

**COUNTY OF SAN BERNARDINO
TRAFFIC IMPACT STUDY
FOR
APN 3064-041-018 AT NE CORNER OF PHELAN ROAD
&
BALDY MESA ROAD**

October 1, 2012

Prepared for
Oak Hills Plaza, L.P.
626 S. Plymouth Blvd
Los Angeles, Ca. 90010



Prepared by

Chidi Onumonu, P.E., T.E.
Albert Wilson & Associates
7866 Henbane Street
Rancho Cucamonga, CA. 91739

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INTRODUCTION

This traffic impact analysis (TIA) has been prepared to provide an assessment of potential traffic circulation impact associated with the development of a retail center/ fast food restaurant on a 2.6 acre land in the Oak Hills community in the county of San Bernardino. The project site is located at the north east corner of the intersection of Phelan Road and Baldy Mesa Road and provided as Exhibit 1 in this report.

This project is within the San Bernardino County High Desert Local Area Transportation Facilities Plan area. The fee under this plan shall be determined by the County.

The San Bernardino County Traffic Engineering Division staff recommends that operational analysis be performed at the intersection of Phelan Road and Baldy Mesa Road and at the driveways to the project. The following features at these study locations are proposed to be installed by others or are recommended by this study and therefore assumed in-place for the operational analysis:

- Phelan Rd @ Baldy Mesa Rd intersection shall be re-stripped from eastbound right turn lane to a shared through/right turn lane
- Project driveways on both Baldy Mesa and Phelan Roads.
- Driveway on Phelan Road restricted to no left turn out movement.

This project is found to potentially generate 140 new trips in morning peak hour and 159 trips in the evening peak hour.

With the addition of traffic generated by the proposed project to the study area roadways, a minimum level of service standard must be maintained at study intersections consistent with San Bernardino County minimum level of service threshold requirement. This TIA analyzes existing traffic condition, project opening day condition and general plan build-out condition and determines mitigation measures attributable to the project in order to provide the required minimum level of service standard at the study intersections.

This report is also prepared to assess and mitigate safety and other traffic off-site operational issues that may result from the development project. It is also prepared to satisfy the requirement for the disclosure of potential impacts and mitigation measures per the California Environmental Quality Act (CEQA)

PROJECT DISCRPTION

The proposed project is a development of a retail center/ fast food restaurant on a 2.6 acre land in the Oak Hills area of San Bernardino County. The project is located at the north east corner of Phelan Road and Baldy Mesa Road. The project site plan is provided as exhibit 2.

ANALYSIS METHODOLOGY

This study presents an analysis of the study intersections operating conditions during the project peak hours for the following time frames:

- Existing year 2012 (based on 2010 traffic counts)
- Project Opening year 2014
- Future forecast year 2035

The analysis scenarios are as follows:

- Existing condition
- Project opening year 2014 without project condition
- Project opening year 2014 with project condition
- Future forecast year 2035 without project condition
- Future forecast year 2035 with project condition

The Transportation Research Board –Highway Capacity Manual (HCM), 2000 Update, or most recent release is used for the operational analysis of intersections. Un-signalized intersections are to be analyzed using Chapter 17 of the Highway Capacity Manual. Signalized intersection is analyzed using operational methods as described in Chapter 16, Section 11.

This study is also prepared consistent with 'Level of Service Definition & Procedures' below.

Level of Service Definitions and Procedures

Roadway operations and relationship between capacity and traffic volumes are generally expressed in terms of level of service (which is defined using the letter grades A through F). These levels recognize that while an absolute limit exists as to the amount of traffic traveling through a given intersection (the absolute capacity); the conditions that motorists experience rapidly deteriorate as traffic approaches the absolute capacity. Under such conditions, congestion is experienced. There is general instability in the traffic flow, which means that relative small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays. This near-capacity situation is labeled Level of Service (LOS) 'E'. Beyond LOS E, capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. Upstream queues will then form and continue to expand in length until demand again declines. A complete description of the meaning of level of service can be found in the Highway Research Board Special Report 209, Highway Capacity Manual. The manual establishes levels of service A through F. Table A provides brief descriptions of the six levels of service, as abstracted from the Manual.

TABLE A- Level of Service Definitions

LOS	Description
-----	-------------

A	No approach phase is fully utilized by traffic and no vehicles waits longer than one red indication. Typically, the approach appears quite open, turns are made easily and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operation conditions. Occasionally drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks periods; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles any that any particular intersections approach can accommodate. Full utilization of every signal is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time due to the congestions. In the extreme case, both speed and volume can drop to zero.

