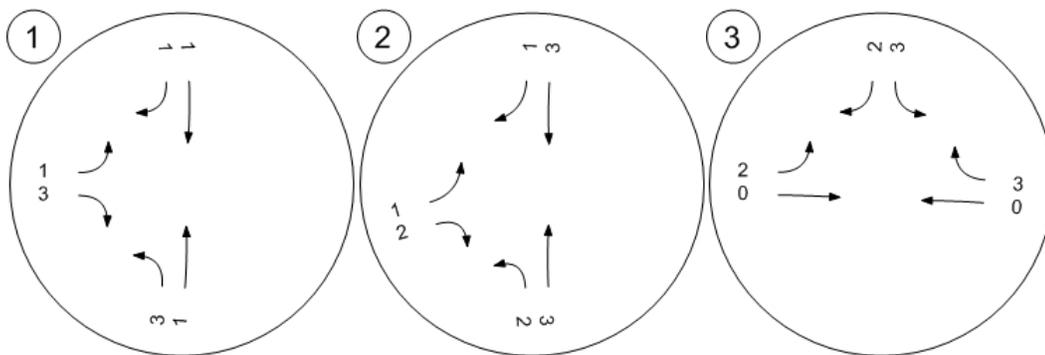
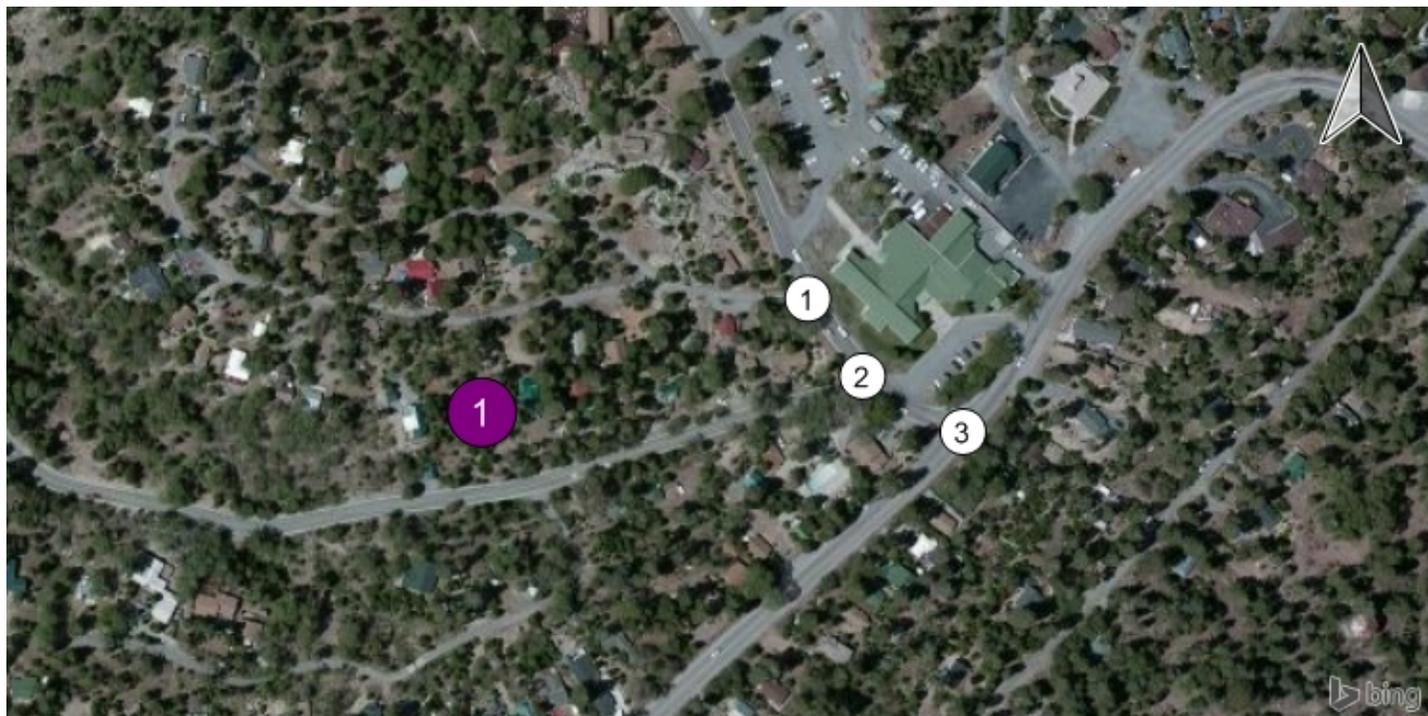
Traffic Volume - Future Total Volume



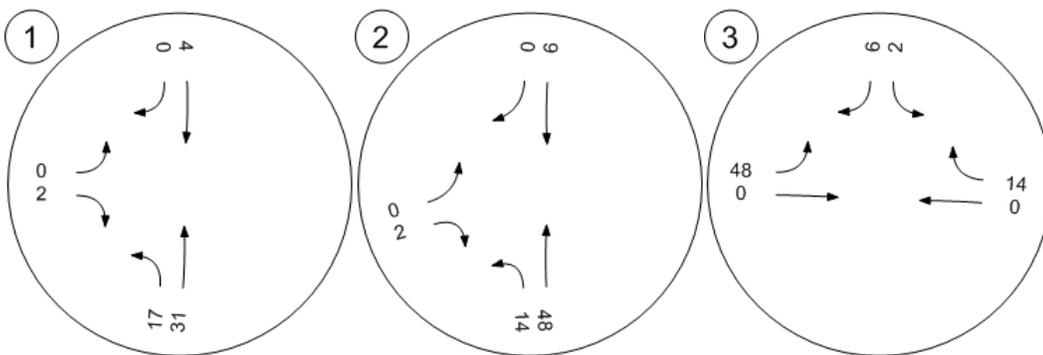
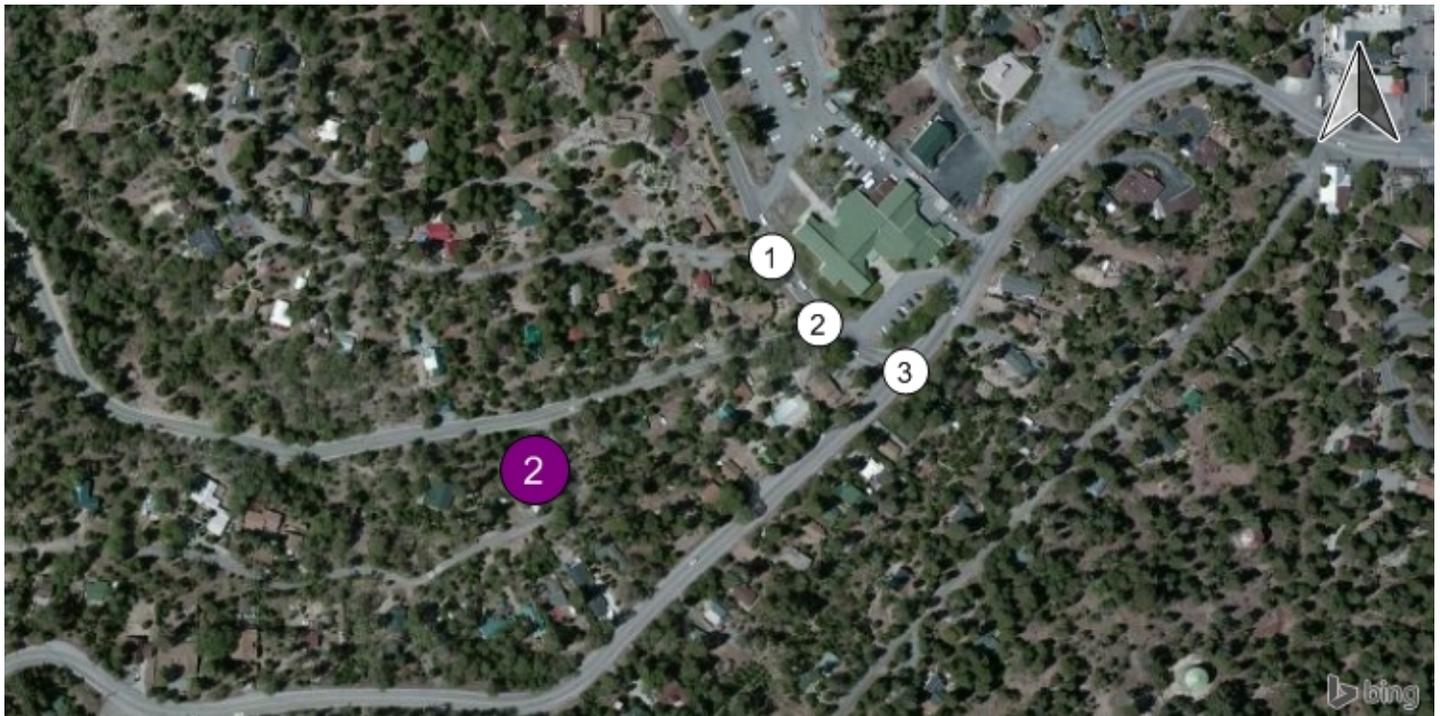
Traffic Conditions



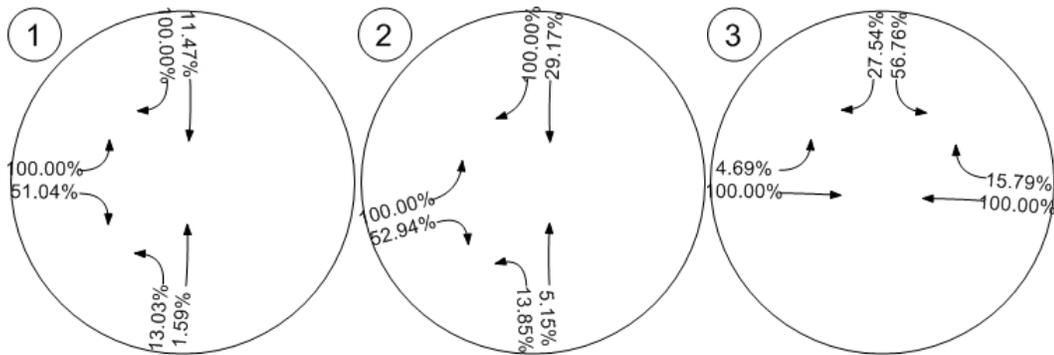
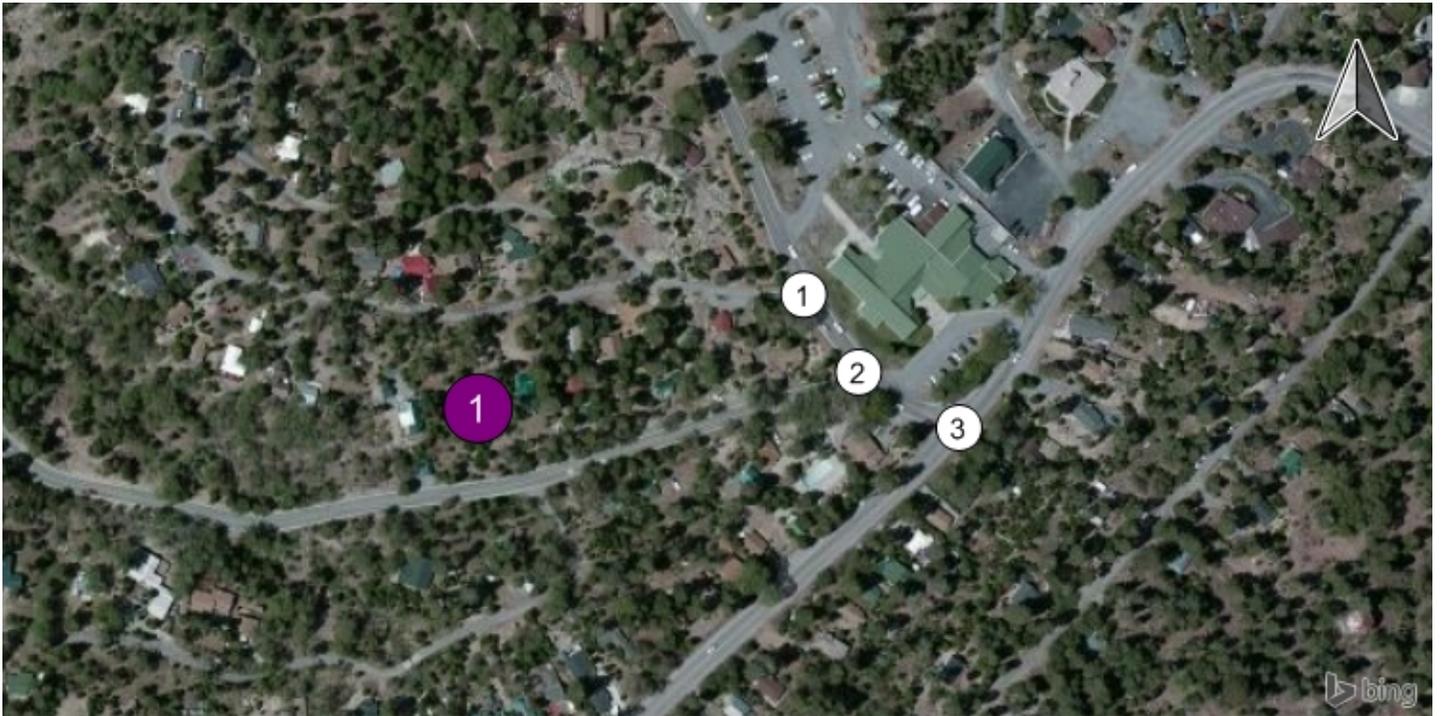
Fair Share - Fair Share Volumes - Zone 1: Cabin



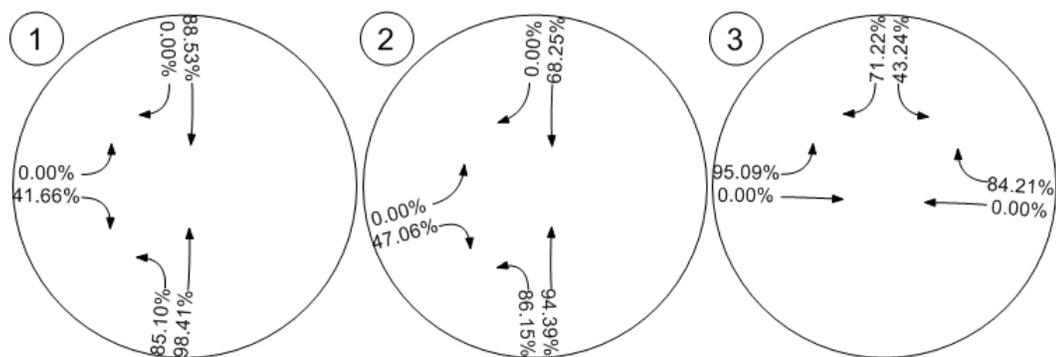
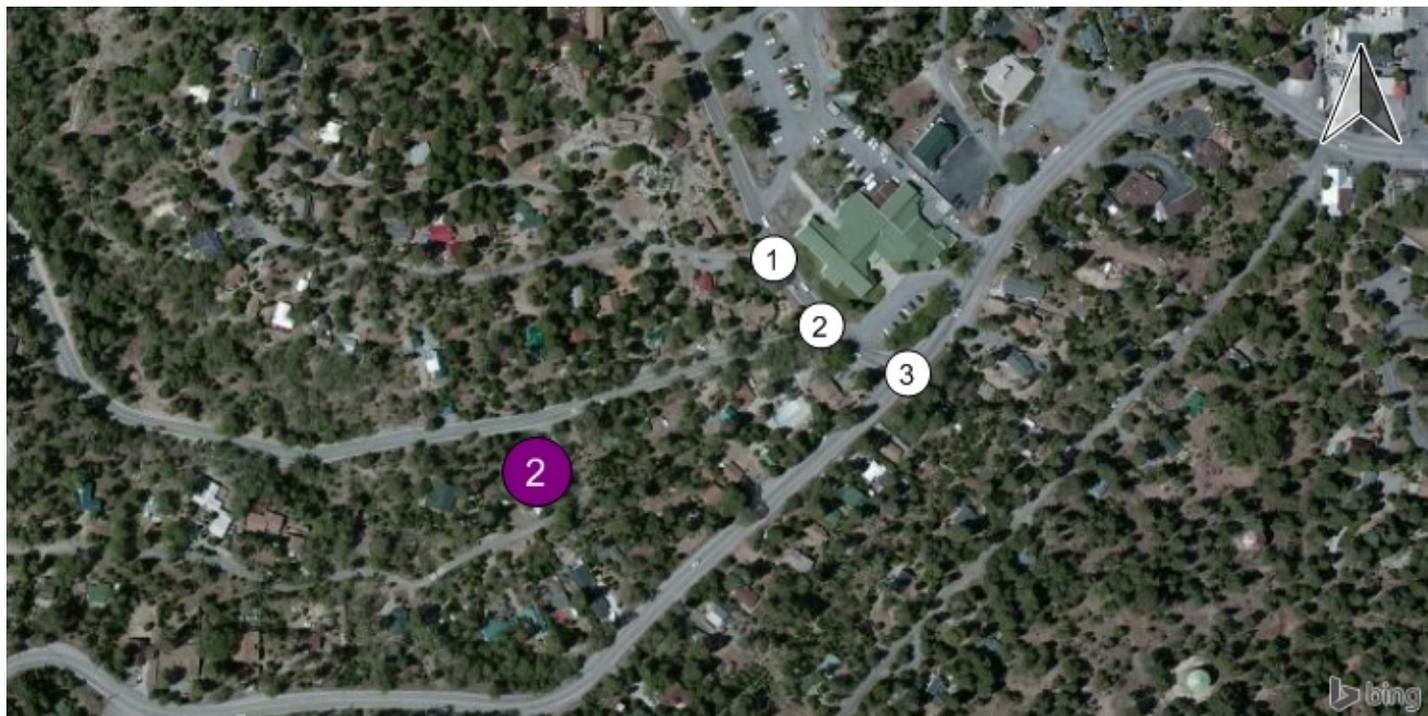
Fair Share - Fair Share Volumes - Zone 2: Special Event



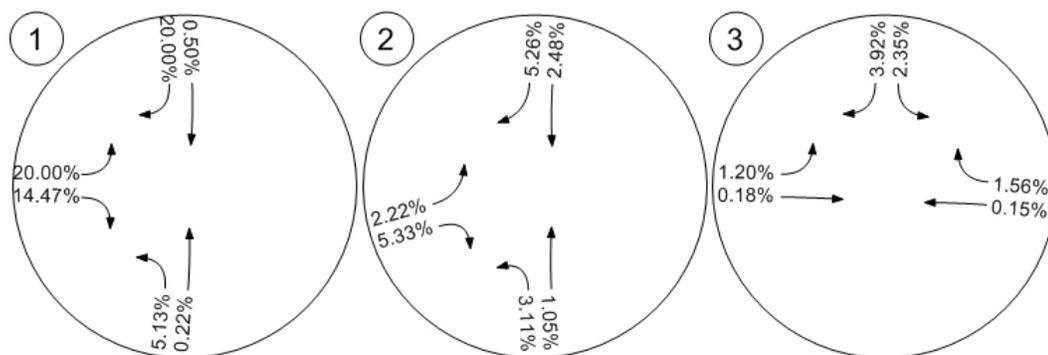
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



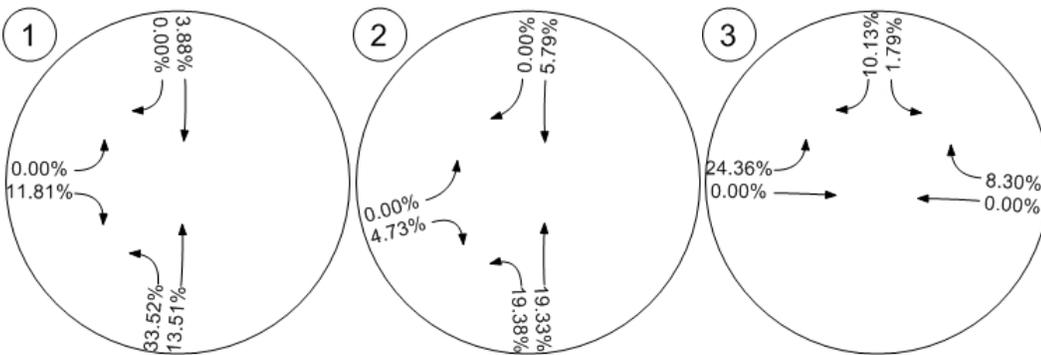
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Arrowhead Pine Rose Cabins

Vistro File: J:\...\E Saturday.vistro

Scenario 2: Existing Plus Project - Saturday Mid-Day

Report File: J:\...\EP Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.001	10.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.027	11.2	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.152	12.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	94	87	1	0	8
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	10	3	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	116	101	2	1	13
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	31	27	1	0	3
Total Analysis Volume [veh/h]	18	123	107	2	1	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.44	0.00	0.00	0.00	10.08	8.85
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.31	0.31	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft]	7.80	7.80	0.00	0.00	1.23	1.23
d_A, Approach Delay [s/veh]	0.95		0.00		8.93	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.01					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↳		↱	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	38	53	103	13	12	39
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	18	7	1	1	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	78	123	16	15	47
Peak Hour Factor	0.8680	0.8680	0.8680	0.8680	0.8680	0.8680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	22	35	5	4	14
Total Analysis Volume [veh/h]	56	90	142	18	17	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.03	0.06
d_M, Delay for Movement [s/veh]	7.62	0.00	0.00	0.00	11.21	9.42
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.34	0.34	0.00	0.00	0.29	0.29
95th-Percentile Queue Length [ft]	8.50	8.50	0.00	0.00	7.15	7.15
d_A, Approach Delay [s/veh]	2.92		0.00		9.85	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.99					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	69	51	45	92	134	68
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	7	18	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	65	69	104	151	84
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	17	18	27	39	22
Total Analysis Volume [veh/h]	86	68	72	109	158	88
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

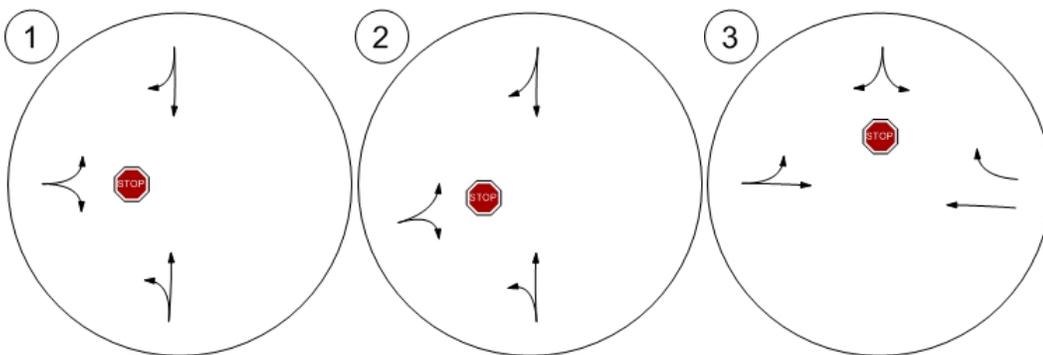
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.08	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.93	10.60	7.86	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.87	0.87	0.47	0.47	0.00	0.00
95th-Percentile Queue Length [ft]	21.87	21.87	11.76	11.76	0.00	0.00
d_A, Approach Delay [s/veh]	11.90		3.13		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.13					
Intersection LOS	B					

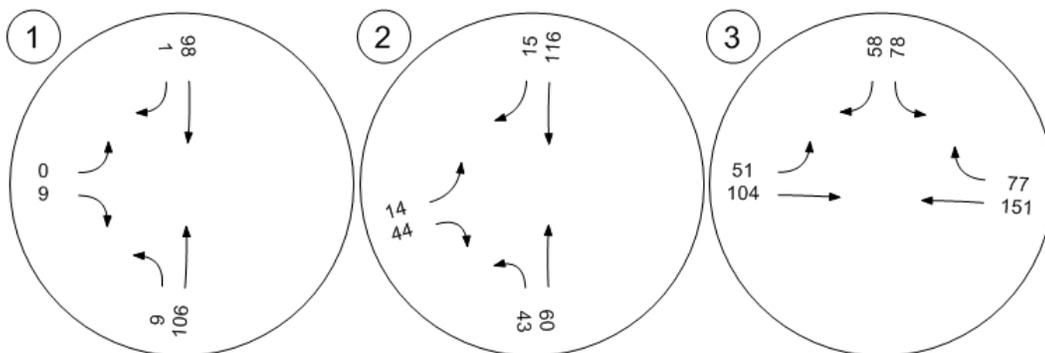
Study Intersections



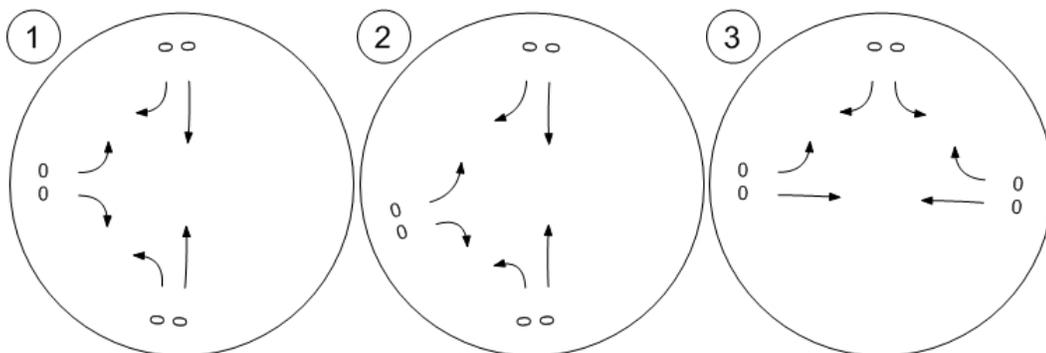
Lane Configuration and Traffic Control



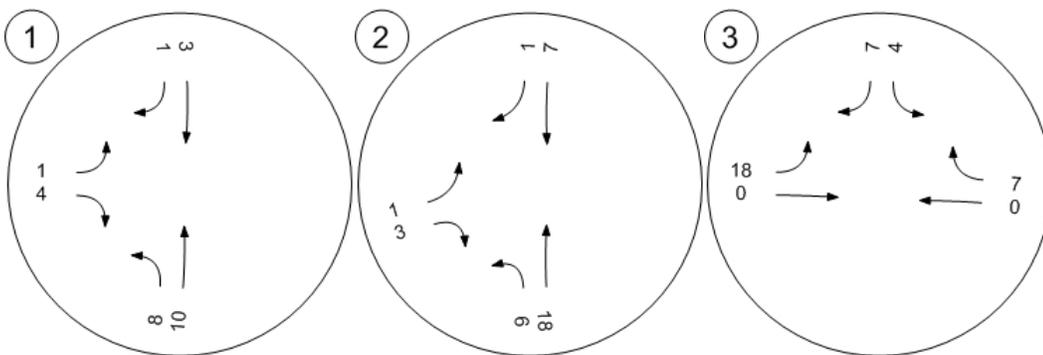
Traffic Volume - Base Volume



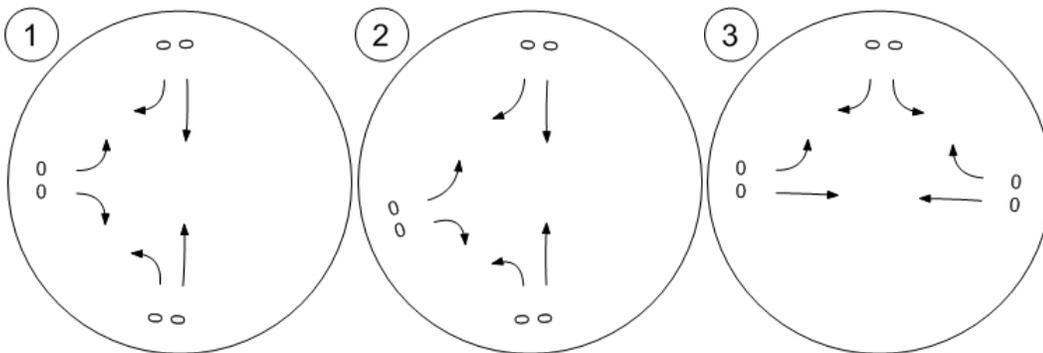
Traffic Volume - In-Process Volume



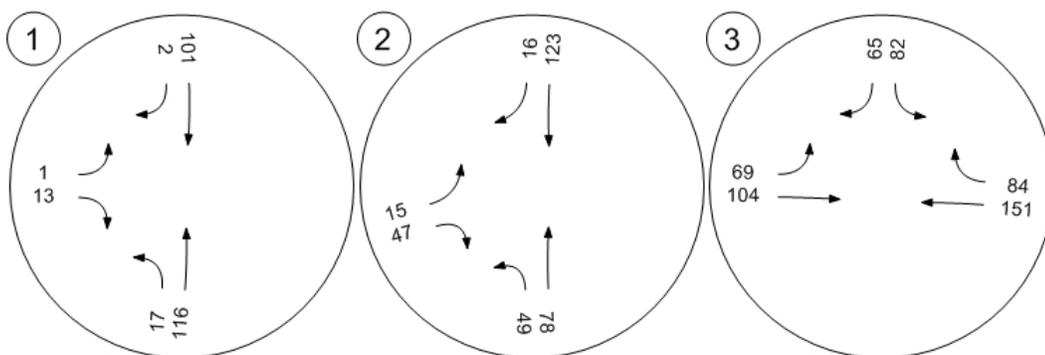
Traffic Volume - Net New Site Trips



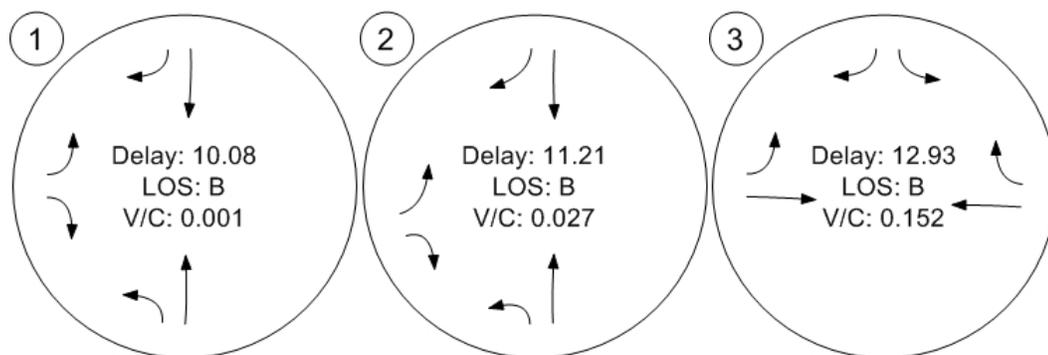
Traffic Volume - Other Volume



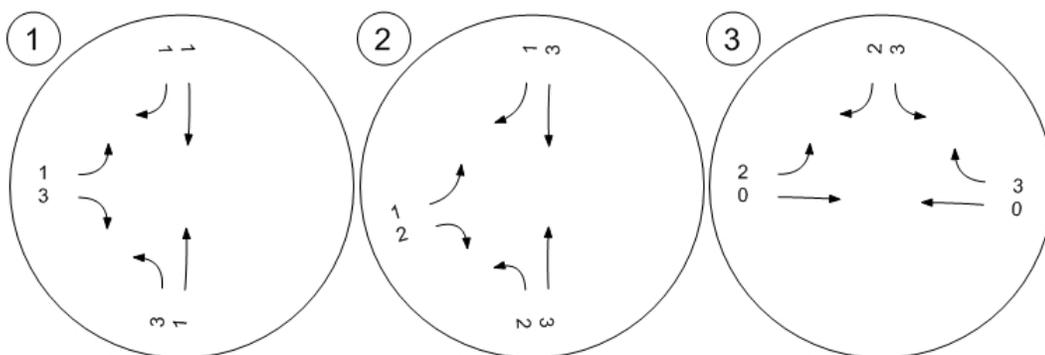
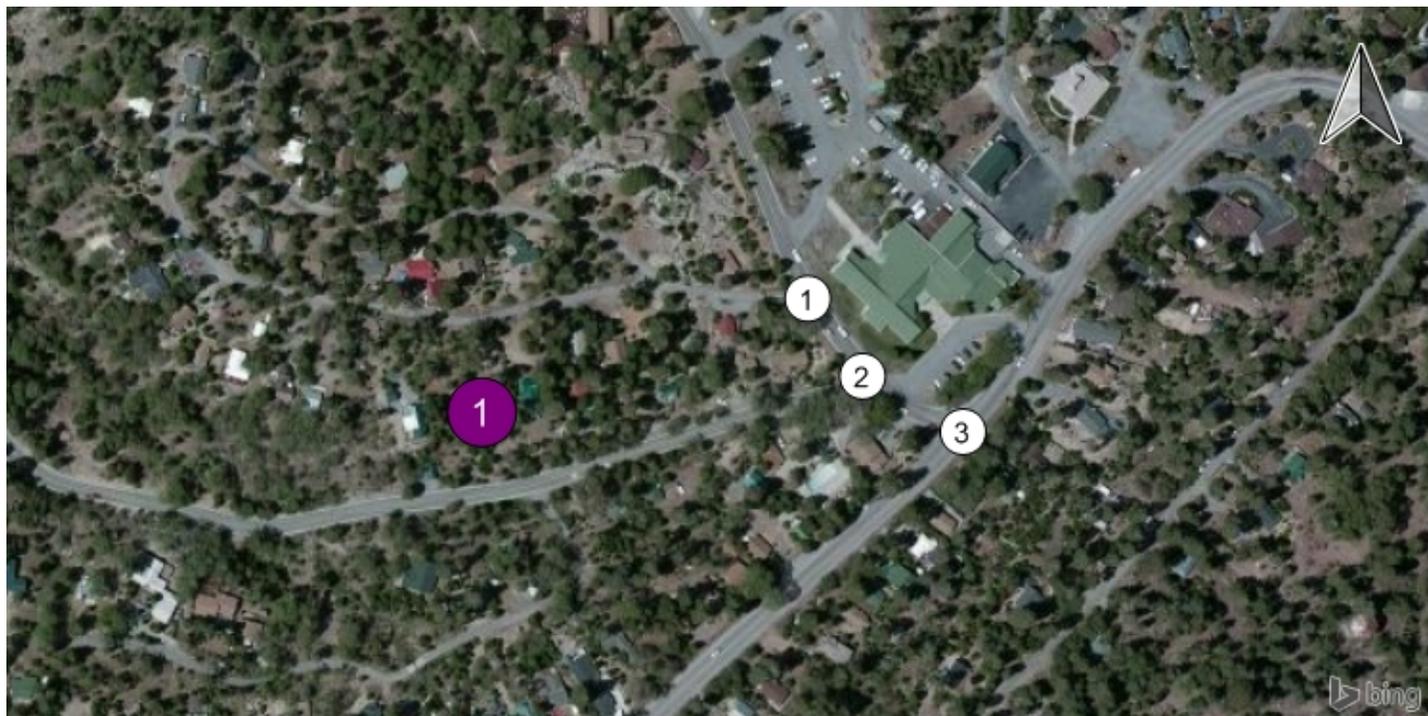
Traffic Volume - Future Total Volume



