Hall & Foreman, Inc.
Engineering ▪ Planning ▪ Surveying

MEMORANDUM

January 15, 2014 Job No. VV.130048.0000

To: Mr. Tom Steeno
Steeno Design Studio
11774 Hesperia Rd, Suite 1B
Hesperia, CA, 92345

From: Robert A. Kilpatrick, P.E., T.E.
Vice President/Associate

REGISTERED PROFESSIONAL ENGINEER
ROBERT A. KILPATRICK
No. 1573
Exp. 6-30-07
TRAFFIC
STATE OF CALIFORNIA

Re: Winter Weekend Traffic Analysis Addendum - - Eagle Ridge Market- State Hwy 38 and State Lane - - Erwin Lake, San Bernardino County, California,

Hall & Foreman, Inc. is pleased to submit this Traffic Analysis Addendum Memorandum to provide a Winter Weekend Traffic Analysis at the intersection of Highway 38 and State Lane, in connection with the proposed Eagle Ridge commercial development in the unincorporated community of Erwin Lake, in the County of San Bernardino. The Traffic Analysis Addendum reviews the traffic existing conditions for a typical winter weekend.

1. INTRODUCTION

The approved Traffic Study for the proposed project dated September 19, 2013 analyzed the weekday AM and PM peak hours to analyze traffic impacts for the proposed project. HFI has conducted a traffic analysis of the existing Friday PM and Sunday PM peak hour conditions. The turn movement counts were conducted on Friday December 13, 2013 and Sunday December 15, 2013, and were representative of typical winter weekend traffic, when the local ski resorts were in operation. This memorandum identifies the potential Friday and Sunday traffic impacts, for the intersection of Highway 38 and State Lane, in connection with the proposed Eagle Ridge commercial development in the unincorporated community of Erwin Lake, in the County of San Bernardino.

HFI has conducted traffic analysis of the Existing, Year 2014 Background, Year 2014 Project, Future Year 2035 without Project, and Future Year 2035 with Project volumes at the intersection of Highway 38 and State Lane. The analysis utilized a straight line growth of 2% increase, compounded annually for the Year 2014 Background volumes and the Future Year 2035 without Project. The previously outlined conditions were examined to identify traffic impacts.

2. EXISTING CONDITIONS

Currently the intersection of Highway 38 and State Lane is controlled by two way stop controls. Greenspot Boulevard/Highway 38 provides local and regional access in the project area. Highway 38 (SR 38) traverses north to south and provides access from the Big Bear Lake area to Redlands/Yucaipa and the Interstate I-10 Freeway. This roadway is primarily a two-lane highway (one lane in each direction). The intersection of Highway 38 and State Lane is currently two-way-stop-controlled. State Lane will provide the primary access to the project site. State Lane is primarily a two-lane paved road (one lane in each direction) fronting the project site east of Highway 38. Currently, State Lane does not consist of a curb and gutter along the property.

2.1 Traffic Volume

Newport Traffic Studies staff conducted a Friday (4:00-7:00 PM) and Sunday (3:00-6:00 PM) peak period turning movement counts, at the intersection of Highway 38 and State Lane, identified for detailed analysis. These counts were conducted on December 13, 2013 and December 15, 2013 respectively. The resulting volumes are provided as an attachment.

2.2 Capacity Analysis

An intersection capacity analysis calculation was conducted to determine the current intersection level of service (LOS). The Synchro 8 Software package, by Trafficware Ltd was utilized. Synchro implements the methods of the 2010 Highway Capacity Manual. The analysis determines a level-of-service (LOS) which quantitatively describes the operating characteristics of signalized intersections and the maximum delay. The LOS ranges from "A" (the best) through "F" (system breakdown). The level-of-service is based on the average delay of vehicles at the intersections.

TABLE A
Capacity Analysis – Existing Conditions
Traffic Analysis – Eagle Ridge Market

Intersections	Friday PM Peak		Sunday PM Peak	
	LOS	Delay	LOS	Delay
Highway 38 and State Lane	18.0	C	14.8	B

(1) LOS – HCM Level of Service
(2) Delay –In Seconds
Source: **Hall & Foreman Inc.**

As shown in *Table A* the study intersection is currently operating at LOS C or better during the Friday and Sunday PM peak hours.

