



**KUNZMAN ASSOCIATES, INC.**

**DOLLAR GENERAL - PINON HILLS**

**FOCUSED TRAFFIC ANALYSIS**

**August 10, 2015**



August 10, 2015

Mr. David Friedberg, Project Manager  
SIMONCRE VIA SOLERI II  
5111 North Scottsdale Road, Suite 200  
Scottsdale, AZ 85250

Dear Mr. Friedberg:

## INTRODUCTION

The firm of Kunzman Associates, Inc. is pleased to provide this focused traffic analysis for the Dollar General - Pinon Hills project. The Dollar General - Pinon Hills project consists of a 9,100 square foot variety store and is located south of SR-188 Highway between Mountain Road and Oasis Road in the Pinon Hills area of the County of San Bernardino (see Figure 1). Figure 2 illustrates the project site plan.

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 within Appendix A.

## TRAFFIC IMPACT ANALYSIS CRITERIA

The County of San Bernardino Transportation Department staff has requested that California Department of Transportation guidelines be utilized for this project. As stated in the Guide for the Preparation of Traffic Impact Studies, California Department of Transportation, December 2002, a traffic impact study may be needed when a project:

1. Generates over 100 peak hour trips assigned to a State highway facility.
2. Generates 50 to 100 peak hour trips assigned to a State highway facility - and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (Level of Service "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility - the following are examples that may require a full traffic impact study or some lesser analysis:
  - a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (Level of Service "E" or "F").
  - b. The potential risk for a traffic accident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).

- c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

## EXISTING TRAFFIC CONDITIONS

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.

Existing intersection traffic conditions were established through morning and evening peak hour traffic counts obtained by Kunzman Associates, Inc. from May 2015 (see Appendix B). 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 volumes and types (number of axles) of trucks was used in the conversion of trucks to Passenger Car Equivalents.

The morning peak hour and evening peak hour traffic counts have been converted to Passenger Car Equivalents. The following passenger car equivalents have been utilized throughout this report based on the San Bernardino Association of Governments, Congestion Management Program, Appendix C: Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2005:

- 2 axle = 1.5
- 3 axle = 2.0
- 4+ axle = 3.0

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix C) based on the 2010 Highway Capacity Manual – Transportation Research Board. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

For existing/existing plus project/and existing plus ambient growth plus project 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.

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 for all County maintained roads. Therefore, any intersection operating at Level of Service E to F will be considered deficient.

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

Mr. David Friedberg, Project Manager  
SIMONCRE VIA SOLERI II  
August 10, 2015

## PROJECT TRIP GENERATION

Trip generation rates were determined for daily traffic, morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the proposed land use. By multiplying the trip generation rates by the land use quantity, the project generated traffic volumes are determined.

Table 2 exhibits the trip generation rates, project peak hour volumes, and project daily traffic volumes. The trip generation rates are derived from the Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012. In the absence of data from the Institute of Transportation Engineers, the morning and evening peak hour inbound/outbound ratio splits for specialty retail/strip commercial were obtained from the San Diego Association of Governments, Traffic Generators, May 2003.

The proposed development is projected to generate approximately 583 daily vehicle trips, 35 of which occur during the morning peak hour and 62 of which occur during the evening peak hour.

## PROJECT TRIP DISTRIBUTION

Figure 4 contains the directional distribution of the project trips for the proposed land use. To determine the trip distribution for the proposed project, peak hour traffic counts of the existing directional distribution of traffic for existing areas in the vicinity of the site and other additional information on future development and traffic impacts in the area were reviewed.

## STUDY AREA TRAFFIC CONDITIONS

The study area intersections were analyzed for Existing Plus Project<sup>1</sup> and Existing Plus Ambient Growth Plus Project traffic conditions (see Appendix C).

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix C) based on the 2010 Highway Capacity Manual – Transportation Research Board. 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.

To assess Existing Plus Ambient Growth Plus Project traffic conditions, project traffic is combined with existing traffic and areawide growth. The Opening Year for analysis purposes in this report is 2017.

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<sup>1</sup> 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. This scenario is provided for informational purposes only, and will not be used for impact determinations or mitigation.

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For future traffic conditions, an annual growth rate of 1.64% was used. This growth rate was based on average daily traffic volumes obtained from the 2014 Traffic Volumes on California State Highways by the California Department of Transportation along SR-138 Highway adjacent to the project site over a three year period.

According to the County of San Bernardino Transportation Department staff, there are not currently any approved projects within the vicinity of the project site that would generate significant trips to the study area intersections. Therefore, the Existing Plus Ambient Growth Plus Project traffic conditions are representative of Existing Plus Ambient Growth Plus Project Plus Cumulative traffic conditions.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours (see Table 3).

For Existing Plus Ambient Growth Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours (see Table 4).

## **EMERGENCY ACCESS**

Figure 5 shows distances from SR-138 Highway to the entrance of the building and property boundary for an emergency vehicle parked along SR-138 Highway. Since these distances are less than 1,000 feet, adequate emergency access is provided because emergency personnel can park along SR-138 and provide emergency services in the event that the project access is blocked and inaccessible.

## **CONCLUSIONS**

The proposed development is projected to generate approximately 583 daily vehicle trips, 35 of which occur during the morning peak hour and 62 of which occur during the evening peak hour.

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

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

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

## **RECOMMENDATIONS**

The following improvements are recommended in conjunction with the proposed development to ensure adequate circulation within the project itself (see Figure 6).

Construct SR-138 Highway from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development adhering to sight distance requirements, as necessary.

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Sight distance at the project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the County and approved as consistent with this measure prior to issue of grading permits.

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

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

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.

It has been a pleasure to service your needs on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 973-8383.

Sincerely,

KUNZMAN ASSOCIATES , INC.

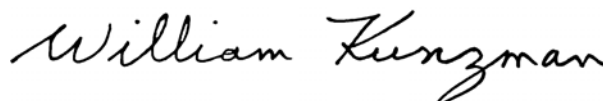


Bryan Crawford  
Senior Associate

#6172



KUNZMAN ASSOCIATES, INC.



William Kunzman, P.E.  
Principal

**Table 1**

**Existing Intersection Delay and Level of Service**

Intersection	Jurisdiction	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Peak Hour Delay-LOS <sup>2</sup>	
			Northbound			Southbound			Eastbound			Westbound			Morning	Evening
			L	T	R	L	T	R	L	T	R	L	T	R		
Mountain Road (NS) at: SR-138 Highway (EW) - #1	Caltrans	CSS	0	1	0	0	1	0	1	0.5	0.5	1	0.5	0.5	12.1-B	22.3-C
Oasis Road (NS) at: SR-138 Highway (EW) - #3	Caltrans	TS	1	0.5	0.5	1	0.5	0.5	1	1	1	1	1	1	18.3-B	25.6-C

<sup>1</sup> 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

<sup>2</sup> Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2010 Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross Street Stop; TS = Traffic Signal

**Table 2**  
**Project Trip Generation<sup>1</sup>**

Land Use	Quantity	Units <sup>2</sup>	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
<u>Trip Generation Rates</u>									
Variety Store	9.100	TSF	2.29	1.52	3.81	3.41	3.41	6.82	64.03
<u>Trips Generated</u>									
Variety Store	9.100	TSF	21	14	35	31	31	62	583

<sup>1</sup> Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 814. Since morning and evening peak hour inbound/outbound ratios are not available, the morning and evening peak hour inbound/outbound ratio splits for specialty retail/strip commercial has been obtained from the San Diego Association of Governments, Traffic Generators, May 2003.

<sup>2</sup> TSF = Thousand Square Feet



**Table 3**

**Existing Plus Project Intersection Delay and Level of Service**

Intersection	Jurisdiction	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Peak Hour Delay-LOS <sup>2</sup>	
			Northbound			Southbound			Eastbound			Westbound			Morning	Evening
			L	T	R	L	T	R	L	T	R	L	T	R		
Mountain Road (NS) at: SR-138 Highway (EW) - #1	Caltrans	CSS	0	1	0	0	1	0	1	0.5	0.5	1	0.5	0.5	12.1-B	22.5-C
Project Access (NS) at: SR-138 Highway (EW) - #2	Caltrans	<b>CSS</b>	<b>0.5</b>	0	<b>0.5</b>	0	0	0	0	0.5	0.5	1	1	0	11.3-B	16.3-C
Oasis Road (NS) at: SR-138 Highway (EW) - #3	Caltrans	TS	1	0.5	0.5	1	0.5	0.5	1	1	1	1	1	1	18.9-B	26.6-C

<sup>1</sup> 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; 1 = Improvement

<sup>2</sup> Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2010 Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross Street Stop; TS = Traffic Signal

**Table 4**

**Existing Plus Ambient Growth Plus Project Intersection Delay and Level of Service**

Intersection	Jurisdiction	Traffic Control <sup>3</sup>	Intersection Approach Lanes <sup>1</sup>												Peak Hour Delay-LOS <sup>2</sup>	
			Northbound			Southbound			Eastbound			Westbound			Morning	Evening
			L	T	R	L	T	R	L	T	R	L	T	R		
Mountain Road (NS) at: SR-138 Highway (EW) - #1	Caltrans	CSS	0	1	0	0	1	0	1	0.5	0.5	1	0.5	0.5	12.2-B	24.4-C
Project Access (NS) at: SR-138 Highway (EW) - #2	Caltrans	CSS	0.5	0	0.5	0	0	0	0	0.5	0.5	1	1	0	11.4-B	16.4-C
Oasis Road (NS) at: SR-138 Highway (EW) - #3	Caltrans	TS	1	0.5	0.5	1	0.5	0.5	1	1	1	1	1	1	19.2-B	27.4-C

<sup>1</sup> 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; 1 = Improvement

<sup>2</sup> Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2010 Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross Street Stop; TS = Traffic Signal