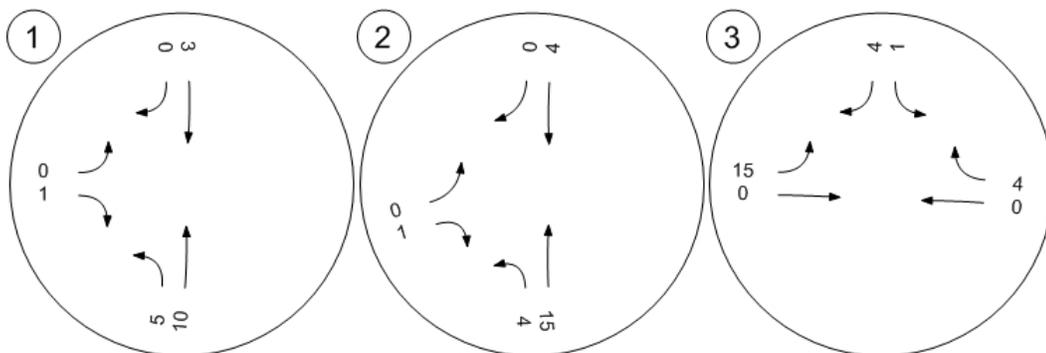
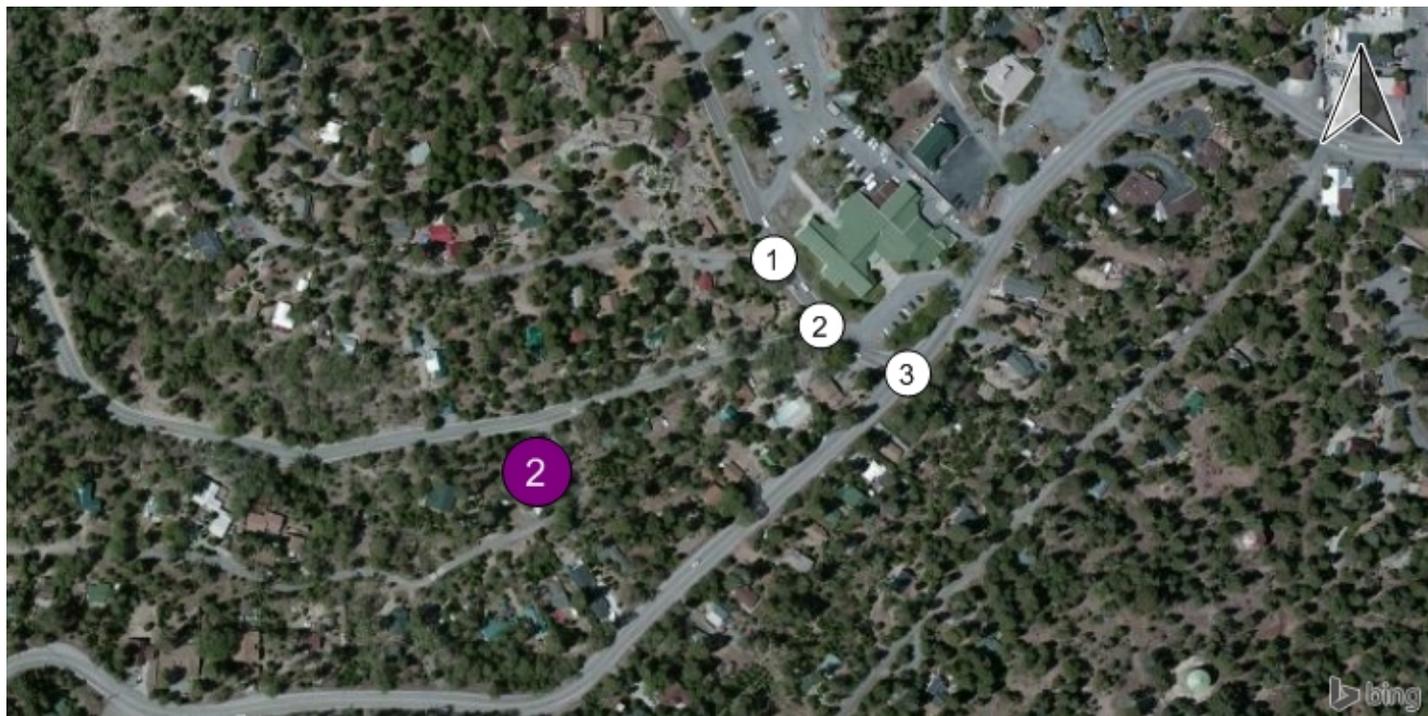
Traffic Conditions



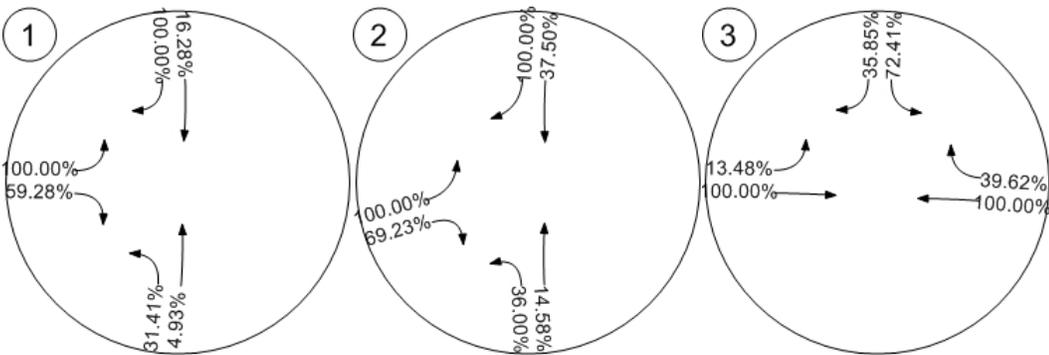
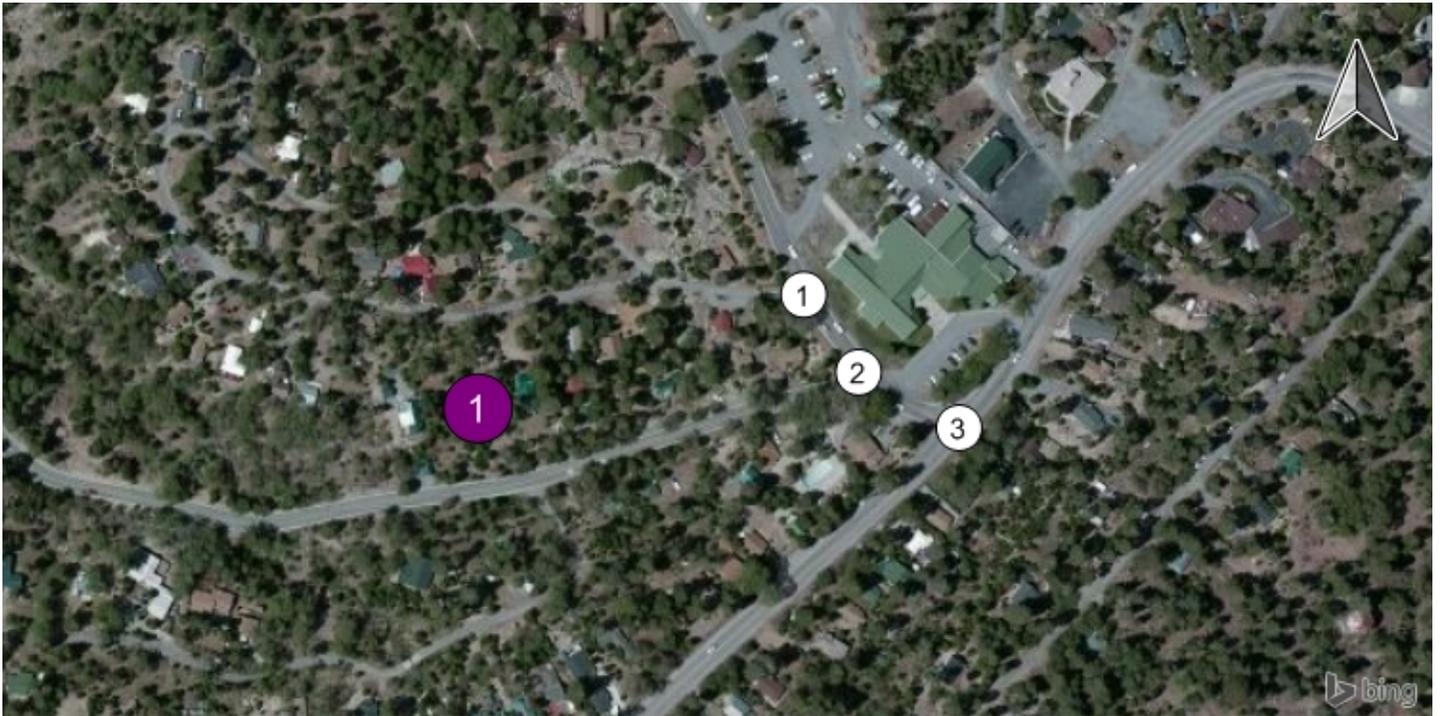
Fair Share - Fair Share Volumes - Zone 1: Cabin



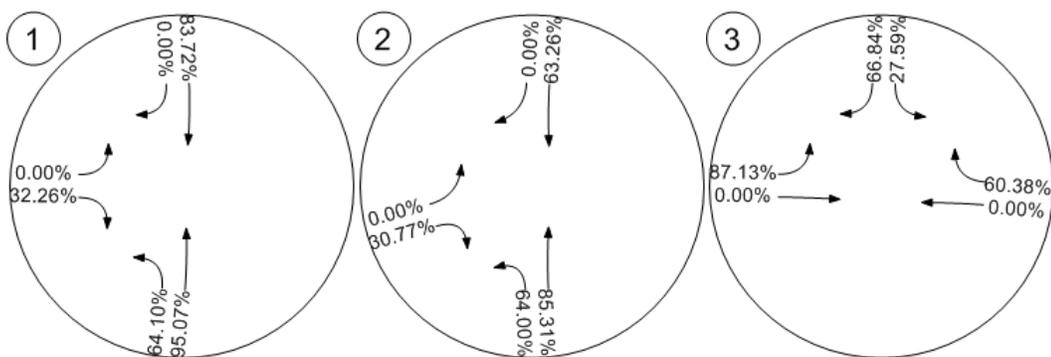
Fair Share - Fair Share Volumes - Zone 2: Special Event



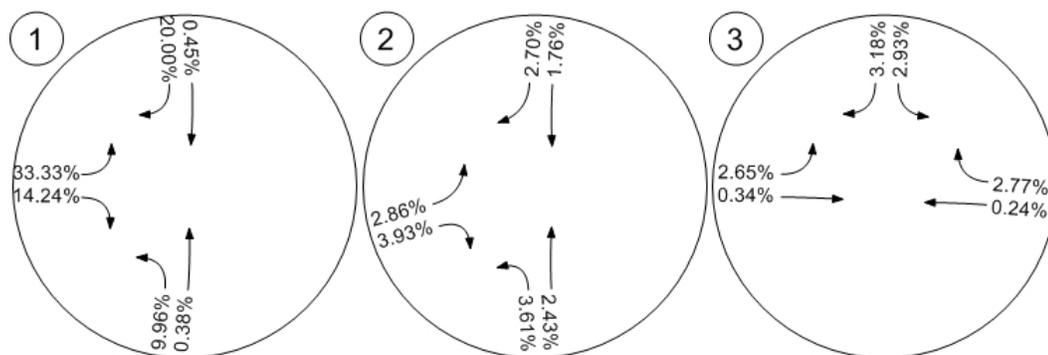
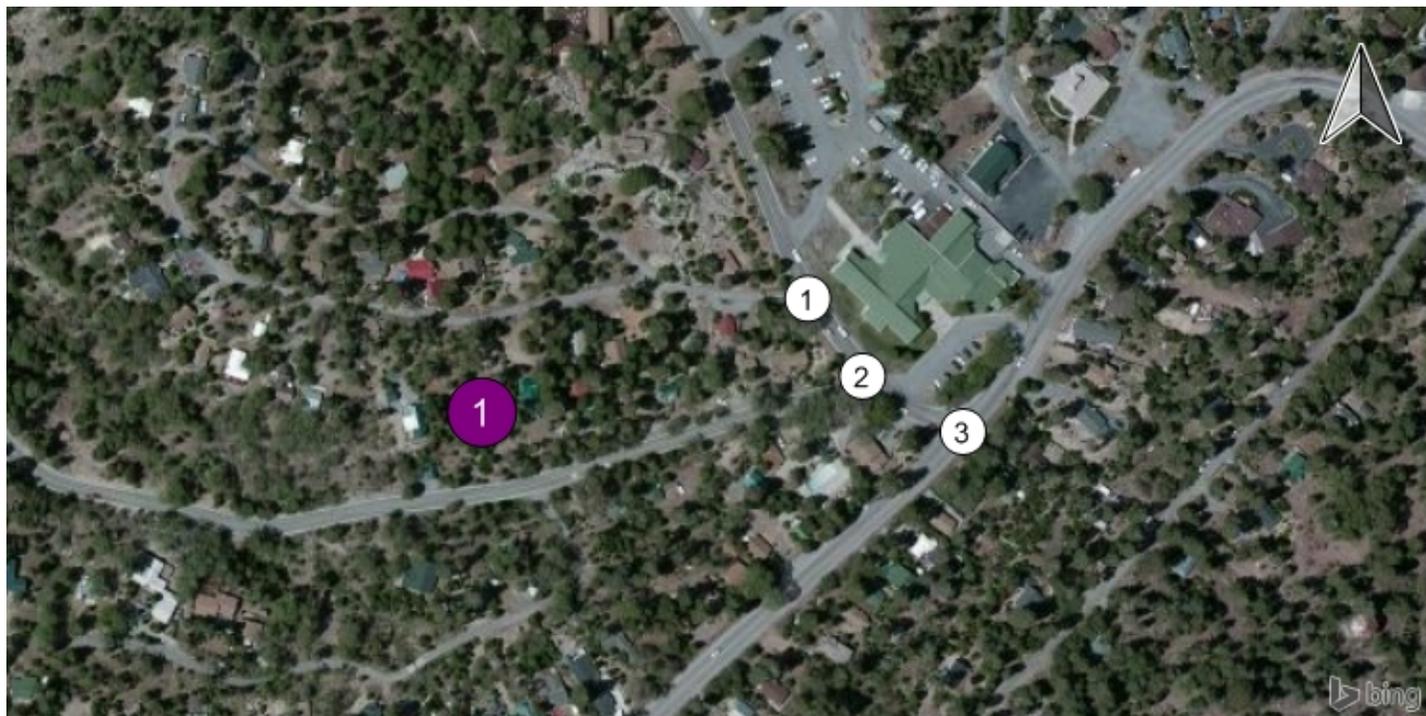
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



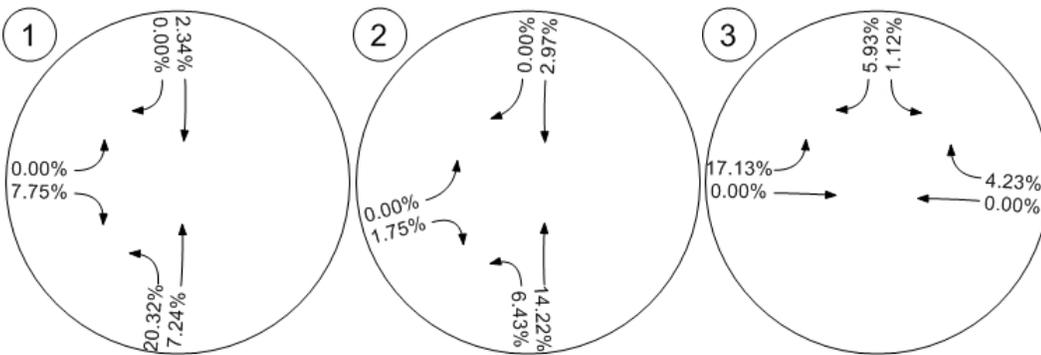
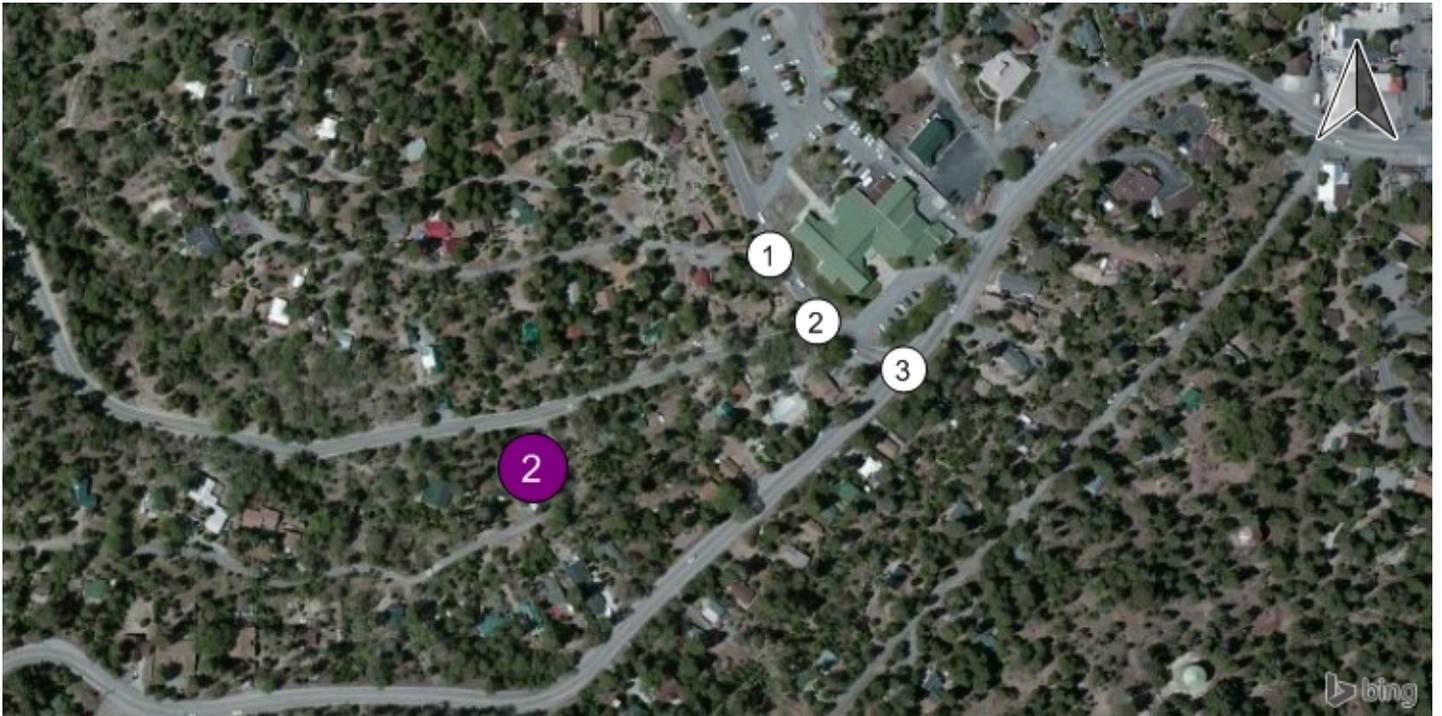
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Opening Year (2018) Without Project

Arrowhead Pine Rose Cabins

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Scenario 1: Opening Year (2018) Without Project - Friday Evening

Report File: J:\...\OY Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.004	10.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.032	10.8	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.256	17.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	137	75	2	3	7
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	155	85	2	3	8
Peak Hour Factor	0.9237	0.9237	0.9237	0.9237	0.9237	0.9237
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	23	1	1	2
Total Analysis Volume [veh/h]	10	168	92	2	3	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	10.14	8.77
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.40	0.40	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	9.98	9.98	0.00	0.00	1.03	1.03
d_A, Approach Delay [s/veh]	0.42		0.00		9.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.65					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	34	128	75	8	18	28
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	145	85	9	20	32
Peak Hour Factor	0.9583	0.9583	0.9583	0.9583	0.9583	0.9583
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	38	22	2	5	8
Total Analysis Volume [veh/h]	40	151	89	9	21	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.03
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	10.82	9.03
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.43	0.43	0.00	0.00	0.21	0.21
95th-Percentile Queue Length [ft]	10.85	10.85	0.00	0.00	5.30	5.30
d_A, Approach Delay [s/veh]	1.56		0.00		9.72	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.40					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.256

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	74	29	62	158	182	98
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	33	70	179	206	111
Peak Hour Factor	0.8143	0.8143	0.8143	0.8143	0.8143	0.8143
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	10	21	55	63	34
Total Analysis Volume [veh/h]	103	41	86	220	253	136
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

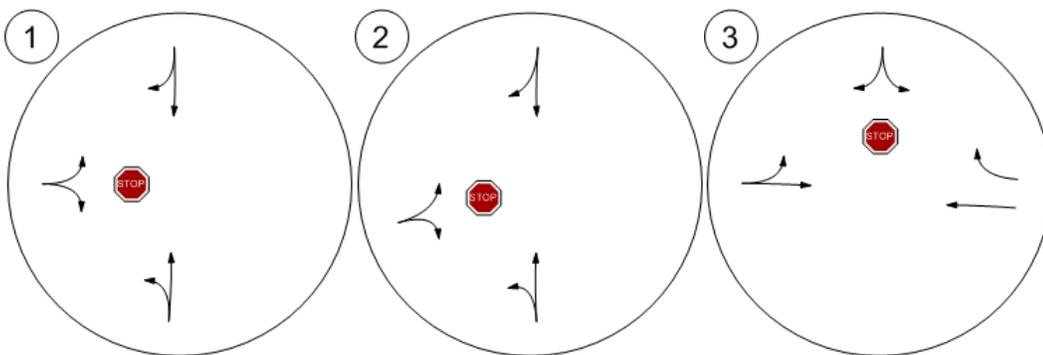
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.05	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.31	12.93	8.29	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.29	1.29	1.04	1.04	0.00	0.00
95th-Percentile Queue Length [ft]	32.26	32.26	26.00	26.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.06		2.33		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.61					
Intersection LOS	C					

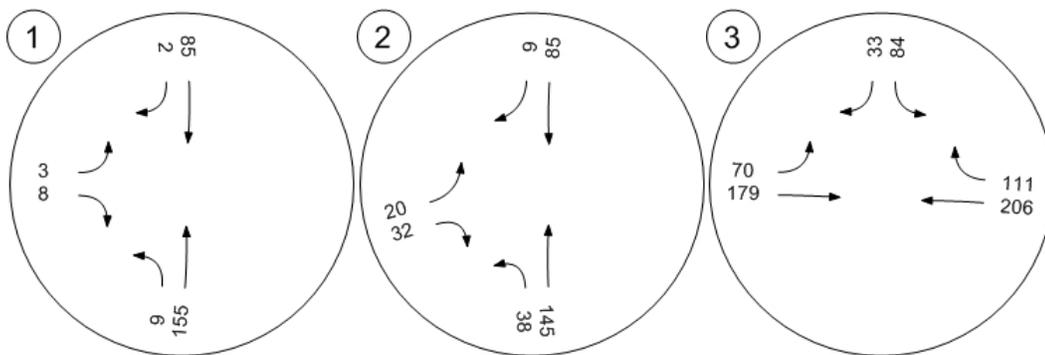
Study Intersections



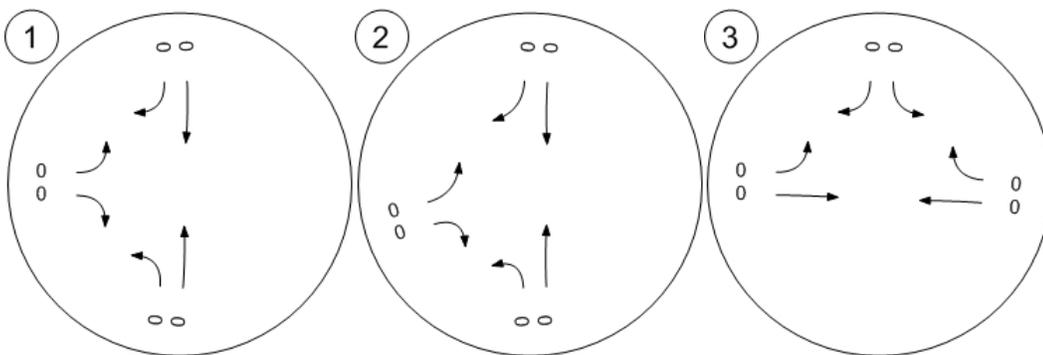
Lane Configuration and Traffic Control



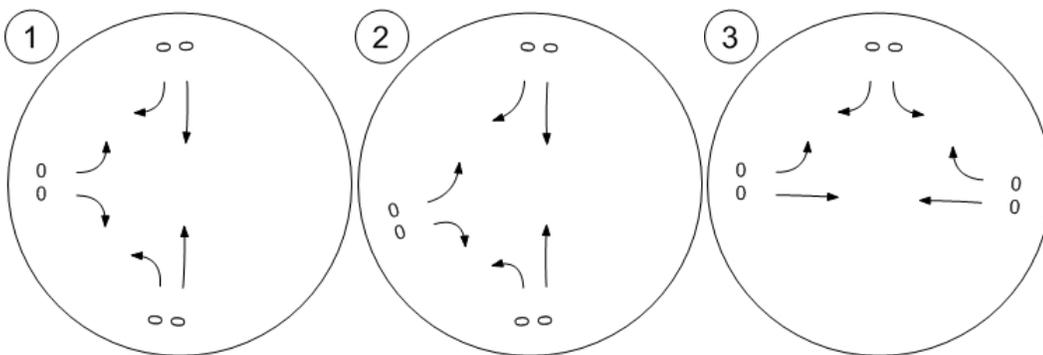
Traffic Volume - Base Volume



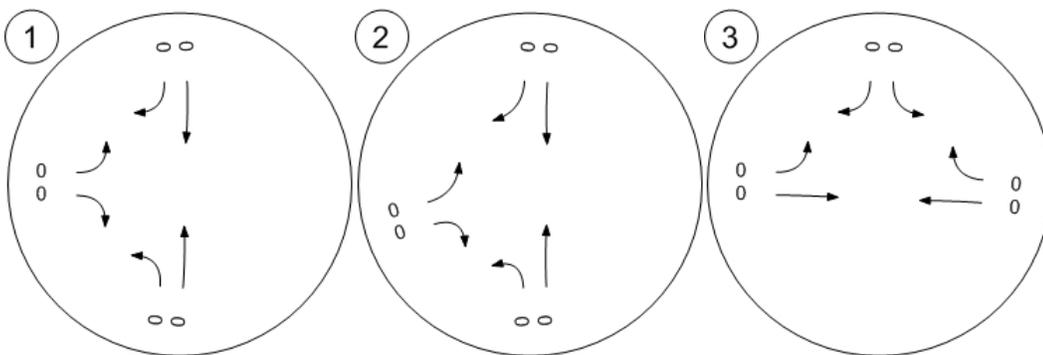
Traffic Volume - In-Process Volume



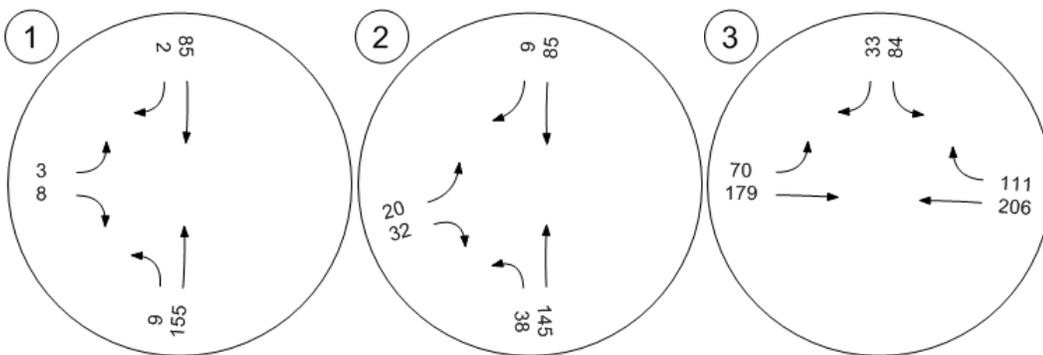
Traffic Volume - Net New Site Trips



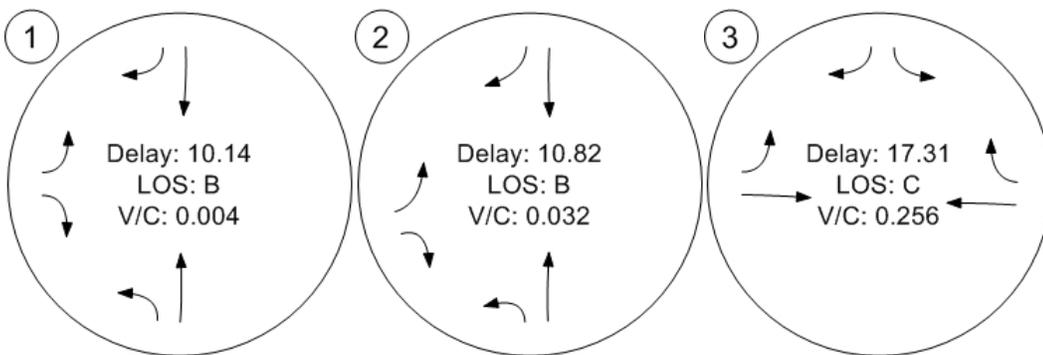
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Arrowhead Pine Rose Cabins

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Scenario 1: Opening Year (2018) Without Project - Saturday
Mid-Day

Report File: J:\...\OY Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.000	9.9	A
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.028	10.9	B
3	Grandview Road (NS) at SR- 189 (EW)	Two-way stop	HCM 2010	SB Left	0.140	12.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	95	90	1	0	10
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	107	102	1	0	11
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	28	27	0	0	3
Total Analysis Volume [veh/h]	11	113	108	1	0	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	0.00	9.89	8.83
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.27	0.27	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	6.78	6.78	0.00	0.00	0.96	0.96
d_A, Approach Delay [s/veh]	0.66		0.00		8.83	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.77					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	38	56	104	15	14	39
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	63	118	17	16	44
Peak Hour Factor	0.8680	0.8680	0.8680	0.8680	0.8680	0.8680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	18	34	5	5	13
Total Analysis Volume [veh/h]	50	73	136	20	18	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.06
d_M, Delay for Movement [s/veh]	7.60	0.00	0.00	0.00	10.91	9.37
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.28	0.28	0.00	0.00	0.27	0.27
95th-Percentile Queue Length [ft]	7.01	7.01	0.00	0.00	6.84	6.84
d_A, Approach Delay [s/veh]	3.09		0.00		9.77	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.140

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	70	54	45	95	146	69
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	61	51	107	165	78
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	16	13	28	43	20
Total Analysis Volume [veh/h]	83	64	53	112	172	82
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

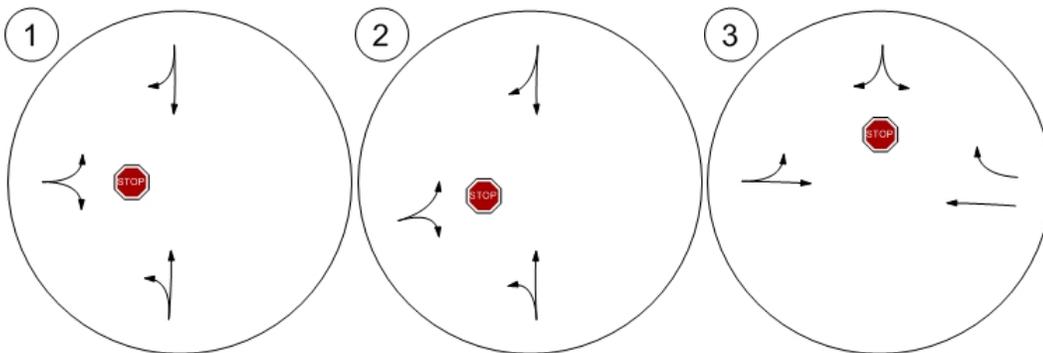
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.07	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.50	10.52	7.83	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.80	0.80	0.43	0.43	0.00	0.00
95th-Percentile Queue Length [ft]	20.10	20.10	10.66	10.66	0.00	0.00
d_A, Approach Delay [s/veh]	11.64		2.52		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.76					
Intersection LOS	B					