3. YEAR 2014

The Year 2014 is the anticipated opening year of the project. The Year 2014 considers two conditions, Year 2014 Background Condition and Year 2014 Project Condition.

3.1 Traffic Volumes

The Year 2014 Background Condition is necessary to analyze the project impacts, with the inclusion of traffic generated by other projects within the study area. The turn movement volumes utilized a straight line growth of 2% increase, compounded annually to represent regional growth of 1 to 2%. The 2% increase was used to be conservative.

The Year 2014 Project Condition was analyzed to determine the amount of traffic that would be generated from the proposed development. To identify potential traffic impacts from the project, trip generation factors were applied to the type of use to generate project traffic estimates. The trip generation rates were obtained from the 9th edition of the Institute of Transportation Engineers trip generation report as presented in the Proposed Commercial Development Eagle Ridge Market Traffic Report, by Hall & Foreman Inc., dated September 19, 2013.

3.2 Capacity Analysis

TABLE B
Capacity Analysis –Year 2014
Traffic Analysis – Eagle Ridge Market

Intersections	Background Condition				Project Condition			
	Friday Peak		Sunday Peak		Friday Peak		Sunday Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Highway 38 and State Lane	19.5	C	15.8	C	24.9	C	20.0	C

(1) LOS – HCM Level of Service
(2) Delay –In Seconds
Source: **Hall & Foreman Inc.**

As shown in *Table B* the study intersections are anticipated to continue to operate at LOS C during the Friday and Sunday peak hours, under the Background and Project conditions.

4. FUTURE YEAR - 2035

The Future Year 2035 considers two conditions, Future Year 2035 without Project Condition and Future Year 2035 with Project Condition.

4.1 Traffic Volumes

The analysis primary focus is with traffic impacts created by the proposed project. However, growth within the study area due to development will occur. To analyze the future conditions a 2% growth per year of the existing peak hour volumes was considered. The turn movement volumes utilized a straight line growth of 2% increase, compounded annually to represent regional growth of 1 to 2%. The 2% increase was used to be conservative.

4.2 Capacity Analysis

TABLE C
Capacity Analysis – Future Year 2035
Traffic Analysis – Eagle Ridge Market

Intersections	Future Year 2035 without Project				Future Year 2035 with Project			
	Friday Peak		Sunday Peak		Friday Peak		Sunday Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Highway 38 and State Lane	35.0	D	24.2	C	47.7	E	30.5	D

(1) LOS – HCM Level of Service
(2) Delay –In Seconds
Source: **Hall & Foreman Inc.**

As shown in *Table C* the study intersections are anticipated to operate at LOS "E" or better during the Friday and Sunday PM peak hours under the Year 2035 conditions.

5. SUMMARY

Based on the traffic analysis, the project will not cause any significant negative impacts to the surrounding street system. The existing street system will be adequate to handle estimated project and future traffic with the existing intersection geometrics. As a result no project specific mitigation is needed at the study intersection.

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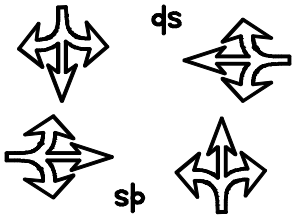
SUBJECT	BY	DATE	JOB NO.	SHEET OF
SUMMARY	TM	7-Jan-14	VV.130048.0000	1 OF 2

E/W STREET : STATE LANE DRIVE
N/S STREET : HIGHWAY 38
CONDITION : FRIDAY PEAK HOUR

PROJECT YEAR : 2014
PROJECTED GROWTH PER YEAR : 2%

CONDITION DIAGRAMS



EXISTING GEOMETRICS

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENERIO #							
STATE LANE DRIVE							
EB LEFT	15	**0**	15	0	15	20	20
EB THRU	5	**0**	5	15	20	5	20
EB RIGHT	5	**0**	5	0	5	5	5
WB LEFT	5	**0**	5	10	15	5	15
WB THRU	5	**0**	5	15	20	5	20
WB RIGHT	90	**0**	95	25	120	135	160
HIGHWAY 38							
NB LEFT	5	**0**	5	0	5	5	5
NB THRU	120	**5**	130	-5	125	180	175
NB RIGHT	5	**0**	5	10	15	5	15
SB LEFT	215	**0**	225	25	250	315	340
SB THRU	75	**15**	95	-5	90	125	120
SB RIGHT	20	**0**	20	0	20	30	30
TOTALS	**565**	**20**	**610**	**90**	**700**	**835**	**925**