Table B shows the level of service criteria for un-signalized and signalized intersections.

Table B – Level of service Criteria for unsignalized and Signalized Intersections

Level of Service	Unsignalized Intersection Average Daily per Vehicle (sec)	Signalized Intersection Average Daily per Vehicle (sec)
A	≤ 10	≤ 10
B	>10 and ≤ 15	>10 and ≤ 20
C	>15 and ≤ 25	>20 and ≤ 35
D	>25 and ≤ 35	>35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	>50	>80

Level of Service Threshold Criteria

Intersections under County of San Bernardino jurisdiction shall operate at LOS "E" or better.

EXISTING STUDY AREA CONDITION

Existing Roadway Systems

The existing study intersection traffic control and lane configuration is provided in exhibit 4. Major streets and highways in the site vicinity which are affected by the proposed project are Phelan Road and Baldy Mesa Road.

Existing 2010 Traffic Volumes

The 2010 turning movement volumes are shown on Exhibit 3. The traffic counts were performed by "Newport Traffic Studies" for approved project at 9770 Baldy Mesa Road. The count sheets are contained in Appendix B.

FUTURE STUDY AREA CONDITION

Exhibit 6 provides study intersection turning movement volumes without the opening year project traffic. The volumes were generated, using County Expansion factor of 2% yearly growth projected to year 2014 with the 2010 traffic count numbers.

The forecast year 2035 traffic volumes represented on Exhibit 10A and 10B are derived from 2010 traffic counts provided on Appendix B.

PROJECT TRIP GENERATION

Table 1 summarizes the trip generation for the proposed project. As shown in Table 1, the project is expected to generate 140 morning peak hour trips and 159 evening peak hour trips.

TRIP DISTRIBUTION & ASSIGNMENT

Trip distribution pattern for the project traffic was developed to reflect locations of population densities closest to the site. Exhibit 7 illustrates the trip distribution, Exhibit 8 represents the trip assignment.

APPROVED AND PENDING PROJECTS

An approved project at 9770 Baldy Mesa Road is currently under construction. The project trips as provided in Exhibit 5, is incorporated into this study.

TRAFFIC ANALYSIS

Appendix A provides the operational analysis worksheets for the study intersection and driveways. Table 2. summarizes the analysis results. The results show that for all the analysis scenarios, all intersection examined are found to operate at satisfactory Levels of Service.

CIRCULATION IMPROVEMENTS

As recommended by the County, the operational analysis assumes no left turning out movement from the project driveway on Phelan Road. No other circulation improvements are recommended.

SUMMARY & CONCLUSIONS

1. The project analysis location includes one intersection and two project driveway:
 - Phelan Road / Baldy Mesa Rd
 - Project Driveway at Phelan Road
 - Project Driveway at Baldy Mesa Road
2. The analysis includes examination of a.m. and p.m. peak hour traffic operations under the following conditions:
 - 2010 condition
 - Year 2014 without project traffic
 - Year 2014 with project traffic
 - Year 2035 without project traffic
 - Year 2035 with project traffic
3. As shown on Table 1, the project is expected to generate a total of 140 trips in the a.m. peak hour and 159 trips during the p.m. peak hour.
4. The project analysis locations will operate at satisfactory levels of service in all study scenarios.
5. This project is located in the High Desert Local Area Transportation Facilities Plan area and therefore subject to the fee approved by the County Board of Supervisors.
6. Project driveway at Phelan Road shall be designed as a "no left-out" turn driveway.

TABLE 1

TRIP GENERATION

USING ITE TRIP GENERATION, 8TH EDITION

Land Use	Units	A.M. Peak Hour			P.M. Peak Hour			Daily		
		In	Out	Total	In	Out	Total	In	Out	Total
Fast Food Restaurant with Drive thru. (Land Use 934)	2.850 TSF									
Trips/Unit		25.17	24.18	49.35	17.60	16.24	33.84	248.06	248.06	496.12
Trip		72	69	141	50	46	96	707	707	1414
Pass-by(40%) ¹		29	28	57	20	18	38	283	283	566
New Trips		43	41	84	30	28	58	424	424	848
Specialty Retail Center (Land Use 814)	17.448 TSF									
Trips /Unit					1.19	1.52	2.71	22.16	22.16	44.32
Trips					21	27	48	387	387	774
Pass-by(20%) ¹					4	5	9	77	77	154
New Trips					17	22	39	310	310	619
Mini Market (Land Use 852)	3.000 TSF									
Trips / Unit		15.51	15.51	31.02	16.94	17.63	34.57			
Trips		47	47	94	51	53	104			
Pass-by(40%) ¹		19	19	38	20	21	42			
New Trips		28	28	56	31	32	62			
Total New Trips		71	69	140	78	82	159			