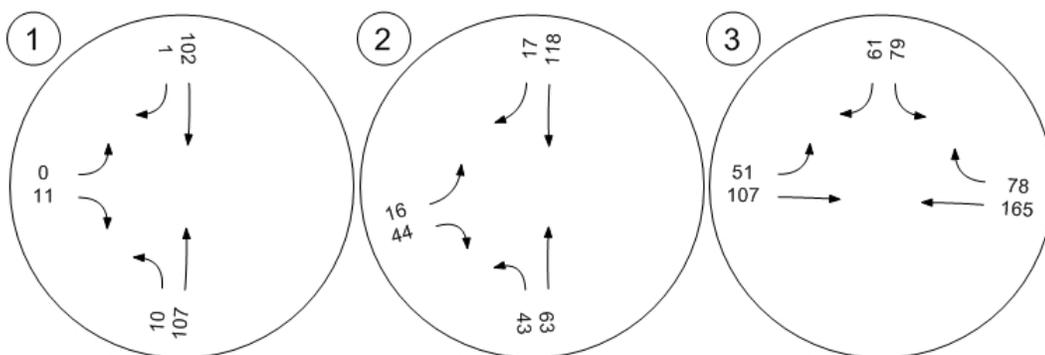
Study Intersections



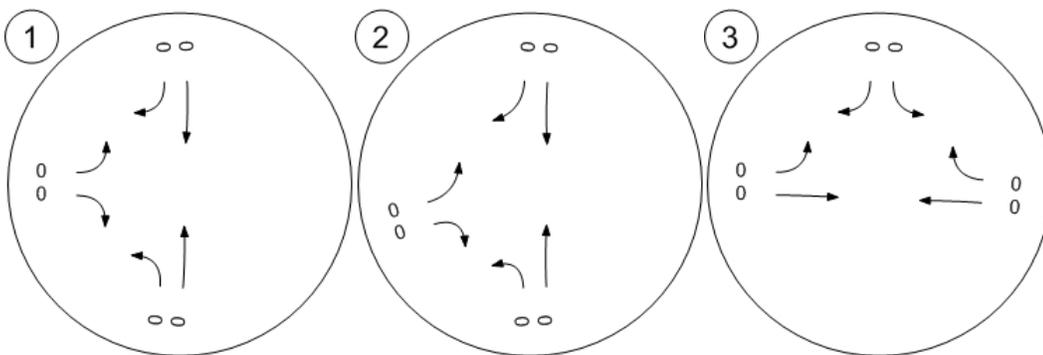
Lane Configuration and Traffic Control



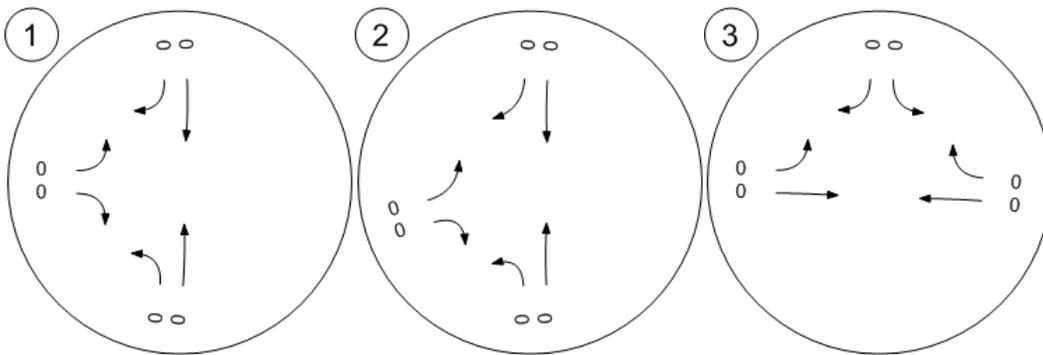
Traffic Volume - Base Volume



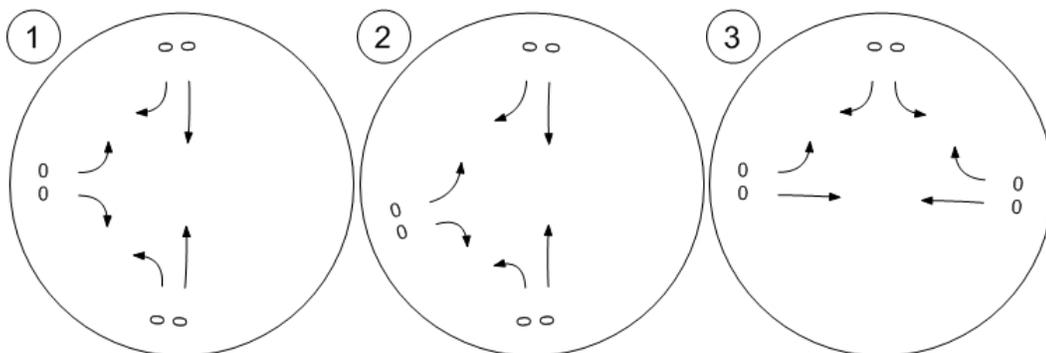
Traffic Volume - In-Process Volume



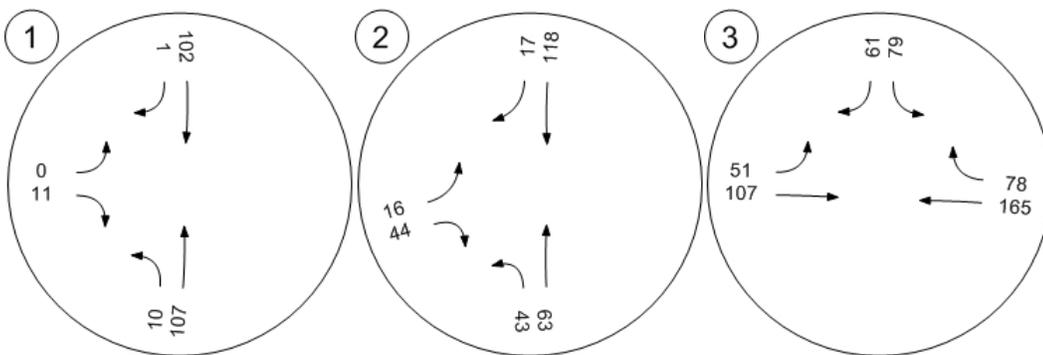
Traffic Volume - Net New Site Trips



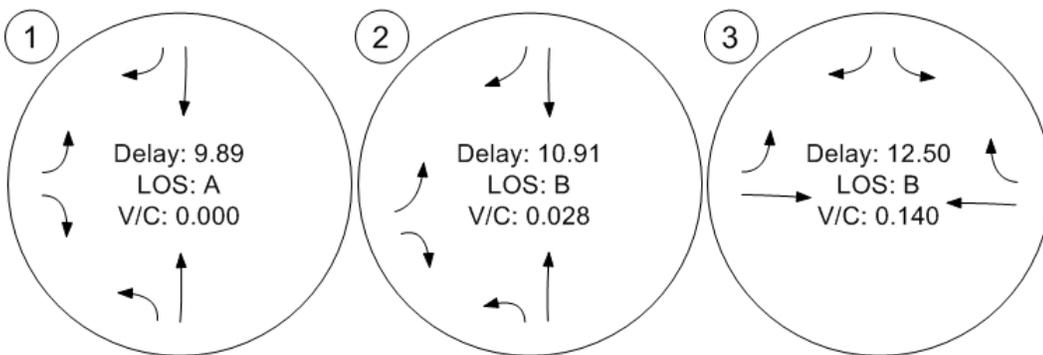
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Opening Year (2018) With Project

Arrowhead Pine Rose Cabins

Vistro File: J:\...\OY Friday.vistro

Scenario 2: Opening Year (2018) With Project - Friday
Evening

Report File: J:\...\OYP Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.006	10.8	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.039	11.7	B
3	Grandview Road (NS) at SR- 189 (EW)	Two-way stop	HCM 2010	SB Left	0.344	22.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	8	137	75	2	3	7
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	31	4	1	1	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	186	89	3	4	13
Peak Hour Factor	0.9237	0.9237	0.9237	0.9237	0.9237	0.9237
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	50	24	1	1	4
Total Analysis Volume [veh/h]	31	201	96	3	4	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	7.44	0.00	0.00	0.00	10.83	8.82
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.54	0.54	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft]	13.61	13.61	0.00	0.00	1.60	1.60
d_A, Approach Delay [s/veh]	0.99		0.00		9.27	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.14					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	34	128	75	8	18	28
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	51	9	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	196	94	10	21	36
Peak Hour Factor	0.9583	0.9583	0.9583	0.9583	0.9583	0.9583
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	51	25	3	5	9
Total Analysis Volume [veh/h]	56	205	98	10	22	38
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.04	0.04
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	0.00	11.73	9.16
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.63	0.63	0.00	0.00	0.25	0.25
95th-Percentile Queue Length [ft]	15.80	15.80	0.00	0.00	6.36	6.36
d_A, Approach Delay [s/veh]	1.61		0.00		10.10	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.39					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	74	29	62	158	182	98
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	51	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	42	121	179	206	128
Peak Hour Factor	0.8143	0.8143	0.8143	0.8143	0.8143	0.8143
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	13	37	55	63	39
Total Analysis Volume [veh/h]	109	52	149	220	253	157
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

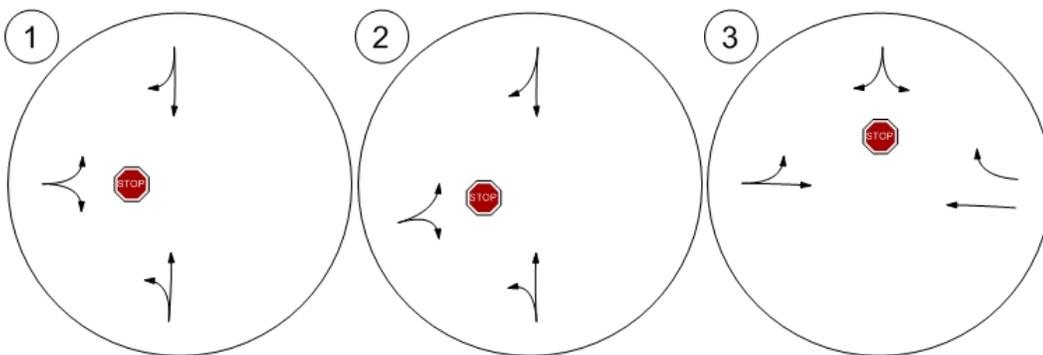
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.07	0.13	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	22.61	15.79	8.56	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	1.95	1.95	1.38	1.38	0.00	0.00
95th-Percentile Queue Length [ft]	48.87	48.87	34.52	34.52	0.00	0.00
d_A, Approach Delay [s/veh]	20.41		3.46		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.85					
Intersection LOS	C					

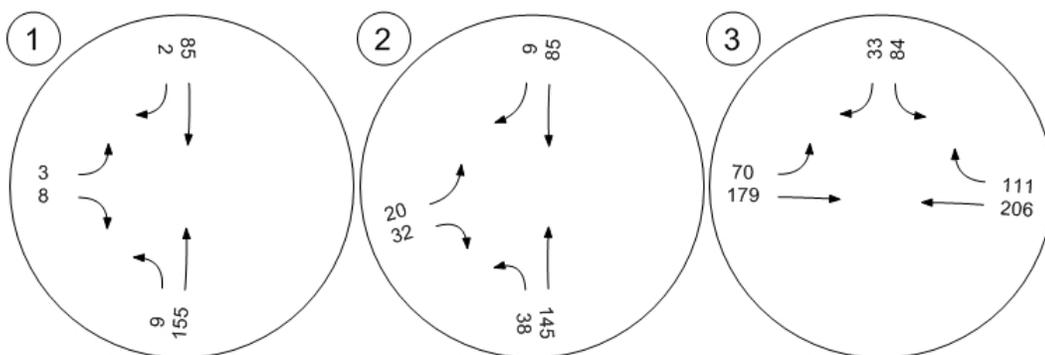
Study Intersections



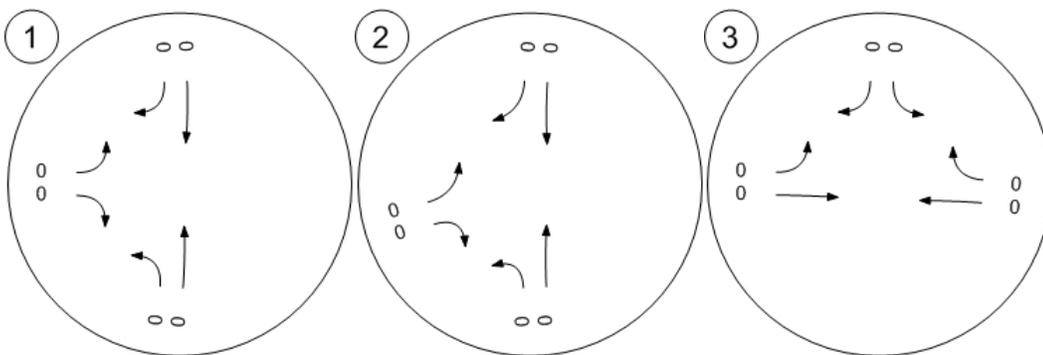
Lane Configuration and Traffic Control



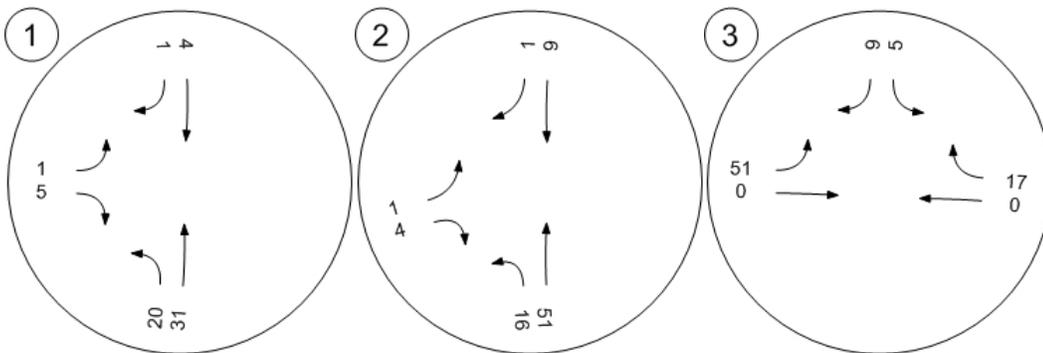
Traffic Volume - Base Volume



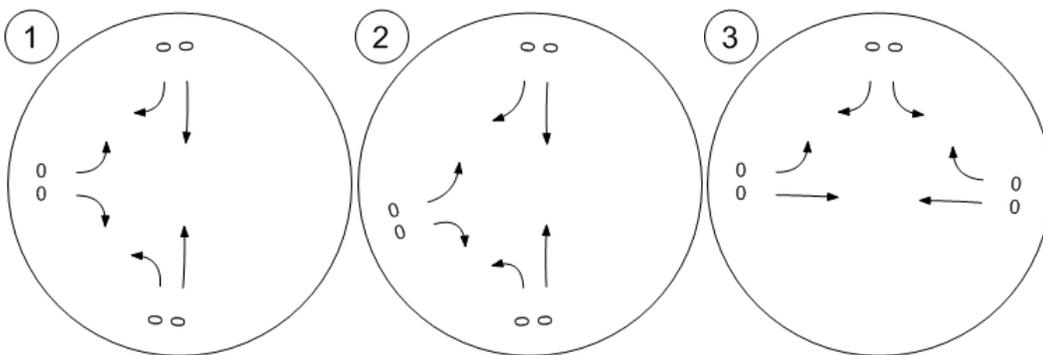
Traffic Volume - In-Process Volume



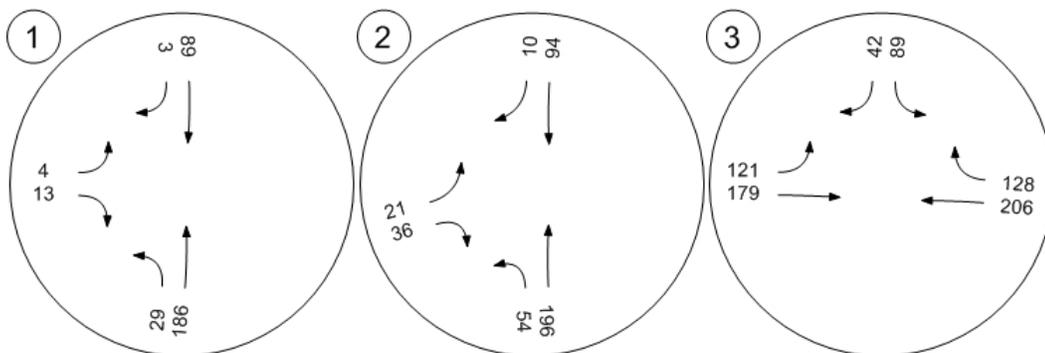
Traffic Volume - Net New Site Trips



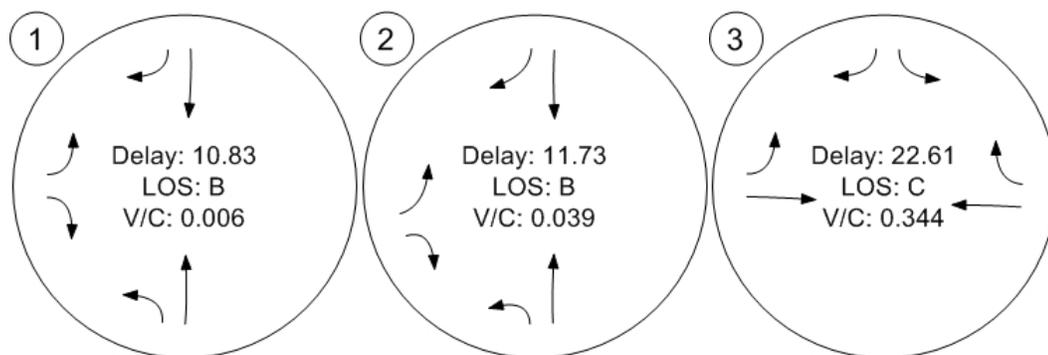
Traffic Volume - Other Volume



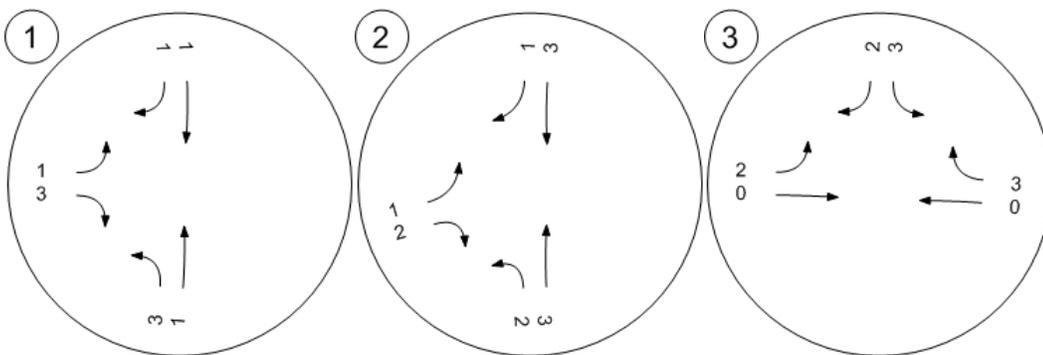
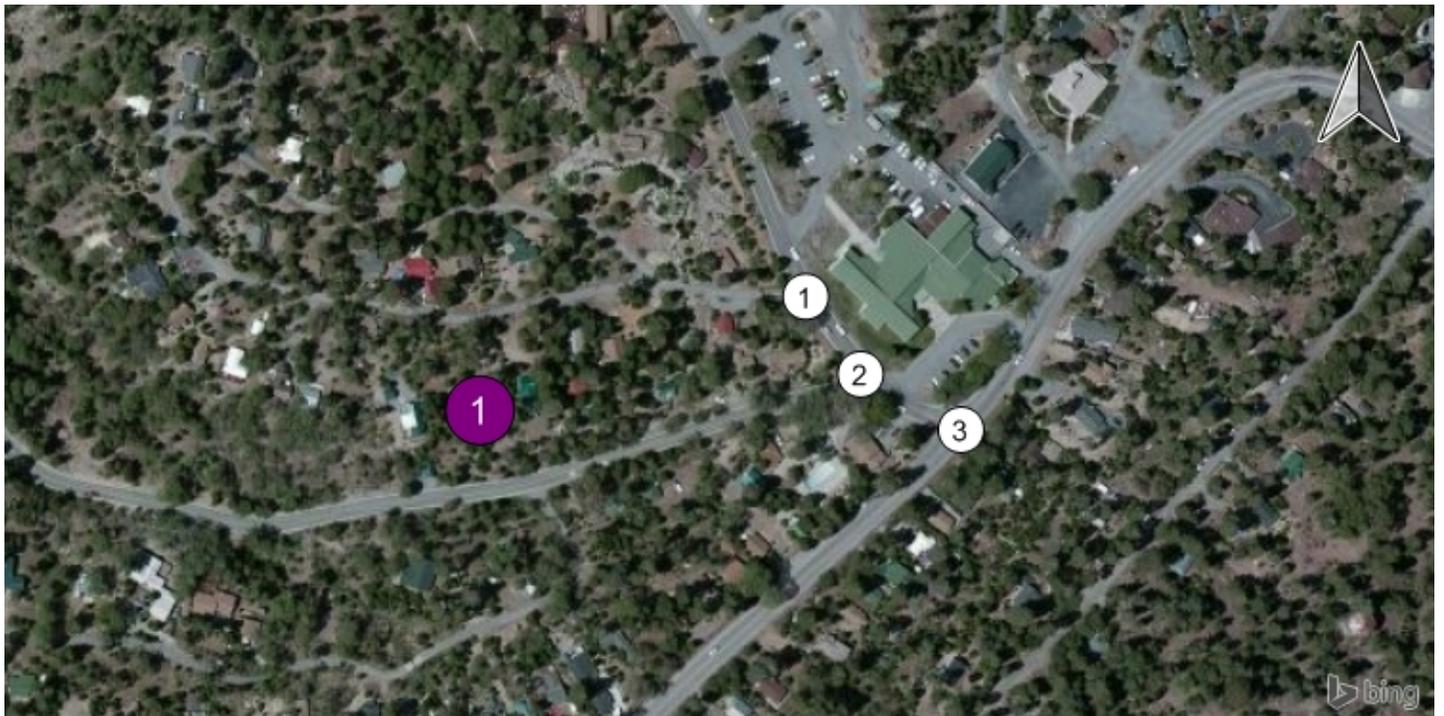
Traffic Volume - Future Total Volume



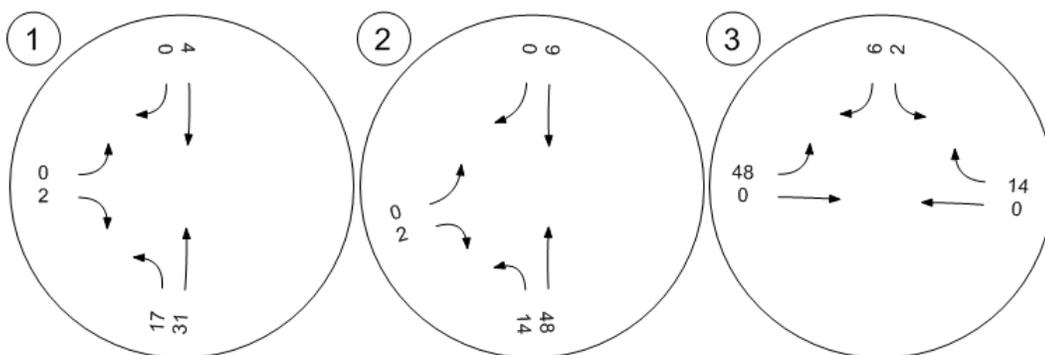
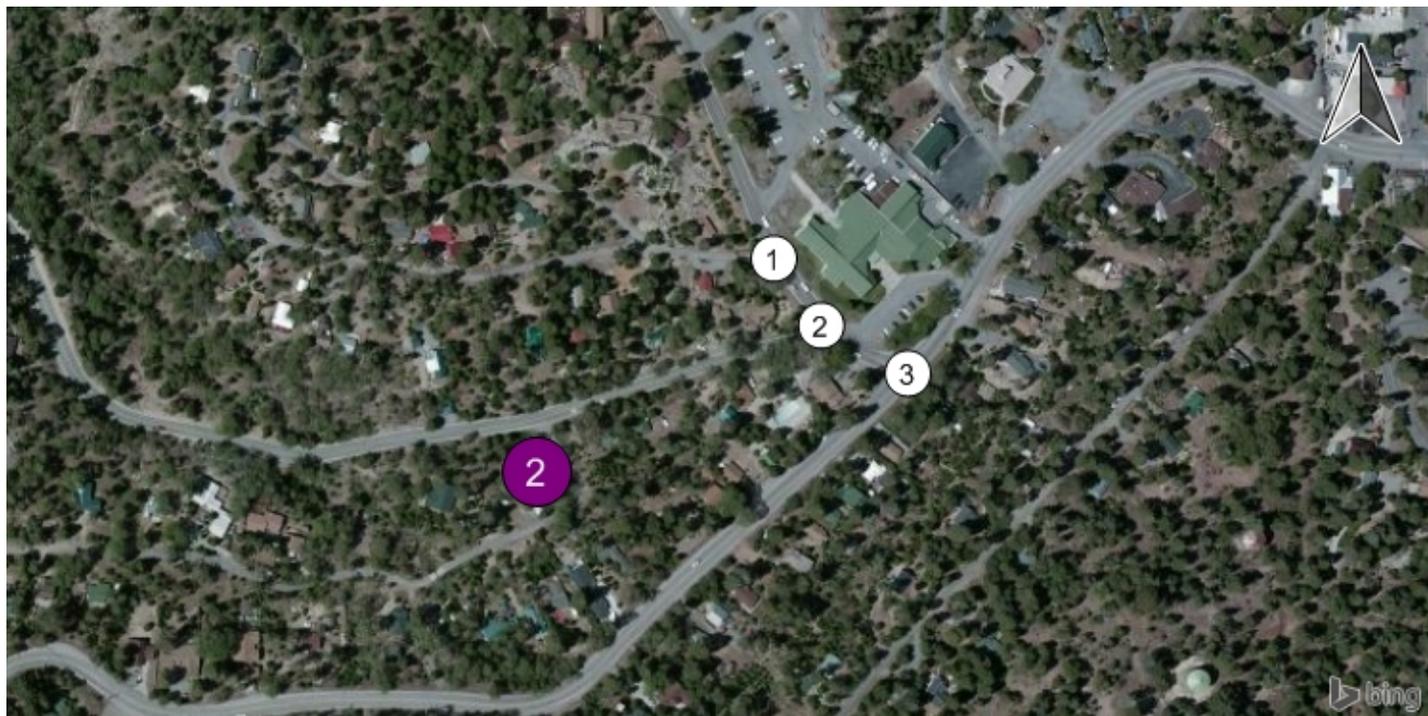
Traffic Conditions



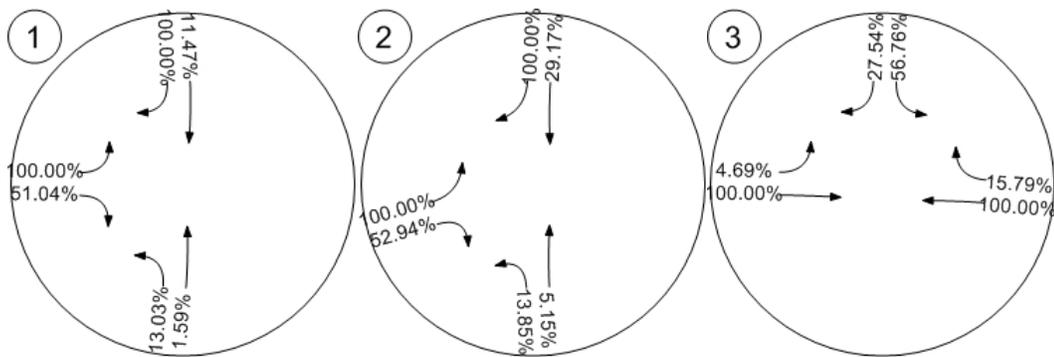
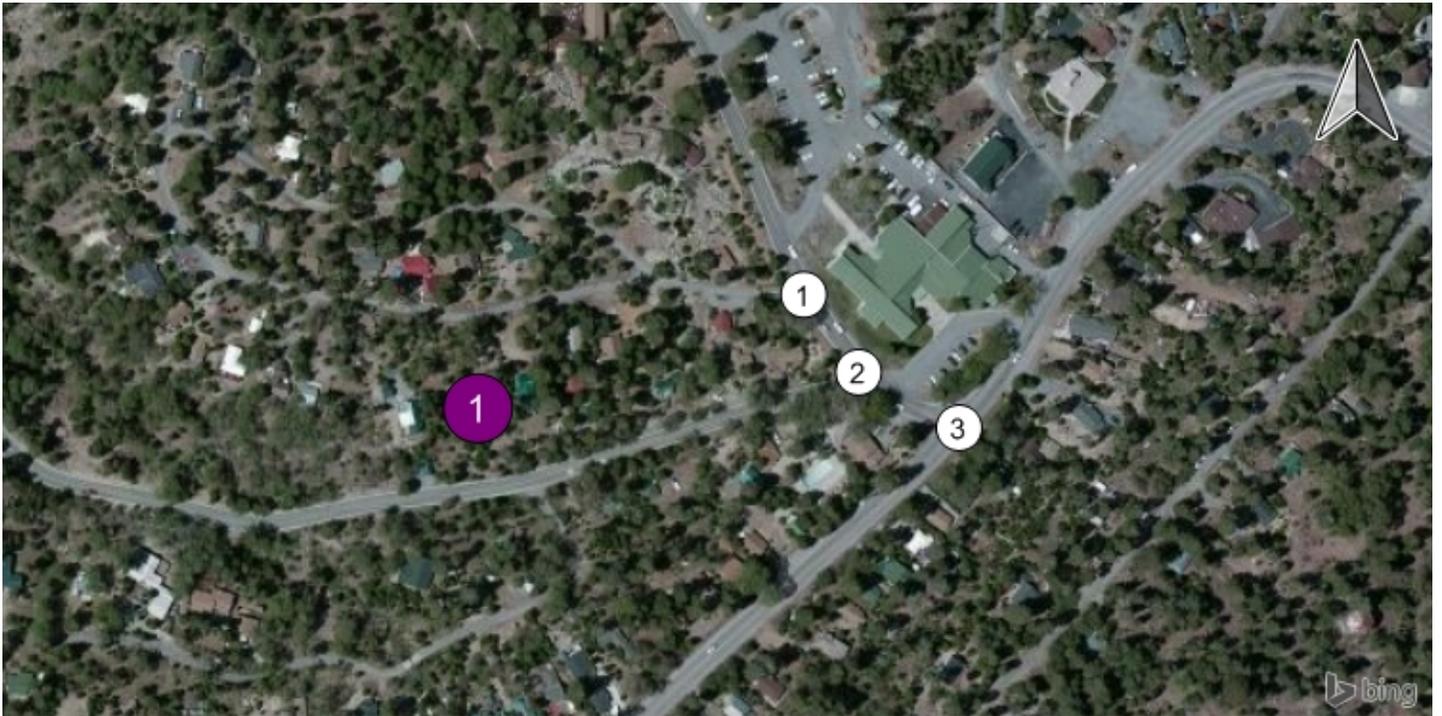
Fair Share - Fair Share Volumes - Zone 1: Cabin



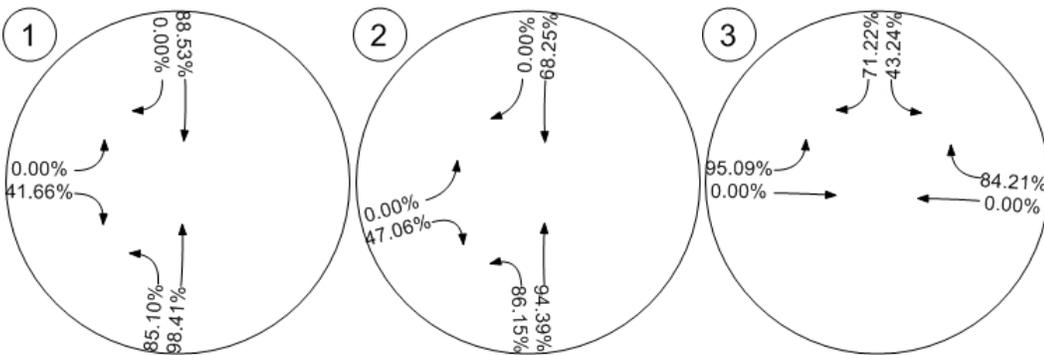
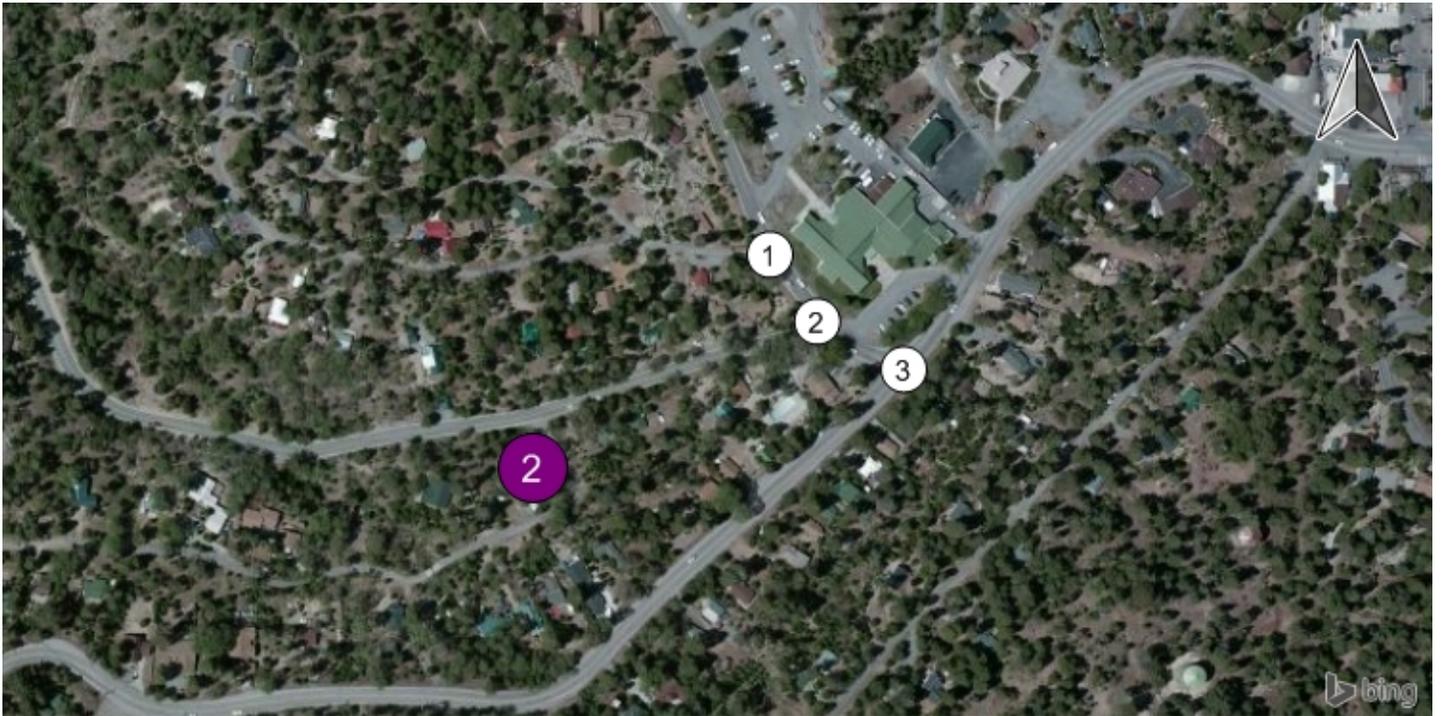
Fair Share - Fair Share Volumes - Zone 2: Special Event



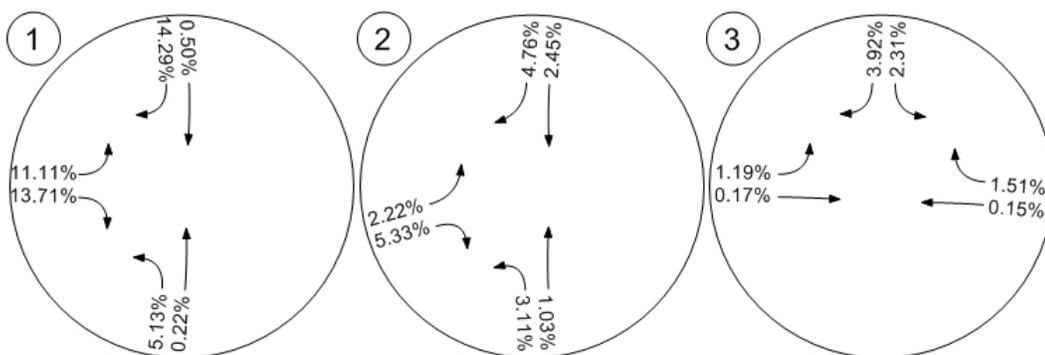
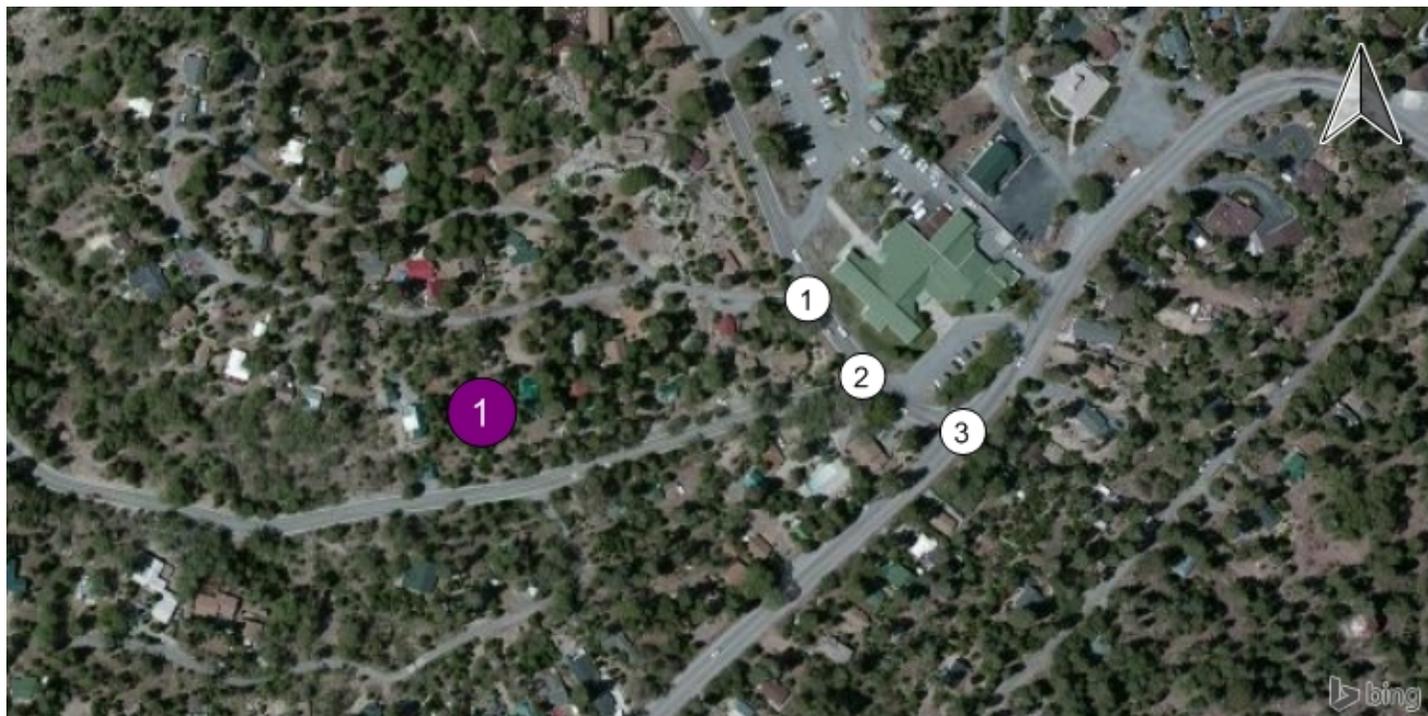
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