Figure 1  
Project Location Map

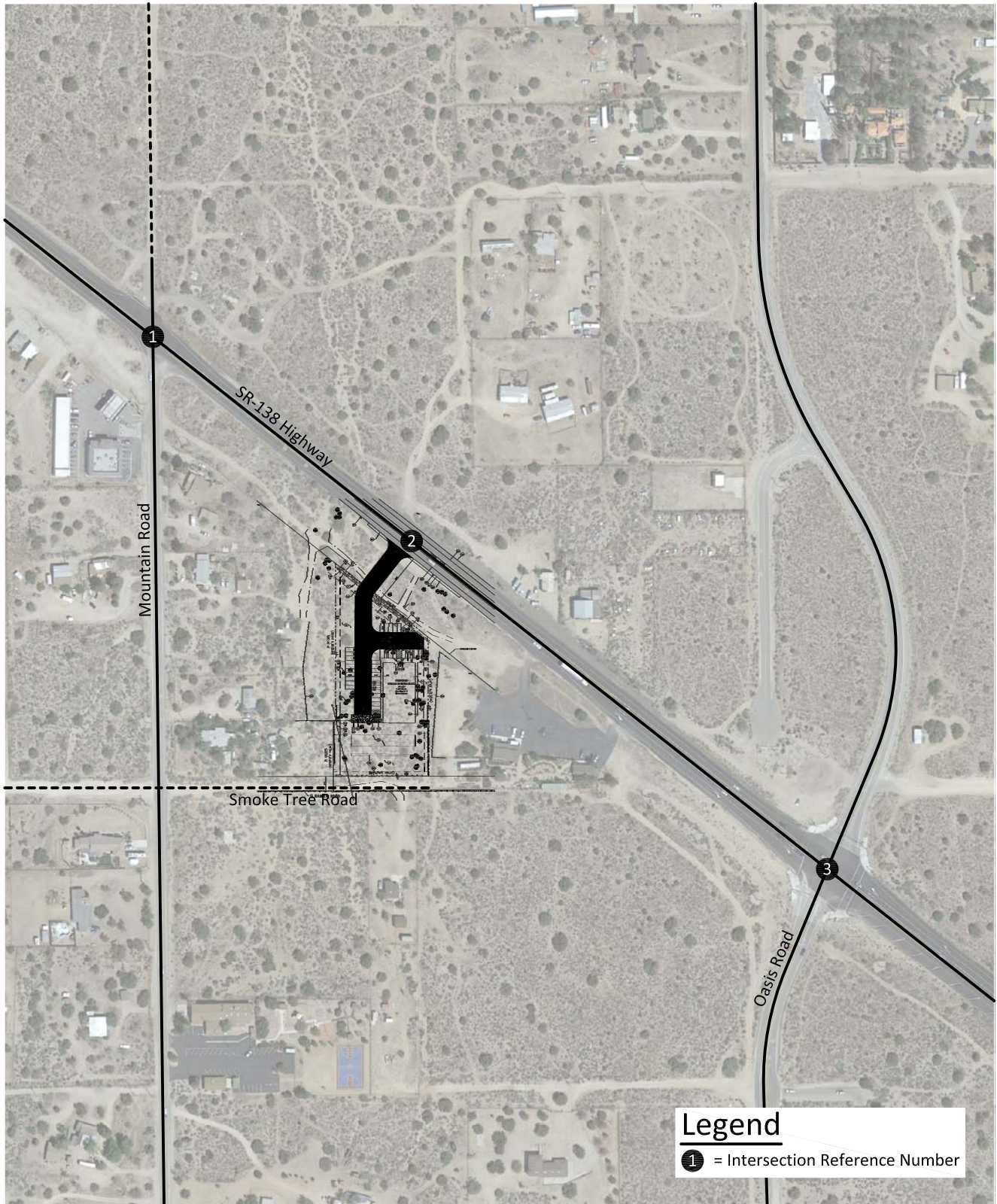


Figure 2  
Site Plan

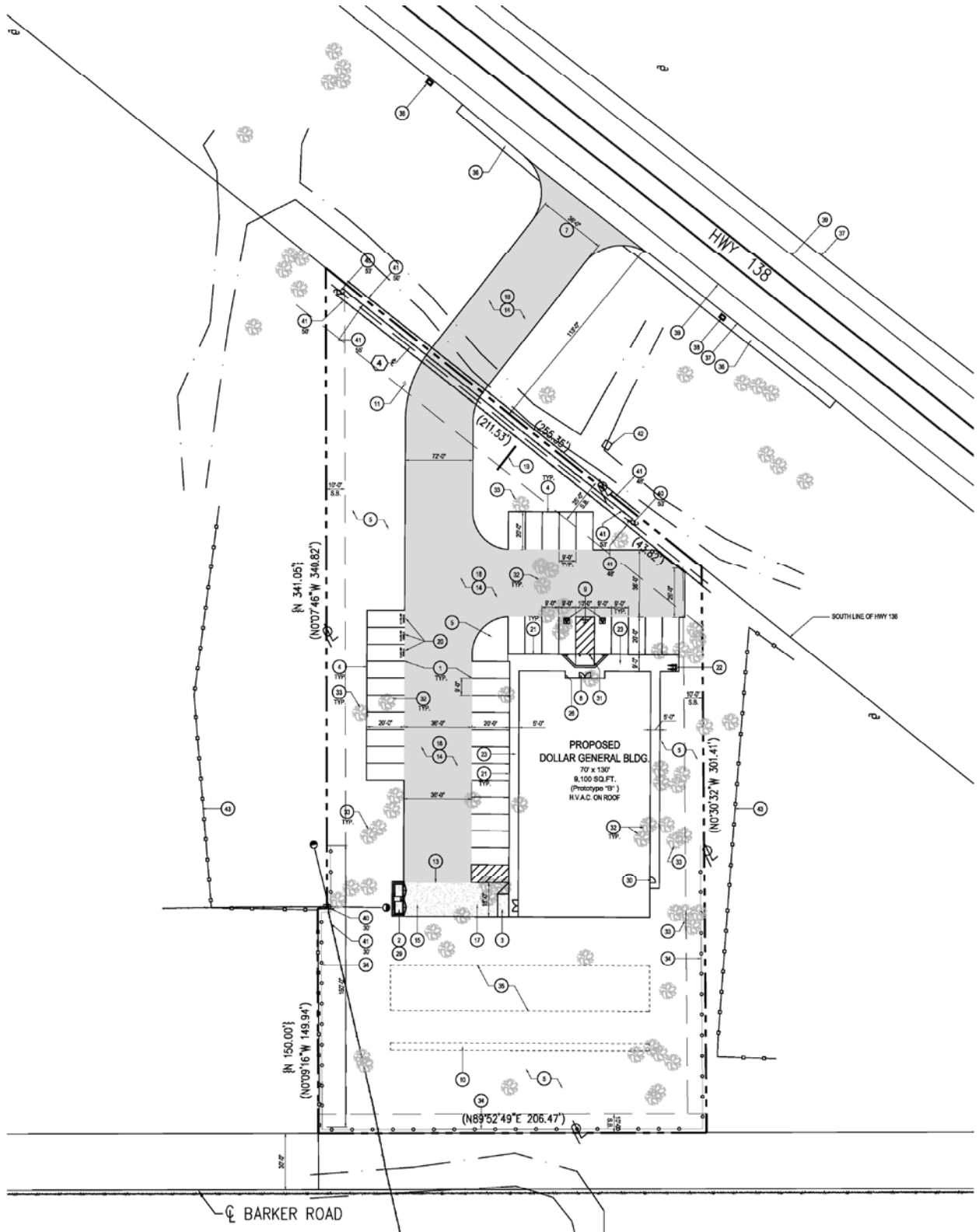


Figure 3  
Existing Through Travel Lanes and Intersection Controls

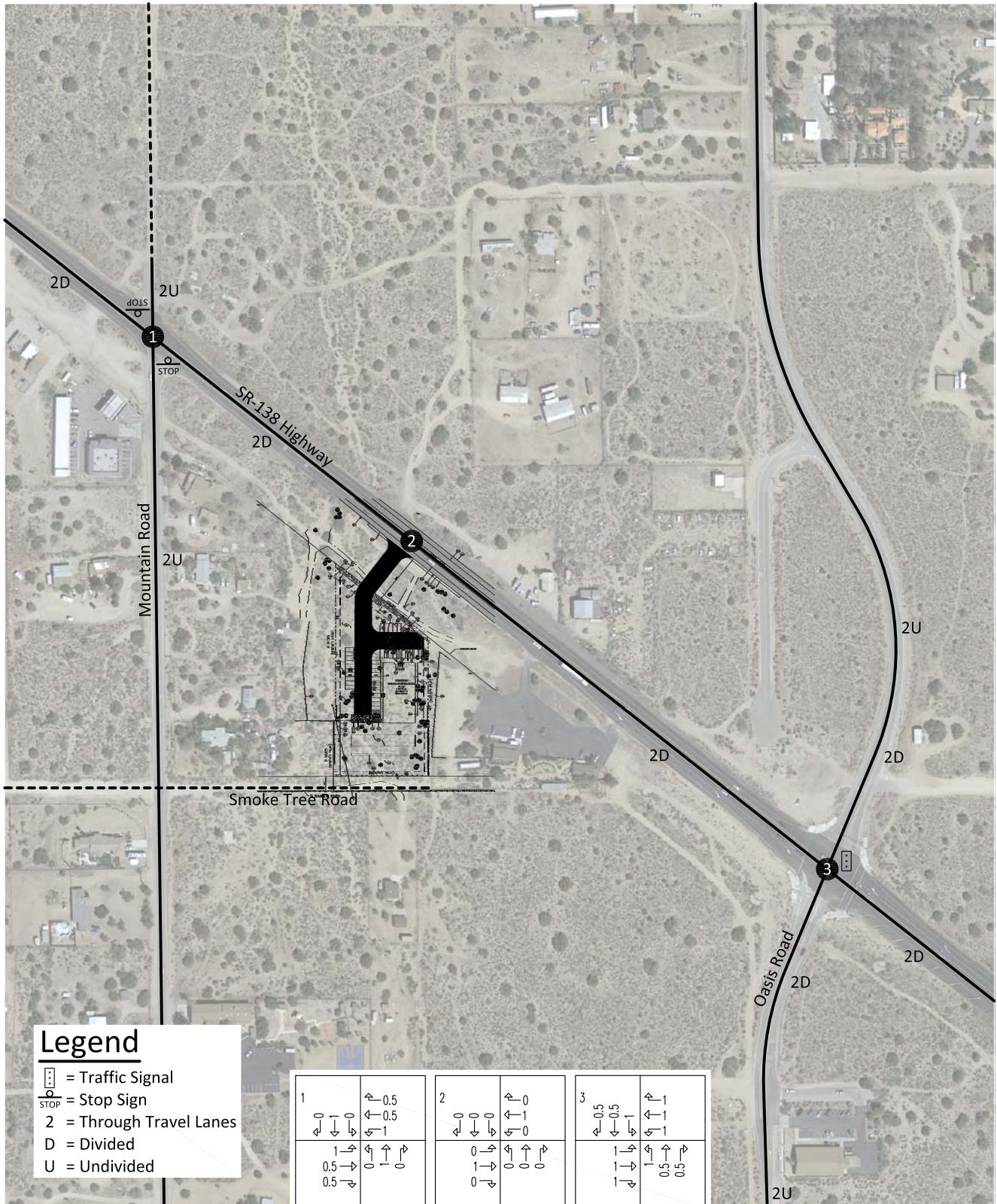


Figure 4  
Project Trip Distribution



Figure 5  
Emergency Access

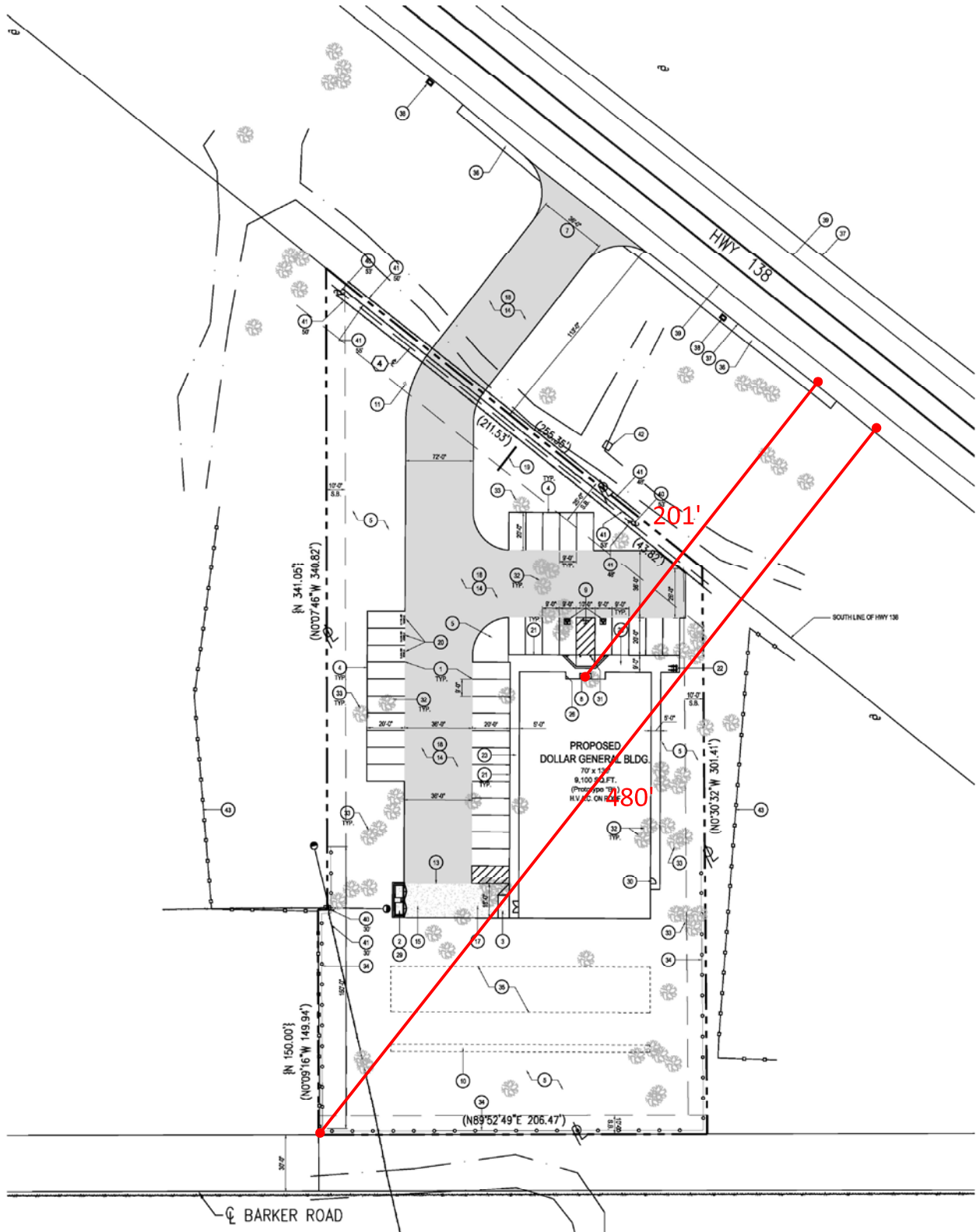
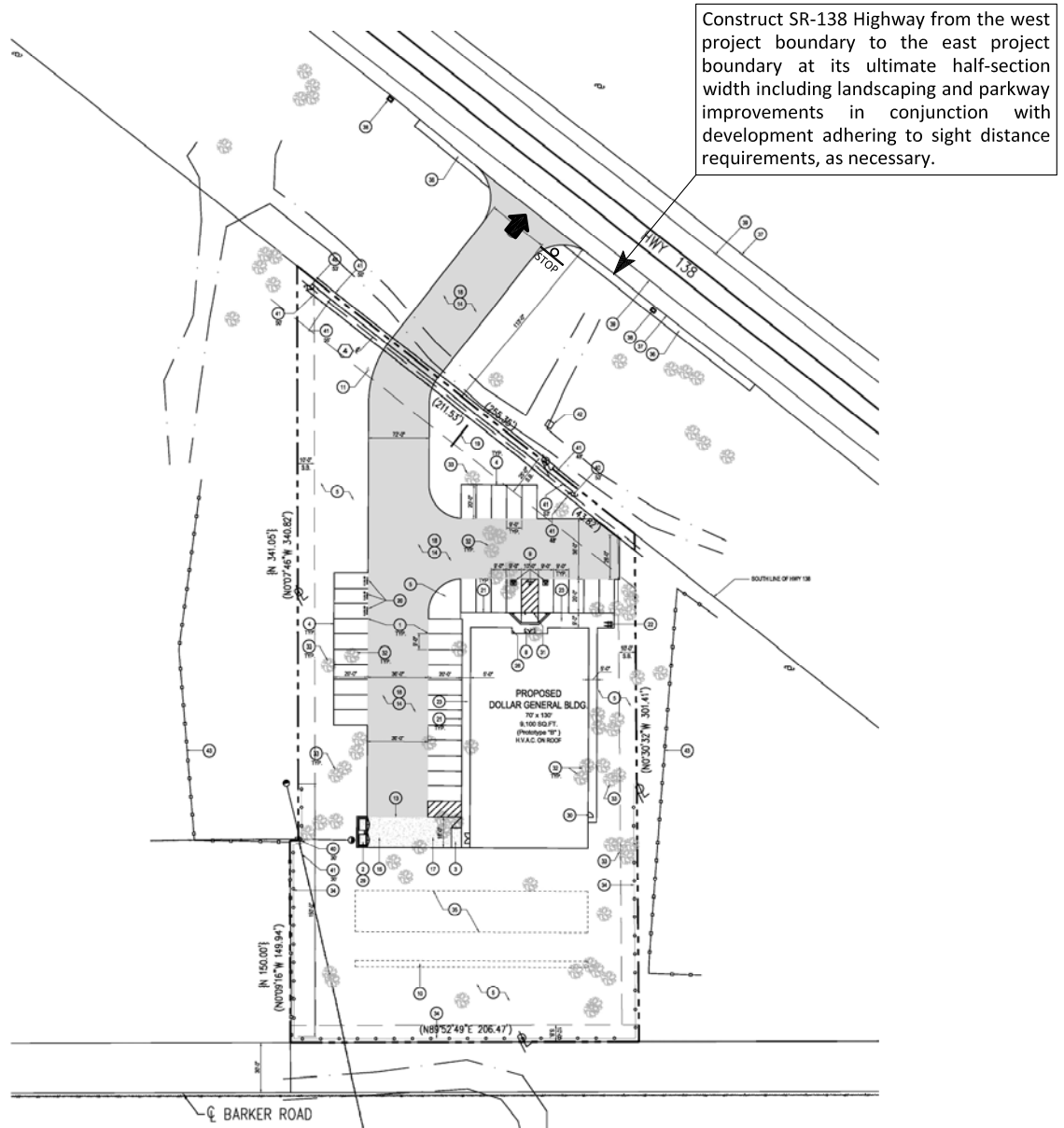


Figure 6  
Circulation Recommendations



Sight distance at the project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the County and approved as consistent with this measure prior to issue of grading permits.