1. Pass-by rates are as recommended by the San Bernardino Traffic Division in previous studies.

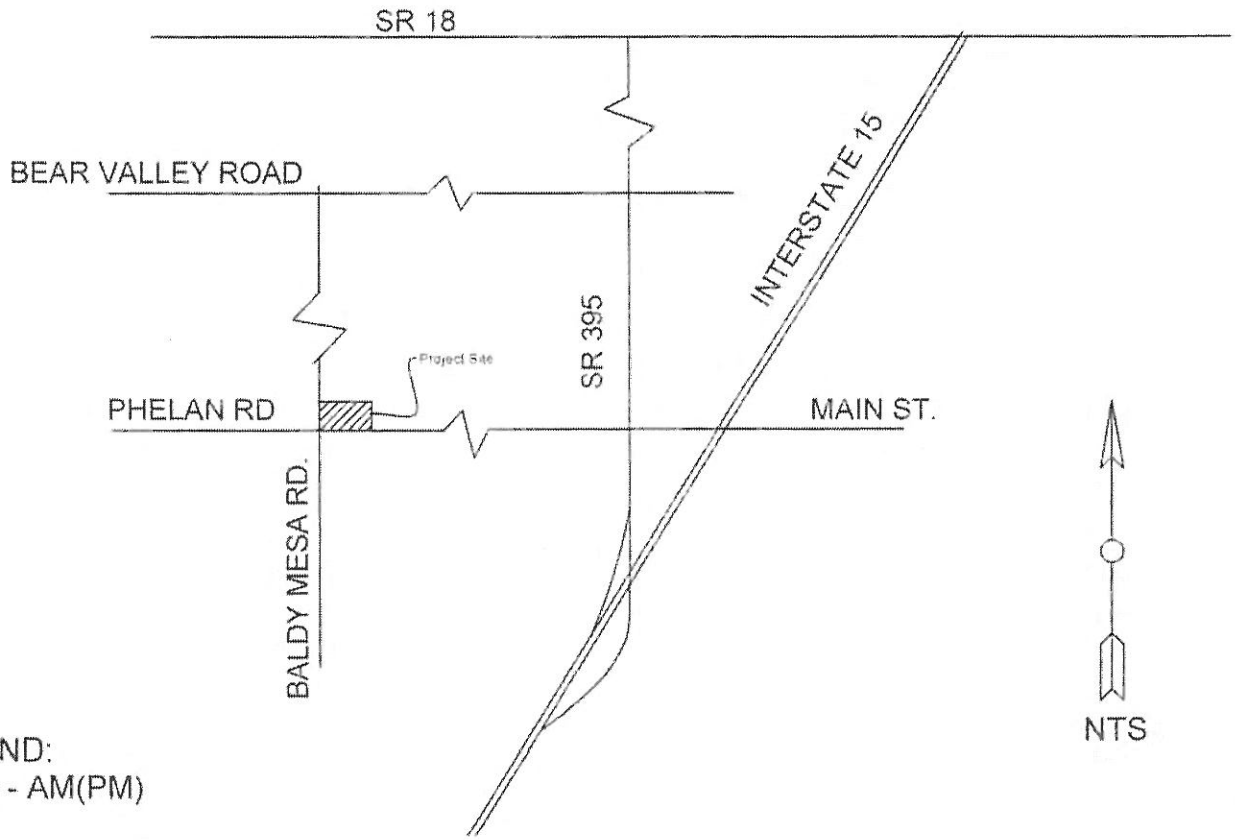
TABLE 2: SUMMARY OF INTERSECTIONS OPERATIONAL ANALYSIS RESULTS

Intersection	DELAY LEVEL OF SERVICE VOLUME CAPACITY RATIO									
	Existing 2012		2014 w/o Project		2014 with Project		2035 Forecast w/o Project		2035 forecast with Project	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Phelan Rd @ Baldy Mesa Rd	22 C+ 0.26	27 C 0.36	28 C 0.40	25 C 0.40	25 C 0.28	26 C- 0.44	23 C 0.37	28 C 0.51	30 C- 0.39	25 C+ 0.54
Proj. Drwy @ Baldy Mesa Rd					10.3 B .09	12.6 B .13			12.6 B .13	12.6 B .13
Proj. Drwy @ Phelan Rd.					9.9 A 0.07	14.8 B 0.14			13.4 B 0.12	14.8 B 0.14

EXHIBITS



EXHIBIT 1 VICINITY MAP



LEGEND:
 xx(xx) - AM(PM)