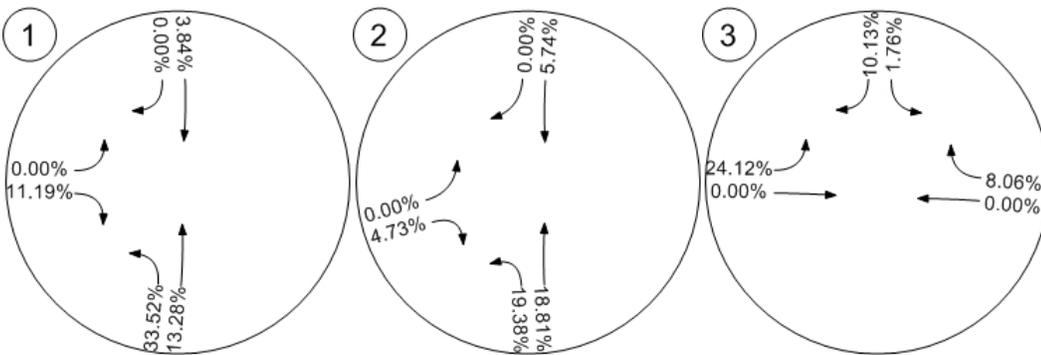
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Arrowhead Pine Rose Cabins

Vistro File: J:\...\OY Saturday.vistro

Scenario 2: Opening Year (2018) With Project - Saturday
Mid-Day

Report File: J:\...\OYP Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.001	10.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.032	11.3	B
3	Grandview Road (NS) at SR- 189 (EW)	Two-way stop	HCM 2010	SB Left	0.157	13.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	95	90	1	0	10
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	10	3	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	117	105	2	1	15
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	31	28	1	0	4
Total Analysis Volume [veh/h]	19	124	111	2	1	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	10.14	8.88
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.32	0.32	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft]	7.95	7.95	0.00	0.00	1.40	1.40
d_A, Approach Delay [s/veh]	0.99		0.00		8.95	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	38	56	104	15	14	39
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	18	7	1	1	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	81	125	18	17	47
Peak Hour Factor	0.8680	0.8680	0.8680	0.8680	0.8680	0.8680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	23	36	5	5	14
Total Analysis Volume [veh/h]	56	93	144	21	20	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.03	0.06
d_M, Delay for Movement [s/veh]	7.63	0.00	0.00	0.00	11.30	9.47
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.31	0.31
95th-Percentile Queue Length [ft]	8.73	8.73	0.00	0.00	7.63	7.63
d_A, Approach Delay [s/veh]	2.87		0.00		9.97	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.00					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.157

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	70	54	45	95	146	69
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	7	18	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	68	69	107	165	85
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	18	18	28	43	22
Total Analysis Volume [veh/h]	87	71	72	112	172	89
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

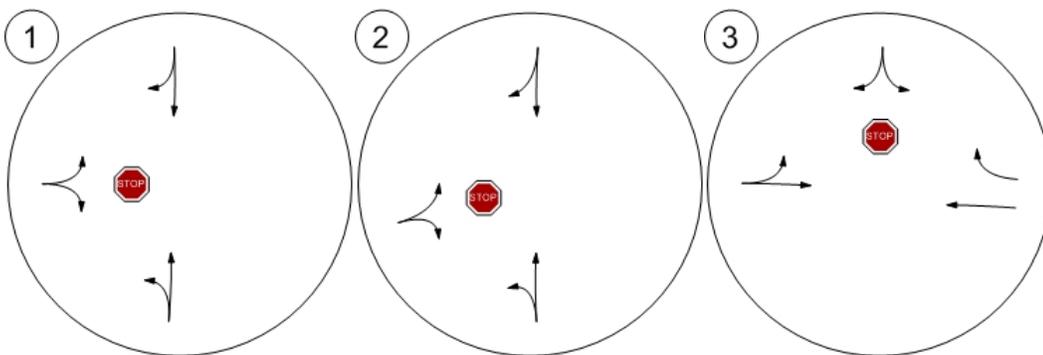
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.08	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.20	10.80	7.90	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.92	0.92	0.49	0.49	0.00	0.00
95th-Percentile Queue Length [ft]	23.12	23.12	12.16	12.16	0.00	0.00
d_A, Approach Delay [s/veh]	12.12		3.09		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.12					
Intersection LOS	B					

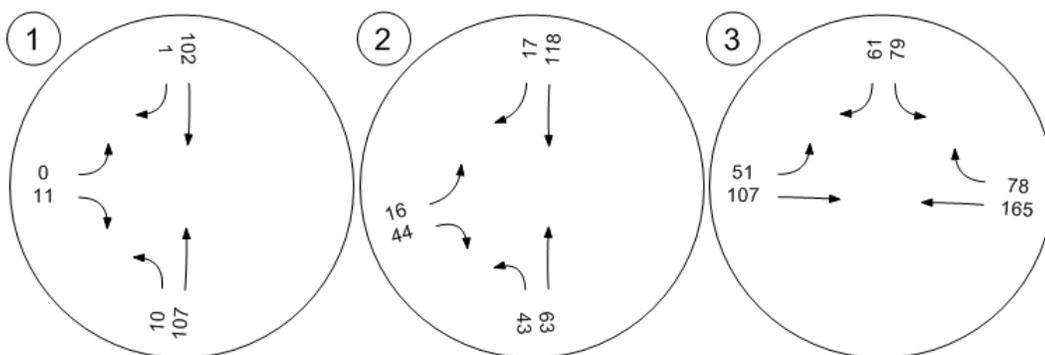
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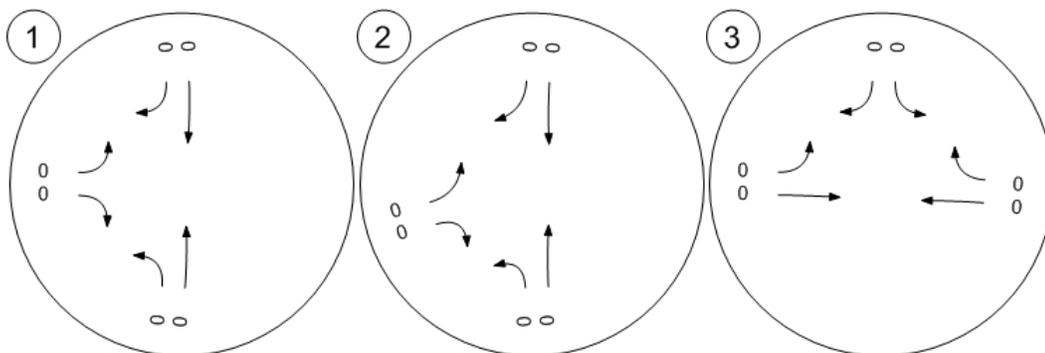
Lane Configuration and Traffic Control



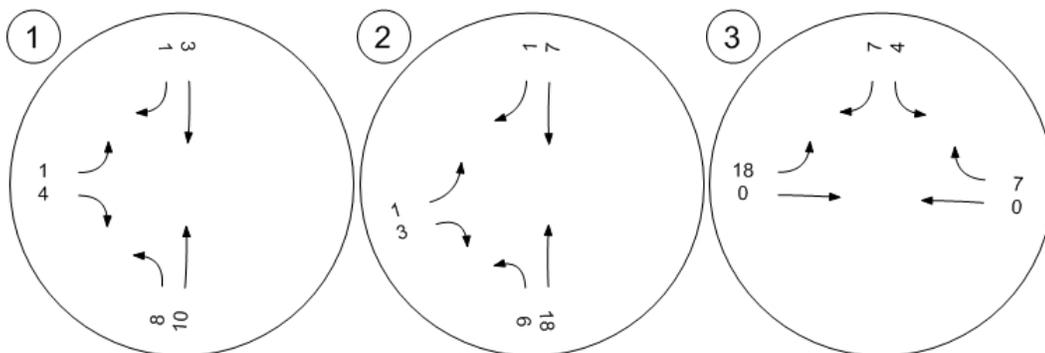
Traffic Volume - Base Volume



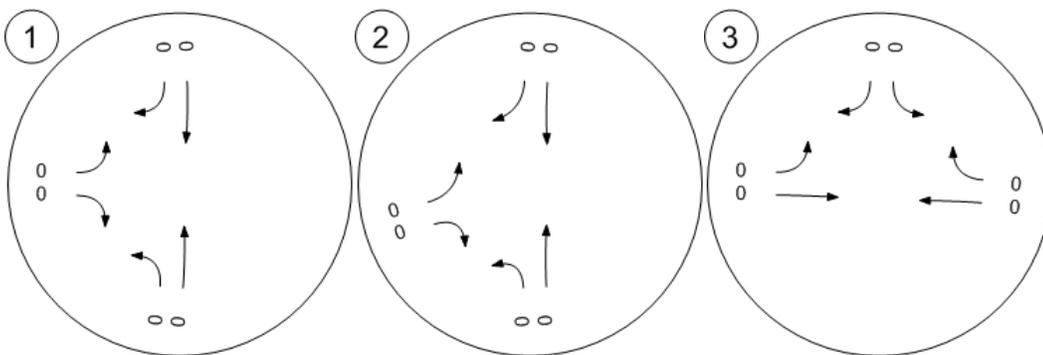
Traffic Volume - In-Process Volume



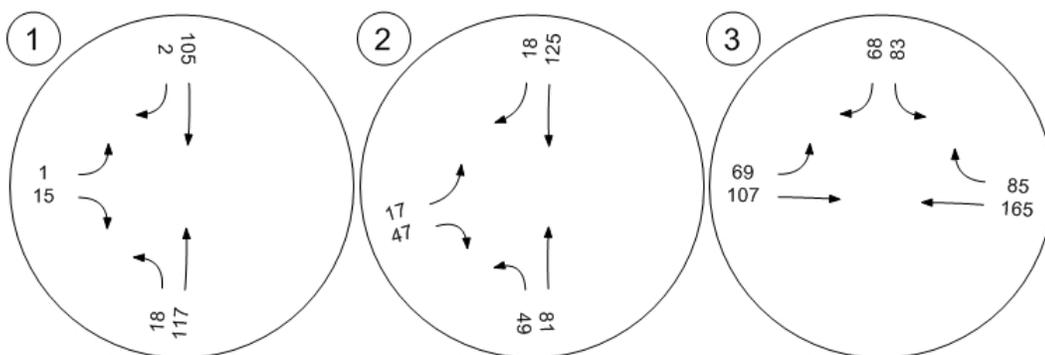
Traffic Volume - Net New Site Trips



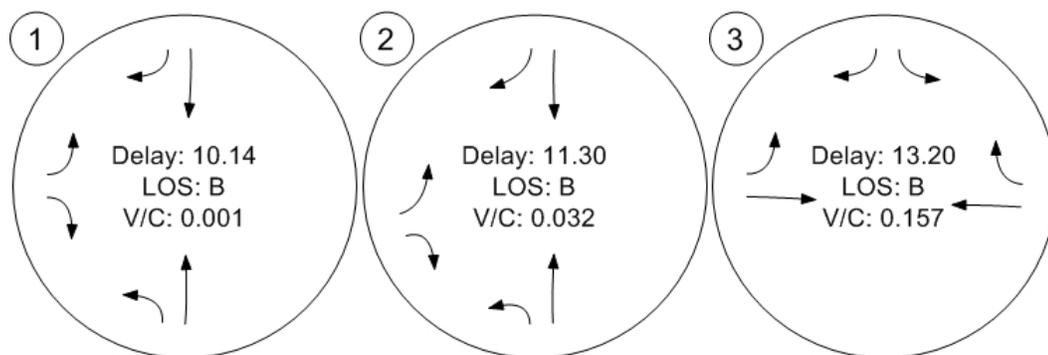
Traffic Volume - Other Volume



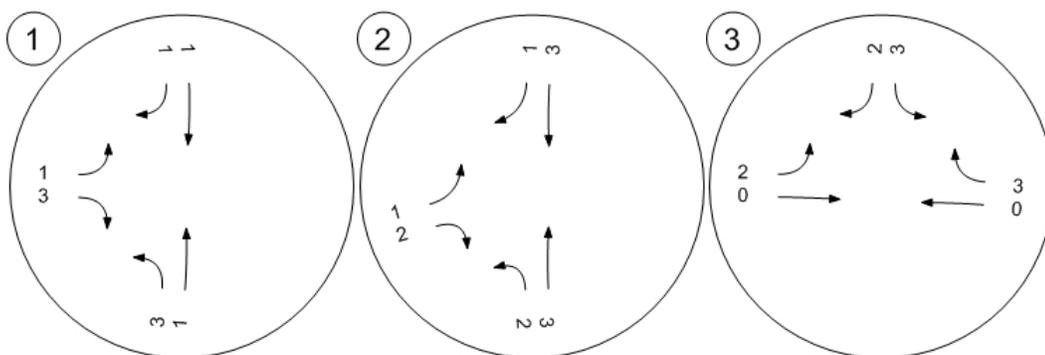
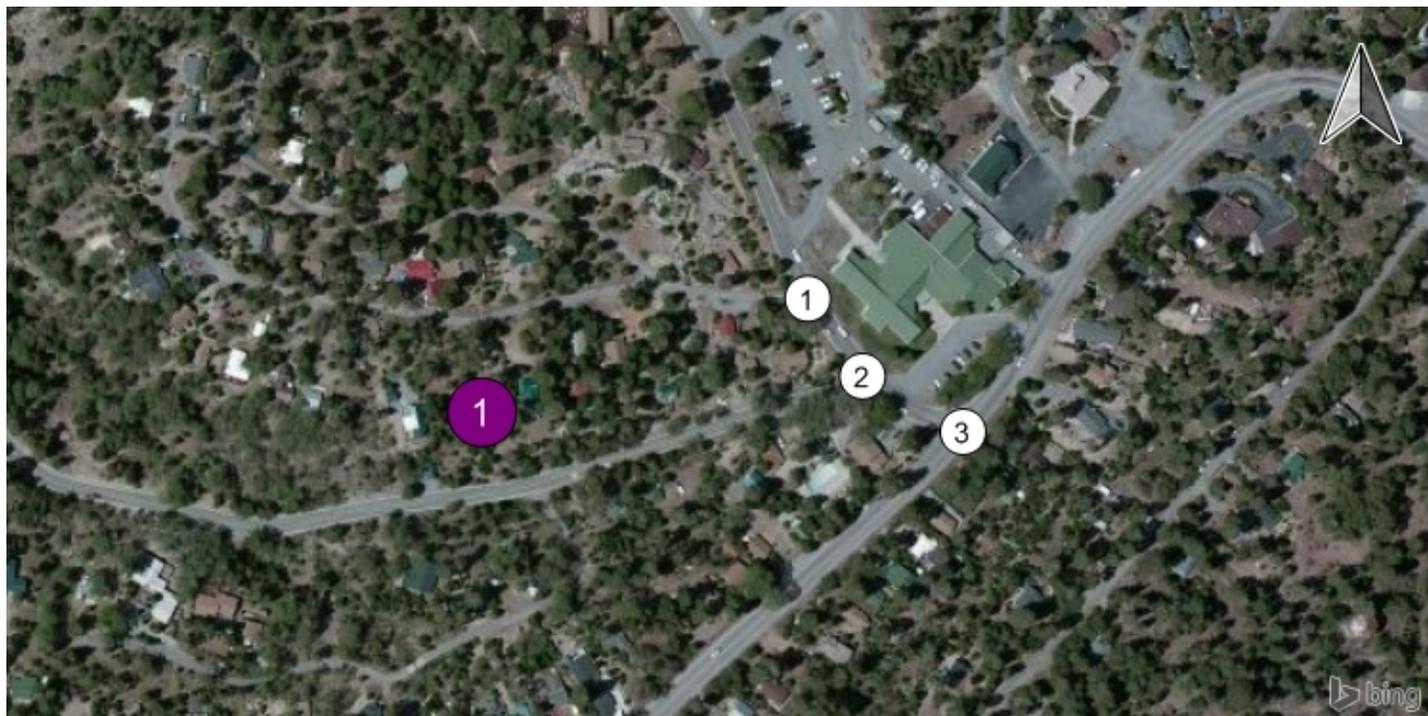
Traffic Volume - Future Total Volume



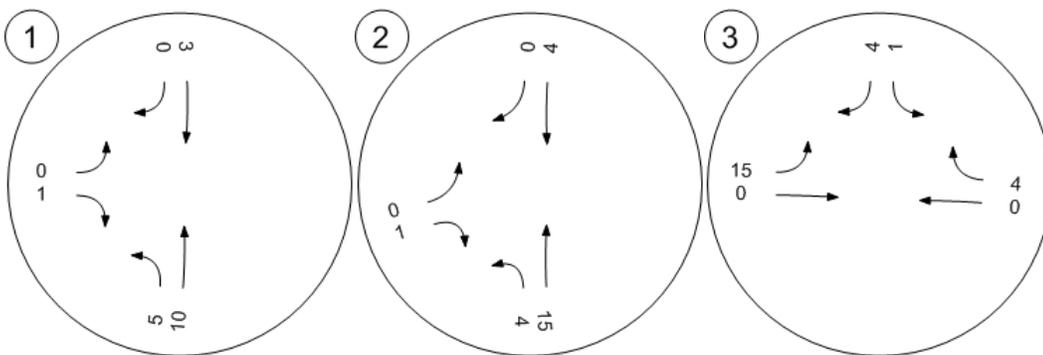
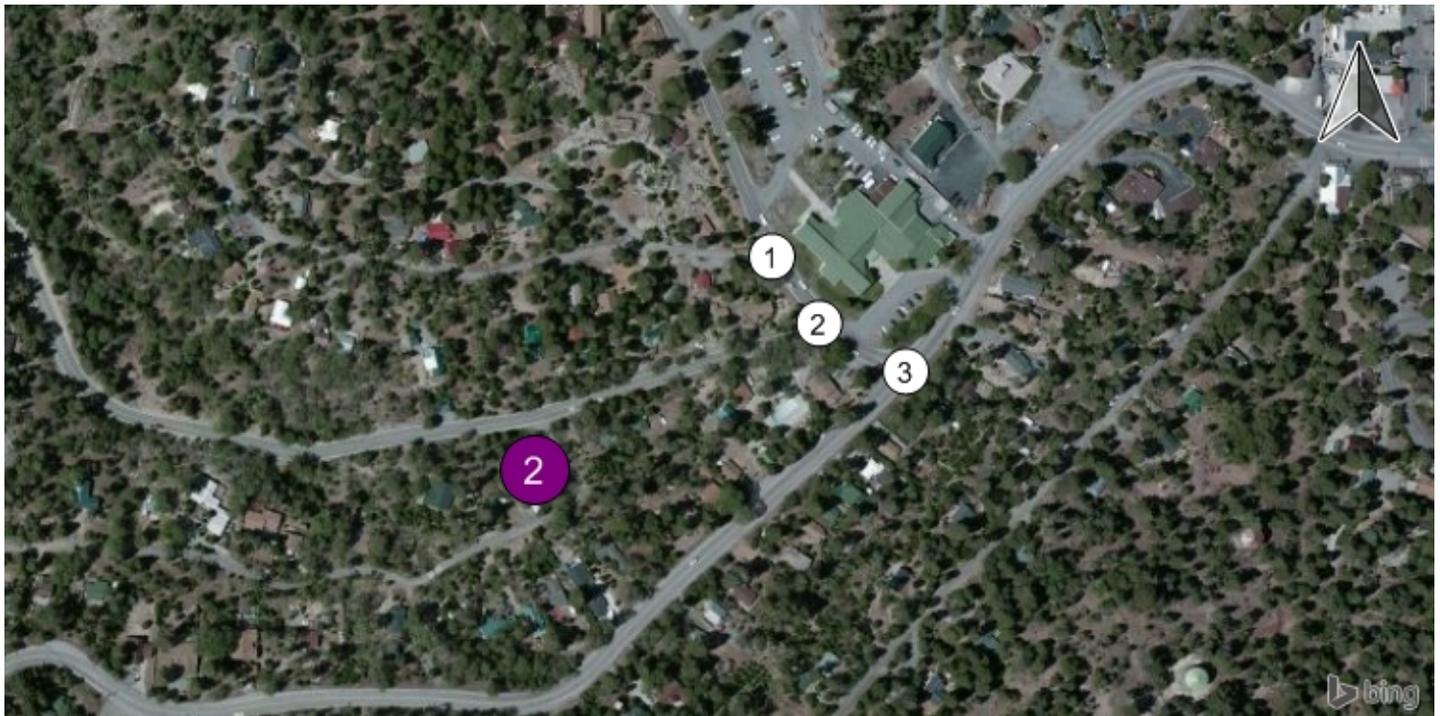
Traffic Conditions



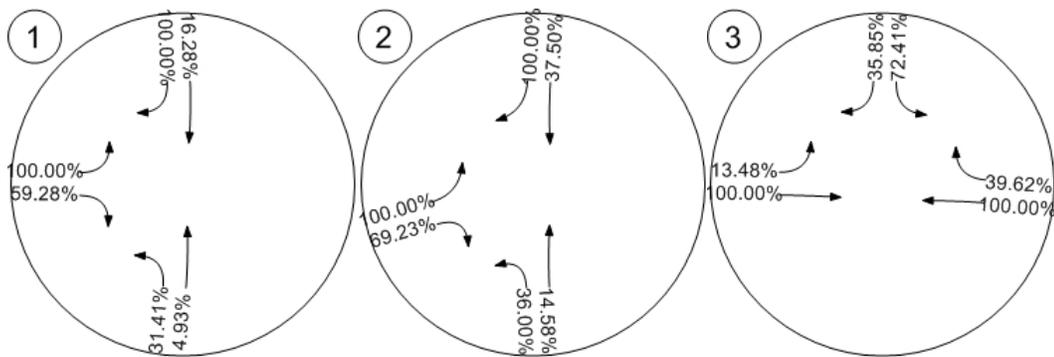
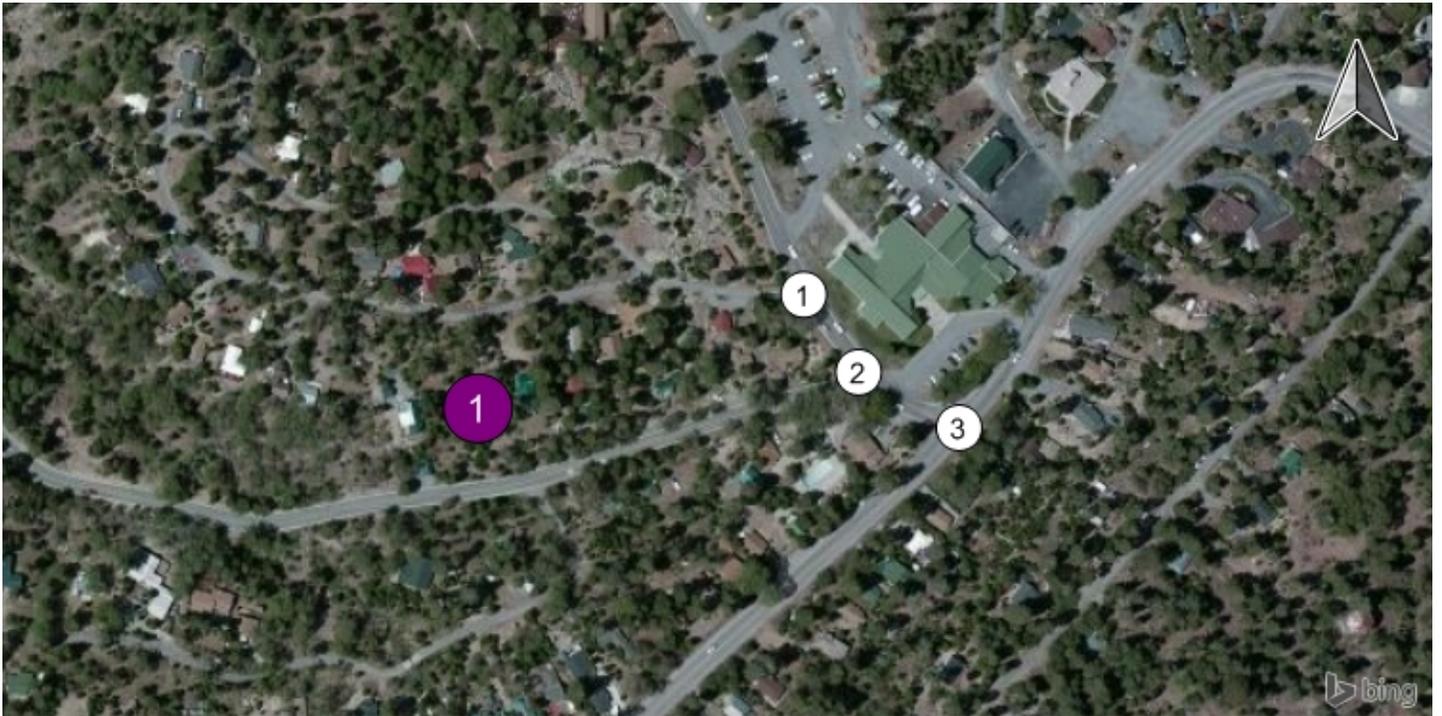
Fair Share - Fair Share Volumes - Zone 1: Cabin



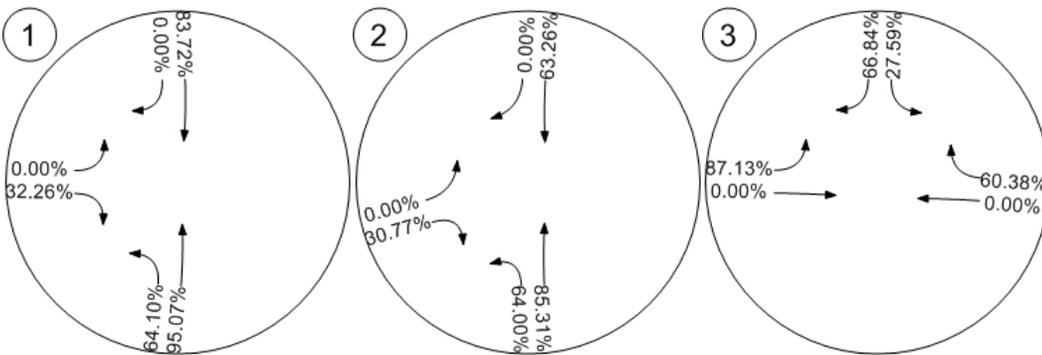
Fair Share - Fair Share Volumes - Zone 2: Special Event



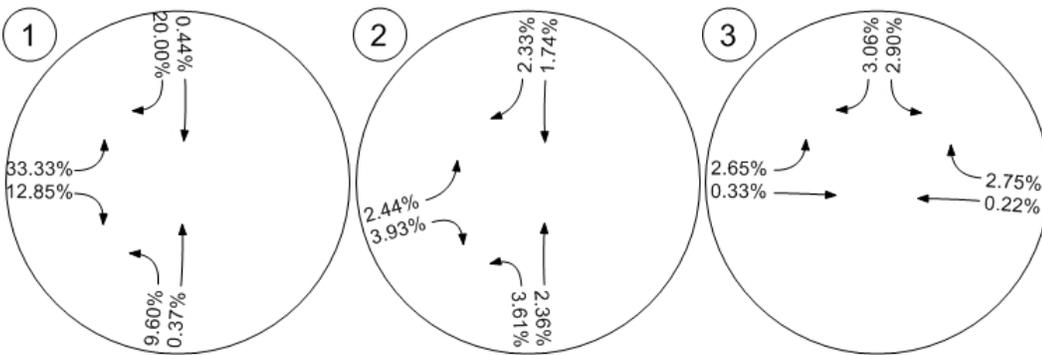
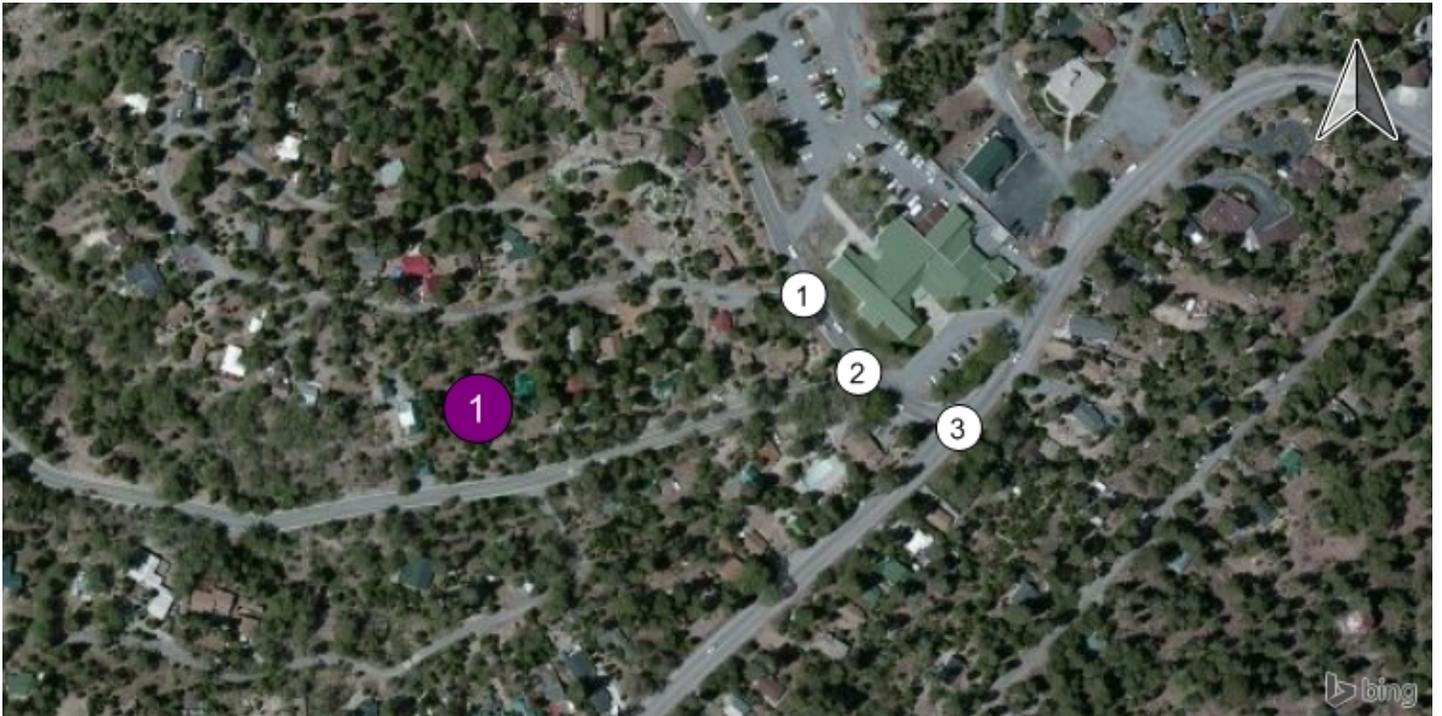
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



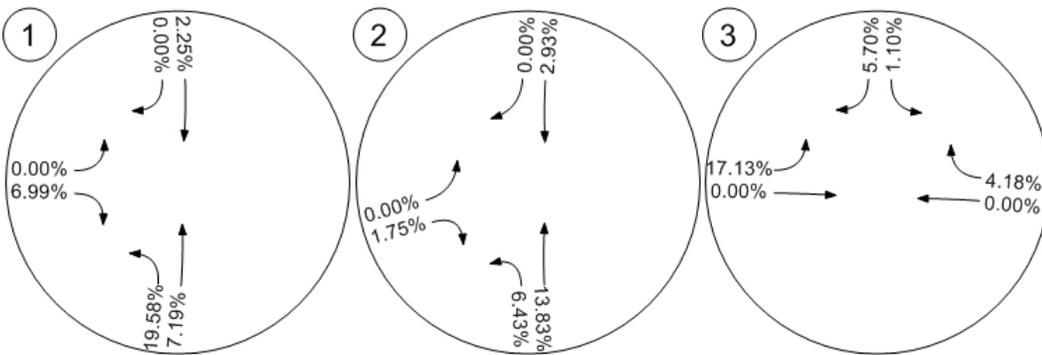
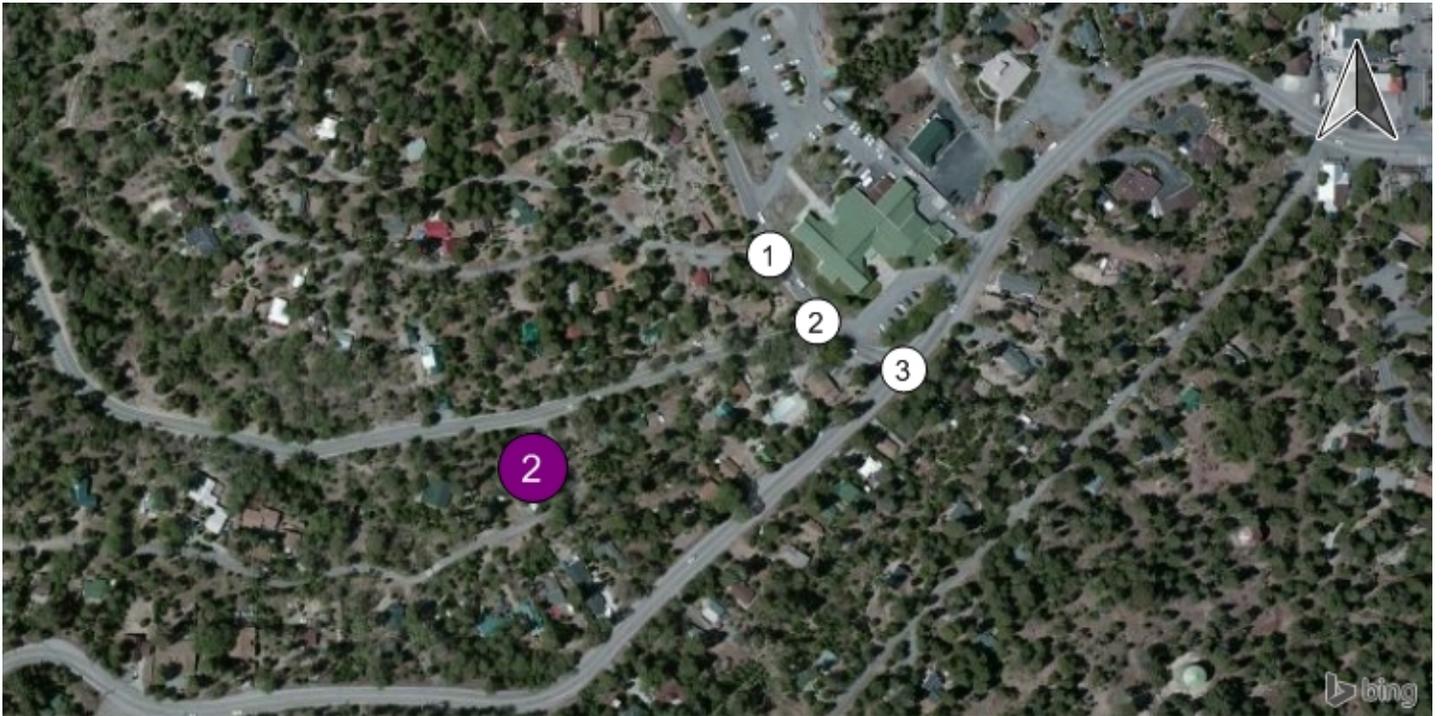
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Year 2040 Without Project