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

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

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.

**Legend**

- = Stop Sign
- = Full Access Driveway



**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:** 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.

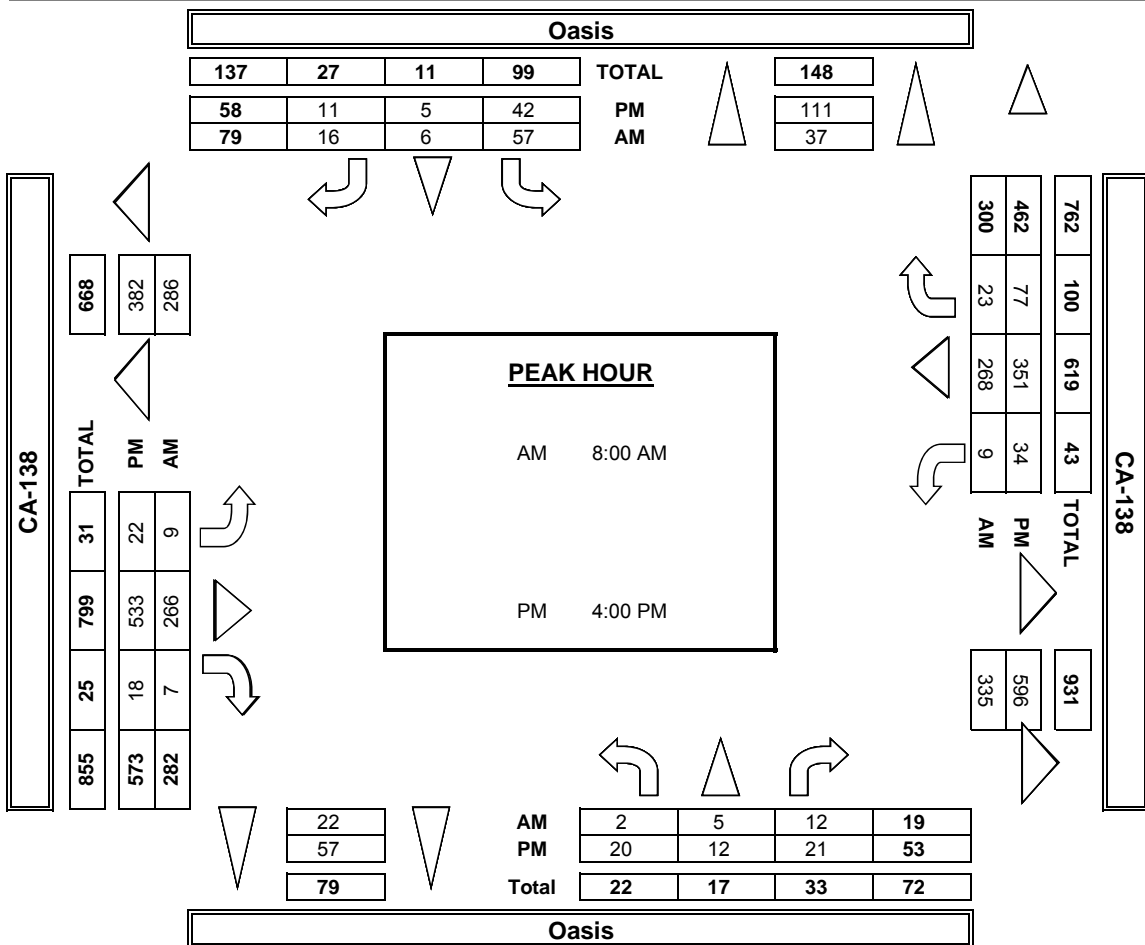
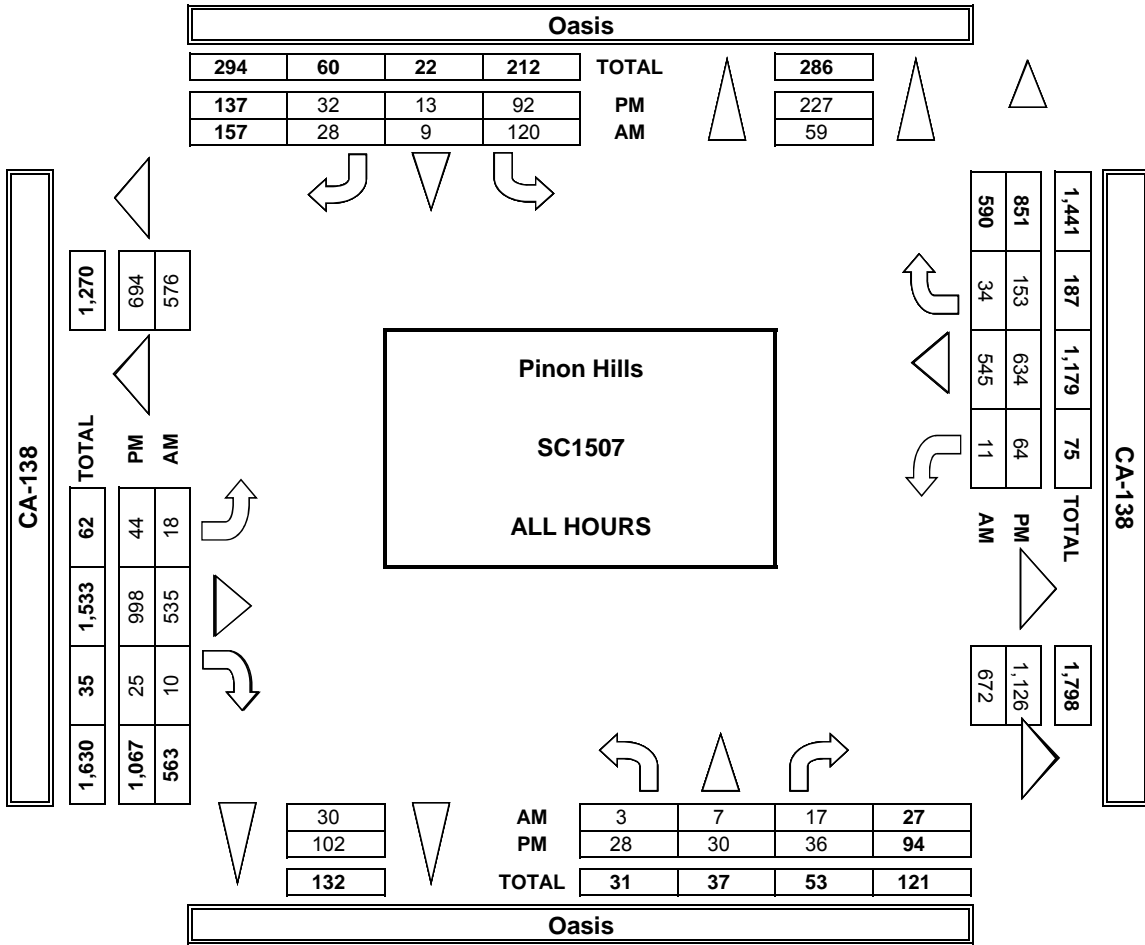
**VEHICLE MILES OF TRAVEL:** A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

**APPENDIX B**

**Traffic Count Worksheets**



**AimTD LLC**  
TURNING MOVEMENT COUNTS





# INTERSECTION TURNING MOVEMENT COUNTS

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

**DATE:**  
7/29/15  
WEDNESDAY

**LOCATION:** Pinon Hills  
NORTH & SOUTH: Oasis  
EAST & WEST: CA-138

**PROJECT #:** SC1507  
**LOCATION #:** 1  
**CONTROL:** SIGNAL

<b>CLASS 1:</b>	<b>NOTES:</b>				
PASSENGER VEHICLES		AM		▲	
		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Oasis			Oasis			CA-138			CA-138				NB	SB	EB	WB	TTL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR						

<b>AM</b>	7:00 AM	0	1	0	18	1	1	1	58	2	0	46	3	131
	7:15 AM	0	1	1	13	0	7	1	49	1	0	54	1	128
	7:30 AM	1	0	1	13	1	1	3	58	0	1	54	3	136
	7:45 AM	0	0	1	13	1	1	2	53	0	1	42	4	118
	8:00 AM	1	0	1	13	0	1	0	42	1	1	43	4	107
	8:15 AM	0	1	2	12	0	1	2	47	2	4	51	6	128
	8:30 AM	1	0	4	12	3	6	1	56	1	1	46	3	134
	8:45 AM	0	4	4	14	2	7	4	63	2	3	40	4	147
	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

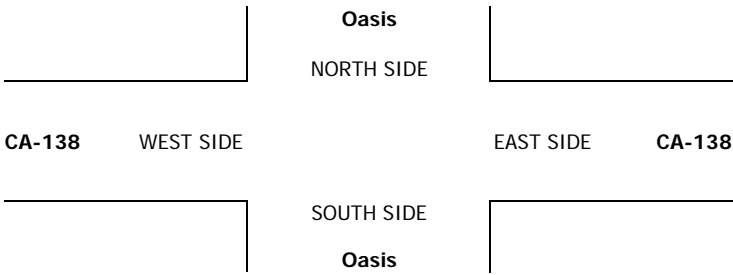
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0	0	0	0	0
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0	0	0	0	0

VOLUMES	3	7	14	108	8	25	14	426	9	11	376	28	1,029
APPROACH %	13%	29%	58%	77%	6%	18%	3%	95%	2%	3%	91%	7%	
APP/DEPART	24	/	49	141	/	28	449	/	548	415	/	404	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	2	5	11	51	5	15	7	208	6	9	180	17	516
APPROACH %	11%	28%	61%	72%	7%	21%	3%	94%	3%	4%	87%	8%	
PEAK HR FACTOR	0.563			0.772			0.801			0.844			0.878
APP/DEPART	18	/	29	71	/	20	221	/	270	206	/	197	0

<b>PM</b>	03:00 PM	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	
	3:30 PM	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	
	4:00 PM	7	1	5	6	4	3	5	79	6	10	78	16	220
	4:15 PM	6	3	6	13	0	0	5	127	4	6	70	15	255
	4:30 PM	3	6	2	8	1	6	6	119	3	11	74	23	262
	4:45 PM	3	2	5	12	0	2	5	103	4	5	82	16	239
	5:00 PM	1	3	5	10	3	2	5	95	1	8	59	14	206
	5:15 PM	0	6	3	13	0	10	7	84	2	7	58	22	212
	5:30 PM	3	4	3	15	4	6	4	106	2	9	74	20	250
	5:45 PM	3	5	3	7	1	1	5	84	0	5	56	16	186

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	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	26	30	32	84	13	30	42	797	22	61	551	142	1,830
APPROACH %	30%	34%	36%	66%	10%	24%	5%	93%	3%	8%	73%	19%	
APP/DEPART	88	/	214	127	/	96	861	/	913	754	/	607	0
BEGIN PEAK HR	4:00 PM												
VOLUMES	19	12	18	39	5	11	21	428	17	32	304	70	976
APPROACH %	39%	24%	37%	71%	9%	20%	5%	92%	4%	8%	75%	17%	
PEAK HR FACTOR	0.817			0.917			0.857			0.940			0.931
APP/DEPART	49	/	103	55	/	54	466	/	485	406	/	334	0



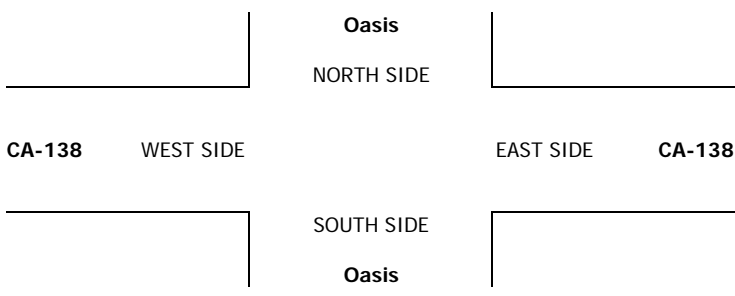
# INTERSECTION TURNING MOVEMENT COUNTS

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

<b>DATE:</b> 7/29/15 WEDNESDAY	<b>LOCATION:</b> Pinon Hills <b>NORTH &amp; SOUTH:</b> Oasis <b>EAST &amp; WEST:</b> CA-138	<b>PROJECT #:</b> SC1507 <b>LOCATION #:</b> 1 <b>CONTROL:</b> SIGNAL	<table border="1" style="margin: auto;"> <tr><td>AM</td><td></td><td>▲</td><td></td></tr> <tr><td>PM</td><td></td><td>N</td><td></td></tr> <tr><td>MD</td><td>◀ W</td><td></td><td>E ▶</td></tr> <tr><td>OTHER</td><td></td><td>S</td><td></td></tr> <tr><td>OTHER</td><td></td><td>▼</td><td></td></tr> </table>	AM		▲		PM		N		MD	◀ W		E ▶	OTHER		S		OTHER		▼	
AM		▲																					
PM		N																					
MD	◀ W		E ▶																				
OTHER		S																					
OTHER		▼																					
<b>CLASS 2:</b> 2-AXLE WORK VEHICLES/ TRUCKS	<b>NOTES:</b>																						