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax
Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax
Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax
Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	7-Jan-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE
N/S STREET : HIGHWAY 38
CONDITION : FRIDAY PEAK HOUR
COUNT DATE : December 13, 2013

NORTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
1	0	2	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0

SOUTH LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	0

EAST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

WEST LEG								
LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
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

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

	TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
STATE LANE DRIVE					
EB LEFT	0	0	**16**	**15**	**0**
EB THRU	0	0	**2**	**5**	**0**
EB RIGHT	1	0	**1**	**5**	**100**
WB LEFT	0	0	**7**	**5**	**0**
WB THRU	0	0	**3**	**5**	**0**
WB RIGHT	0	0	**92**	**90**	**0**
HIGHWAY 38					
NB LEFT	0	0	**7**	**5**	**0**
NB THRU	2	0	**122**	**120**	**2**
NB RIGHT	1	0	**6**	**5**	**17**
SB LEFT	2	0	**214**	**215**	**1**
SB THRU	4	0	**73**	**75**	**5**
SB RIGHT	1	0	**20**	**20**	**5**

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax
Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax
Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax
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INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: HWY 38
EAST-WEST STREET: STATE LANE DR
JURISDICTION: ERWIN LAKE

DATE: 12-13-13

PEAK HOUR: 04:30PM

NORTH LEG

TOTAL: 307

Rt	Thru	Lt	
20	73	214	Total
6	16	42	1st
6	19	50	2nd
6	16	56	3rd
2	22	66	4th

EAST LEG TOTAL: 102

	1st	2nd	3rd	4th	Total
Rt	27	23	22	20	92
Thru	1	1	1	0	3
Lt	5	0	2	0	7

WEST LEG TOTAL: 19

Total	1st	2nd	3rd	4th	
16	1	3	6	6	Lt
2	1	0	0	1	Thru
1	0	0	1	0	Rt

PEAK HOUR FACTORS

NORTH LEG = 0.85
SOUTH LEG = 0.80
EAST LEG = 0.77
WEST LEG = 0.68

ALL LEGS = 0.93

SOUTH LEG

TOTAL: 135

	Lt	Thru	Rt
1st	2	30	2
2nd	4	37	1
3rd	1	21	2
4th	0	34	1
Total	7	122	6

HOUR TOTAL: 563

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM DATE: 12-13-13

NORTH LEG

Rt	Thru	Lt	
22	73	192	Total
5	21	49	1st
5	17	51	2nd
6	16	42	3rd
6	19	50	4th

	1st	2nd	3rd	4th	Total
Rt	32	27	27	23	109
Thru	1	0	1	1	3
Lt	0	0	5	0	5

Total	1st	2nd	3rd	4th	
9	4	1	1	3	Lt
1	0	0	1	0	Thru
0	0	0	0	0	Rt

	Lt	Thru	Rt
1st	0	22	3
2nd	3	26	4
3rd	2	30	2
4th	4	37	1
Total	9	115	10

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM DATE: 12-13-13

NORTH LEG

Rt	Thru	Lt	
24	55	198	Total
6	16	56	1st
2	22	66	2nd
8	9	38	3rd
8	8	38	4th

	1st	2nd	3rd	4th	Total
Rt	22	20	30	32	104
Thru	1	0	2	1	4
Lt	2	0	0	2	4

Total	1st	2nd	3rd	4th	
23	6	6	4	7	Lt
1	0	1	0	0	Thru
1	1	0	0	0	Rt

	Lt	Thru	Rt
1st	1	21	2
2nd	0	34	1
3rd	0	26	1
4th	0	19	5
Total	1	100	9

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 06:00PM-07:00PM DATE: 12-13-13