Arrowhead Pine Rose Cabins

Vistro File: J:\...\LR Friday.vistro

Scenario 1: Future Year (2040) Without Project - Friday Evening

Report File: J:\...\LR Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.004	10.4	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.041	11.3	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.276	19.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	147	103	3	3	7
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	166	116	3	3	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	44	31	1	1	2
Total Analysis Volume [veh/h]	11	175	122	3	3	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.46	0.00	0.00	0.00	10.42	8.92
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.43	0.43	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	10.80	10.80	0.00	0.00	0.99	0.99
d_A, Approach Delay [s/veh]	0.44		0.00		9.33	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.57					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	37	135	101	9	21	31
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	153	114	10	24	35
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	40	30	3	6	9
Total Analysis Volume [veh/h]	44	161	120	11	25	37
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.04	0.04
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	0.00	11.32	9.28
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.49	0.49	0.00	0.00	0.26	0.26
95th-Percentile Queue Length [ft]	12.15	12.15	0.00	0.00	6.57	6.57
d_A, Approach Delay [s/veh]	1.62		0.00		10.10	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.41					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	19.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.276

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	80	33	67	206	297	113
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	37	76	233	336	128
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	10	20	61	88	34
Total Analysis Volume [veh/h]	95	39	80	245	354	135
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

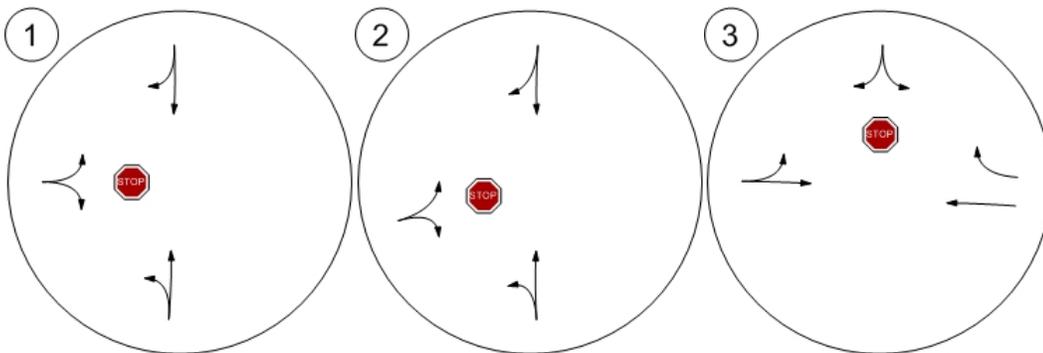
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.06	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.80	14.55	8.58	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.43	1.43	1.27	1.27	0.00	0.00
95th-Percentile Queue Length [ft]	35.72	35.72	31.66	31.66	0.00	0.00
d_A, Approach Delay [s/veh]	18.27		2.11		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.31					
Intersection LOS	C					

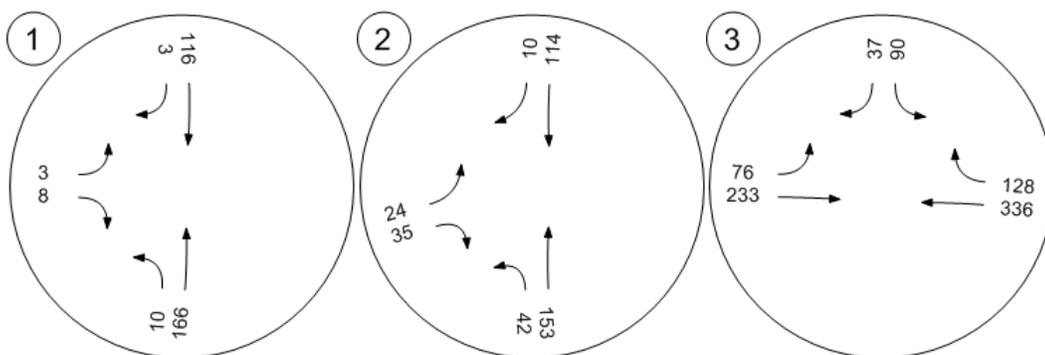
Study Intersections



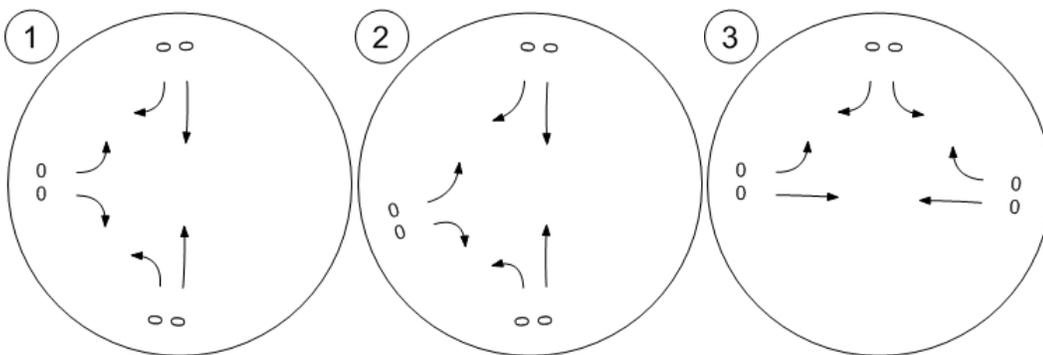
Lane Configuration and Traffic Control



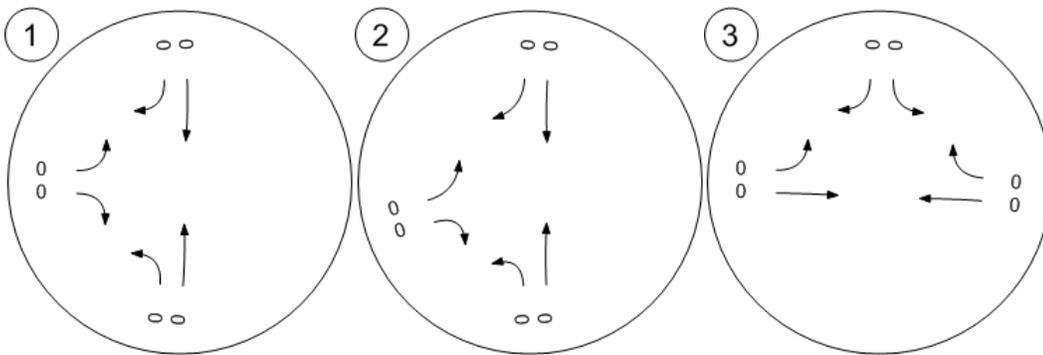
Traffic Volume - Base Volume



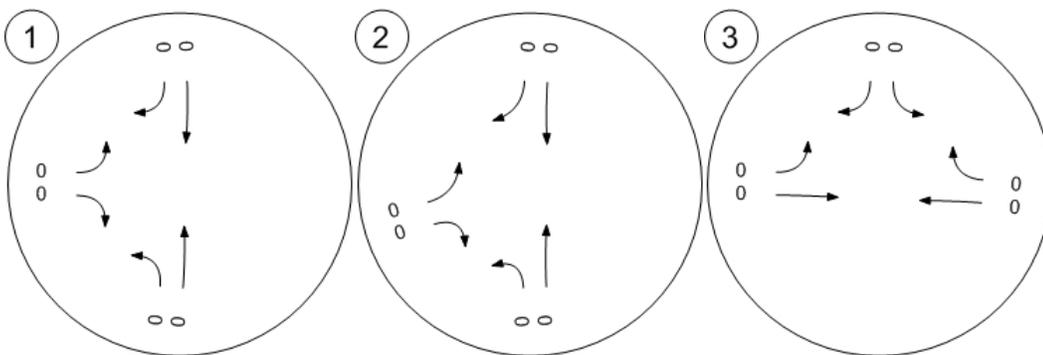
Traffic Volume - In-Process Volume



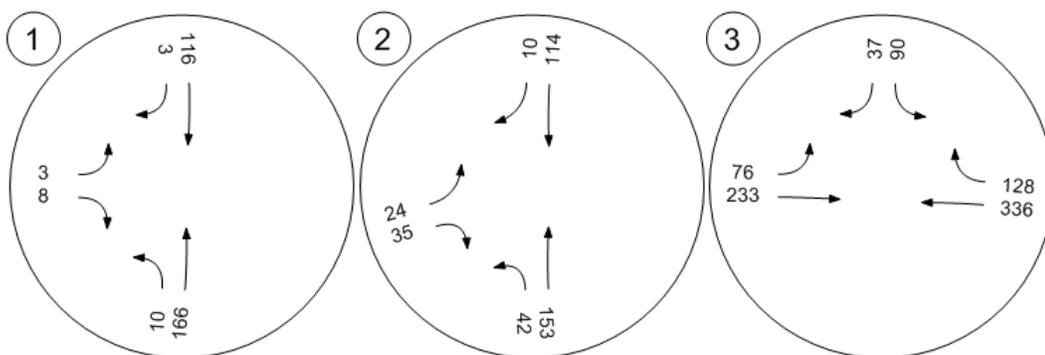
Traffic Volume - Net New Site Trips



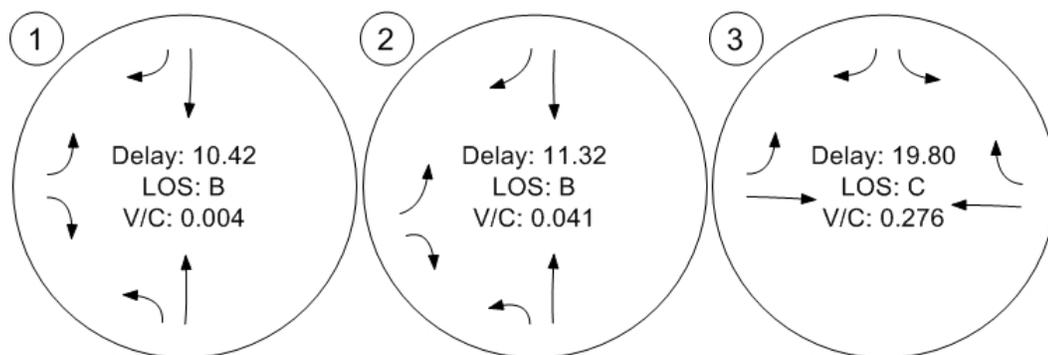
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Arrowhead Pine Rose Cabins

Vistro File: J:\...\LR Saturday.vistro

Scenario 1: Future Year (2040) Without Project - Saturday
Mid-Day

Report File: J:\...\LR Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.000	10.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.040	11.0	B
3	Grandview Road (NS) at SR- 189 (EW)	Two-way stop	HCM 2010	SB Left	0.190	14.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	103	110	2	0	10
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	116	124	2	0	11
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	31	33	1	0	3
Total Analysis Volume [veh/h]	11	122	131	2	0	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.48	0.00	0.00	0.00	10.11	8.95
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.30	0.30	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft]	7.48	7.48	0.00	0.00	0.99	0.99
d_A, Approach Delay [s/veh]	0.62		0.00		8.95	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.68					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.040

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	42	58	120	24	22	43
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	66	136	27	25	49
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	17	36	7	7	13
Total Analysis Volume [veh/h]	49	69	143	28	26	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.04	0.06
d_M, Delay for Movement [s/veh]	7.63	0.00	0.00	0.00	11.03	9.52
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.27	0.27	0.00	0.00	0.33	0.33
95th-Percentile Queue Length [ft]	6.79	6.79	0.00	0.00	8.14	8.14
d_A, Approach Delay [s/veh]	3.17		0.00		10.02	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.15					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.190

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	76	57	50	133	223	75
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	64	56	150	252	85
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	17	15	39	66	22
Total Analysis Volume [veh/h]	91	67	59	158	265	89
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

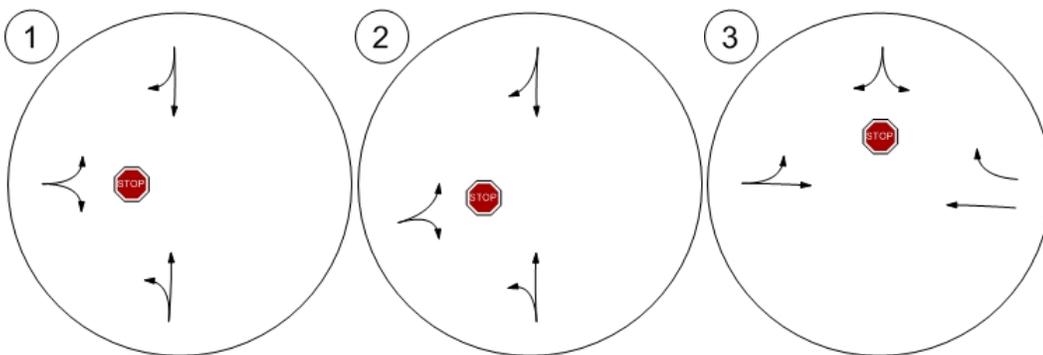
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.09	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.91	12.01	8.11	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.12	1.12	0.65	0.65	0.00	0.00
95th-Percentile Queue Length [ft]	28.02	28.02	16.21	16.21	0.00	0.00
d_A, Approach Delay [s/veh]	13.68		2.21		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.62					
Intersection LOS	B					

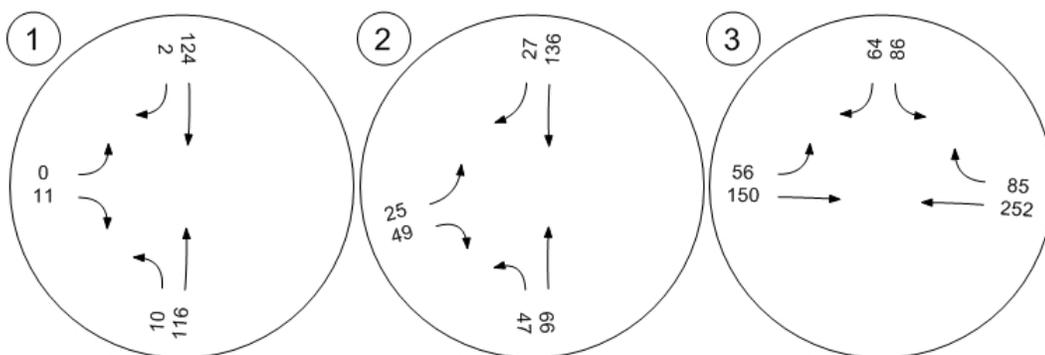
Study Intersections



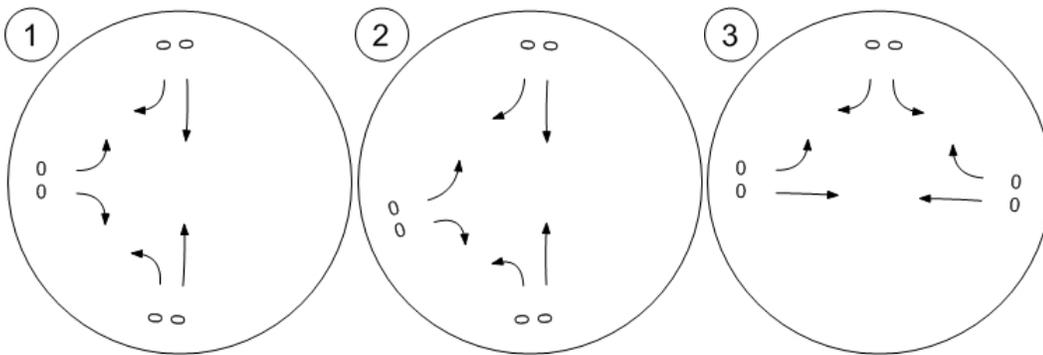
Lane Configuration and Traffic Control



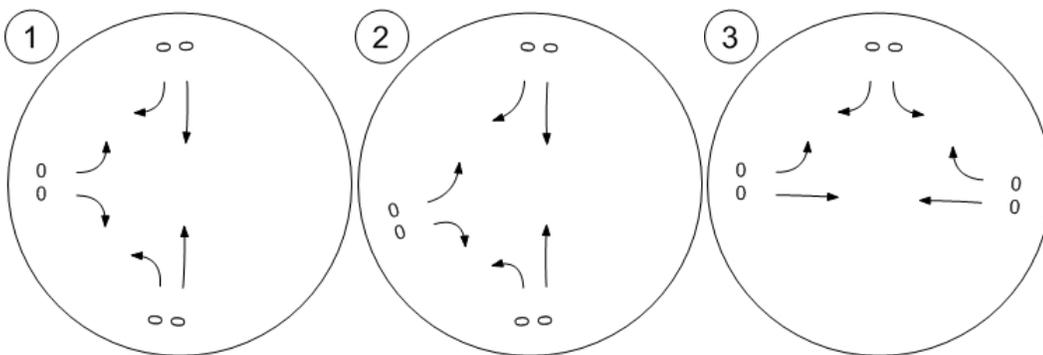
Traffic Volume - Base Volume



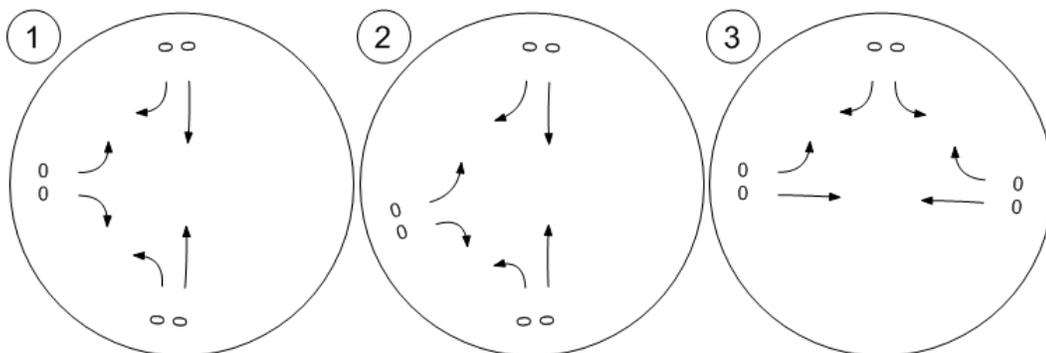
Traffic Volume - In-Process Volume



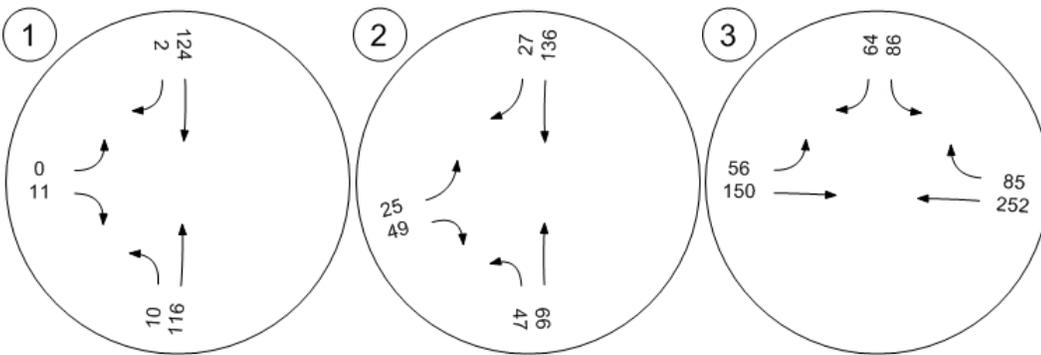
Traffic Volume - Net New Site Trips



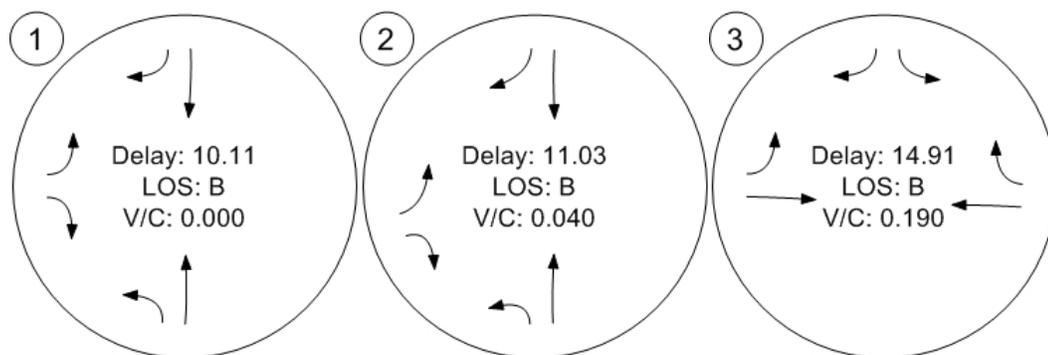
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Arrowhead Pine Rose Cabins

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Scenario 3: Future Year (2040) Without Project With
Improvement - Friday Evening

Report File: J:\...\LRi Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Grandview Road (NS) at SR-189 (EW)	Signalized	HCM 2010	SB Left	0.282	6.6	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	80	33	67	206	297	113
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	37	76	233	336	128
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	10	20	61	88	34
Total Analysis Volume [veh/h]	95	39	80	245	354	135
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	45	0	0	15	15	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	46	46	46	46
g / C, Green / Cycle	0.10	0.76	0.76	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.13	0.19	0.08
s, saturation flow rate [veh/h]	1748	1043	1900	1900	1615
c, Capacity [veh/h]	180	811	1451	1451	1233
d1, Uniform Delay [s]	26.16	3.70	1.93	2.06	1.83
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	0.24	0.25	0.40	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

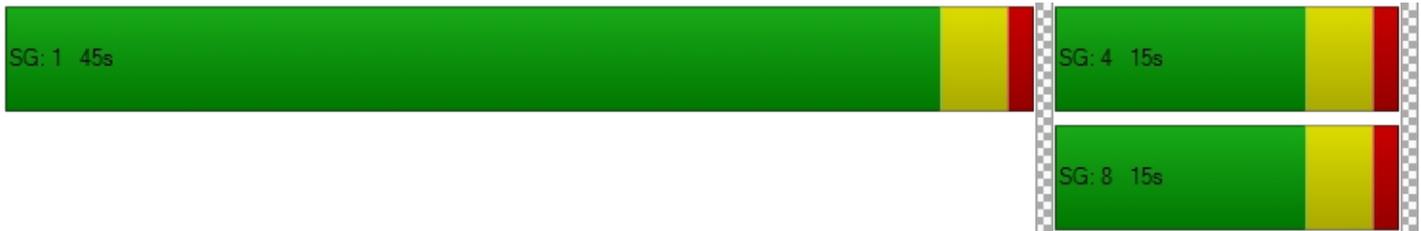
X, volume / capacity	0.74	0.10	0.17	0.24	0.11
d, Delay for Lane Group [s/veh]	32.09	3.94	2.18	2.46	2.01
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.05	0.29	0.39	0.61	0.21
50th-Percentile Queue Length [ft]	51.29	7.27	9.84	15.33	5.36
95th-Percentile Queue Length [veh]	3.69	0.52	0.71	1.10	0.39
95th-Percentile Queue Length [ft]	92.32	13.08	17.72	27.60	9.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.09	32.09	3.94	2.18	2.46	2.01
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	32.09		2.61		2.34	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.64					
Intersection LOS	A					
Intersection V/C	0.282					

Sequence

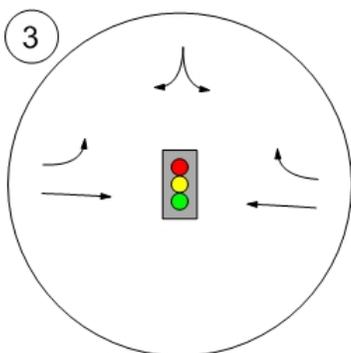
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Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



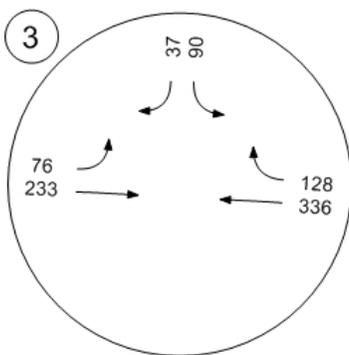
Study Intersections



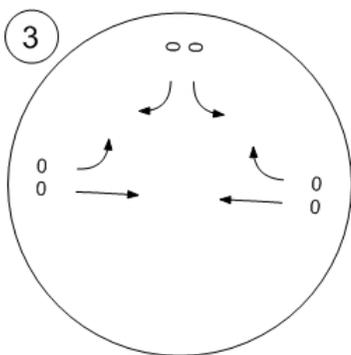
Lane Configuration and Traffic Control



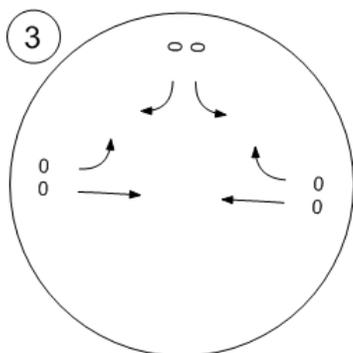
Traffic Volume - Base Volume



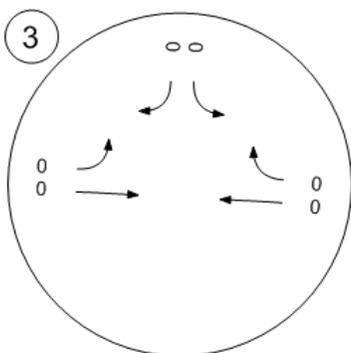
Traffic Volume - In-Process Volume



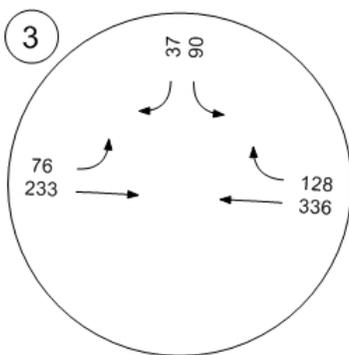
Traffic Volume - Net New Site Trips



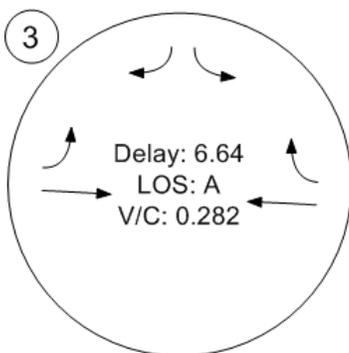
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Arrowhead Pine Rose Cabins

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Scenario 3: Future Year (2040) Without Project With
Improvement - Saturday Mid-Day

Report File: J:\...\LRi Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Grandview Road (NS) at SR-189 (EW)	Signalized	HCM 2010	SB Left	0.248	8.7	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.248

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	76	57	50	133	223	75
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	64	56	150	252	85
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	17	15	39	66	22
Total Analysis Volume [veh/h]	91	67	59	158	265	89
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	45	0	0	15	15	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	45	45	45	45
g / C, Green / Cycle	0.12	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.09	0.05	0.08	0.14	0.06
s, saturation flow rate [veh/h]	1722	1132	1900	1900	1615
c, Capacity [veh/h]	209	867	1417	1417	1204
d1, Uniform Delay [s]	25.53	3.67	2.12	2.26	2.06
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.53	0.15	0.16	0.29	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

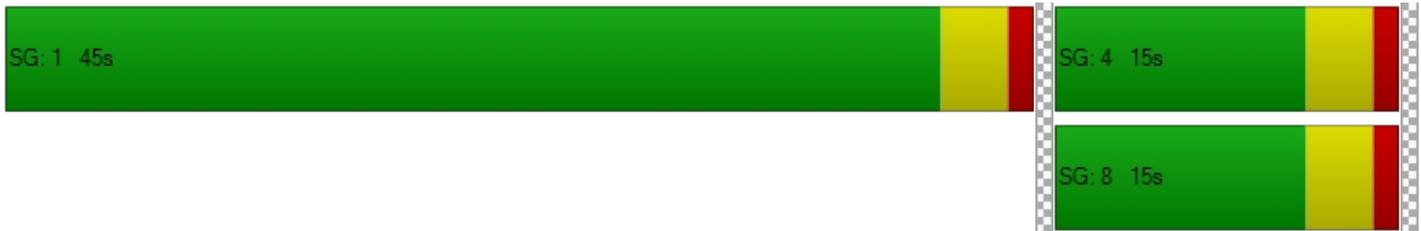
X, volume / capacity	0.76	0.07	0.11	0.19	0.07
d, Delay for Lane Group [s/veh]	31.06	3.82	2.28	2.55	2.18
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.37	0.21	0.29	0.53	0.17
50th-Percentile Queue Length [ft]	59.27	5.23	7.35	13.21	4.16
95th-Percentile Queue Length [veh]	4.27	0.38	0.53	0.95	0.30
95th-Percentile Queue Length [ft]	106.69	9.41	13.24	23.78	7.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.06	31.06	3.82	2.28	2.55	2.18
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	31.06		2.70		2.46	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	8.73					
Intersection LOS	A					
Intersection V/C	0.248					

Sequence

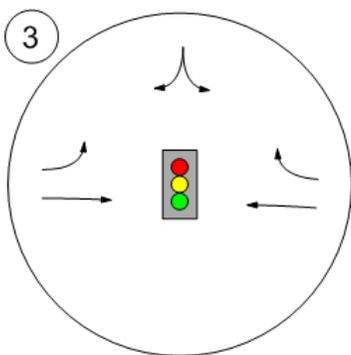
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Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



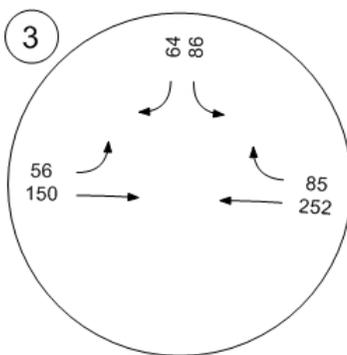
Study Intersections



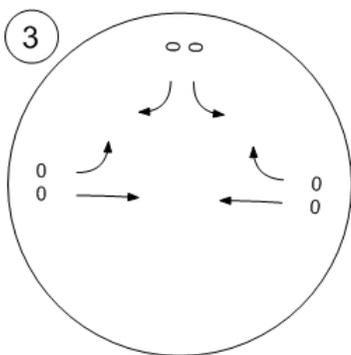
Lane Configuration and Traffic Control



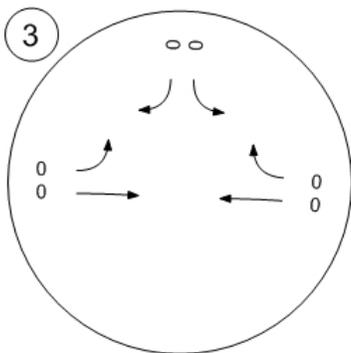
Traffic Volume - Base Volume



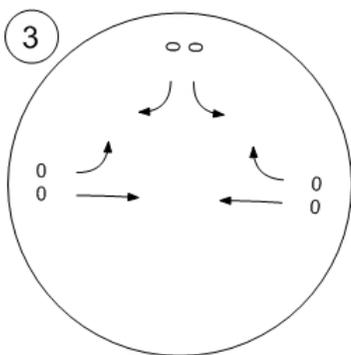
Traffic Volume - In-Process Volume



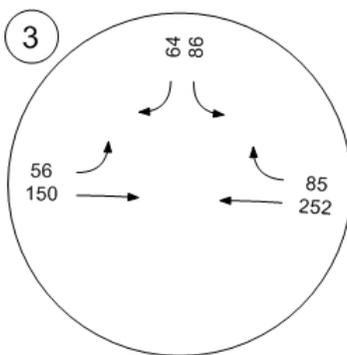
Traffic Volume - Net New Site Trips



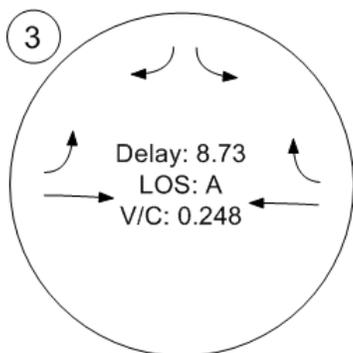
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Year 2040 With Project

APPENDIX E

Traffic Signal Warrant Worksheet

Arrowhead Pine Rose Cabins

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Scenario 2: Future Year (2040) With Project - Friday
Evening

Report File: J:\...\LRP Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.007	11.1	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.049	12.3	B
3	Grandview Road (NS) at SR- 189 (EW)	Two-way stop	HCM 2010	SB Left	0.360	25.5	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	147	103	3	3	7
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	31	4	1	1	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	197	120	4	4	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	52	32	1	1	3
Total Analysis Volume [veh/h]	32	207	126	4	4	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.01	0.02
d_M, Delay for Movement [s/veh]	7.51	0.00	0.00	0.00	11.14	8.98
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.58	0.58	0.00	0.00	0.07	0.07
95th-Percentile Queue Length [ft]	14.53	14.53	0.00	0.00	1.67	1.67
d_A, Approach Delay [s/veh]	1.01		0.00		9.46	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.06					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.049

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	37	135	101	9	21	31
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	51	9	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	204	123	11	25	39
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	54	32	3	7	10
Total Analysis Volume [veh/h]	61	215	129	12	26	41
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.05	0.04
d_M, Delay for Movement [s/veh]	7.58	0.00	0.00	0.00	12.35	9.44
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.70	0.70	0.00	0.00	0.31	0.31
95th-Percentile Queue Length [ft]	17.48	17.48	0.00	0.00	7.74	7.74
d_A, Approach Delay [s/veh]	1.68		0.00		10.57	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	25.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	80	33	67	206	297	113
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	51	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	46	127	233	336	145
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	12	33	61	88	38
Total Analysis Volume [veh/h]	100	48	134	245	354	153
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

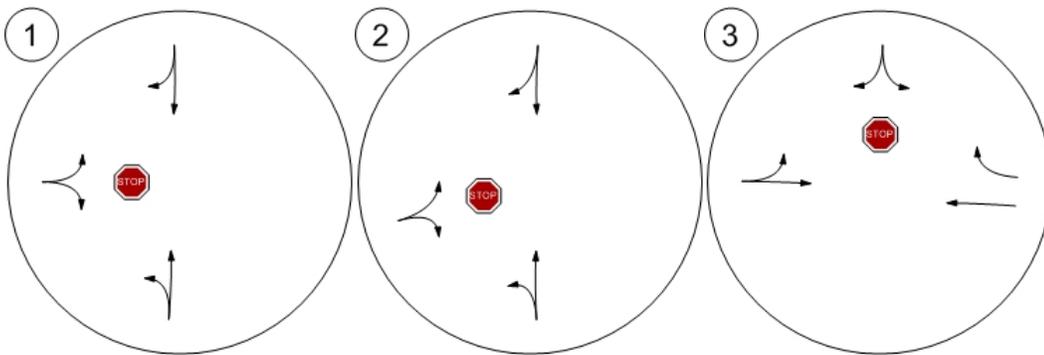
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.36	0.07	0.13	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	25.54	17.78	8.85	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.08	2.08	1.62	1.62	0.00	0.00
95th-Percentile Queue Length [ft]	51.90	51.90	40.48	40.48	0.00	0.00
d_A, Approach Delay [s/veh]	23.03		3.13		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.44					
Intersection LOS	D					