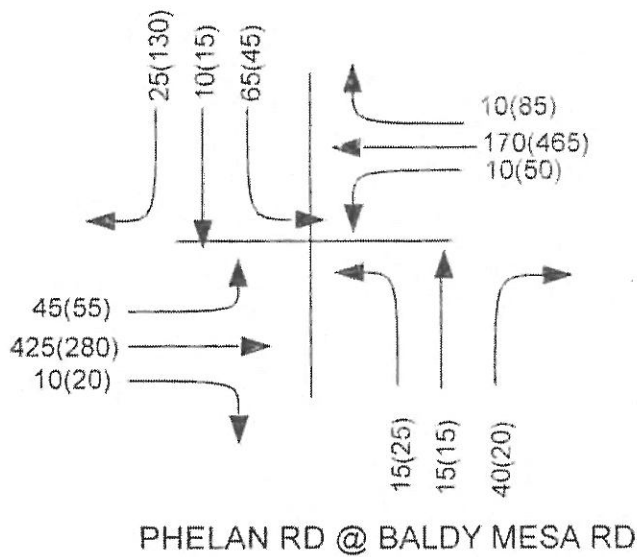
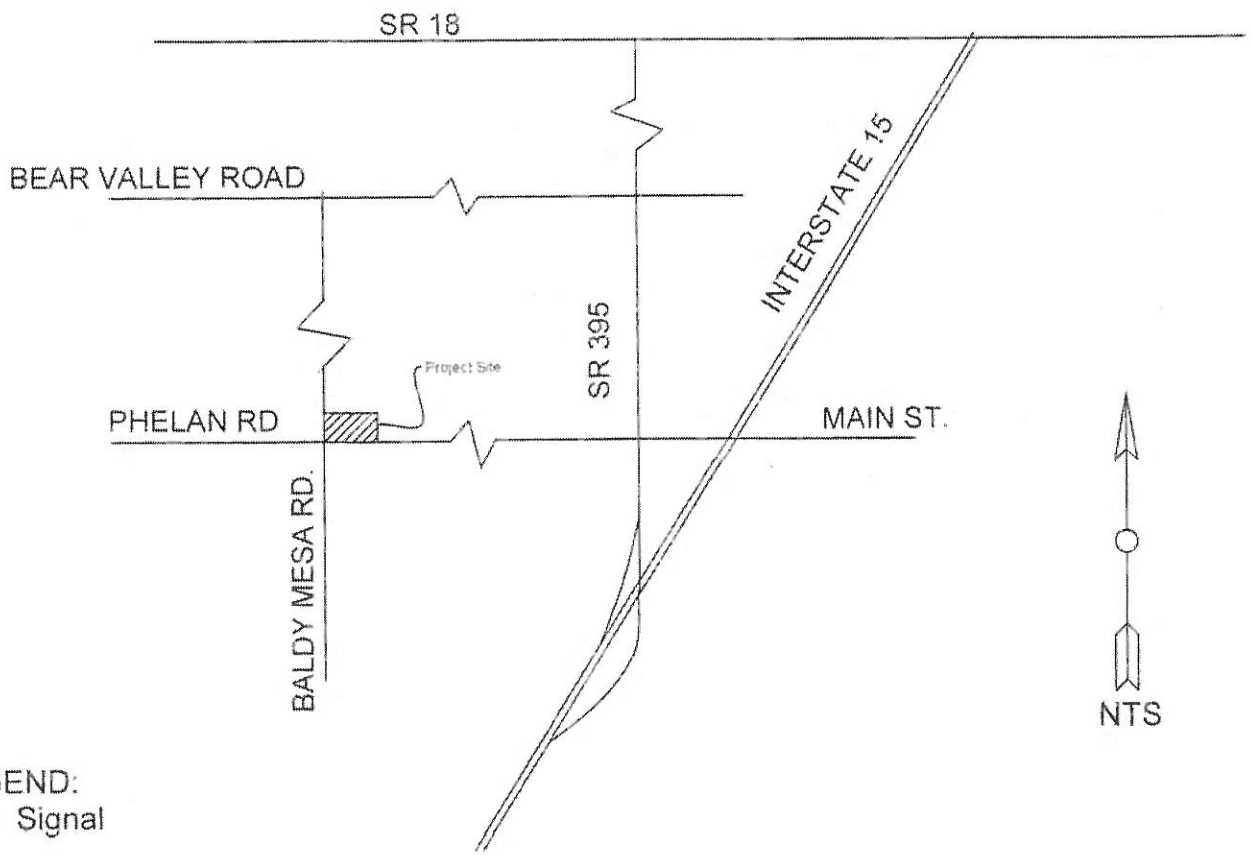
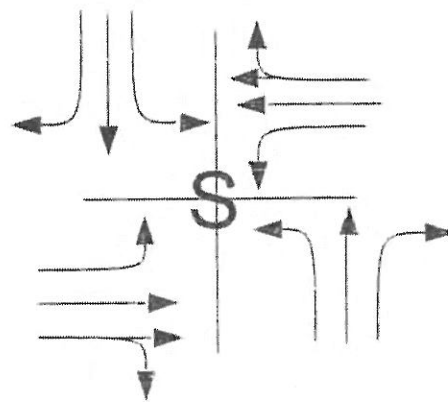