NORTH LEG

Rt	Thru	Lt	
11	36	140	Total
4	9	49	1st
3	9	46	2nd
3	7	23	3rd
1	11	22	4th

	1st	2nd	3rd	4th	Total
Rt	18	21	25	16	80
Thru	1	0	3	0	4
Lt	0	1	0	0	1

Total	1st	2nd	3rd	4th	
11	4	1	3	3	Lt
2	0	1	1	0	Thru
0	0	0	0	0	Rt

	Lt	Thru	Rt
1st	2	14	1
2nd	0	23	1
3rd	1	19	1
4th	2	20	3
Total	5	76	6

Prepared by NEWPORT TRAFFIC STUDIES

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Friday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Existing Conditions
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	120	5	215	75	20
Peak-Hour Factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Hourly Flow Rate, HFR	5	129	5	231	80	21
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	5	90	15	5	5
Peak Hour Factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Hourly Flow Rate, HFR	5	5	96	16	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0				
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	231		106			26	
C(m) (vph)	1473	1432		761			303	
v/c	0.00	0.16		0.14			0.09	
95% queue length	0.01	0.58		0.48			0.28	
Control Delay	7.5	8.0		10.5			18.0	
LOS	A	A		B			C	
Approach Delay				10.5			18.0	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Friday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Existing plus Background
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	130	5	225	95	20
Peak-Hour Factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Hourly Flow Rate, HFR	5	139	5	241	102	21
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	5	95	15	5	5
Peak Hour Factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Hourly Flow Rate, HFR	5	5	102	16	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	241		112			26	
C(m) (vph)	1446	1420		745			274	
v/c	0.00	0.17		0.15			0.09	
95% queue length	0.01	0.61		0.53			0.31	
Control Delay	7.5	8.1		10.7			19.5	
LOS	A	A		B			C	
Approach Delay				10.7			19.5	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Friday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Project Year 2014
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	125	15	250	90	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	138	16	277	100	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	20	120	15	20	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	16	22	133	16	22	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	277		171			43	
C(m) (vph)	1447	1408		543			224	
v/c	0.00	0.20		0.31			0.19	
95% queue length	0.01	0.73		1.37			0.71	
Control Delay	7.5	8.2		14.7			24.9	
LOS	A	A		B			C	
Approach Delay				14.7			24.9	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Friday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Year 2035 without Project
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	180	5	315	125	30
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	189	5	331	131	31
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	5	135	20	5	5
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	5	142	21	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	331		152			31	
C(m) (vph)	1399	1361		665			151	
v/c	0.00	0.24		0.23			0.21	
95% queue length	0.01	0.96		0.89			0.77	
Control Delay	7.6	8.5		12.0			35.0-	
LOS	A	A		B			D	
Approach Delay				12.0			35.0-	
Approach LOS				B			D	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Friday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Year 2035 with Project
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	175	15	340	120	30
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	184	15	357	126	31
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	20	160	20	20	5
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	15	21	168	21	21	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	357		204			47	
C(m) (vph)	1405	1356		456			131	
v/c	0.00	0.26		0.45			0.36	
95% queue length	0.01	1.07		2.38			1.62	
Control Delay	7.6	8.6		19.2			47.7	
LOS	A	A		C			E	
Approach Delay				19.2			47.7	
Approach LOS				C			E	

Hall & Foreman, Inc.

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SUBJECT	BY	DATE	JOB NO.	SHEET OF
SUMMARY	TM	7-Jan-14	VV.130048.0000	1 OF 2

E/W STREET : STATE LANE DRIVE
N/S STREET : HIGHWAY 38
CONDITION : SUNDAY PEAK HOUR

PROJECT YEAR : 2014
PROJECTED GROWTH PER YEAR : 2%

CONDITION DIAGRAMS

TURN MOVEMENTS

CONDITION	EXISTING TRAFFIC	BACKGROUND TRAFFIC	EXISTING + BACKGROUND TRAFFIC	PROJECT TRIPS	EXISTING + BACKGROUND + PROJECT	YEAR 2035 WITHOUT PROJECT	YEAR 2035 WITH PROJECT
SCENERIO #							
STATE LANE DRIVE							
EB LEFT	10	**0**	10	0	10	15	15
EB THRU	5	**0**	5	15	20	5	20
EB RIGHT	5	**0**	5	0	5	5	5
WB LEFT	10	**0**	10	10	20	15	25
WB THRU	5	**0**	5	15	20	5	20
WB RIGHT	95	**0**	100	30	130	140	170
HIGHWAY 38							
NB LEFT	5	**0**	5	0	5	5	5
NB THRU	70	**20**	95	-5	90	125	120
NB RIGHT	10	**0**	10	10	20	15	25
SB LEFT	145	**0**	150	30	180	210	240
SB THRU	170	**10**	185	-5	180	255	250
SB RIGHT	15	**0**	15	0	15	20	20
TOTALS	**545**	**30**	**595**	**100**	**695**	**815**	**915**