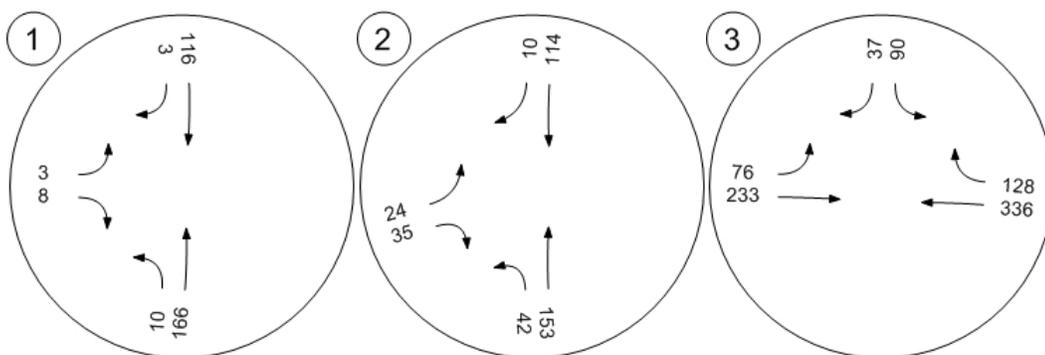
Study Intersections



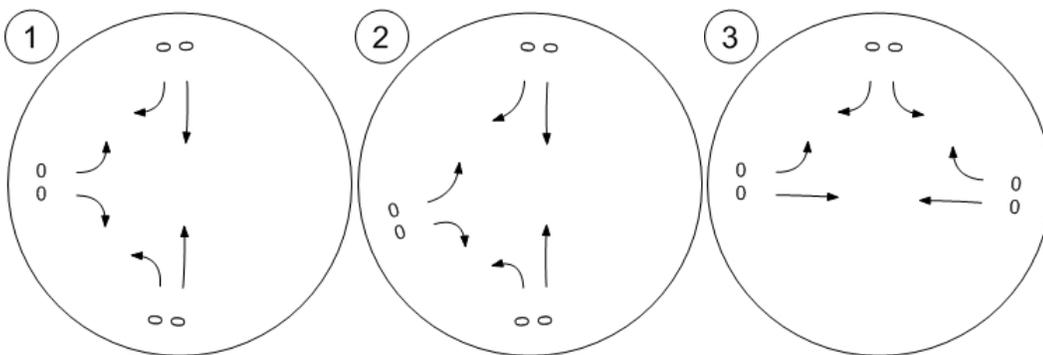
Lane Configuration and Traffic Control



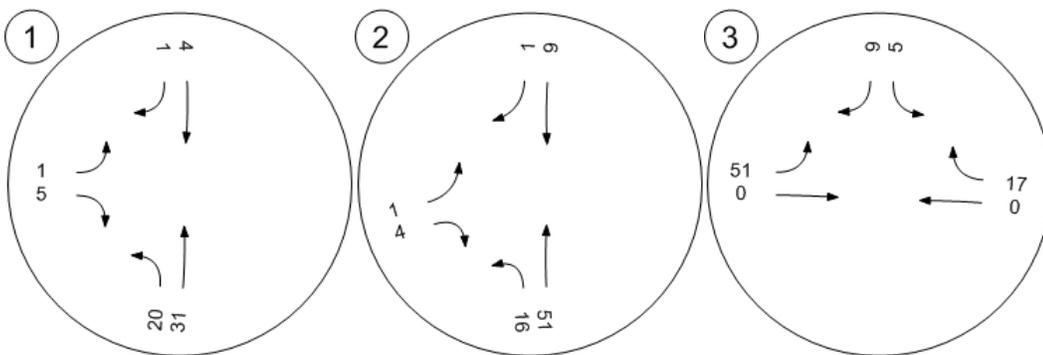
Traffic Volume - Base Volume



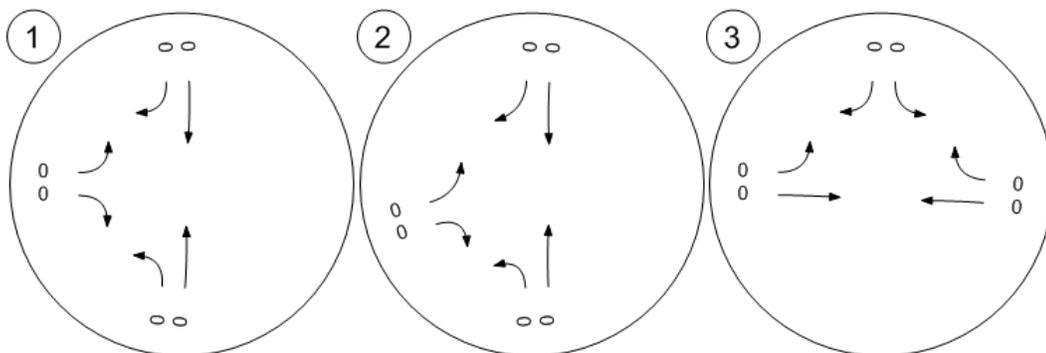
Traffic Volume - In-Process Volume



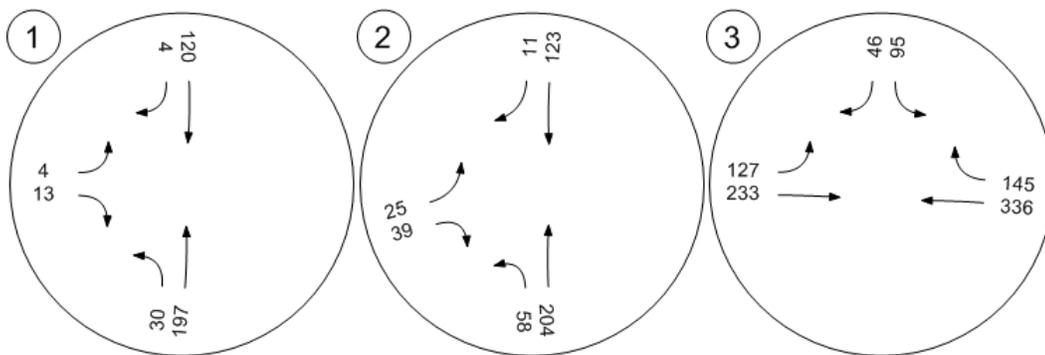
Traffic Volume - Net New Site Trips



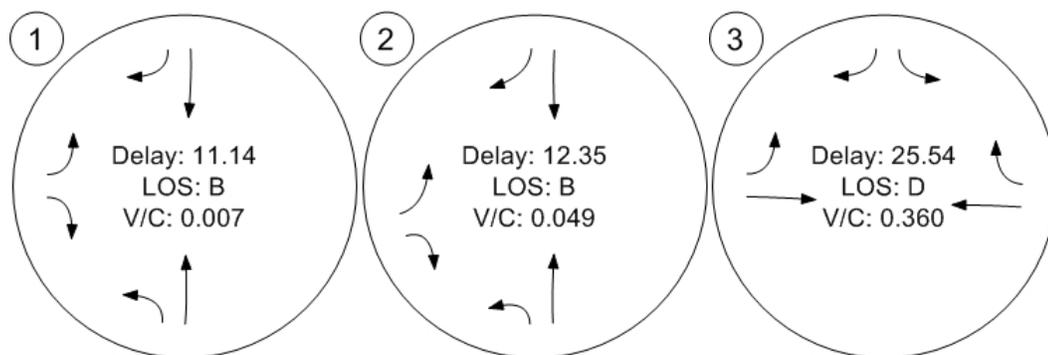
Traffic Volume - Other Volume



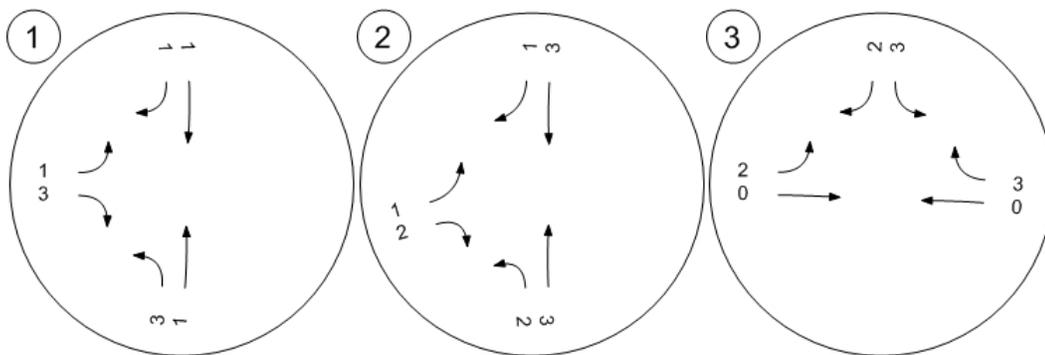
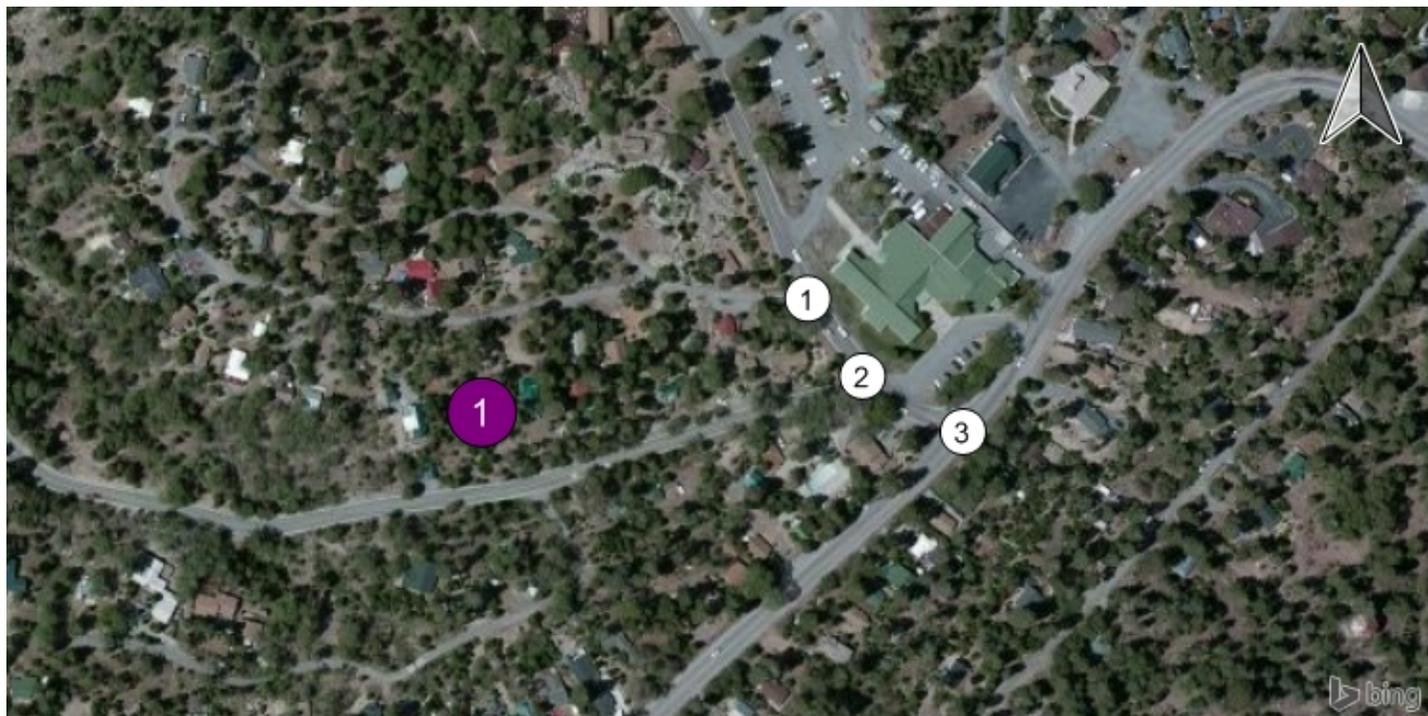
Traffic Volume - Future Total Volume



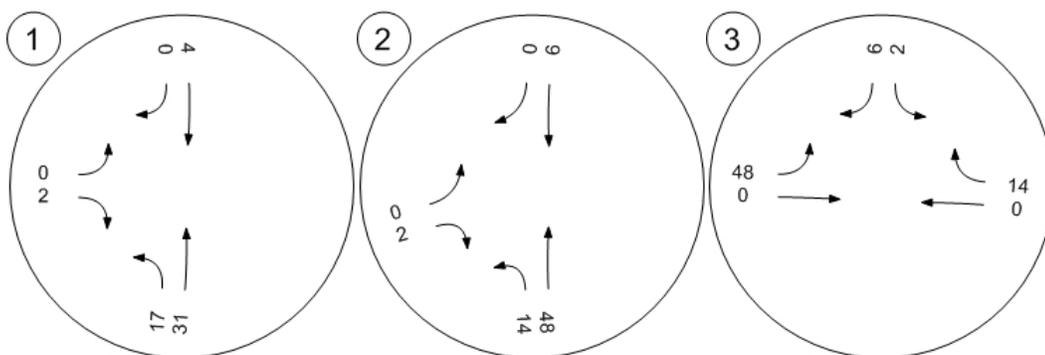
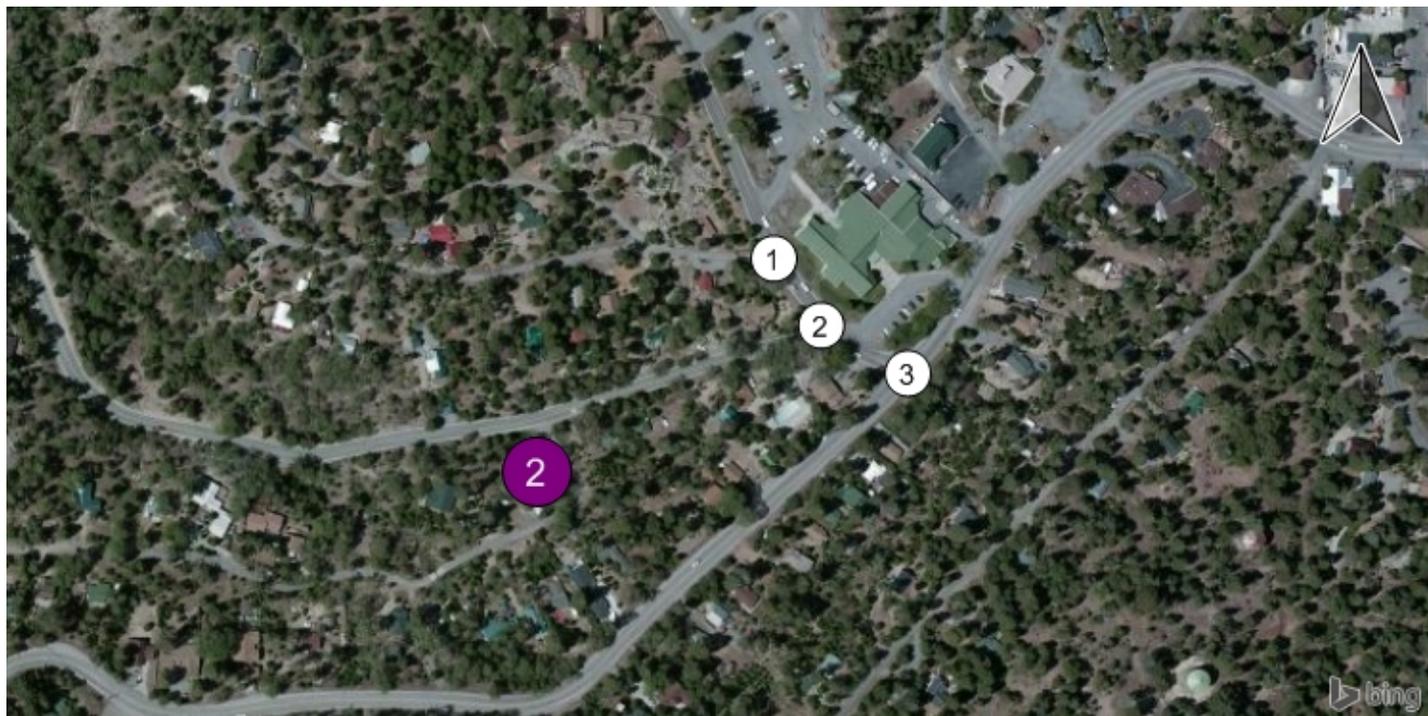
Traffic Conditions



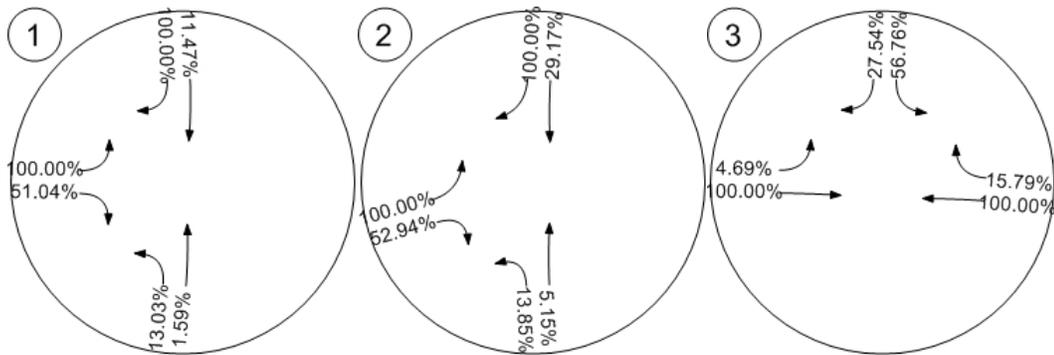
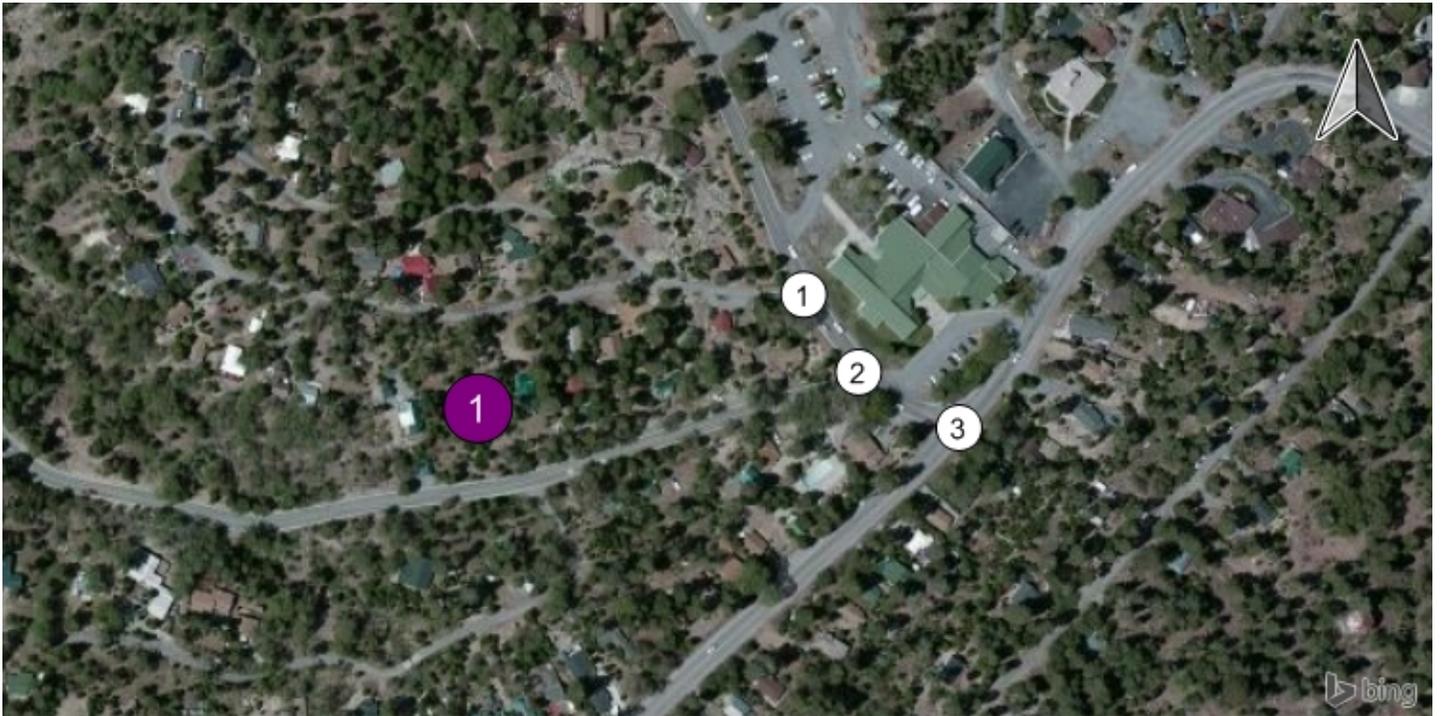
Fair Share - Fair Share Volumes - Zone 1: Cabin



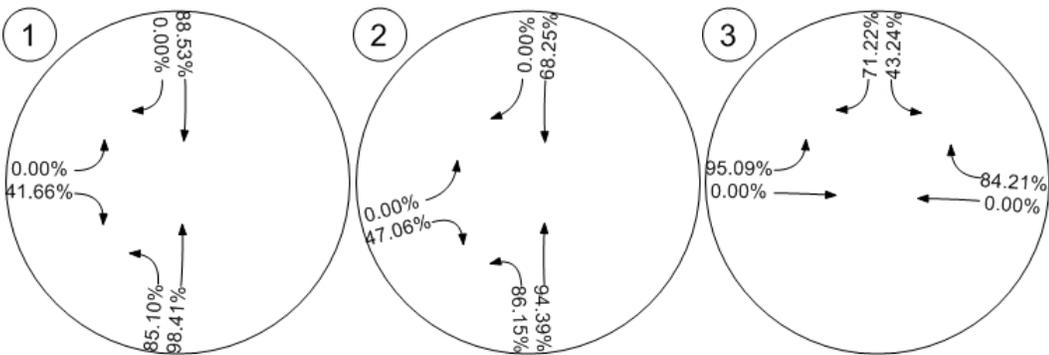
Fair Share - Fair Share Volumes - Zone 2: Special Event



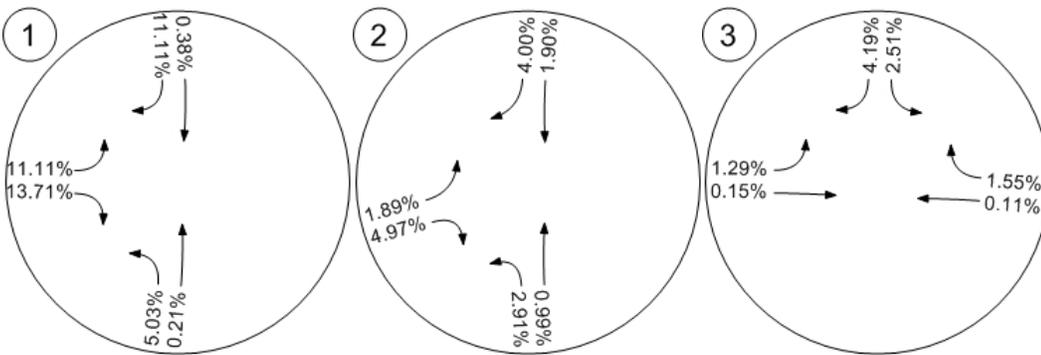
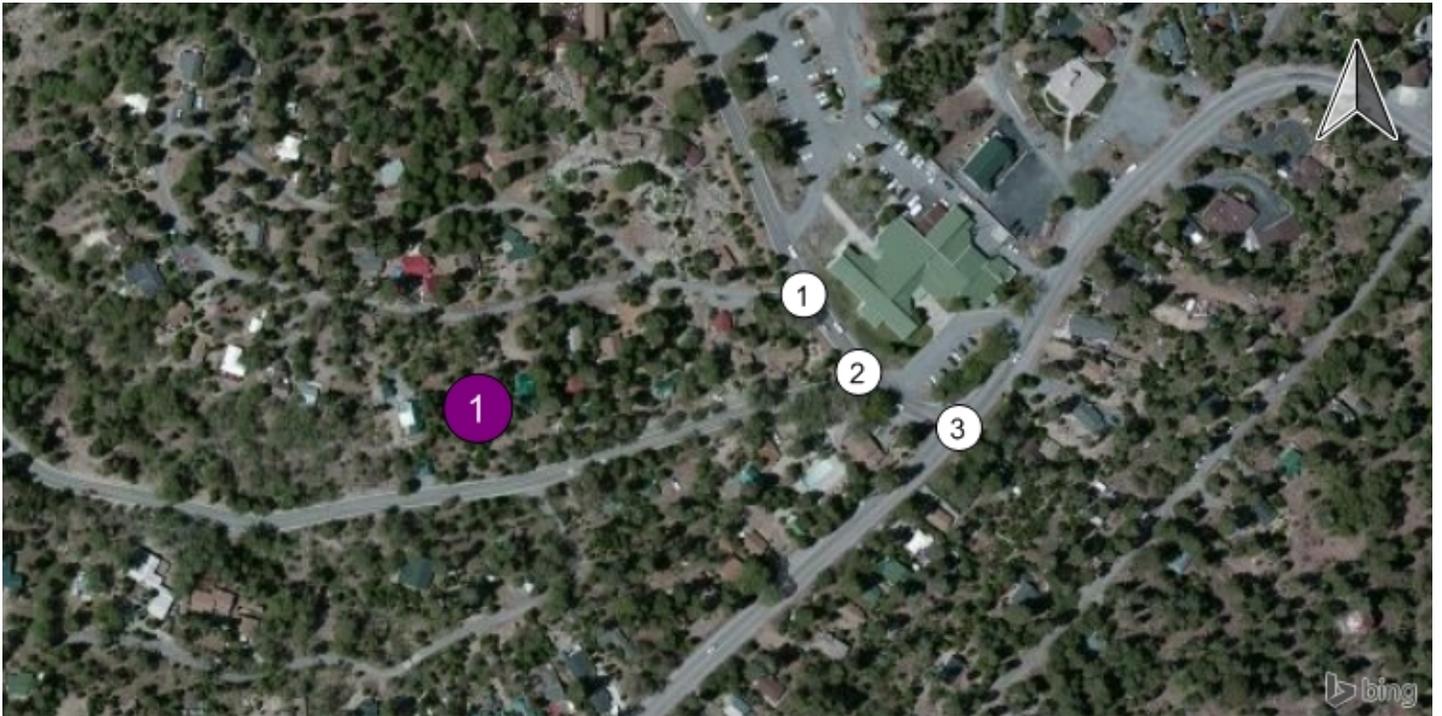
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



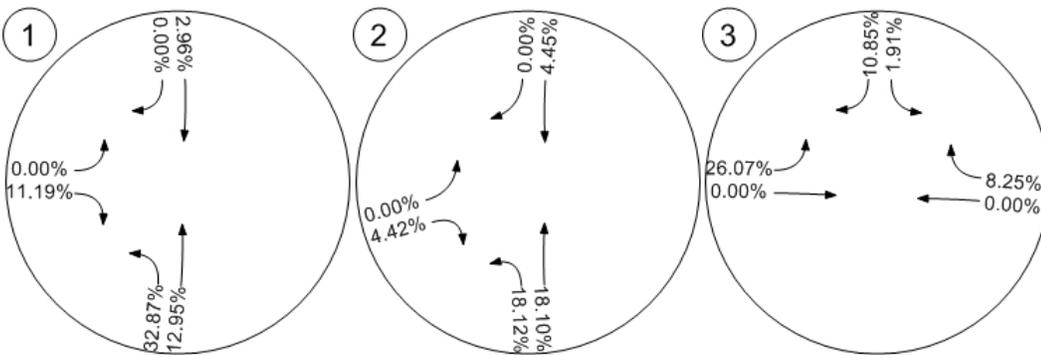
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Arrowhead Pine Rose Cabins

Vistro File: J:\...\LR Saturday.vistro

Scenario 2: Future Year (2040) With Project - Saturday Mid-Day

Report File: J:\...\LRP Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Grandview Road (NS) at Sunset Loop (EW)	Two-way stop	HCM 2010	EB Left	0.001	10.4	B
2	Grandview Road (NS) at North Road (EW)	Two-way stop	HCM 2010	EB Left	0.044	11.4	B
3	Grandview Road (NS) at SR-189 (EW)	Two-way stop	HCM 2010	SB Left	0.213	16.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Grandview Road (NS) at Sunset Loop (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		Sunset Loop (EW)	
Base Volume Input [veh/h]	9	103	110	2	0	10
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	10	3	1	1	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	126	127	3	1	15
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	33	33	1	0	4
Total Analysis Volume [veh/h]	19	133	134	3	1	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	0.00	10.37	9.00
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft]	8.70	8.70	0.00	0.00	1.44	1.44
d_A, Approach Delay [s/veh]	0.94		0.00		9.08	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.97					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 2: Grandview Road (NS) at North Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		Grandview Road (NS)		North Road (EW)	
Base Volume Input [veh/h]	42	58	120	24	22	43
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	18	7	1	1	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	84	143	28	26	52
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	22	38	7	7	14
Total Analysis Volume [veh/h]	56	88	151	29	27	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.04	0.06
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	0.00	11.44	9.63
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.34	0.34	0.00	0.00	0.36	0.36
95th-Percentile Queue Length [ft]	8.53	8.53	0.00	0.00	8.89	8.89
d_A, Approach Delay [s/veh]	2.98		0.00		10.22	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.12					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.213

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	76	57	50	133	223	75
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	7	18	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	71	74	150	252	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	19	19	39	66	24
Total Analysis Volume [veh/h]	95	75	78	158	265	97
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

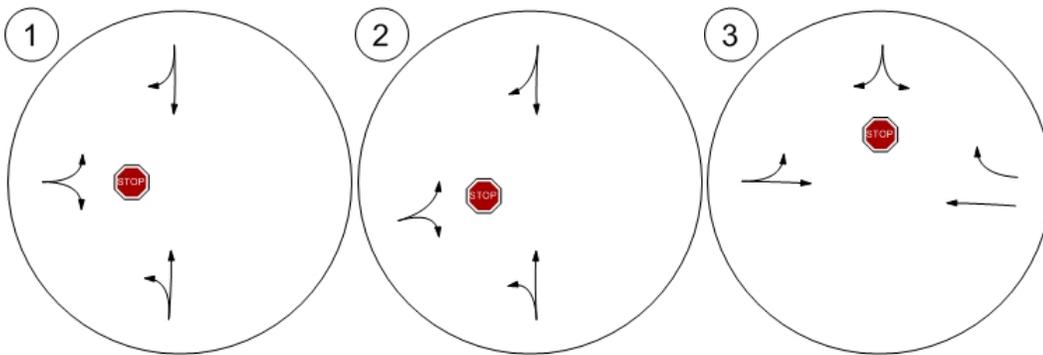
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.10	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.97	12.53	8.19	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.31	1.31	0.72	0.72	0.00	0.00
95th-Percentile Queue Length [ft]	32.67	32.67	18.11	18.11	0.00	0.00
d_A, Approach Delay [s/veh]	14.45		2.71		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.03					
Intersection LOS	C					