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Oasis			Oasis			CA-138			CA-138				NB	SB	EB	WB	TTL
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR						

<b>AM</b>	7:00 AM	0	0	1	0	0	1	0	4	0	0	12	0	18	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	7	0	0	10	0	17	0	0	0	0	0
	7:30 AM	0	0	1	2	0	0	1	3	0	0	10	0	17	0	0	0	0	0
	7:45 AM	0	0	0	2	0	1	0	5	0	0	9	0	17	0	0	0	0	0
	8:00 AM	0	0	1	2	0	0	1	8	0	0	15	1	28	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	6	0	0	10	0	16	0	0	0	0	0
	8:30 AM	0	0	0	0	0	1	0	2	0	0	7	3	13	0	0	0	0	0
	8:45 AM	0	0	0	2	1	0	0	5	1	0	4	1	14	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	3	8	1	3	2	40	1	0	77	5	140	0	0	0	0	0
APPROACH %	0%	0%	100%	67%	8%	25%	5%	93%	2%	0%	94%	6%							
APP/DEPART	3	/	7	12	/	2	43	/	51	82	/	80	0						
BEGIN PEAK HR	7:15 AM																		
VOLUMES	0	0	2	6	0	1	2	23	0	0	44	1	79						
APPROACH %	0%	0%	100%	86%	0%	14%	8%	92%	0%	0%	98%	2%							
PEAK HR FACTOR	0.500			0.583			0.694			0.703			0.705						
APP/DEPART	2	/	3	7	/	0	25	/	31	45	/	45	0						
<b>PM</b>	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	1	0	0	0	0	0	0	13	0	0	4	2	20	0	0	0	0	0
	4:15 PM	0	0	0	2	0	0	0	14	0	1	6	0	23	0	0	0	0	0
	4:30 PM	0	0	1	0	0	0	0	9	0	0	2	1	13	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	12	0	0	8	2	22	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	9	0	0	3	2	14	0	0	0	0	0
	5:15 PM	0	0	1	2	0	0	0	6	1	1	4	0	15	0	0	0	0	0
	5:30 PM	0	0	0	1	0	1	1	10	1	0	6	0	20	0	0	0	0	0
	5:45 PM	1	0	0	0	0	0	0	7	0	0	2	1	11	0	0	0	0	0
	VOLUMES	2	0	2	5	0	1	1	80	2	2	35	8	138	0	0	0	0	0
APPROACH %	50%	0%	50%	83%	0%	17%	1%	96%	2%	4%	78%	18%							
APP/DEPART	4	/	9	6	/	4	83	/	87	45	/	38	0						
BEGIN PEAK HR	4:00 PM																		
VOLUMES	1	0	1	2	0	0	0	48	0	1	20	5	78						
APPROACH %	50%	0%	50%	100%	0%	0%	0%	100%	0%	4%	77%	19%							
PEAK HR FACTOR	0.500			0.250			0.857			0.650			0.848						
APP/DEPART	2	/	5	2	/	1	48	/	51	26	/	21	0						



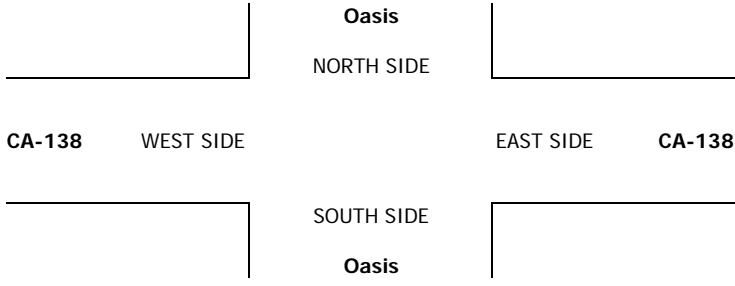
# INTERSECTION TURNING MOVEMENT COUNTS

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

<b>DATE:</b> 7/29/15 WEDNESDAY	LOCATION: Pinon Hills NORTH & SOUTH: Oasis EAST & WEST: CA-138	PROJECT #: SC1507 LOCATION #: 1 CONTROL: SIGNAL	
<b>CLASS 3:</b> 3-AXLE TRUCKS	<b>NOTES:</b>		

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

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS					
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		NB	SB	EB	WB	TTL	
<b>7:00 AM</b>	0	0	0	0	0	0	1	0	0	0	5	0	6	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	2	0	0	4	0	6	0	0	0	0	0	
7:45 AM	0	0	0	1	0	0	0	1	0	0	3	0	5	0	0	0	0	0	
8:00 AM	0	0	0	1	0	0	0	1	0	0	4	0	6	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	1	0	0	3	1	5	0	0	0	0	0	
8:30 AM	0	0	0	1	0	0	0	2	0	0	3	0	6	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	4	0	0	2	0	6	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	
<b>VOLUMES</b>	0	0	0	3	0	0	1	14	0	0	24	1	43	0	0	0	0	0	
<b>APPROACH %</b>	0%	0%	0%	100%	0%	0%	7%	93%	0%	0%	96%	4%							
<b>APP/DEPART</b>	0	/	2	3	/	0	15	/	17	25	/	24	0						
<b>BEGIN PEAK HR</b>	8:00 AM																		
<b>VOLUMES</b>	0	0	0	2	0	0	0	8	0	0	12	1	23						
<b>APPROACH %</b>	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	92%	8%							
<b>PEAK HR FACTOR</b>	0.000			0.500			0.500			0.813			0.958						
<b>APP/DEPART</b>	0	/	1	2	/	0	8	/	10	13	/	12	0						
<b>03:00 PM</b>	0	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	0	
3:30 PM	0	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	0	
4:00 PM	0	0	1	0	0	0	0	4	0	0	0	0	5	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	5	0	0	2	0	7	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	
5:00 PM	0	0	0	1	0	0	0	3	0	0	2	0	6	0	0	0	0	0	
5:15 PM	0	0	0	0	0	1	0	1	0	0	2	0	4	0	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0	
5:45 PM	0	0	0	1	0	0	0	2	0	0	2	0	5	0	0	0	0	0	
<b>VOLUMES</b>	0	0	1	2	0	1	0	21	0	0	9	0	34						
<b>APPROACH %</b>	0%	0%	100%	67%	0%	33%	0%	100%	0%	0%	100%	0%							
<b>APP/DEPART</b>	1	/	0	3	/	0	21	/	24	9	/	10	0						
<b>BEGIN PEAK HR</b>	4:30 PM																		
<b>VOLUMES</b>	0	0	0	1	0	1	0	13	0	0	6	0	21						
<b>APPROACH %</b>	0%	0%	0%	50%	0%	50%	0%	100%	0%	0%	100%	0%							
<b>PEAK HR FACTOR</b>	0.000			0.500			0.650			0.750			0.750						
<b>APP/DEPART</b>	0	/	0	2	/	0	13	/	14	6	/	7	0						



# INTERSECTION TURNING MOVEMENT COUNTS

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

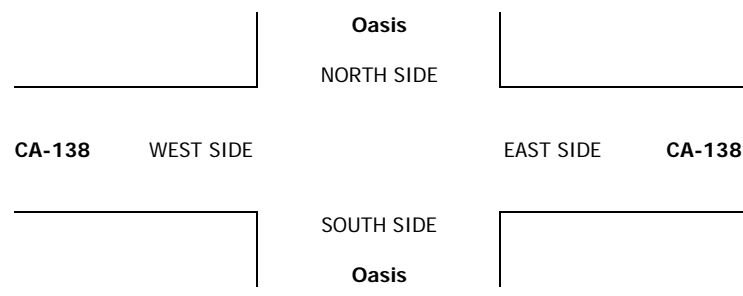
<b>DATE:</b> 7/29/15 WEDNESDAY	<b>LOCATION:</b> Pinon Hills <b>NORTH &amp; SOUTH:</b> Oasis <b>EAST &amp; WEST:</b> CA-138	<b>PROJECT #:</b> SC1507 <b>LOCATION #:</b> 1 <b>CONTROL:</b> SIGNAL
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<b>CLASS 4:</b> 4 OR MORE AXLE TRUCKS	<b>NOTES:</b>	AM PM MD OTHER OTHER	◀ W      E ▶ ▲ N ▼ S
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LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	Oasis			Oasis			CA-138			CA-138				NB	SB	EB	WB	TTL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR						

<b>AM</b>	7:00 AM	0	0	0	0	0	0	0	4	0	0	5	0	9	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	9	0	0	5	0	14	0	0	0	0	0	
	7:30 AM	0	0	0	0	0	0	6	0	0	12	0	18	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	7	0	0	4	0	11	0	0	0	0	0	
	8:00 AM	0	0	0	0	0	0	1	7	0	0	15	23	0	0	0	0	0	
	8:15 AM	0	0	0	0	0	0	2	0	0	4	0	6	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	9	0	0	12	0	21	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	9	0	0	8	0	17	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	
	<b>VOLUMES</b>	0	0	0	0	0	0	1	53	0	0	65	119	0	0	0	0	0	
	<b>APPROACH %</b>	0%	0%	0%	0%	0%	0%	2%	98%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
	<b>APP/DEPART</b>	0	/	1	0	/	0	54	/	53	65	/	65	0	0	0	0	0	
	<b>BEGIN PEAK HR</b>	8:00 AM																	
	<b>VOLUMES</b>	0	0	0	0	0	0	1	27	0	0	39	67	0	0	0	0	0	
	<b>APPROACH %</b>	0%	0%	0%	0%	0%	0%	4%	96%	0%	0%	100%	0%	0%	0%	0%	0%	0%	
	<b>PEAK HR FACTOR</b>	0.000			0.000			0.778			0.650			0.728					
	<b>APP/DEPART</b>	0	/	1	0	/	0	28	/	27	39	/	39	0	0	0	0	0	

<b>PM</b>	03:00 PM	0	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	1	10	1	0	6	18	0	0	0	0	0	
	4:15 PM	0	0	0	0	0	0	0	7	0	0	7	14	0	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	15	0	1	9	26	0	0	0	0	0	
	4:45 PM	0	0	1	1	0	0	0	10	0	0	3	15	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	12	0	0	3	16	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	8	0	0	5	13	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	10	0	0	3	13	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	23	0	0	1	24	0	0	0	0	0	
	<b>VOLUMES</b>	0	0	1	1	0	0	1	95	1	1	37	139	0	0	0	0	0	
	<b>APPROACH %</b>	0%	0%	100%	100%	0%	0%	1%	98%	1%	3%	93%	5%	0%	0%	0%	0%	0%	
	<b>APP/DEPART</b>	1	/	3	1	/	2	97	/	97	40	/	37	0	0	0	0	0	
	<b>BEGIN PEAK HR</b>	4:00 PM																	
	<b>VOLUMES</b>	0	0	1	1	0	0	1	42	1	1	25	73	0	0	0	0	0	
	<b>APPROACH %</b>	0%	0%	100%	100%	0%	0%	2%	95%	2%	4%	93%	4%	0%	0%	0%	0%	0%	
	<b>PEAK HR FACTOR</b>	0.250			0.250			0.733			0.614			0.702					
	<b>APP/DEPART</b>	1	/	2	1	/	2	44	/	44	27	/	25	0	0	0	0	0	



## INTERSECTION TURNING MOVEMENT COUNTS

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

**DATE:**  
7/29/15  
**WEDNESDAY**

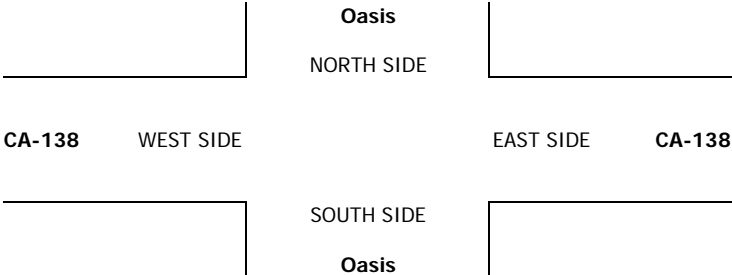
**LOCATION:** Pinon Hills  
NORTH & SOUTH: Oasis  
EAST & WEST: CA-138

**PROJECT #:** SC1507  
**LOCATION #:** 1  
**CONTROL:** SIGNAL

<b>CLASS 5:</b>	<b>NOTES:</b>	AM PM MD OTHER OTHER	◀ W	▲ N ▼ S	E ▶
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
	1	0.5	1.5	1	0.5	1.5	1	1	1	1	1	1						

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		NB	SB	EB	WB	TTL
<b>AM</b>																		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	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	1	0	0	0	0	0	0	0	0	1	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	1	0	0	0	0	1	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	1	0	0	0	1	0	0	2	0	4	0	0	0	0	0
APPROACH %	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%						
APP/DEPART	0	/	0	1	/	0	1	/	2	2	/	2	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	0	0	0	1	0	0	0	0	0	0	2	0	3					
APPROACH %	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%						
PEAK HR FACTOR	0.000			0.250			0.000			0.250			0.375					
APP/DEPART	0	/	0	1	/	0	0	/	1	2	/	2	0					
<b>PM</b>																		
03:00 PM	0	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	0
3:30 PM	0	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	0
4:00 PM	0	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	0
4:30 PM	0	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	1	1	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	1	0	1	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	4	0	0	2	1	7	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	67%	33%						
APP/DEPART	0	/	1	0	/	0	4	/	4	3	/	2	0					
BEGIN PEAK HR	5:00 PM																	
VOLUMES	0	0	0	0	0	0	0	4	0	0	2	0	6					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%						
PEAK HR FACTOR	0.000			0.000			0.500			0.500			0.500					
APP/DEPART	0	/	0	0	/	0	4	/	4	2	/	2	0					