Tustin Office: 714.665.4500 Tel/ 714.665.4501 Fax
Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax
Victorville Office: 760.524.9100 Tel/ 760.524.9101 Fax
Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

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SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	TM	7-Jan-14	VV.130048.0000	2	OF 2

E/W STREET : STATE LANE DRIVE
N/S STREET : HIGHWAY 38
CONDITION : SUNDAY PEAK HOUR
COUNT DATE : December 15, 2013

NORTH LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0

SOUTH LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

EAST LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
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
1	0	0	0	0	0	0	0	0

WEST LEG

LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

NORTH LEG			SOUTH LEG			EAST LEG			WEST LEG		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

	TRUCK TOTAL	AUTO VOLUMES	TOTALS	ROUNDED TOTALS	TRUCK PERCENTAGE
STATE LANE DRIVE					
EB LEFT	1	0	**10**	**10**	**10**
EB THRU	0	0	**2**	**5**	**0**
EB RIGHT	0	0	**3**	**5**	**0**
WB LEFT	0	0	**10**	**10**	**0**
WB THRU	0	0	**4**	**5**	**0**
WB RIGHT	2	0	**97**	**95**	**2**
HIGHWAY 38					
NB LEFT	0	0	**2**	**5**	**0**
NB THRU	0	0	**70**	**70**	**0**
NB RIGHT	0	0	**8**	**10**	**0**
SB LEFT	1	0	**145**	**145**	**1**
SB THRU	0	0	**171**	**170**	**0**
SB RIGHT	0	0	**15**	**15**	**0**

Irvine Office: 714.665.4500 Tel/ 714.665.4501 Fax
Santa Clarita Office: 661.284.7400 Tel/ 661.284.7401 Fax
Victorville Office: 760.241.0595 Tel/ 760.241.1937 Fax
Temecula Office: 951.294.9300 Tel/ 951.294.9301 Fax

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: HWY 38
EAST-WEST STREET: STATE LANE DR
JURISDICTION: ERWIN LAKE

DATE: 12-15-13

PEAK HOUR: 04:00PM

NORTH LEG

TOTAL: 331

Rt	Thru	Lt	
15	171	145	Total
4	50	35	1st
2	37	43	2nd
5	43	33	3rd
4	41	34	4th

EAST LEG TOTAL: 111

	1st	2nd	3rd	4th	Total
Rt	21	32	27	17	97
Thru	0	1	0	3	4
Lt	2	5	2	1	10

WEST LEG TOTAL: 15

Total	1st	2nd	3rd	4th	
10	2	2	3	3	Lt
2	0	0	0	2	Thru
3	0	0	1	2	Rt

PEAK HOUR FACTORS

NORTH LEG = 0.93
SOUTH LEG = 0.74
EAST LEG = 0.73
WEST LEG = 0.54

ALL LEGS = 0.94

SOUTH LEG

TOTAL: 80

	Lt	Thru	Rt
1st	0	15	0
2nd	1	17	3
3rd	1	13	3
4th	0	25	2
Total	2	70	8

HOUR TOTAL: 537

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 03:00PM-04:00PM DATE: 12-15-13

NORTH LEG

Rt	Thru	Lt	
23	141	107	Total
5	22	26	1st
6	38	23	2nd
4	38	32	3rd
8	43	26	4th

	1st	2nd	3rd	4th	Total
Rt	23	19	20	18	80
Thru	0	1	0	0	1
Lt	1	4	4	2	11

Total	1st	2nd	3rd	4th	
18	3	5	5	5	Lt
5	1	1	1	2	Thru
2	1	1	0	0	Rt

	Lt	Thru	Rt
1st	0	14	2
2nd	0	12	2
3rd	2	12	1
4th	0	15	2
Total	2	53	7

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 04:00PM-05:00PM DATE: 12-15-13