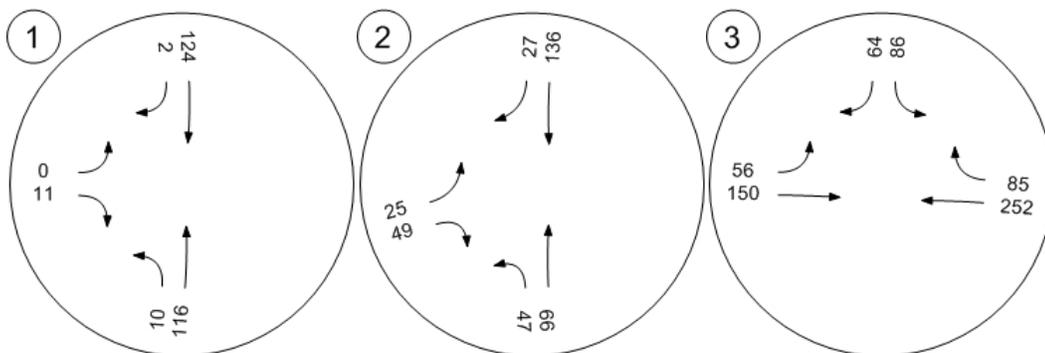
Study Intersections



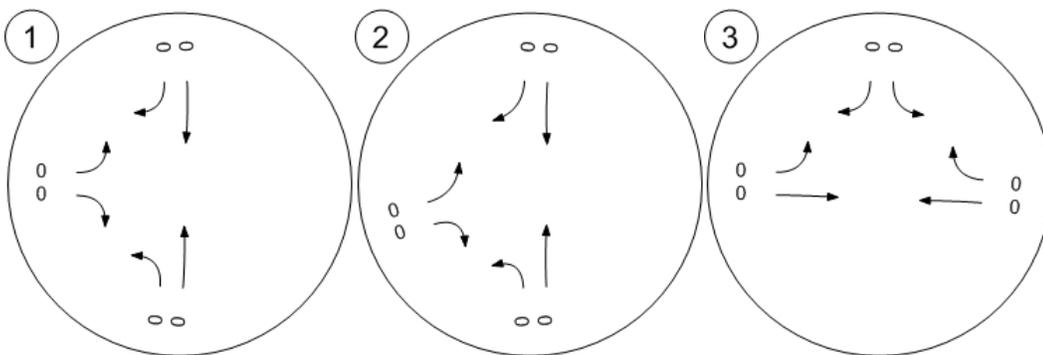
Lane Configuration and Traffic Control



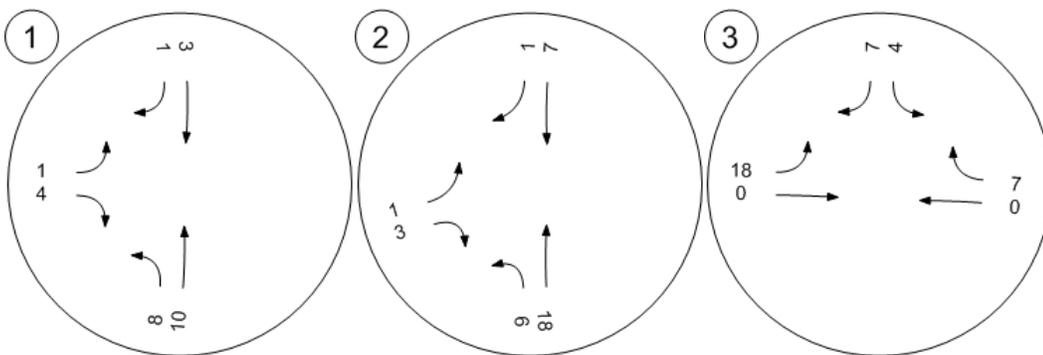
Traffic Volume - Base Volume



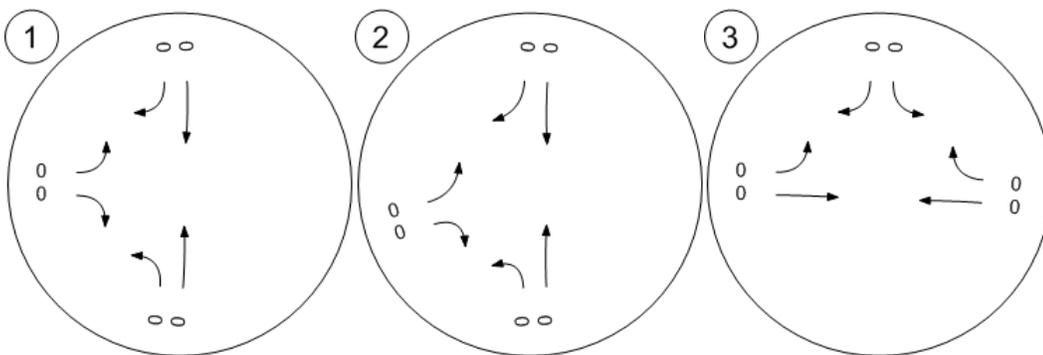
Traffic Volume - In-Process Volume



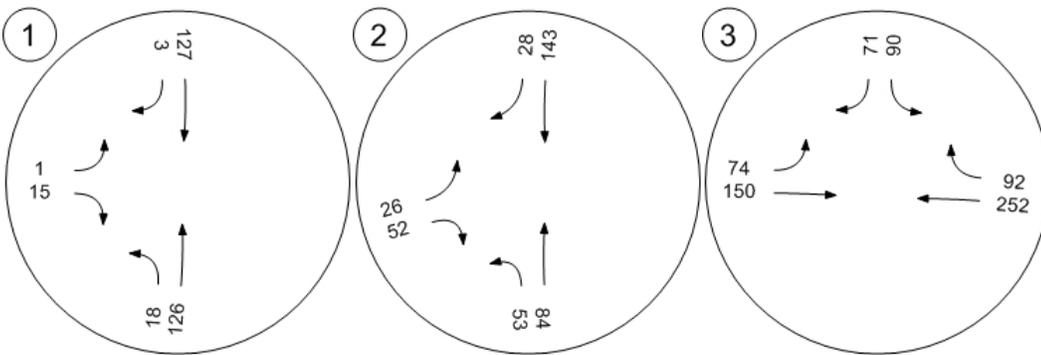
Traffic Volume - Net New Site Trips



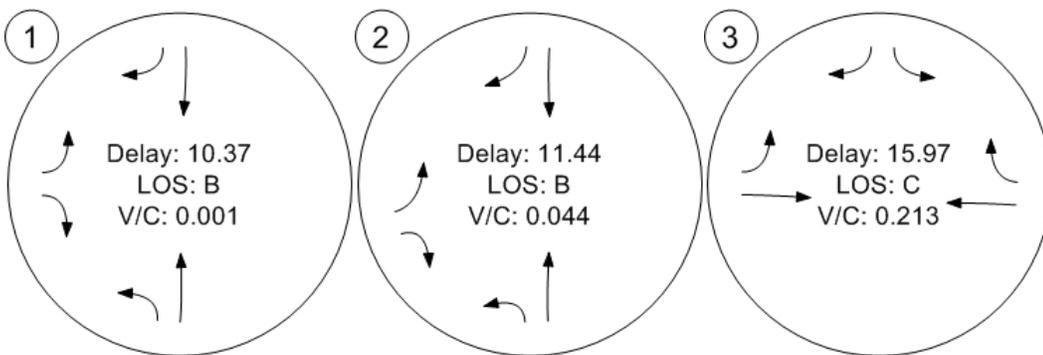
Traffic Volume - Other Volume



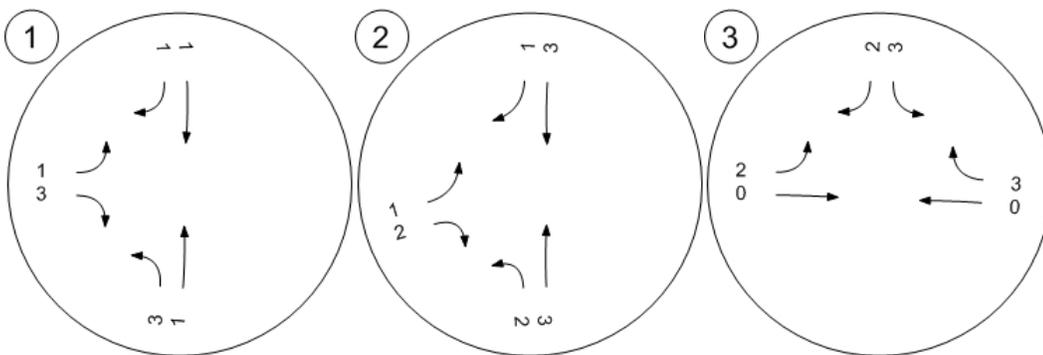
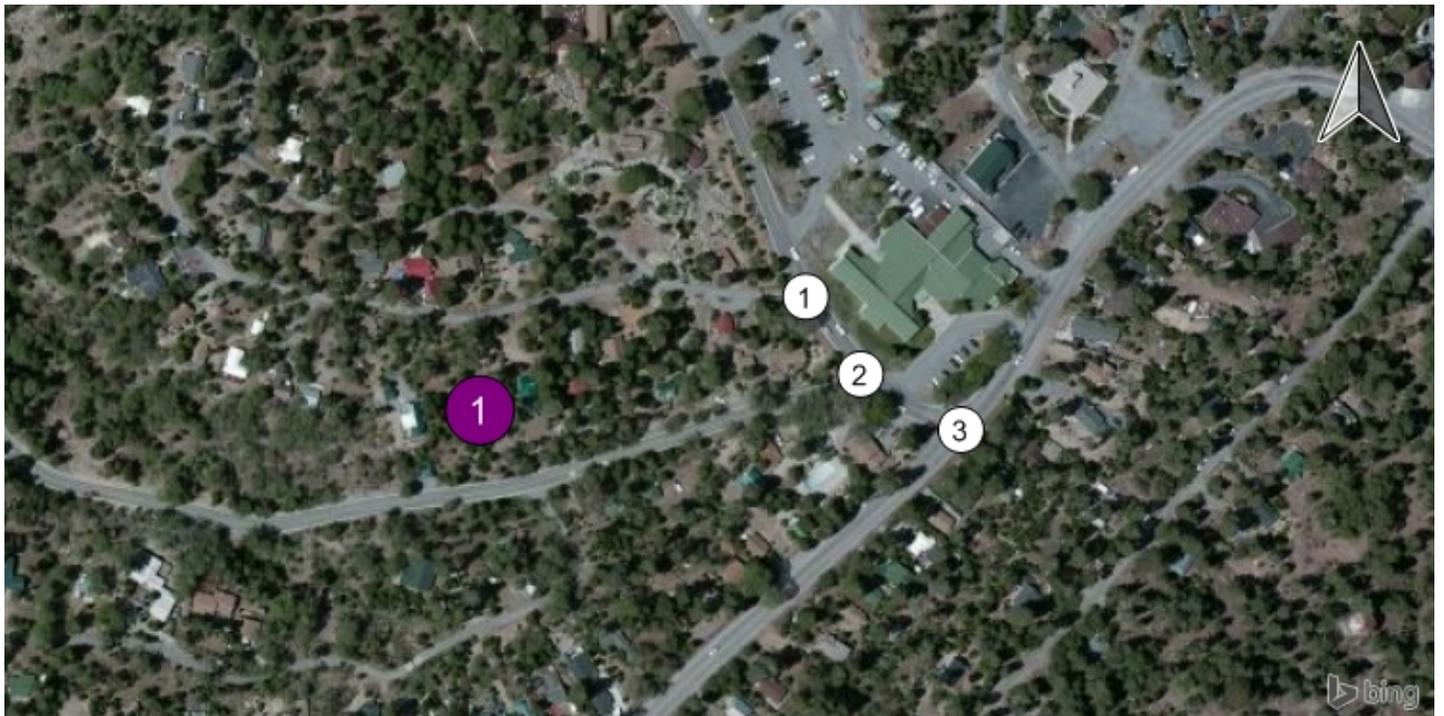
Traffic Volume - Future Total Volume



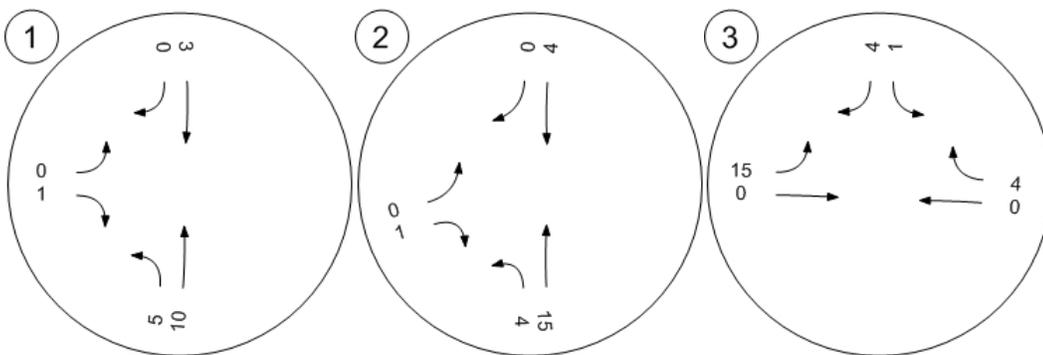
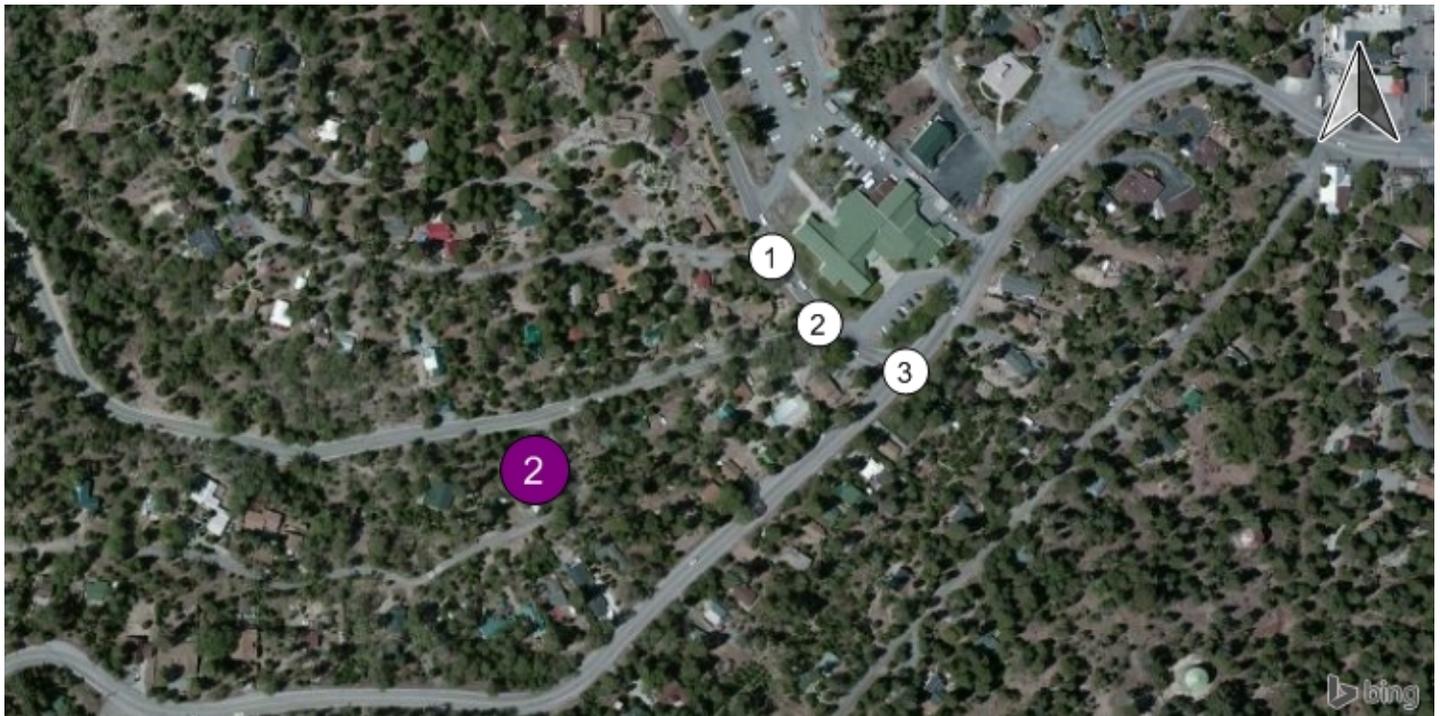
Traffic Conditions



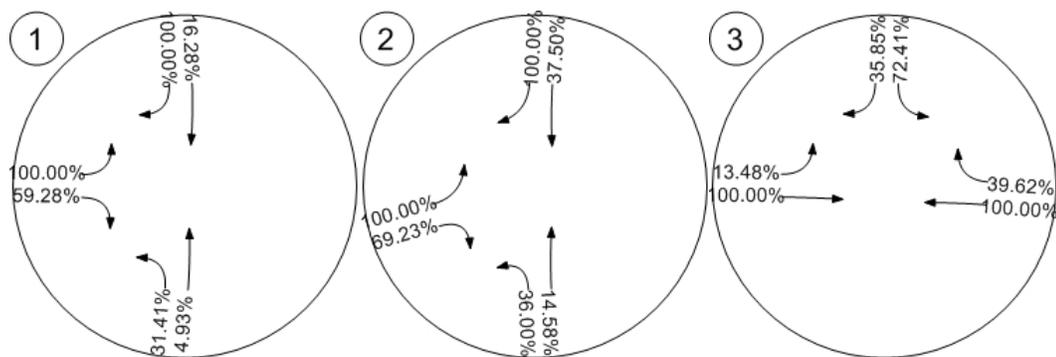
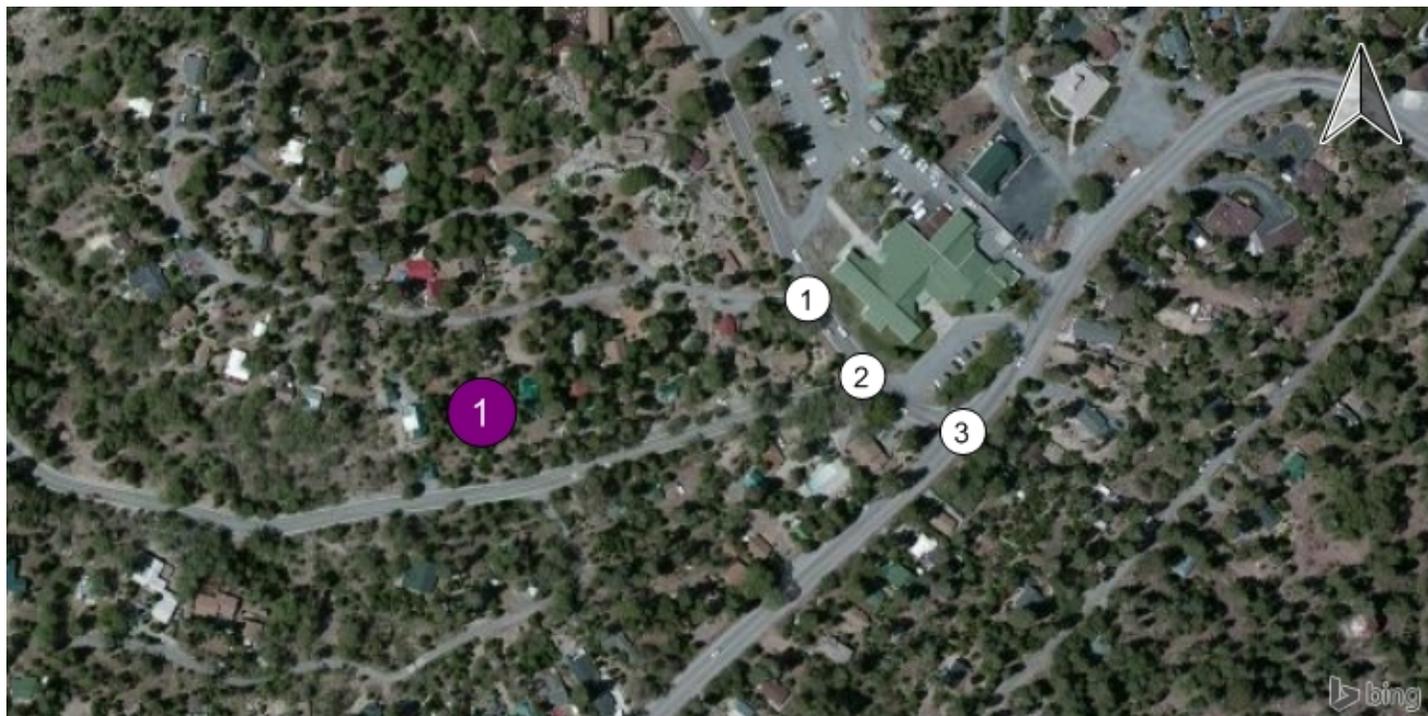
Fair Share - Fair Share Volumes - Zone 1: Cabin



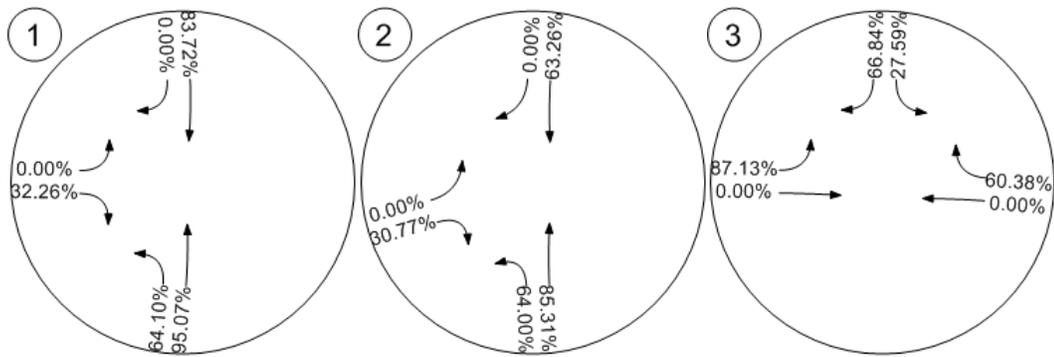
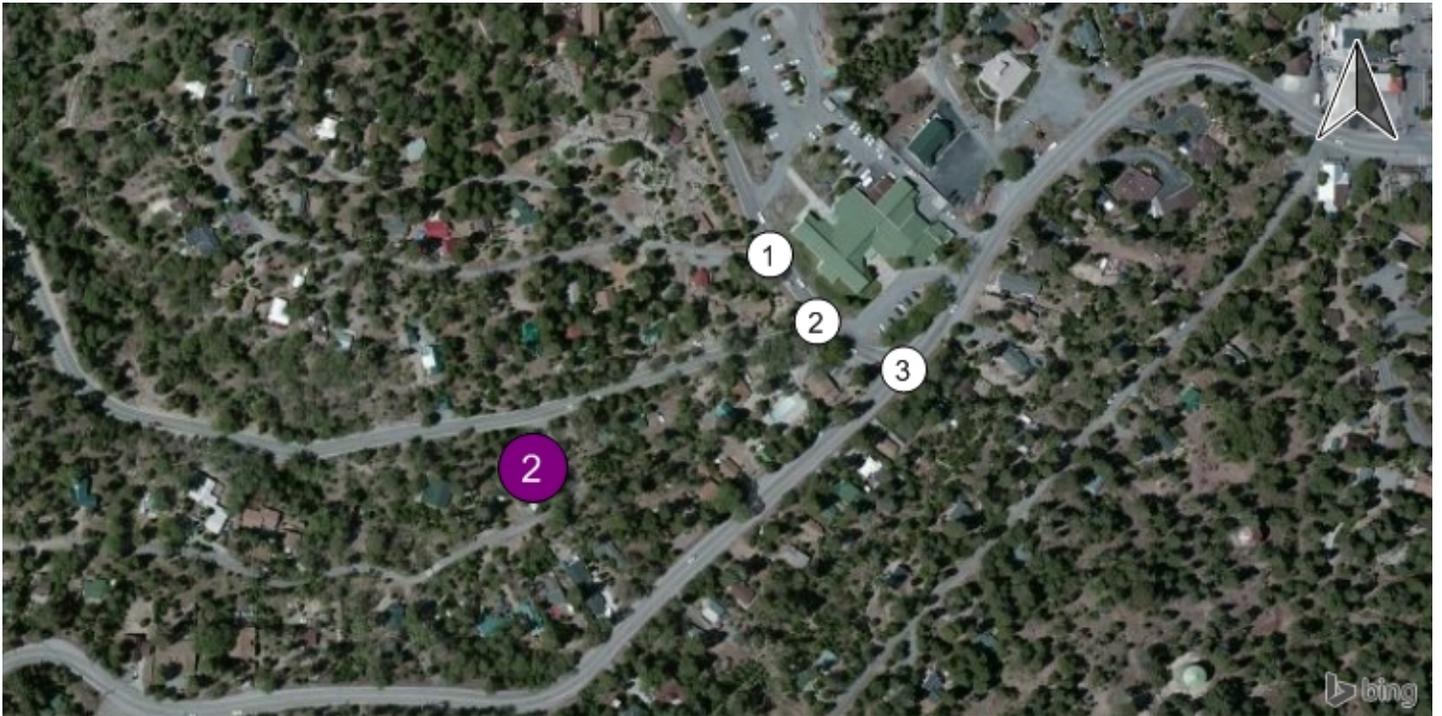
Fair Share - Fair Share Volumes - Zone 2: Special Event



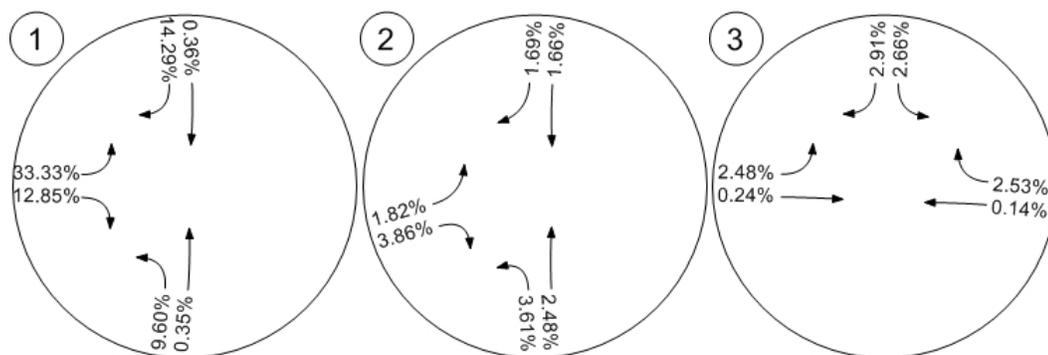
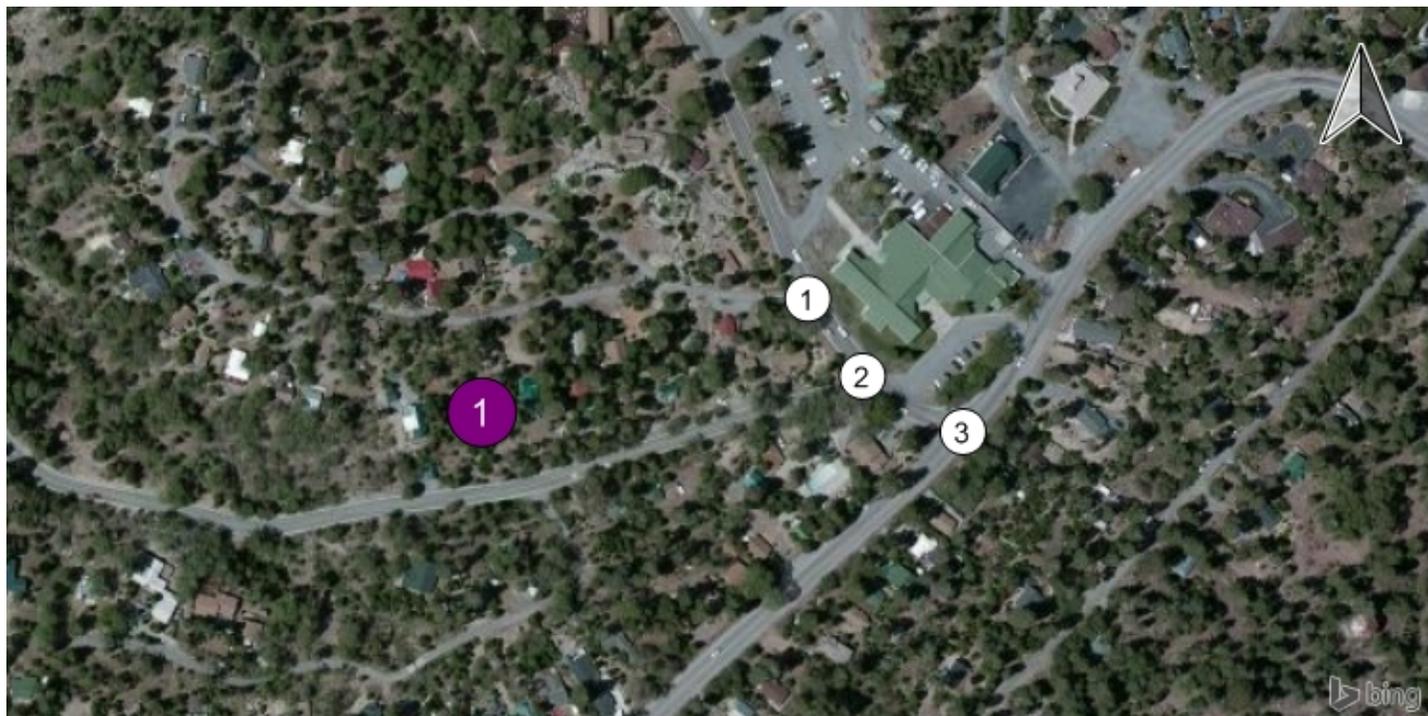
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



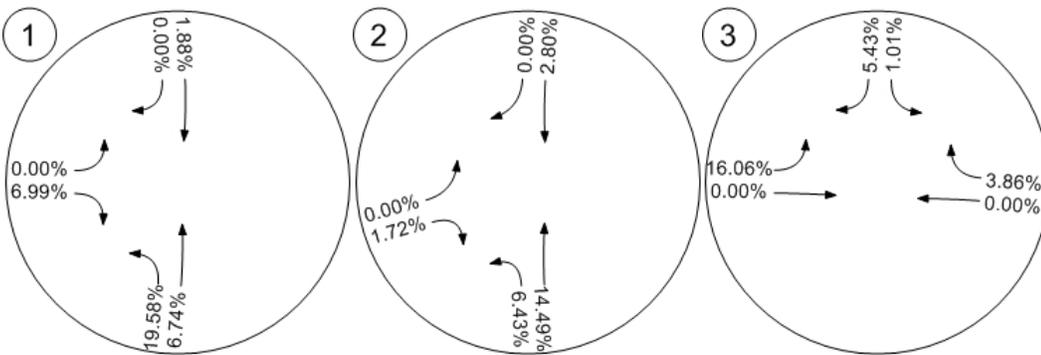
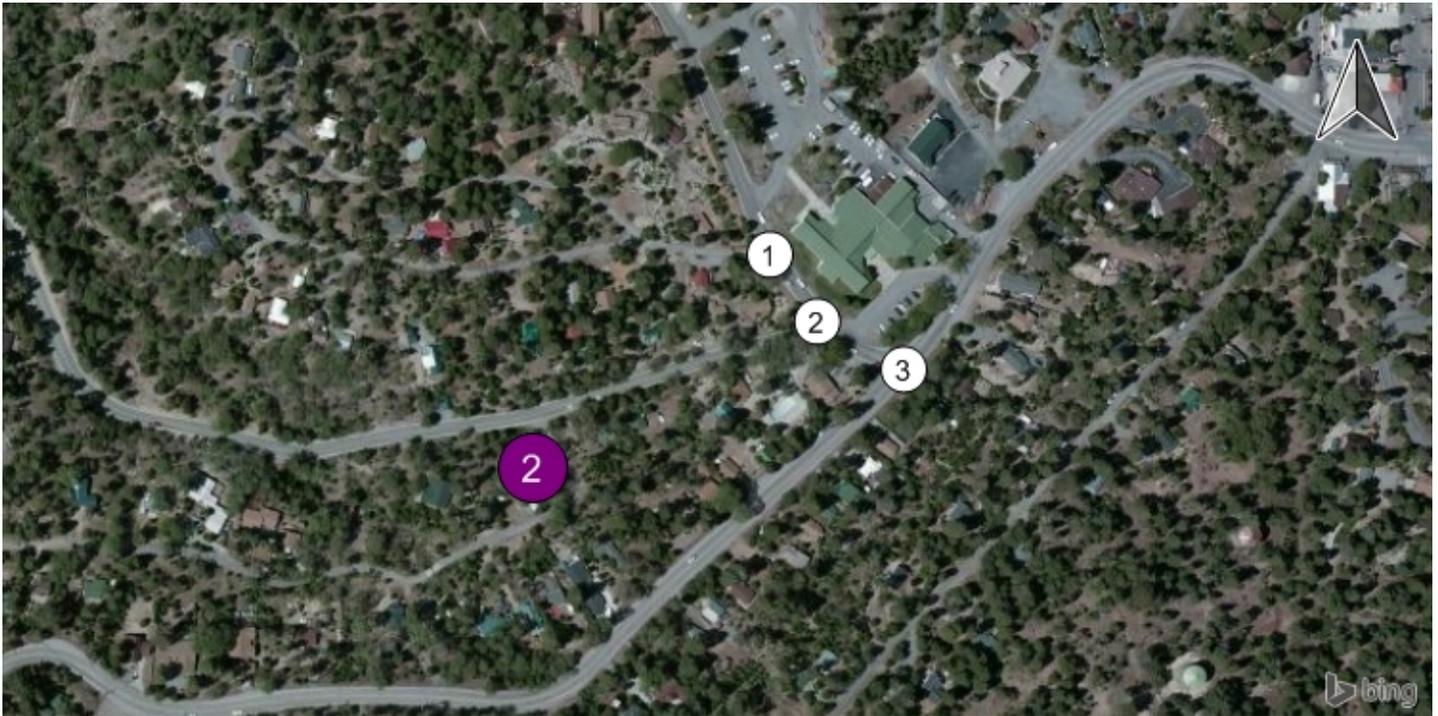
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Arrowhead Pine Rose Cabins

Vistro File: J:\...\LR Friday.vistro

Scenario 4: Future Year (2040) With Project With
Improvement - Friday Evening

Report File: J:\...\LRPi Fri.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Grandview Road (NS) at SR-189 (EW)	Signalized	HCM 2010	SB Left	0.291	6.9	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Signalized	Delay (sec / veh):	6.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.291

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	80	33	67	206	297	113
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	51	0	0	17
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	46	127	233	336	145
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	12	33	61	88	38
Total Analysis Volume [veh/h]	100	48	134	245	354	153
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	45	0	0	15	15	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	45	45	45	45
g / C, Green / Cycle	0.11	0.75	0.75	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.13	0.19	0.09
s, saturation flow rate [veh/h]	1741	1043	1900	1900	1615
c, Capacity [veh/h]	197	799	1432	1432	1217
d1, Uniform Delay [s]	25.80	4.20	2.09	2.24	2.02
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.45	0.26	0.41	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

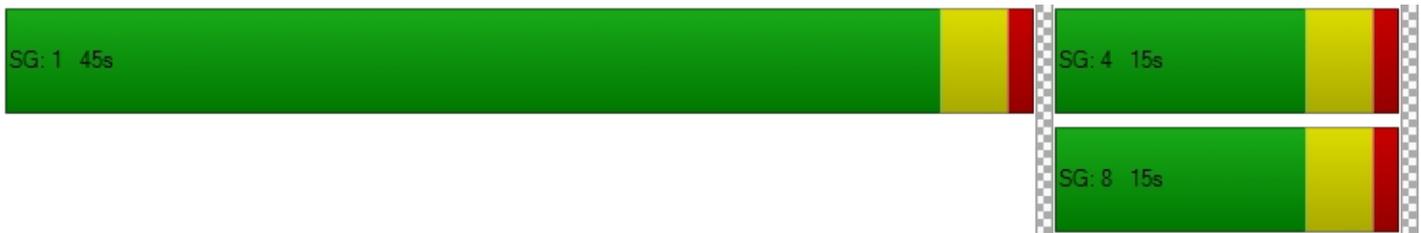
X, volume / capacity	0.75	0.17	0.17	0.25	0.13
d, Delay for Lane Group [s/veh]	31.43	4.65	2.35	2.66	2.23
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.24	0.55	0.44	0.69	0.28
50th-Percentile Queue Length [ft]	55.91	13.75	11.09	17.26	6.91
95th-Percentile Queue Length [veh]	4.03	0.99	0.80	1.24	0.50
95th-Percentile Queue Length [ft]	100.65	24.75	19.95	31.07	12.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.43	31.43	4.65	2.35	2.66	2.23
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	31.43		3.17		2.53	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.90					
Intersection LOS	A					
Intersection V/C	0.291					

Sequence

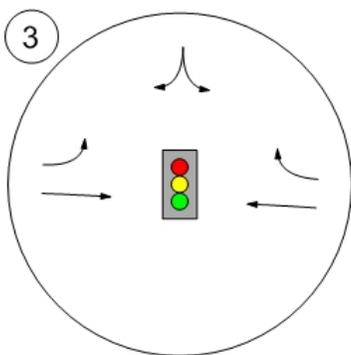
Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