# INTERSECTION TURNING MOVEMENT COUNTS

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

**DATE:**  
7/29/15  
**WEDNESDAY**

**LOCATION:**  
NORTH & SOUTH:  
EAST & WEST:

Pinon Hills  
Oasis  
CA-138

**PROJECT #:** SC1507  
**LOCATION #:** 1  
**CONTROL:** SIGNAL

<b>CLASS 6:</b>	<b>NOTES:</b>	AM PM MD OTHER OTHER	◀ W	▲ N S ▼ E ▶
BUSES				

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Oasis			Oasis			CA-138			CA-138			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	0.5	1.5	1	0.5	1.5	1	1	1	1	1	1	

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

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
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	1	0	1
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	1	0	0	0	0	1
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

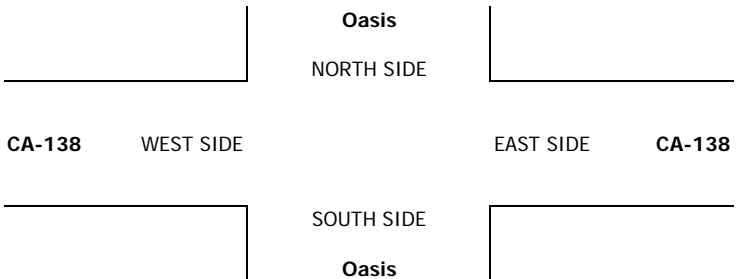
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	1	0	0	1	0	2
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	0	0	/	0	1	/	1	1	/	1	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	0	0	0	0	0	0	0	1	0	0	1	0	2
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR	0.000			0.000			0.250			0.250			0.500
APP/DEPART	0	/	0	0	/	0	1	/	1	1	/	1	0

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
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	1	0	0	0	0	1
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
0	0	0	0	0
0	0	0	0	0

VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0
BEGIN PEAK HR	3:30 PM												
VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.250			0.000			0.250
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0

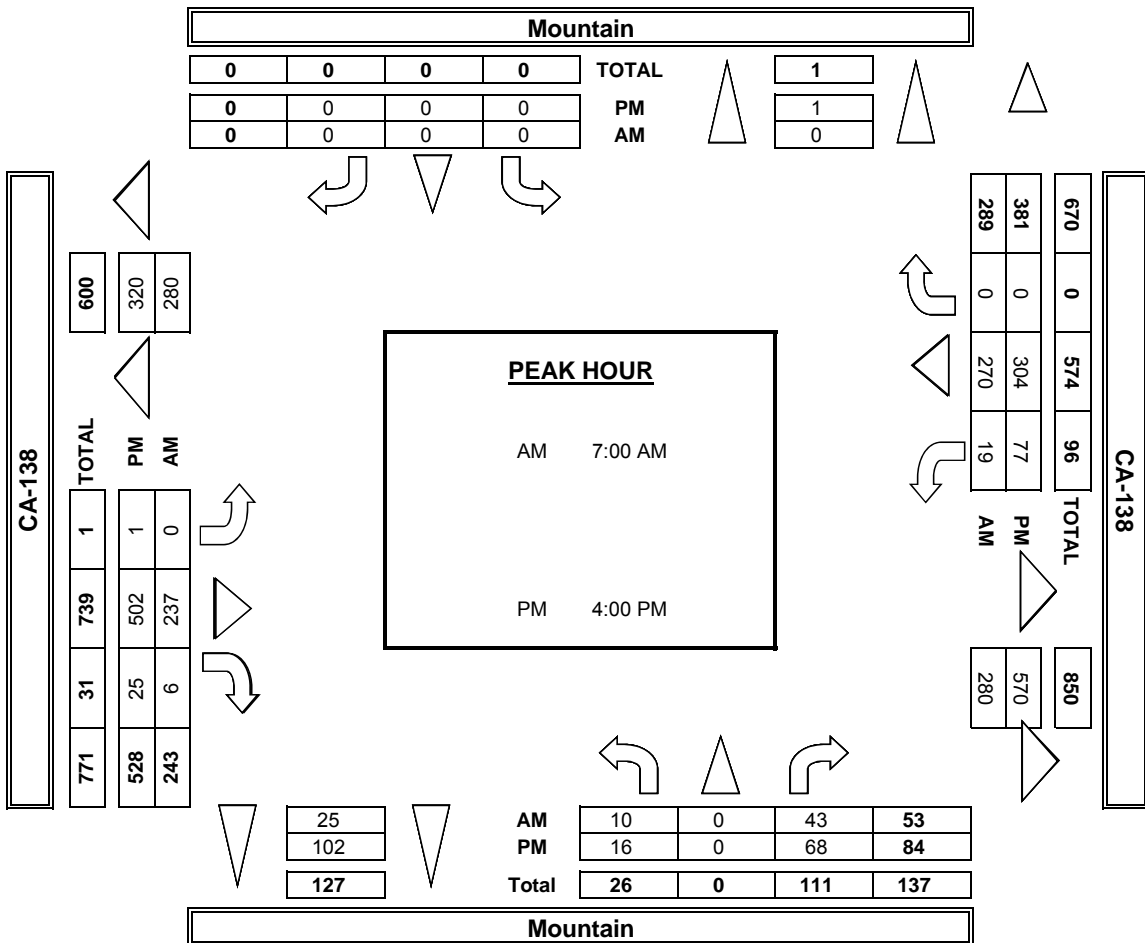
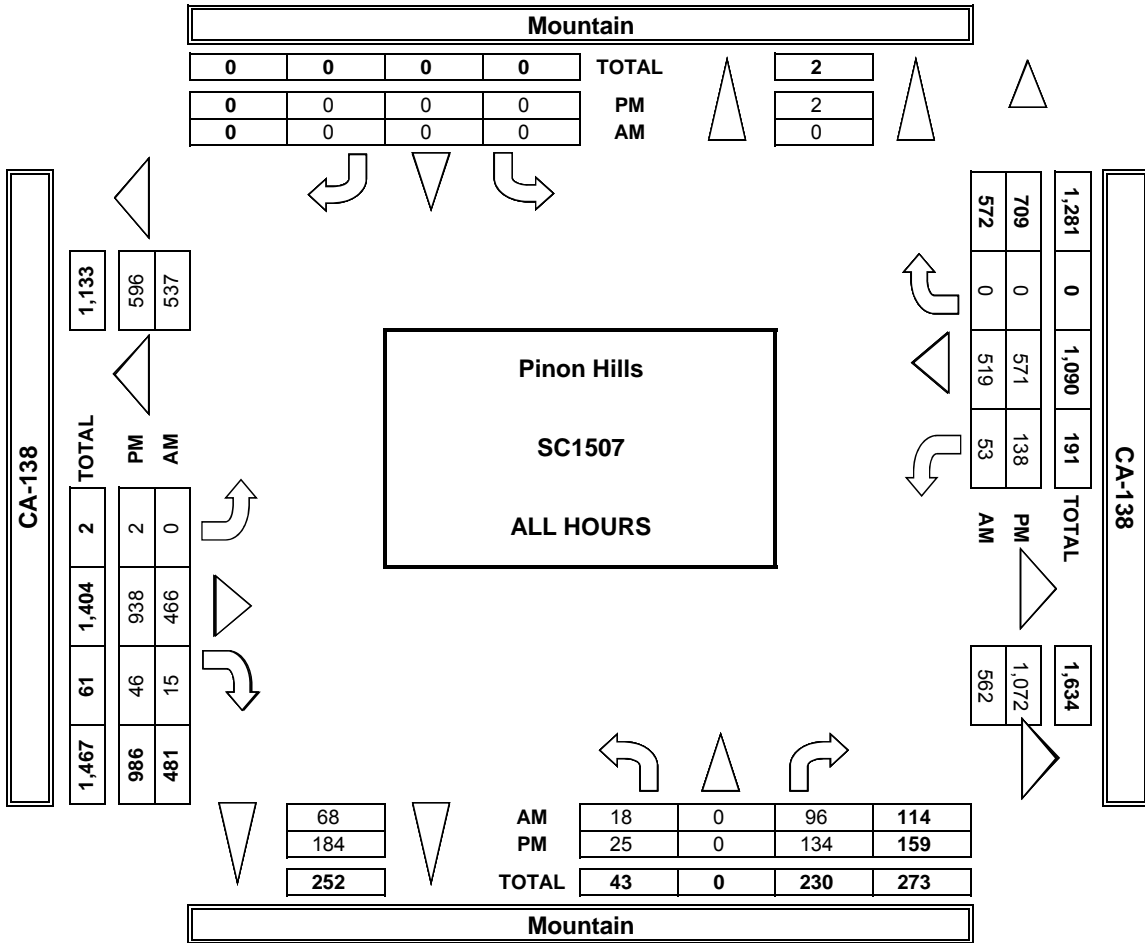








**AimTD LLC**  
TURNING MOVEMENT COUNTS



# INTERSECTION TURNING MOVEMENT COUNTS

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

**DATE:**  
7/29/15  
WEDNESDAY

**LOCATION:**  
NORTH & SOUTH:  
EAST & WEST:

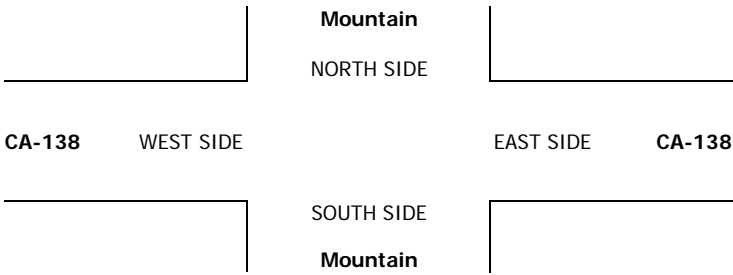
Pinon Hills  
Mountain  
CA-138

**PROJECT #:** SC1507  
**LOCATION #:** 2  
**CONTROL:** SIGNAL

<b>CLASS 1:</b>	<b>NOTES:</b>				
PASSENGER VEHICLES		AM		▲	
		PM		N	
		MD	◀ W		E ▶
		OTHER		S	
		OTHER		▼	

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

<b>AM</b>	7:00 AM	0	0	14	0	0	0	0	47	0	4	50	0	115	0	0	0	0	0
	7:15 AM	3	0	6	0	0	0	0	45	3	4	50	0	111	0	0	0	0	0
	7:30 AM	5	0	9	0	0	0	0	47	1	5	43	0	110	0	0	0	0	0
	7:45 AM	2	0	9	0	0	0	0	48	1	4	46	0	110	0	0	0	0	0
	8:00 AM	1	0	7	0	0	0	0	38	2	3	42	0	93	0	0	0	0	0
	8:15 AM	2	0	11	0	0	0	0	42	2	6	42	0	105	0	0	0	0	0
	8:30 AM	1	0	14	0	0	0	0	42	3	6	43	0	109	0	0	0	0	0
	8:45 AM	1	0	15	0	0	0	0	52	2	11	33	0	114	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	15	0	85	0	0	0	0	361	14	43	349	0	867	0	0	0	0	0
APPROACH %	15%	0%	85%	0%	0%	0%	0%	96%	4%	11%	89%	0%							
APP/DEPART	100	/	0	0	/	57	375	/	446	392	/	364	0						
BEGIN PEAK HR	7:00 AM																		
VOLUMES	10	0	38	0	0	0	0	187	5	17	189	0	446						
APPROACH %	21%	0%	79%	0%	0%	0%	0%	97%	3%	8%	92%	0%							
PEAK HR FACTOR	0.857			0.000			0.980			0.954			0.970						
APP/DEPART	48	/	0	0	/	22	192	/	225	206	/	199	0						
<b>PM</b>	03:00 PM	0	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	0
	3:30 PM	0	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	0
	4:00 PM	1	0	10	0	0	0	1	79	9	16	64	0	180	0	0	0	0	0
	4:15 PM	4	0	20	0	0	0	0	126	4	22	64	0	240	0	0	0	0	0
	4:30 PM	4	0	19	0	0	0	0	99	6	20	54	0	202	0	0	0	0	0
	4:45 PM	5	0	15	0	0	0	0	101	5	15	78	0	219	0	0	0	0	0
	5:00 PM	3	0	10	0	0	0	0	91	5	11	43	0	163	0	0	0	0	0
	5:15 PM	2	0	13	0	0	0	1	85	3	26	53	0	183	0	0	0	0	0
	5:30 PM	2	0	20	0	0	0	0	91	6	9	73	0	201	0	0	0	0	0
	5:45 PM	1	0	16	0	0	0	0	72	1	12	61	0	163	0	0	0	0	0
	VOLUMES	22	0	123	0	0	0	2	744	39	131	490	0	1,551	0	0	0	0	0
APPROACH %	15%	0%	85%	0%	0%	0%	0%	95%	5%	21%	79%	0%							
APP/DEPART	145	/	2	0	/	170	785	/	867	621	/	512	0						
BEGIN PEAK HR	4:00 PM																		
VOLUMES	14	0	64	0	0	0	1	405	24	73	260	0	841						
APPROACH %	18%	0%	82%	0%	0%	0%	0%	94%	6%	22%	78%	0%							
PEAK HR FACTOR	0.813			0.000			0.827			0.895			0.876						
APP/DEPART	78	/	1	0	/	97	430	/	469	333	/	274	0						



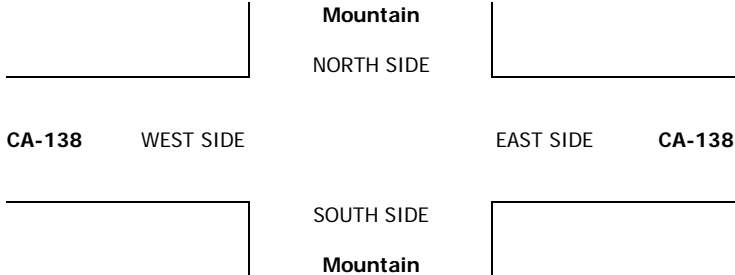
# INTERSECTION TURNING MOVEMENT COUNTS

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

<b>DATE:</b> 7/29/15 WEDNESDAY	LOCATION: Pinon Hills NORTH & SOUTH: Mountain EAST & WEST: CA-138	PROJECT #: SC1507 LOCATION #: 2 CONTROL: SIGNAL	
<b>CLASS 2:</b> 2-AXLE WORK VEHICLES/ TRUCKS	<b>NOTES:</b>		