NORTH LEG

Rt	Thru	Lt	
15	171	145	Total
4	50	35	1st
2	37	43	2nd
5	43	33	3rd
4	41	34	4th

	1st	2nd	3rd	4th	Total
Rt	21	32	27	17	97
Thru	0	1	0	3	4
Lt	2	5	2	1	10

Total	1st	2nd	3rd	4th	
10	2	2	3	3	Lt
2	0	0	0	2	Thru
3	0	0	1	2	Rt

	Lt	Thru	Rt
1st	0	15	0
2nd	1	17	3
3rd	1	13	3
4th	0	25	2
Total	2	70	8

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 38

EAST-WEST STREET: STATE LANE DR

TIME: 05:00PM-06:00PM DATE: 12-15-13

NORTH LEG

Rt	Thru	Lt	
24	96	105	Total
2	26	32	1st
7	19	33	2nd
10	23	14	3rd
5	28	26	4th

	1st	2nd	3rd	4th	Total
Rt	16	22	20	15	73
Thru	0	0	0	0	0
Lt	1	0	3	3	7

Total	1st	2nd	3rd	4th	
9	3	3	1	2	Lt
1	0	0	1	0	Thru
3	1	0	1	1	Rt

	Lt	Thru	Rt
1st	1	19	1
2nd	1	5	3
3rd	1	6	2
4th	0	9	2
Total	3	39	8

Prepared by NEWPORT TRAFFIC STUDIES

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Sunday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Existing Condition
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	70	10	145	170	15
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR	5	74	10	154	180	15
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	5	95	10	5	5
Peak Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR	10	5	101	10	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	154		116			20	
C(m) (vph)	1360	1494		803			386	
v/c	0.00	0.10		0.14			0.05	
95% queue length	0.01	0.34		0.51			0.16	
Control Delay	7.7	7.7		10.2			14.8	
LOS	A	A		B			B	
Approach Delay				10.2			14.8	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Sunday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Existing plus Background
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	95	10	150	185	15
Peak-Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR	5	101	10	159	196	15
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	5	100	10	5	5
Peak Hour Factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Hourly Flow Rate, HFR	10	5	106	10	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	159		121			20	
C(m) (vph)	1342	1460		771			353	
v/c	0.00	0.11		0.16			0.06	
95% queue length	0.01	0.37		0.56			0.18	
Control Delay	7.7	7.8		10.5			15.8	
LOS	A	A		B			C	
Approach Delay				10.5			15.8	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Sunday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Project Year 2014
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	90	20	180	180	15
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	100	22	200	200	16
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20	20	130	10	20	5
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	22	22	144	11	22	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	200		188			38	
C(m) (vph)	1336	1447		601			278	
v/c	0.00	0.14		0.31			0.14	
95% queue length	0.01	0.48		1.36			0.47	
Control Delay	7.7	7.9		13.7			20.0	
LOS	A	A		B			C	
Approach Delay				13.7			20.0	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Sunday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Year 2035 without Project
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	125	15	210	255	20
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	131	15	221	268	21
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	5	140	15	5	5
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	15	5	147	15	5	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	221		167			25	
C(m) (vph)	1256	1418		663			212	
v/c	0.00	0.16		0.25			0.12	
95% queue length	0.01	0.55		1.01			0.40	
Control Delay	7.9	8.0		12.3			24.2	
LOS	A	A		B			C	
Approach Delay				12.3			24.2	
Approach LOS				B			C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: TM
Agency/Co.: Hall and Foreman, Inc
Date Performed: 1/7/2014
Analysis Time Period: Sunday Peak Hour
Intersection: Highway 38/State Lane Drive
Jurisdiction: San Bernardino County
Units: U. S. Customary
Analysis Year: Year 2035 with Project
Project ID: VV.130048.0000
East/West Street: State Lane Drive
North/South Street: Highway 38
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	120	25	240	250	20
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	5	126	26	252	263	21
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	25	20	170	15	20	5
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	26	21	178	15	21	5
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	5	252		225			41	
C(m) (vph)	1261	1411		510			182	
v/c	0.00	0.18		0.44			0.23	
95% queue length	0.01	0.65		2.33			0.86	
Control Delay	7.9	8.1		17.6			30.5	
LOS	A	A		C			D	
Approach Delay				17.6			30.5	
Approach LOS				C			D	