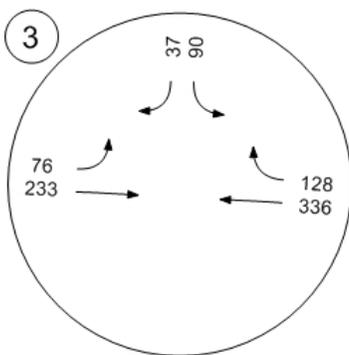
Study Intersections



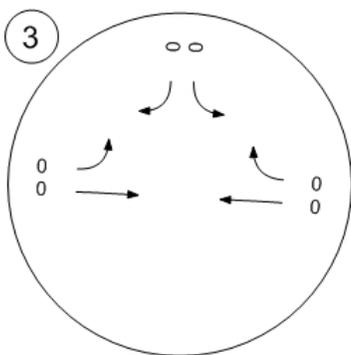
Lane Configuration and Traffic Control



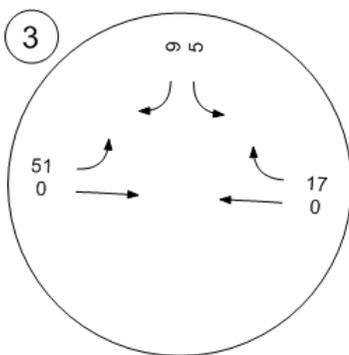
Traffic Volume - Base Volume



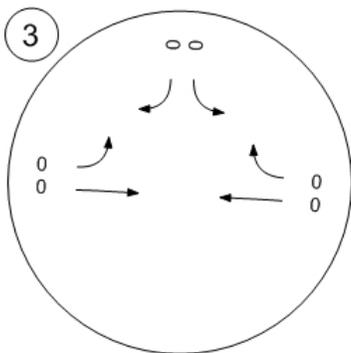
Traffic Volume - In-Process Volume



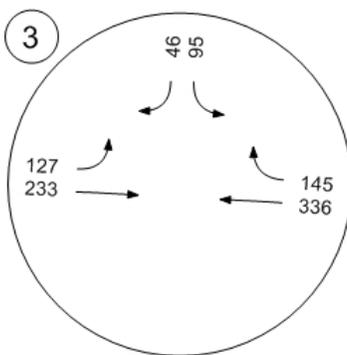
Traffic Volume - Net New Site Trips



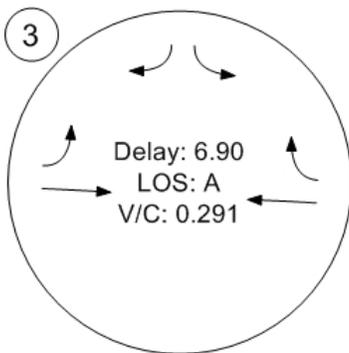
Traffic Volume - Other Volume



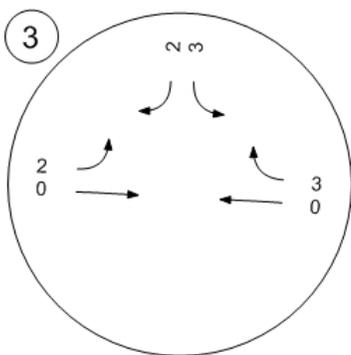
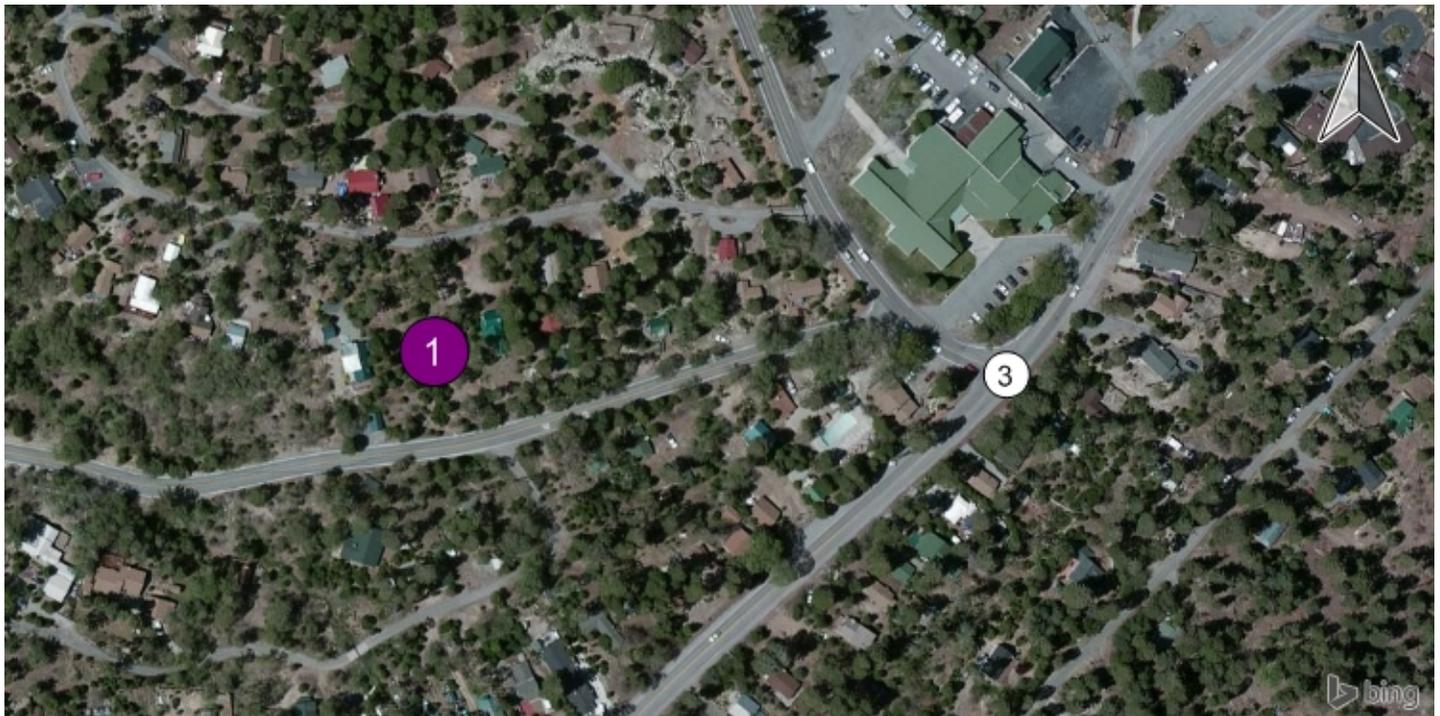
Traffic Volume - Future Total Volume



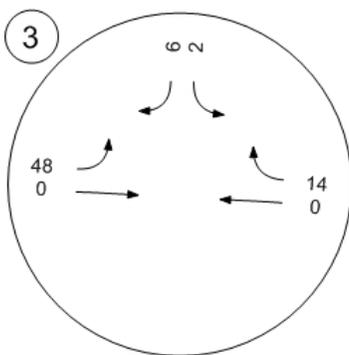
Traffic Conditions



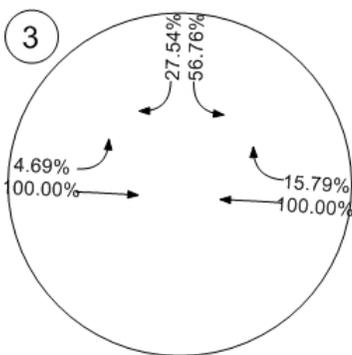
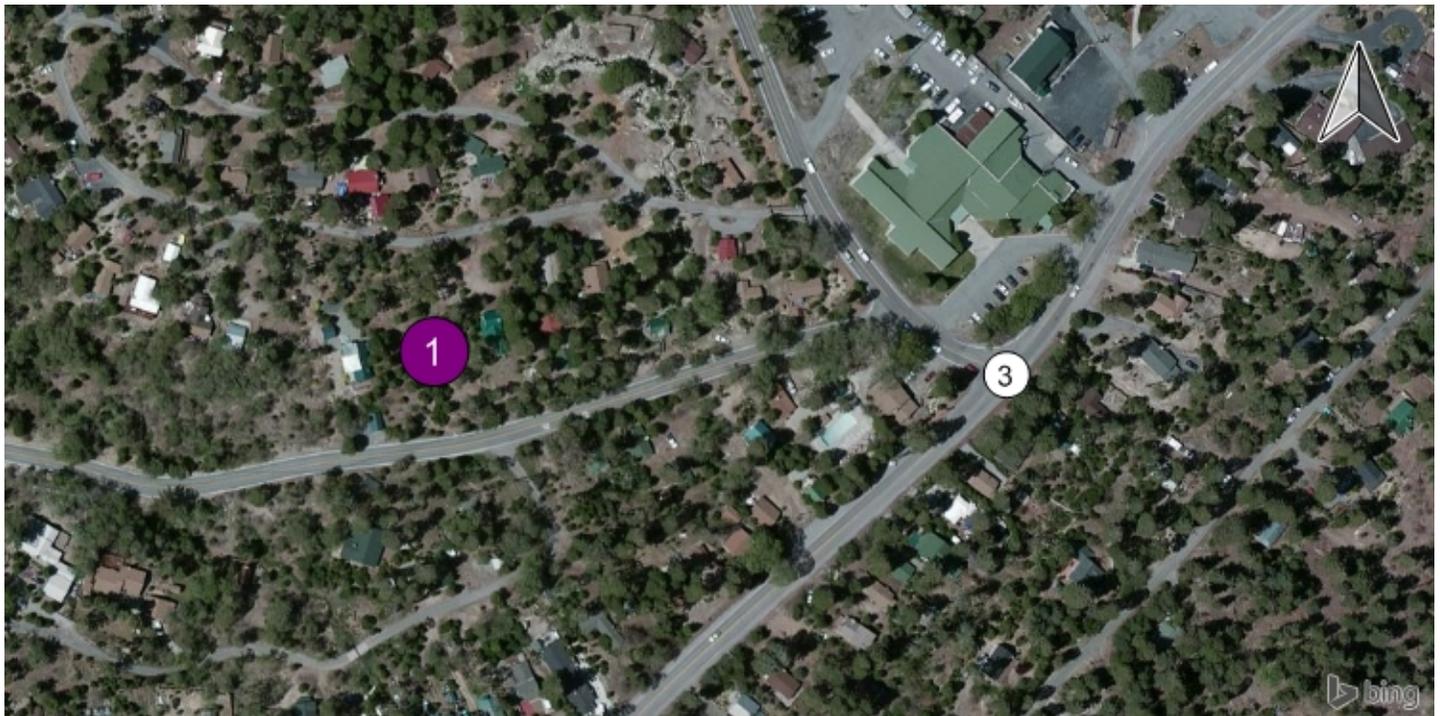
Fair Share - Fair Share Volumes - Zone 1: Cabin



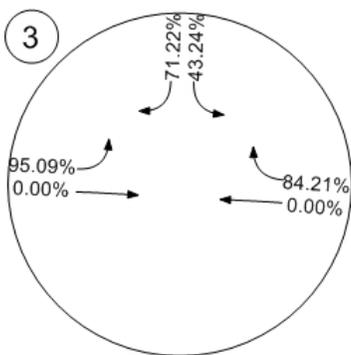
Fair Share - Fair Share Volumes - Zone 2: Special Event



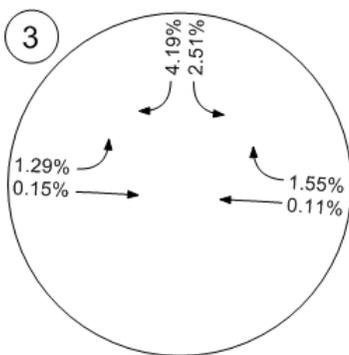
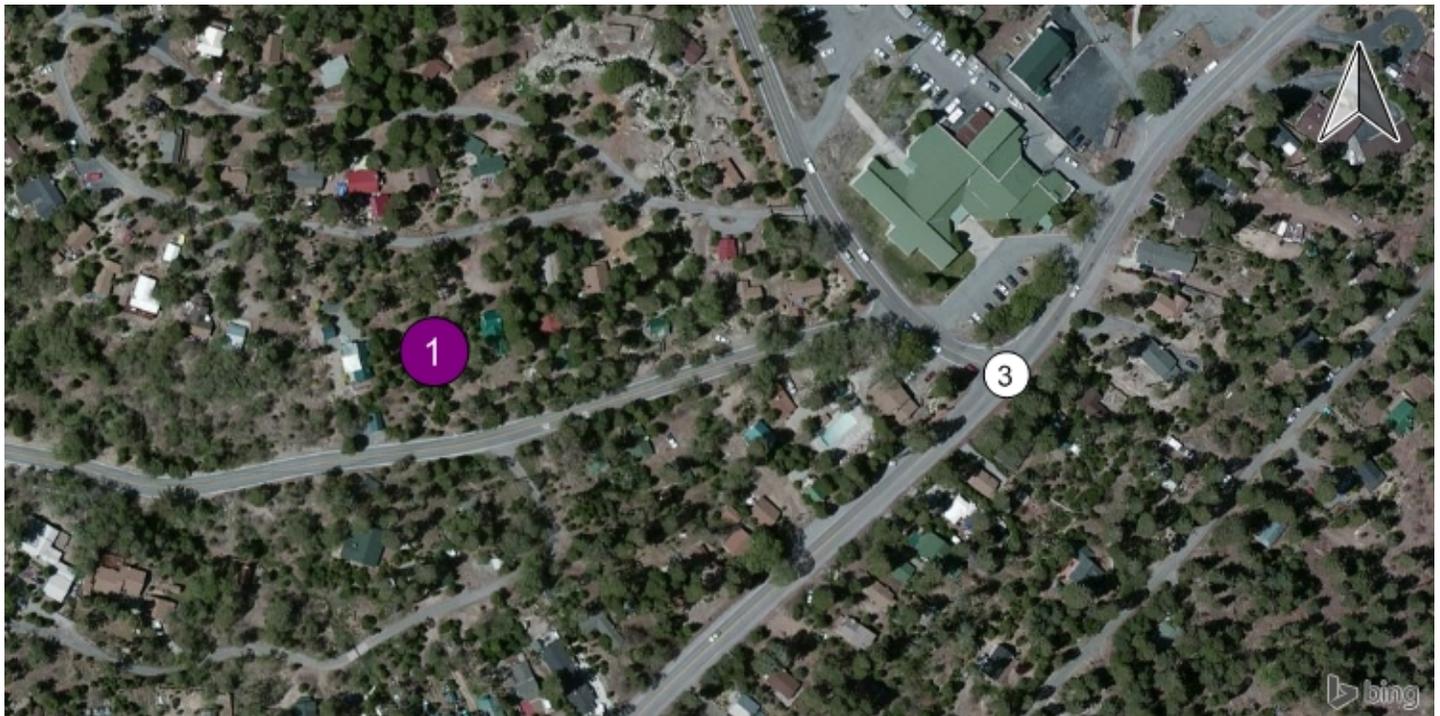
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



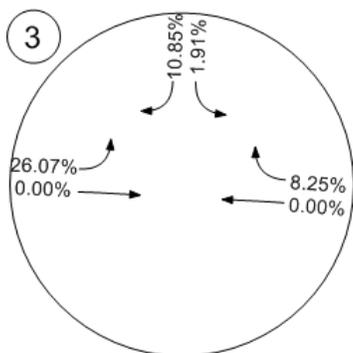
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event



Arrowhead Pine Rose Cabins

Vistro File: J:\...\LR Saturday.vistro

Scenario 4: Future Year (2040) With Project With
Improvement - Saturday Mid-Day

Report File: J:\...\LRPi Sat.pdf

6/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Grandview Road (NS) at SR-189 (EW)	Signalized	HCM 2010	SB Left	0.255	8.9	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Grandview Road (NS) at SR-189 (EW)

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.255

Intersection Setup

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Grandview Road (NS)		SR-189 (EW)		SR-189 (EW)	
Base Volume Input [veh/h]	76	57	50	133	223	75
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	7	18	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	71	74	150	252	92
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	19	19	39	66	24
Total Analysis Volume [veh/h]	95	75	78	158	265	97
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	45	0	0	15	15	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	44	44	44	44
g / C, Green / Cycle	0.13	0.74	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.10	0.07	0.08	0.14	0.06
s, saturation flow rate [veh/h]	1718	1132	1900	1900	1615
c, Capacity [veh/h]	223	856	1401	1401	1191
d1, Uniform Delay [s]	25.25	3.94	2.26	2.41	2.21
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.36	0.21	0.16	0.30	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

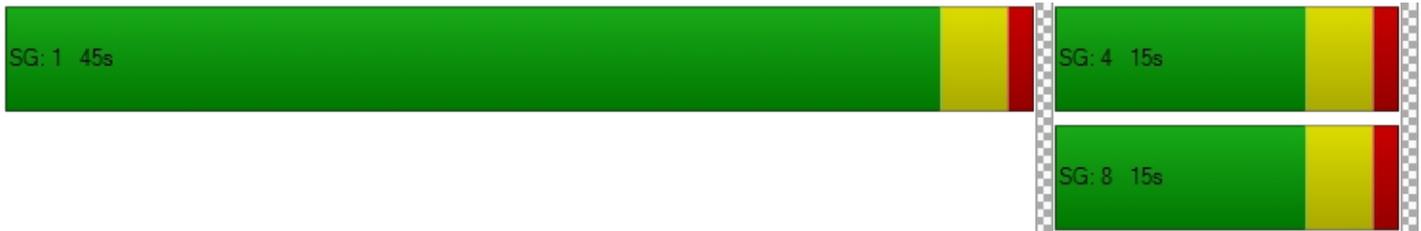
X, volume / capacity	0.76	0.09	0.11	0.19	0.08
d, Delay for Lane Group [s/veh]	30.60	4.15	2.43	2.71	2.34
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.53	0.30	0.32	0.57	0.20
50th-Percentile Queue Length [ft]	63.21	7.39	7.98	14.34	4.94
95th-Percentile Queue Length [veh]	4.55	0.53	0.57	1.03	0.36
95th-Percentile Queue Length [ft]	113.78	13.30	14.37	25.82	8.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.60	30.60	4.15	2.43	2.71	2.34
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	30.60		3.00		2.61	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	8.93					
Intersection LOS	A					
Intersection V/C	0.255					

Sequence

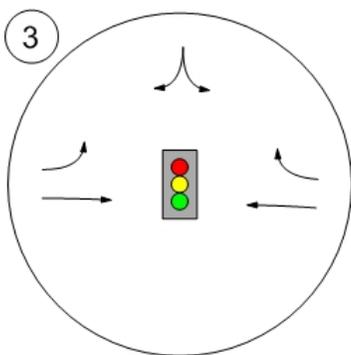
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Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



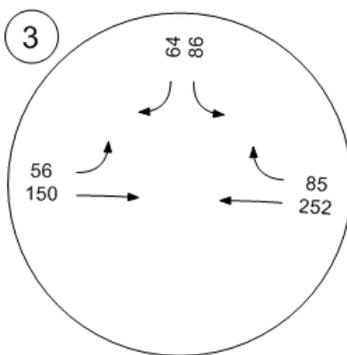
Study Intersections



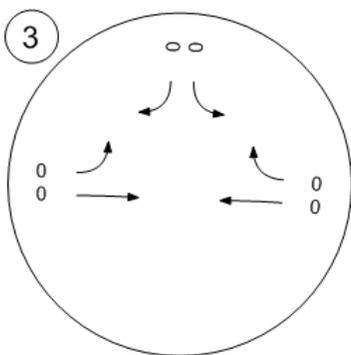
Lane Configuration and Traffic Control



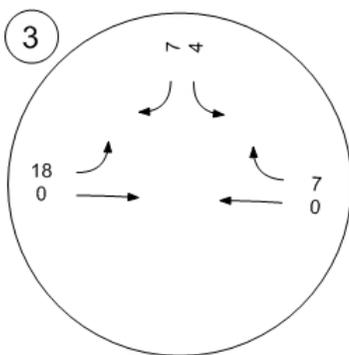
Traffic Volume - Base Volume



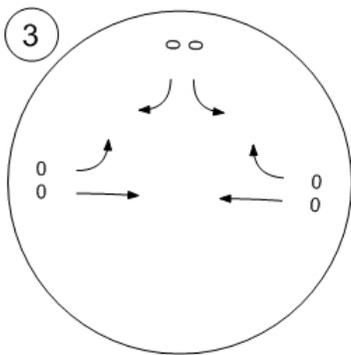
Traffic Volume - In-Process Volume



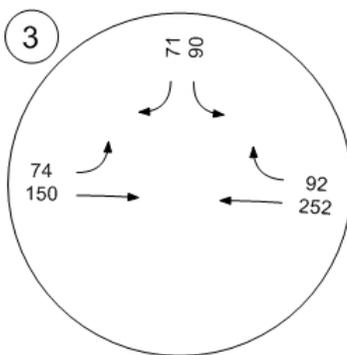
Traffic Volume - Net New Site Trips



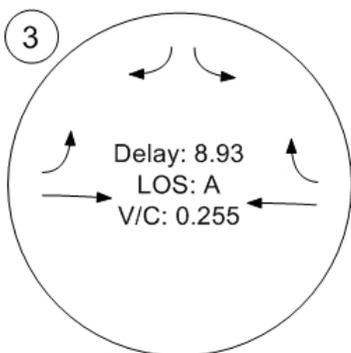
Traffic Volume - Other Volume



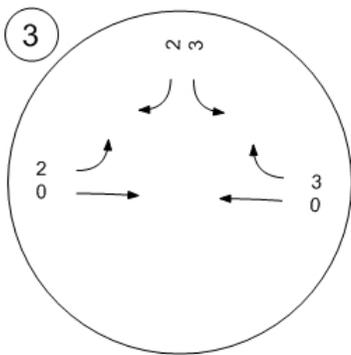
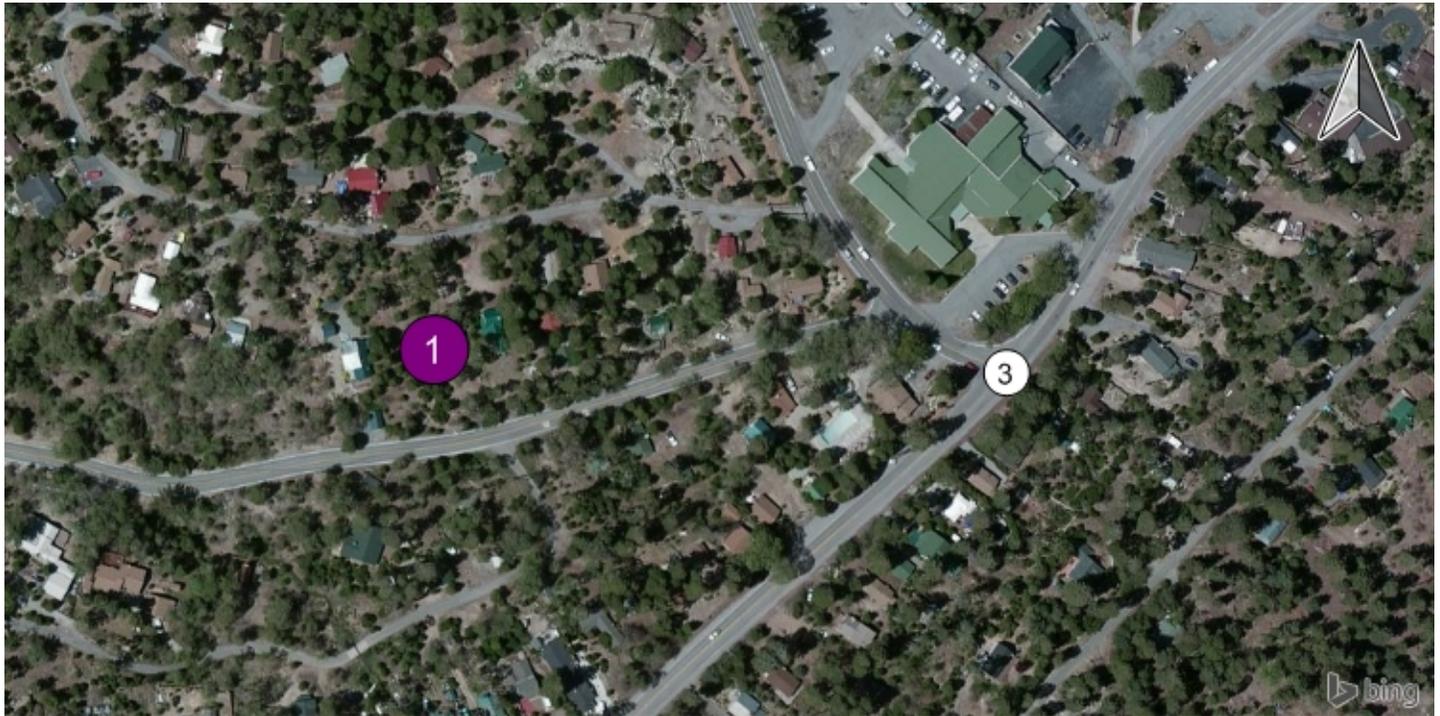
Traffic Volume - Future Total Volume



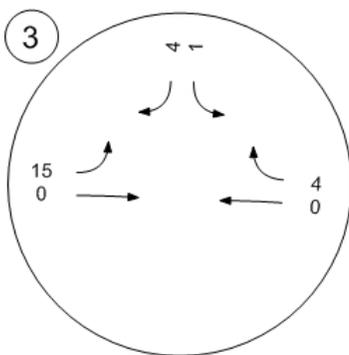
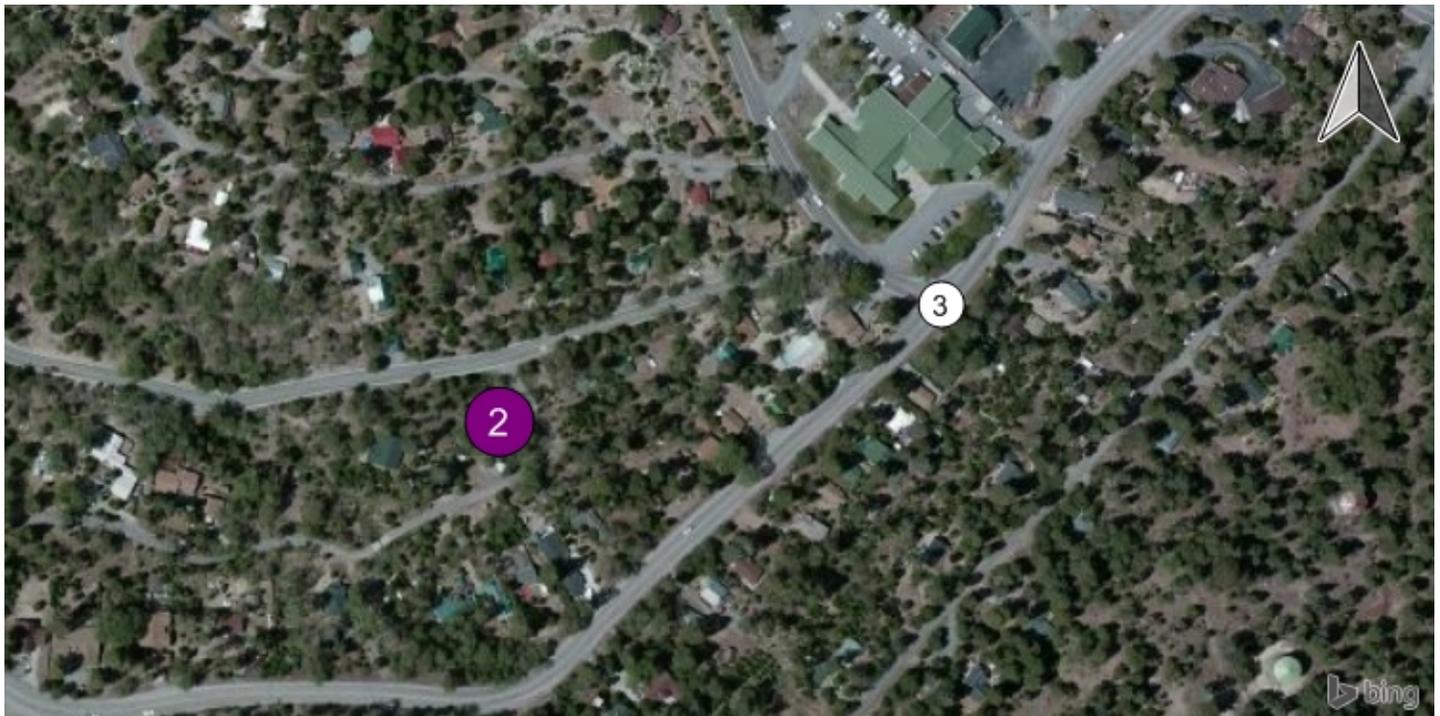
Traffic Conditions



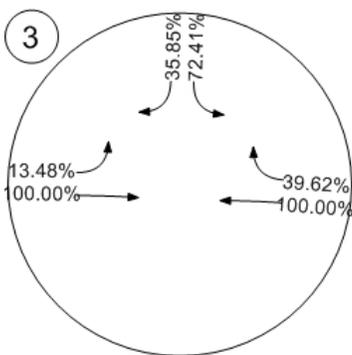
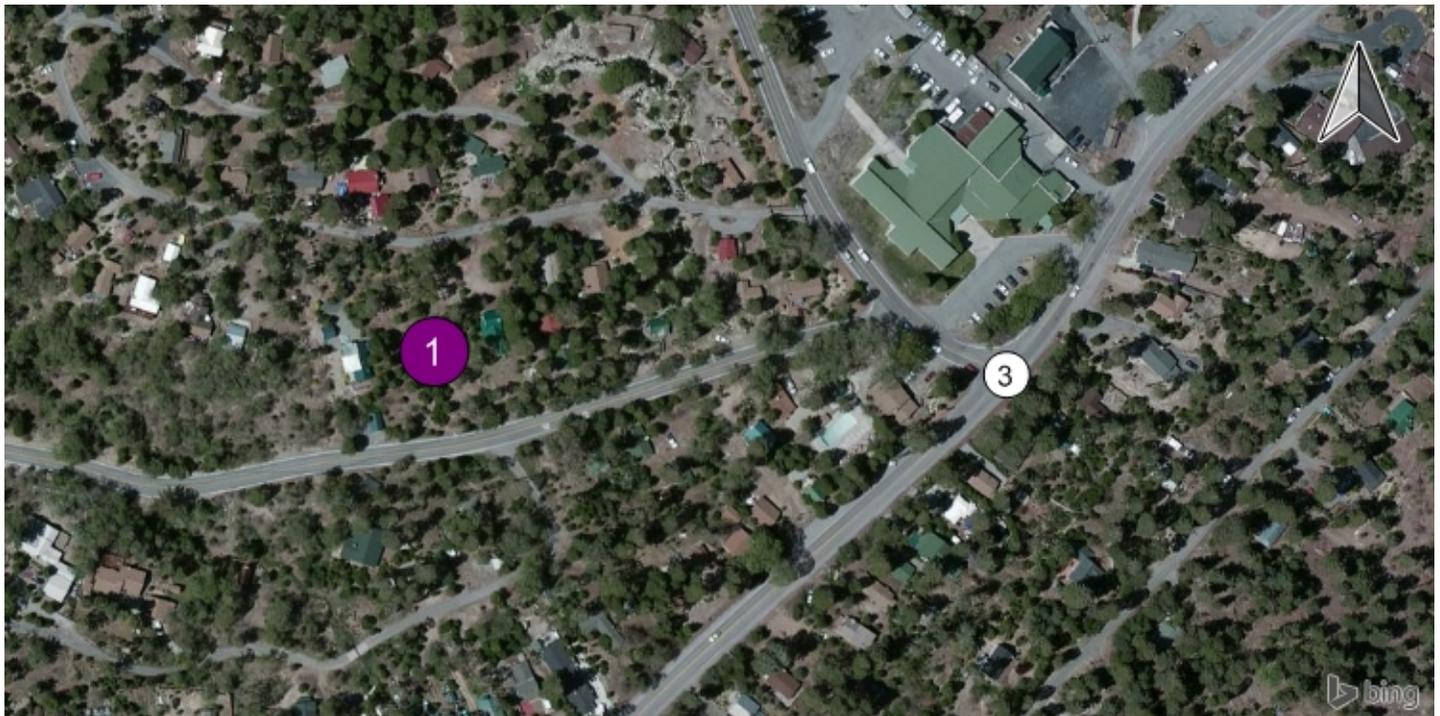
Fair Share - Fair Share Volumes - Zone 1: Cabin



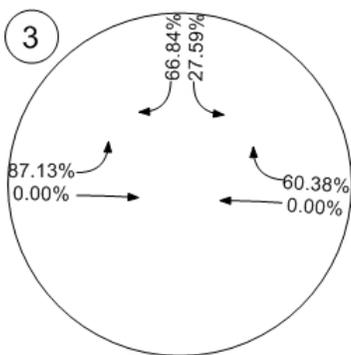
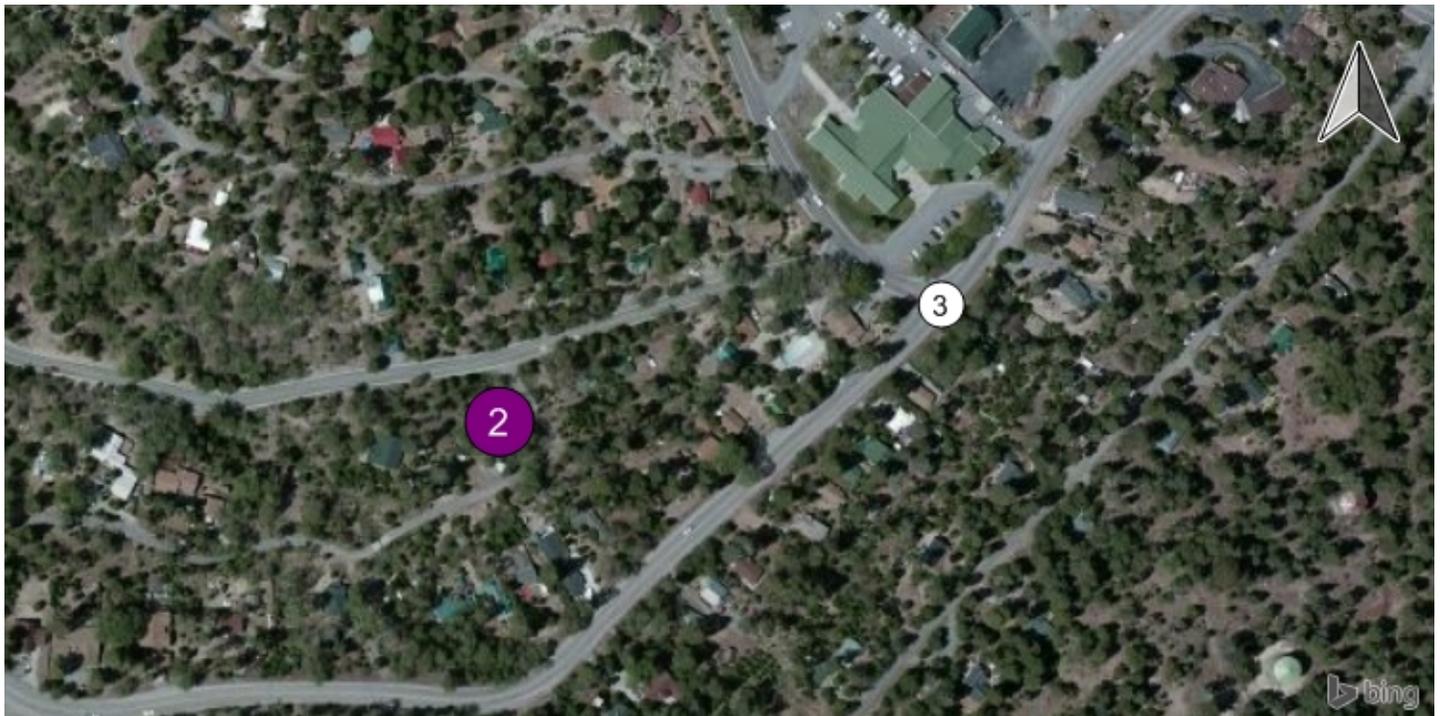
Fair Share - Fair Share Volumes - Zone 2: Special Event



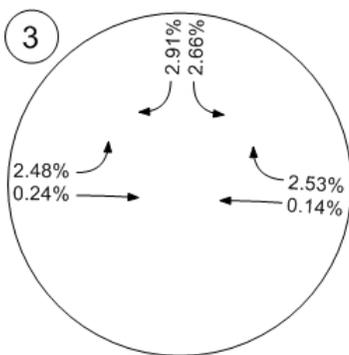
Fair Share - Fair Share % of Net New Site - Zone 1: Cabin



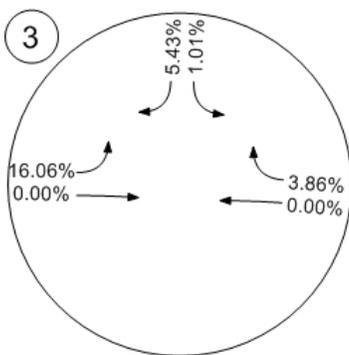
Fair Share - Fair Share % of Net New Site - Zone 2: Special Event



Fair Share - Fair Share % of Total Analysis - Zone 1: Cabin



Fair Share - Fair Share % of Total Analysis - Zone 2: Special Event





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