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
	0	1	0	0	1	0	1	1	0	1	1	0						

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR		NB	SB	EB	WB	TTL
<b>AM</b>																		
7:00 AM	0	0	1	0	0	0	0	3	0	1	11	0	16	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	7	0	0	13	0	21	0	0	0	0	0
7:30 AM	0	0	2	0	0	0	0	3	0	0	8	0	13	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	5	0	1	9	0	15	0	0	0	0	0
8:00 AM	1	0	0	0	0	0	0	5	0	0	16	0	22	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	8	0	1	10	0	19	0	0	0	0	0
8:30 AM	1	0	1	0	0	0	0	2	0	1	9	0	14	0	0	0	0	0
8:45 AM	0	0	3	0	0	0	0	2	0	3	4	0	12	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	2	0	8	0	0	0	0	35	0	7	80	0	132	0	0	0	0	0
APPROACH %	20%	0%	80%	0%	0%	0%	0%	100%	0%	8%	92%	0%		0	0	0	0	0
APP/DEPART	10	/	0	0	/	7	35	/	43	87	/	82	0	0	0	0	0	0
BEGIN PEAK HR	7:15 AM																	
VOLUMES	1	0	3	0	0	0	0	20	0	1	46	0	71	0	0	0	0	0
APPROACH %	25%	0%	75%	0%	0%	0%	0%	100%	0%	2%	98%	0%		0	0	0	0	0
PEAK HR FACTOR	0.500			0.000			0.714			0.734			0.807	0	0	0	0	0
APP/DEPART	4	/	0	0	/	1	20	/	23	47	/	47	0	0	0	0	0	0
<b>PM</b>																		
03:00 PM	0	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	0
3:30 PM	0	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	0
4:00 PM	0	0	1	0	0	0	0	8	0	1	3	0	13	0	0	0	0	0
4:15 PM	1	0	1	0	0	0	0	10	0	0	6	0	18	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	12	0	1	2	0	15	0	0	0	0	0
4:45 PM	0	0	2	0	0	0	0	8	0	1	5	0	16	0	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	10	2	1	2	0	16	0	0	0	0	0
5:15 PM	1	0	1	0	0	0	0	6	0	0	5	0	13	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	9	1	1	7	0	19	0	0	0	0	0
5:45 PM	0	0	1	0	0	0	0	10	0	0	2	0	13	0	0	0	0	0
VOLUMES	2	0	8	0	0	0	0	73	3	5	32	0	123	0	0	0	0	0
APPROACH %	20%	0%	80%	0%	0%	0%	0%	96%	4%	14%	86%	0%		0	0	0	0	0
APP/DEPART	10	/	0	0	/	8	76	/	81	37	/	34	0	0	0	0	0	0
BEGIN PEAK HR	4:15 PM																	
VOLUMES	1	0	4	0	0	0	0	40	2	3	15	0	65	0	0	0	0	0
APPROACH %	20%	0%	80%	0%	0%	0%	0%	95%	5%	17%	83%	0%		0	0	0	0	0
PEAK HR FACTOR	0.625			0.000			0.875			0.750			0.903	0	0	0	0	0
APP/DEPART	5	/	0	0	/	5	42	/	44	18	/	16	0	0	0	0	0	0



## INTERSECTION TURNING MOVEMENT COUNTS

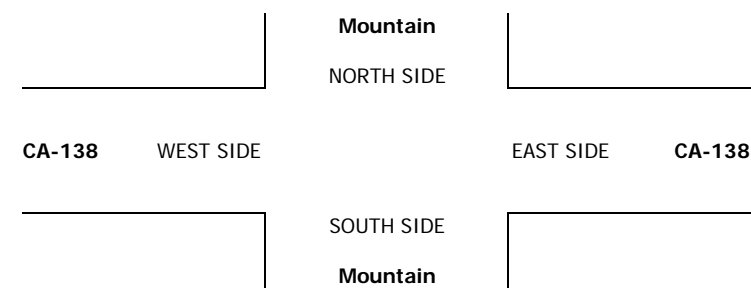
PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

<b>DATE:</b> 7/29/15 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Pinon Hills Mountain CA-138	PROJECT #: LOCATION #: CONTROL:	SC1507 2 SIGNAL
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<b>CLASS 3:</b> 3-AXLE TRUCKS	NOTES:	AM PM MD OTHER OTHER	◀ W E ▶	▲ N S ▼
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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
	0	1	0	0	1	0	1	1	0	1	1	0	0	0	0	0	0	

AM	7:00 AM	0	0	1	0	0	0	0	0	0	5	0	6	0	0	0	0	0	0	
	7:15 AM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	
	7:30 AM	0	0	0	0	0	0	0	2	0	0	5	0	7	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	0	0	0	0	0	
	8:00 AM	0	0	0	0	0	0	0	1	0	1	1	0	3	0	0	0	0	0	
	8:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	2	0	0	7	0	9	0	0	0	0	0	
	8:45 AM	0	0	1	0	0	0	0	6	0	0	3	0	10	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	2	0	0	0	0	15	0	1	25	0	43	0	0	0	0	0	
APPROACH %	0%	0%	100%	0%	0%	0%	0%	100%	0%	4%	96%	0%		0	0	0	0	0		
APP/DEPART	2	/	0	0	/	1	15	/	17	26	/	25	0							
BEGIN PEAK HR	8:00 AM																			
VOLUMES	0	0	1	0	0	0	0	10	0	1	13	0	25	0	0	0	0	0		
APPROACH %	0%	0%	100%	0%	0%	0%	0%	100%	0%	7%	93%	0%								
PEAK HR FACTOR	0.250		0.000			0.417			0.500			0.625								
APP/DEPART	1	/	0	0	/	1	10	/	11	14	/	13	0							
PM	03:00 PM	0	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	0	
	3:30 PM	0	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	0	
	4:00 PM	0	0	0	0	0	0	0	5	0	0	2	0	7	0	0	0	0	0	
	4:15 PM	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	4	0	0	2	0	6	0	0	0	0	0	
	4:45 PM	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	3	0	0	2	0	5	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	2	0	0	2	0	4	0	0	0	0	0	
	VOLUMES	0	0	0	0	0	0	0	23	1	0	10	0	34	0	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	96%	4%	0%	100%	0%		0	0	0	0	0		
APP/DEPART	0	/	0	0	/	1	24	/	23	10	/	10	0							
BEGIN PEAK HR	4:00 PM																			
VOLUMES	0	0	0	0	0	0	0	15	1	0	4	0	20	0	0	0	0	0		
APPROACH %	0%	0%	0%	0%	0%	0%	0%	94%	6%	0%	100%	0%		0	0	0	0	0		
PEAK HR FACTOR	0.000		0.000			0.800			0.500			0.714								
APP/DEPART	0	/	0	0	/	1	16	/	15	4	/	4	0							



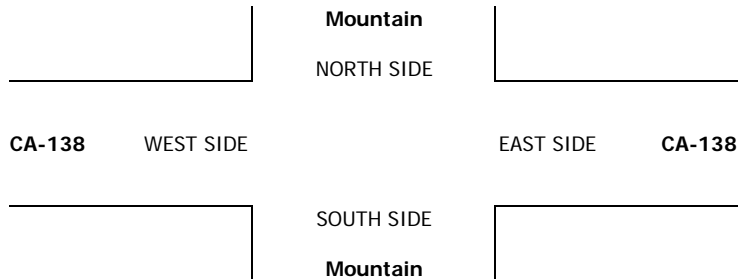
# INTERSECTION TURNING MOVEMENT COUNTS

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

<b>DATE:</b> 7/29/15 WEDNESDAY	LOCATION: Pinon Hills NORTH & SOUTH: Mountain EAST & WEST: CA-138	PROJECT #: SC1507 LOCATION #: 2 CONTROL: SIGNAL																				
<b>CLASS 4:</b> 4 OR MORE AXLE TRUCKS	<b>NOTES:</b>	<table border="1" style="margin: auto;"> <tr> <td>AM</td> <td></td> <td>▲</td> <td></td> </tr> <tr> <td>PM</td> <td></td> <td>N</td> <td></td> </tr> <tr> <td>MD</td> <td>◀ W</td> <td></td> <td>E ▶</td> </tr> <tr> <td>OTHER</td> <td></td> <td>S</td> <td></td> </tr> <tr> <td>OTHER</td> <td></td> <td>▼</td> <td></td> </tr> </table>	AM		▲		PM		N		MD	◀ W		E ▶	OTHER		S		OTHER		▼	
AM		▲																				
PM		N																				
MD	◀ W		E ▶																			
OTHER		S																				
OTHER		▼																				

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

<b>AM</b>	7:00 AM	0	0	0	0	0	0	4	1	0	4	0	9	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	10	0	0	4	0	14	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	6	0	0	13	0	19	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	7	0	0	5	0	12	0	0	0	0	0	0	0
	8:00 AM	0	0	1	0	0	0	7	0	1	16	0	25	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	3	0	0	4	0	7	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	9	0	1	9	0	19	0	0	0	0	0	0	0
	8:45 AM	1	0	0	0	0	0	7	0	0	7	0	15	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	0
	9:15 AM	0	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	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	1	0	1	0	0	0	53	1	2	62	0	120	0	0	0	0	0	0	0
APPROACH %	50%	0%	50%	0%	0%	0%	0%	98%	2%	3%	97%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	2	/	0	0	/	3	54	/	54	64	/	63	0	0	0	0	0	0	0	
BEGIN PEAK HR	7:15 AM																			
VOLUMES	0	0	1	0	0	0	30	0	1	38	0	70	0	0	0	0	0	0	0	
APPROACH %	0%	0%	100%	0%	0%	0%	0%	100%	0%	3%	97%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.250			0.000			0.750			0.574			0.700							
APP/DEPART	1	/	0	0	/	1	30	/	31	39	/	38	0	0	0	0	0	0	0	
<b>PM</b>	03:00 PM	0	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	0	0
	3:30 PM	0	0	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	0	0
	4:00 PM	0	0	0	0	0	0	10	0	0	6	0	16	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	9	0	0	7	0	16	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	14	0	0	9	0	23	0	0	0	0	0	0	0
	4:45 PM	1	0	0	0	0	0	10	0	1	2	0	14	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	12	0	0	2	0	14	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	8	0	1	5	0	14	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	10	0	0	4	0	14	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	23	0	0	2	0	25	0	0	0	0	0	0	0
	VOLUMES	1	0	0	0	0	0	96	0	2	37	0	136	0	0	0	0	0	0	0
APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	5%	95%	0%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	1	/	0	0	/	2	96	/	96	39	/	38	0	0	0	0	0	0	0	
BEGIN PEAK HR	4:00 PM																			
VOLUMES	1	0	0	0	0	0	43	0	1	24	0	69	0	0	0	0	0	0	0	
APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	4%	96%	0%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR	0.250			0.000			0.768			0.694			0.750							
APP/DEPART	1	/	0	0	/	1	43	/	43	25	/	25	0	0	0	0	0	0	0	



# INTERSECTION TURNING MOVEMENT COUNTS

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

**DATE:**  
7/29/15  
**WEDNESDAY**

**LOCATION:**  
NORTH & SOUTH:  
EAST & WEST:

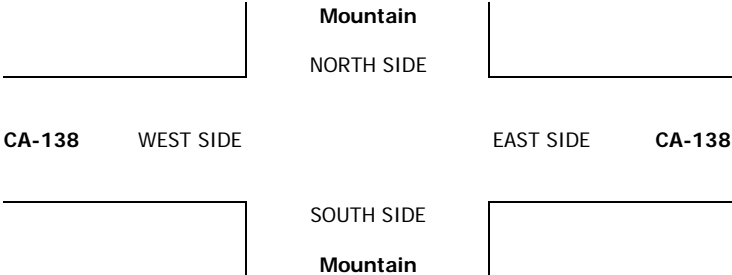
Pinon Hills  
Mountain  
CA-138

**PROJECT #:** SC1507  
**LOCATION #:** 2  
**CONTROL:** SIGNAL

<b>CLASS 5:</b>	<b>NOTES:</b>												
RV		AM		▲									
		PM		N									
		MD	◀ W		E ▶								
		OTHER		S									
		OTHER		▼									

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			U-TURNS					
	Mountain			Mountain			CA-138			CA-138			TOTAL	NB	SB	EB	WB	TTL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR						

<b>AM</b>	7:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	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	1	0	0	0	0	1	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	1	0	0	2	0	3	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%		0	0	0	0	
APP/DEPART	0	/	0	0	/	0	1	/	1	2	/	2	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%		0	0	0	0	
PEAK HR FACTOR	0.000			0.000			0.000			0.250			0.250					
APP/DEPART	0	/	0	0	/	0	0	/	0	2	/	2	0					
<b>PM</b>	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	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
5:30 PM	0	0	2	0	0	0	0	1	3	0	1	0	7	0	0	0	0	
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
VOLUMES	0	0	3	0	0	0	0	1	3	0	2	0	9	0	0	0	0	
APPROACH %	0%	0%	100%	0%	0%	0%	0%	25%	75%	0%	100%	0%		0	0	0	0	
APP/DEPART	3	/	0	0	/	3	4	/	4	2	/	2	0					
BEGIN PEAK HR	5:00 PM																	
VOLUMES	0	0	3	0	0	0	0	1	3	0	2	0	9	0	0	0	0	
APPROACH %	0%	0%	100%	0%	0%	0%	0%	25%	75%	0%	100%	0%		0	0	0	0	
PEAK HR FACTOR	0.375			0.000			0.250			0.500			0.321					
APP/DEPART	3	/	0	0	/	3	4	/	4	2	/	2	0					



## INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: 7/29/15 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	Pinon Hills Mountain CA-138	PROJECT #: LOCATION #: CONTROL:	SC1507 2 SIGNAL
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CLASS 6:	NOTES:	AM PM MD OTHER OTHER	◀ W	E ▶
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	NORTHBOUND <small>Mountain</small>			SOUTHBOUND <small>Mountain</small>			EASTBOUND <small>CA-138</small>			WESTBOUND <small>CA-138</small>			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	1	1	0	1	1	0	

U-TURNS				
NB	SB	EB	WB	TTL

AM

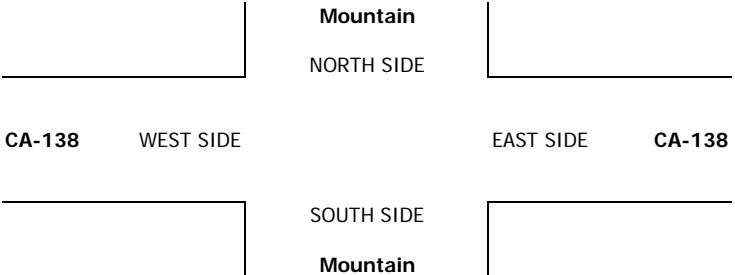
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	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	1	0	0	1	0	2
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	0	0	/	0	1	/	1	1	/	1	0
BEGIN PEAK HR	8:00 AM												
VOLUMES	0	0	0	0	0	0	0	1	0	0	1	0	2
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR	0.000			0.000			0.250			0.250			0.500
APP/DEPART	0	/	0	0	/	0	1	/	1	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	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	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
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	1	0	0	0	0	1
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	0	0	0	1	0	0	0	0	1
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0
BEGIN PEAK HR	3:30 PM												
VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	
PEAK HR FACTOR	0.000			0.000			0.250			0.000			0.250
APP/DEPART	0	/	0	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	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0







**APPENDIX C**

**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 DESCRIPTION<sup>1</sup>

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

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

**Existing**

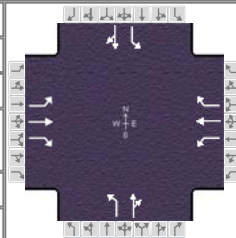
TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>			<b>Site Information</b>					
Analyst	BC		Intersection	Mountain Road/SR-138				
Agency/Co.	Kunzman Associates, Inc.		Jurisdiction	CALTRANS				
Date Performed	8/10/2015		Analysis Year	Existing				
Analysis Time Period	Morning Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>			North/South Street: <i>Mountain Road</i>					
Intersection Orientation: <i>East-West</i>			Study Period (hrs): <i>0.25</i>					
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	304	9	43	356	0		
Peak-Hour Factor, PHF	1.00	0.94	0.94	0.94	0.94	1.00		
Hourly Flow Rate, HFR (veh/h)	0	323	9	45	378	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	12		59	0	0	0		
Peak-Hour Factor, PHF	0.94	1.00	0.94	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	12	0	62	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	45	74			0		
C (m) (veh/h)	1192	1239	584					
v/c	0.00	0.04	0.13					
95% queue length	0.00	0.11	0.43					
Control Delay (s/veh)	8.0	8.0	12.1					
LOS	A	A	B					
Approach Delay (s/veh)	--	--	12.1					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing			
Analysis Time Period	Evening Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Mountain Road</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	624	26	82	365	0		
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00		
Hourly Flow Rate, HFR (veh/h)	0	678	28	89	396	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	19		71	0	0	0		
Peak-Hour Factor, PHF	0.92	1.00	0.92	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	20	0	77	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	89	97			0		
C (m) (veh/h)	1174	902	304					
v/c	0.00	0.10	0.32					
95% queue length	0.00	0.33	1.34					
Control Delay (s/veh)	8.1	9.4	22.3					
LOS	A	A	C					
Approach Delay (s/veh)	--	--	22.3					
Approach LOS	--	--	C					



# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Morning Peak Hour	PHF	0.94
Intersection	Oasis Road/SR 138	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	AME3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	12	343	8	9	379	28	2	5	13	61	7	17

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.9	0.8	80.8	0.7	5.3	24.5			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.0	0.0	3.0	3.0	3.0	3.0			
				Red	0.0	0.0	0.0	0.0	0.0	0.0			

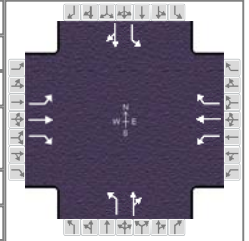
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	6.7	84.6	5.9	83.8	3.7	27.5	12.0	35.8
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	3.0		2.8		2.2	3.3	7.1	3.6
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.37		0.29		0.07	0.82	0.90	0.98
Max Out Probability	0.00		0.00		0.00	0.00	0.06	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	13	365	9	10	403	30	2	19		65	26	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1593		1619	1596	
Queue Service Time (g <sub>s</sub> ), s	1.0	12.3	0.3	0.8	14.2	1.0	0.2	1.3		5.1	1.6	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	1.0	12.3	0.3	0.8	14.2	1.0	0.2	1.3		5.1	1.6	
Green Ratio (g/C)	0.03	0.63	0.63	0.02	0.62	0.62	0.01	0.19		0.07	0.25	
Capacity (c), veh/h	46	1129	957	36	1119	948	9	300		113	402	
Volume-to-Capacity Ratio (X)	0.277	0.323	0.009	0.263	0.360	0.031	0.231	0.064		0.576	0.063	
Available Capacity (c <sub>a</sub> ), veh/h	280	1129	957	280	1119	948	149	428		149	531	
Back of Queue (Q), veh/ln (50th percentile)	0.4	5.0	0.1	0.3	5.8	0.3	0.1	0.5		2.1	0.6	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	61.8	11.3	9.1	62.5	12.0	9.5	64.3	43.4		58.6	37.0	
Incremental Delay (d <sub>2</sub> ), s/veh	1.2	0.8	0.0	1.4	0.9	0.1	4.6	0.0		1.7	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	63.0	12.1	9.1	63.9	12.9	9.6	69.0	43.4		60.4	37.0	
Level of Service (LOS)	E	B	A	E	B	A	E	D		E	D	
Approach Delay, s/veh / LOS	13.7	B		13.8	B		45.9	D		53.8	D	
Intersection Delay, s/veh / LOS	18.3						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.2	B		2.2	B		2.5	B		2.5	B	
Bicycle LOS Score / LOS	1.1	A		1.2	A		0.5	A		0.6	A	

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Evening Peak Hour	PHF	0.90
Intersection	Oasis Road/SR 138	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	AME3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24	658	20	37	413	84	21	12	25	45	5	11

Signal Information				Phase Diagram													
Cycle, s	130.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
		Green	6.2	1.6	73.4	5.7	2.7	28.5									
		Yellow	3.0	0.0	3.0	3.0	0.0	3.0									
		Red	0.0	0.0	0.0	0.0	0.0	0.0									

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	9.2	76.4	10.7	78.0	8.7	31.5	11.4	34.1
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	4.1		5.2		3.8	4.7	5.9	3.1
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.62		0.77		0.57	0.95	0.84	0.98
Max Out Probability	0.00		0.00		0.00	0.00	0.01	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	27	731	22	41	459	93	23	41		50	18	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1605		1619	1602	
Queue Service Time (g <sub>s</sub> ), s	2.1	38.7	0.8	3.2	18.8	3.6	1.8	2.7		3.9	1.1	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.1	38.7	0.8	3.2	18.8	3.6	1.8	2.7		3.9	1.1	
Green Ratio (g/C)	0.05	0.56	0.56	0.06	0.58	0.58	0.04	0.22		0.06	0.24	
Capacity (c), veh/h	77	1017	862	96	1038	880	71	351		104	383	
Volume-to-Capacity Ratio (X)	0.346	0.719	0.026	0.427	0.442	0.106	0.329	0.117		0.480	0.046	
Available Capacity (c <sub>a</sub> ), veh/h	239	1017	862	239	1038	880	149	440		149	472	
Back of Queue (Q), veh/ln (50th percentile)	0.9	16.8	0.3	1.3	7.9	1.3	0.8	1.1		1.6	0.4	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	60.0	20.7	12.5	59.0	15.6	12.4	60.3	40.7		58.7	38.0	
Incremental Delay (d <sub>2</sub> ), s/veh	1.0	4.4	0.1	1.1	1.4	0.2	1.0	0.1		1.3	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	60.9	25.1	12.5	60.1	17.0	12.6	61.3	40.8		60.0	38.0	
Level of Service (LOS)	E	C	B	E	B	B	E	D		E	D	
Approach Delay, s/veh / LOS	26.0		C	19.3		B	48.2		D	54.2		D
Intersection Delay, s/veh / LOS	25.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.3	B	2.5	B	2.5	B
Bicycle LOS Score / LOS	1.8	A	1.5	A	0.6	A	0.6	A

**Existing Plus Project**

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>			<b>Site Information</b>					
Analyst	BC		Intersection	Mountain Road/SR-138				
Agency/Co.	Kunzman Associates, Inc.		Jurisdiction	CALTRANS				
Date Performed	8/10/2015		Analysis Year	Existing Plus Project				
Analysis Time Period	Morning Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>			North/South Street: <i>Mountain Road</i>					
Intersection Orientation: <i>East-West</i>			Study Period (hrs): <i>0.25</i>					
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	306	9	44	357	0		
Peak-Hour Factor, PHF	1.00	0.94	0.94	0.94	0.94	1.00		
Hourly Flow Rate, HFR (veh/h)	0	325	9	46	379	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	12		60	0	0	0		
Peak-Hour Factor, PHF	0.94	1.00	0.94	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	12	0	63	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	46	75			0		
C (m) (veh/h)	1191	1237	584					
v/c	0.00	0.04	0.13					
95% queue length	0.00	0.12	0.44					
Control Delay (s/veh)	8.0	8.0	12.1					
LOS	A	A	B					
Approach Delay (s/veh)	--	--	12.1					
Approach LOS	--	--	B					

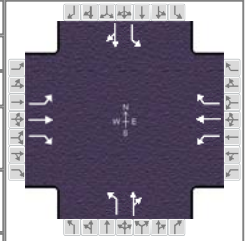
TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>			<b>Site Information</b>					
Analyst	BC		Intersection	Mountain Road/SR-138				
Agency/Co.	Kunzman Associates, Inc.		Jurisdiction	CALTRANS				
Date Performed	8/10/2015		Analysis Year	Existing Plus Project				
Analysis Time Period	Evening Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>			North/South Street: <i>Mountain Road</i>					
Intersection Orientation: <i>East-West</i>			Study Period (hrs): <i>0.25</i>					
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	627	26	84	368	0		
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00		
Hourly Flow Rate, HFR (veh/h)	0	681	28	91	399	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	19		73	0	0	0		
Peak-Hour Factor, PHF	0.92	1.00	0.92	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	20	0	79	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	91	99			0		
C (m) (veh/h)	1171	899	303					
v/c	0.00	0.10	0.33					
95% queue length	0.00	0.34	1.38					
Control Delay (s/veh)	8.1	9.5	22.5					
LOS	A	A	C					
Approach Delay (s/veh)	--	--	22.5					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>			<b>Site Information</b>					
Analyst	BC		Intersection	Mountain Road/SR-138				
Agency/Co.	Kunzman Associates, Inc.		Jurisdiction	CALTRANS				
Date Performed	8/10/2015		Analysis Year	Existing Plus Project				
Analysis Time Period	Morning Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>			North/South Street: <i>Project Access</i>					
Intersection Orientation: <i>East-West</i>			Study Period (hrs): <i>0.25</i>					
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		363	3	18	399	0		
Peak-Hour Factor, PHF	1.00	0.95	0.95	0.95	0.95	1.00		
Hourly Flow Rate, HFR (veh/h)	0	382	3	18	420	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	2	0	12					
Peak-Hour Factor, PHF	0.95	1.00	0.95	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	2	0	12	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	0	0		
Configuration		LTR						
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
v (veh/h)		18		14				
C (m) (veh/h)		1185		584				
v/c		0.02		0.02				
95% queue length		0.05		0.07				
Control Delay (s/veh)		8.1		11.3				
LOS		A		B				
Approach Delay (s/veh)	--	--	11.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing Plus Project			
Analysis Time Period	Evening Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Project Access</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		699	5	26	446	0		
Peak-Hour Factor, PHF	1.00	0.95	0.95	0.95	0.95	1.00		
Hourly Flow Rate, HFR (veh/h)	0	735	5	27	469	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	5	0	26					
Peak-Hour Factor, PHF	0.95	1.00	0.95	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	5	0	27	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	0	0		
Configuration		LTR						
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
v (veh/h)		27		32				
C (m) (veh/h)		876		350				
v/c		0.03		0.09				
95% queue length		0.10		0.30				
Control Delay (s/veh)		9.2		16.3				
LOS		A		C				
Approach Delay (s/veh)	--	--	16.3					
Approach LOS	--	--	C					

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Morning Peak Hour	PHF	0.94
Intersection	Oasis Road/SR 138	Analysis Year	Existing Plus Project	Analysis Period	1 > 7:00
File Name	AMEP3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	13	351	10	9	392	28	4	5	13	61	7	20

Signal Information				Phase Diagrams													
Cycle, s	130.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
		Green	2.9	1.0	79.6	1.4	4.6	25.4									
		Yellow	3.0	0.0	3.0	3.0	3.0	3.0									
		Red	0.0	0.0	0.0	0.0	0.0	0.0									

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	6.9	83.6	5.9	82.6	4.4	28.4	12.0	36.0
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	3.1		2.8		2.3	3.3	7.1	3.8
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.39		0.29		0.14	0.85	0.90	0.98
Max Out Probability	0.00		0.00		0.00	0.00	0.06	0.00

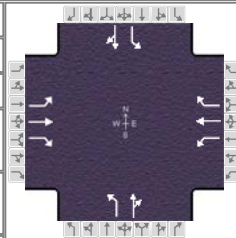
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	14	373	11	10	417	30	4	19		65	29	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1593		1619	1588	
Queue Service Time (g <sub>s</sub> ), s	1.1	12.9	0.3	0.8	15.2	1.0	0.3	1.3		5.1	1.8	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	1.1	12.9	0.3	0.8	15.2	1.0	0.3	1.3		5.1	1.8	
Green Ratio (g/C)	0.03	0.62	0.62	0.02	0.61	0.61	0.01	0.20		0.07	0.25	
Capacity (c), veh/h	49	1116	946	36	1102	934	18	312		113	404	
Volume-to-Capacity Ratio (X)	0.282	0.335	0.011	0.263	0.378	0.032	0.240	0.061		0.576	0.071	
Available Capacity (c <sub>a</sub> ), veh/h	268	1116	946	268	1102	934	149	428		149	520	
Back of Queue (Q), veh/ln (50th percentile)	0.5	5.2	0.1	0.3	6.2	0.3	0.2	0.5		2.1	0.7	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	61.7	11.8	9.5	62.5	12.7	10.0	63.8	42.6		58.6	36.8	
Incremental Delay (d <sub>2</sub> ), s/veh	1.2	0.8	0.0	1.4	1.0	0.1	2.5	0.0		1.7	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	62.8	12.7	9.5	63.9	13.7	10.0	66.3	42.6		60.4	36.8	
Level of Service (LOS)	E	B	A	E	B	B	E	D		E	D	
Approach Delay, s/veh / LOS	14.3		B	14.5		B	46.9		D	53.1		D
Intersection Delay, s/veh / LOS	18.9						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.2		B	2.2		B	2.5		B	2.5		B
Bicycle LOS Score / LOS	1.1		A	1.2		A	0.5		A	0.6		A



# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Evening Peak Hour	PHF	0.90
Intersection	Oasis Road/SR 138	Analysis Year	Existing Plus Project	Analysis Period	1 > 7:00
File Name	PMEP3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	677	23	37	432	84	24	12	25	45	5	16

Signal Information				Signal Phases									
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		6.9	0.9	73.0	6.2	2.2	28.9				
		Yellow		3.0	0.0	3.0	3.0	0.0	3.0				
		Red		0.0	0.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	9.9	76.0	10.7	76.9	9.2	31.9	11.4	34.1
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	4.5		5.2		4.1	4.7	5.9	3.5
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.69		0.77		0.62	0.96	0.84	0.98
Max Out Probability	0.00		0.00		0.00	0.00	0.01	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	752	26	41	480	93	27	41		50	23	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1605		1619	1583	
Queue Service Time (g <sub>s</sub> ), s	2.5	40.9	1.0	3.2	20.4	3.7	2.1	2.7		3.9	1.5	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.5	40.9	1.0	3.2	20.4	3.7	2.1	2.7		3.9	1.5	
Green Ratio (g/C)	0.05	0.56	0.56	0.06	0.57	0.57	0.05	0.22		0.06	0.24	
Capacity (c), veh/h	86	1011	857	96	1023	867	77	357		104	378	
Volume-to-Capacity Ratio (X)	0.376	0.744	0.030	0.427	0.469	0.108	0.346	0.115		0.480	0.062	
Available Capacity (c <sub>a</sub> ), veh/h	234	1011	857	234	1023	867	149	440		149	460	
Back of Queue (Q), veh/ln (50th percentile)	1.0	17.8	0.3	1.3	8.6	1.3	0.9	1.1		1.6	0.6	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	59.5	21.4	12.7	59.0	16.5	12.9	60.0	40.4		58.7	38.2	
Incremental Delay (d <sub>2</sub> ), s/veh	1.0	5.0	0.1	1.1	1.5	0.3	1.0	0.1		1.3	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	60.5	26.4	12.8	60.1	18.1	13.2	60.9	40.4		60.0	38.2	
Level of Service (LOS)	E	C	B	E	B	B	E	D		E	D	
Approach Delay, s/veh / LOS	27.3		C	20.1		C	48.5		D	53.1		D
Intersection Delay, s/veh / LOS	26.6						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3		B	2.3		B	2.5		B	2.5		B
Bicycle LOS Score / LOS	1.8		A	1.5		A	0.6		A	0.6		A

**Existing Plus Ambient Growth Plus Project**

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing + AG + Project			
Analysis Time Period	Morning Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Mountain Road</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	316	9	45	369	0		
Peak-Hour Factor, PHF	1.00	0.94	0.94	0.94	0.94	1.00		
Hourly Flow Rate, HFR (veh/h)	0	336	9	47	392	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	12		62	0	0	0		
Peak-Hour Factor, PHF	0.94	1.00	0.94	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	12	0	65	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	47	77			0		
C (m) (veh/h)	1178	1225	574					
v/c	0.00	0.04	0.13					
95% queue length	0.00	0.12	0.46					
Control Delay (s/veh)	8.1	8.1	12.2					
LOS	A	A	B					
Approach Delay (s/veh)	--	--	12.2					
Approach LOS	--	--	B					

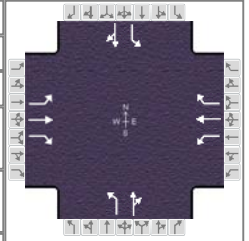
TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing + AG + Project			
Analysis Time Period	Evening Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Mountain Road</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	648	27	87	380	0		
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00		
Hourly Flow Rate, HFR (veh/h)	0	704	29	94	413	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	<i>Undivided</i>							
RT Channelized			0			0		
Lanes	1	1	0	1	1	0		
Configuration	L		TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	20		75	0	0	0		
Peak-Hour Factor, PHF	0.92	1.00	0.92	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	21	0	81	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	1	0		
Configuration		LR			LTR			
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LR			LTR		
v (veh/h)	0	94	102			0		
C (m) (veh/h)	1157	881	286					
v/c	0.00	0.11	0.36					
95% queue length	0.00	0.36	1.56					
Control Delay (s/veh)	8.1	9.6	24.4					
LOS	A	A	C					
Approach Delay (s/veh)	--	--	24.4					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing + AG + Project			
Analysis Time Period	Morning Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Project Access</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		375	3	18	412	0		
Peak-Hour Factor, PHF	1.00	0.95	0.95	0.95	0.95	1.00		
Hourly Flow Rate, HFR (veh/h)	0	394	3	18	433	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	2	0	12					
Peak-Hour Factor, PHF	0.95	1.00	0.95	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	2	0	12	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	0	0		
Configuration		LTR						
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
v (veh/h)		18		14				
C (m) (veh/h)		1173		573				
v/c		0.02		0.02				
95% queue length		0.05		0.08				
Control Delay (s/veh)		8.1		11.4				
LOS		A		B				
Approach Delay (s/veh)	--	--	11.4					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
<b>General Information</b>				<b>Site Information</b>				
Analyst	BC			Intersection	Mountain Road/SR-138			
Agency/Co.	Kunzman Associates, Inc.			Jurisdiction	CALTRANS			
Date Performed	8/10/2015			Analysis Year	Existing + AG + Project			
Analysis Time Period	Evening Peak Hour							
Project Description <i>Dollar General - Pinon Hills</i>								
East/West Street: <i>SR-138 Highway</i>				North/South Street: <i>Project Access</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		699	5	26	461	0		
Peak-Hour Factor, PHF	1.00	0.95	0.95	0.95	0.95	1.00		
Hourly Flow Rate, HFR (veh/h)	0	735	5	27	485	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	1	1	0		
Configuration			TR	L		TR		
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	5	0	26					
Peak-Hour Factor, PHF	0.95	1.00	0.95	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	5	0	27	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	0	0	0	0		
Configuration		LTR						
<b>Delay, Queue Length, and Level of Service</b>								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
v (veh/h)		27		32				
C (m) (veh/h)		876		348				
v/c		0.03		0.09				
95% queue length		0.10		0.30				
Control Delay (s/veh)		9.2		16.4				
LOS		A		C				
Approach Delay (s/veh)	--	--	16.4					
Approach LOS	--	--	C					

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Morning Peak Hour	PHF	0.94
Intersection	Oasis Road/SR 138	Analysis Year	Existing + AG + Project	Analysis Period	1 > 7:00
File Name	AMEAP3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	14	362	9	9	405	29	4	5	13	63	7	21

Signal Information				Signal Phases								
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	2.9	1.2	79.1	1.4	4.7	25.6				
		Yellow	3.0	0.0	3.0	3.0	3.0	3.0				
		Red	0.0	0.0	0.0	0.0	0.0	0.0				

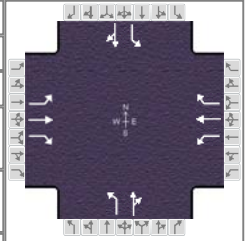
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	7.2	83.4	5.9	82.1	4.4	28.6	12.1	36.3
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	3.2		2.8		2.3	3.3	7.2	3.9
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.42		0.29		0.14	0.85	0.91	0.98
Max Out Probability	0.00		0.00		0.00	0.00	0.08	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	15	385	10	10	431	31	4	19		67	30	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1593		1619	1586	
Queue Service Time (g <sub>s</sub> ), s	1.2	13.5	0.3	0.8	16.0	1.1	0.3	1.3		5.2	1.9	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	1.2	13.5	0.3	0.8	16.0	1.1	0.3	1.3		5.2	1.9	
Green Ratio (g/C)	0.03	0.62	0.62	0.02	0.61	0.61	0.01	0.20		0.07	0.26	
Capacity (c), veh/h	52	1113	943	36	1096	928	18	314		113	406	
Volume-to-Capacity Ratio (X)	0.287	0.346	0.010	0.263	0.393	0.033	0.240	0.061		0.591	0.073	
Available Capacity (c <sub>a</sub> ), veh/h	265	1113	943	265	1096	928	149	428		149	519	
Back of Queue (Q), veh/ln (50th percentile)	0.5	5.5	0.1	0.3	6.6	0.4	0.2	0.5		2.2	0.7	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	61.5	12.1	9.5	62.5	13.1	10.2	63.8	42.4		58.6	36.7	
Incremental Delay (d <sub>2</sub> ), s/veh	1.1	0.9	0.0	1.4	1.1	0.1	2.5	0.0		1.8	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	62.6	12.9	9.6	63.9	14.1	10.2	66.3	42.5		60.5	36.7	
Level of Service (LOS)	E	B	A	E	B	B	E	D		E	D	
Approach Delay, s/veh / LOS	14.6		B	14.9		B	46.8		D	53.1		D
Intersection Delay, s/veh / LOS	19.2						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.2		B	2.2		B	2.5		B	2.5		B
Bicycle LOS Score / LOS	1.2		A	1.3		A	0.5		A	0.6		A

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Kunzman Associates, Inc.			Duration, h	0.25
Analyst	BC	Analysis Date	Aug 10, 2015	Area Type	Other
Jurisdiction	CALTRANS	Time Period	Evening Peak Hour	PHF	0.90
Intersection	Oasis Road/SR 138	Analysis Year	Existing + AG + Project	Analysis Period	1 > 7:00
File Name	PMEAP3.xus				
Project Description	Oasis Road (NS) at SR 138 Highway (EW)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	699	24	38	446	87	25	12	26	46	5	16

Signal Information				Signal Timing (s)													
Cycle, s	130.0	Reference Phase	2	Green	7.0	0.8	72.8	6.3	2.1	29.0	Yellow	3.0	0.0	3.0	3.0	3.0	3.0
Offset, s	0	Reference Point	End	Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	10.0	75.8	10.8	76.6	9.3	32.0	11.4	34.1
Change Period, (Y+R <sub>c</sub> ), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.3	3.1	3.3
Queue Clearance Time (g <sub>s</sub> ), s	4.6		5.3		4.2	4.7	6.0	3.5
Green Extension Time (g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Phase Call Probability	0.70		0.78		0.63	0.97	0.84	0.99
Max Out Probability	0.00		0.00		0.00	0.00	0.01	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	777	27	42	496	97	28	42		51	23	
Adjusted Saturation Flow Rate (s), veh/h/ln	1619	1800	1525	1619	1800	1525	1619	1603		1619	1583	
Queue Service Time (g <sub>s</sub> ), s	2.6	43.4	1.0	3.3	21.4	3.8	2.2	2.7		4.0	1.5	
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.6	43.4	1.0	3.3	21.4	3.8	2.2	2.7		4.0	1.5	
Green Ratio (g/C)	0.05	0.56	0.56	0.06	0.57	0.57	0.05	0.22		0.06	0.24	
Capacity (c), veh/h	87	1008	854	97	1019	864	79	357		105	378	
Volume-to-Capacity Ratio (X)	0.382	0.771	0.031	0.433	0.486	0.112	0.352	0.118		0.487	0.062	
Available Capacity (c <sub>a</sub> ), veh/h	232	1008	854	232	1019	864	149	439		149	459	
Back of Queue (Q), veh/ln (50th percentile)	1.1	19.1	0.4	1.4	9.0	1.4	0.9	1.1		1.7	0.6	
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d <sub>1</sub> ), s/veh	59.4	22.1	12.8	58.9	16.9	13.1	59.8	40.3		58.7	38.2	
Incremental Delay (d <sub>2</sub> ), s/veh	1.0	5.7	0.1	1.1	1.7	0.3	1.0	0.1		1.3	0.0	
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	60.4	27.8	12.9	60.1	18.5	13.3	60.8	40.4		60.0	38.2	
Level of Service (LOS)	E	C	B	E	B	B	E	D		E	D	
Approach Delay, s/veh / LOS	28.7		C	20.5		C	48.5		D	53.2		D
Intersection Delay, s/veh / LOS	27.4						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3		B	2.3		B	2.5		B	2.5		B
Bicycle LOS Score / LOS	1.9		A	1.5		A	0.6		A	0.6		A





# KUNZMAN ASSOCIATES, INC.

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