EXHIBIT 3: 2010 PROJECTED TURNING MOVEMENT VOLUMES

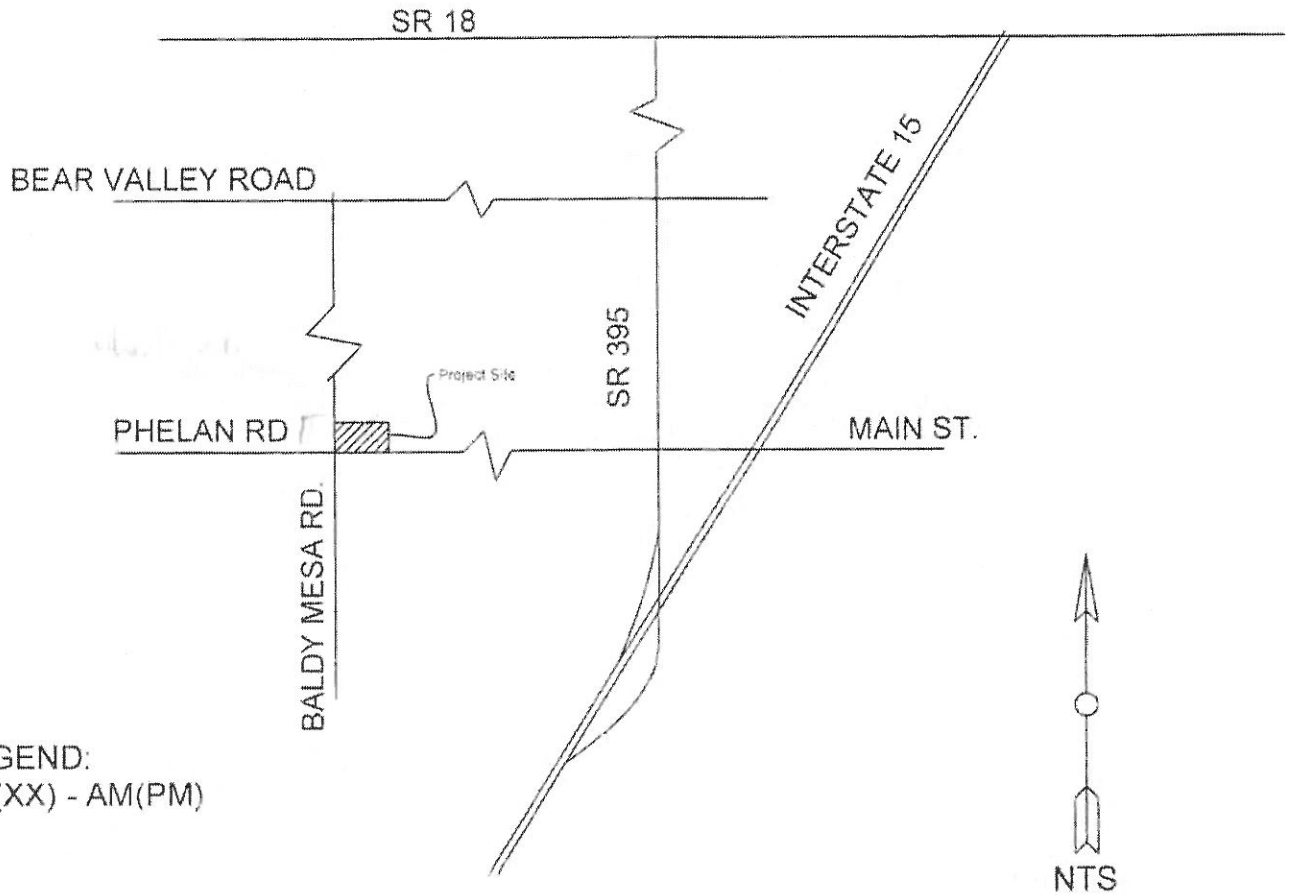


LEGEND:
S - Signal

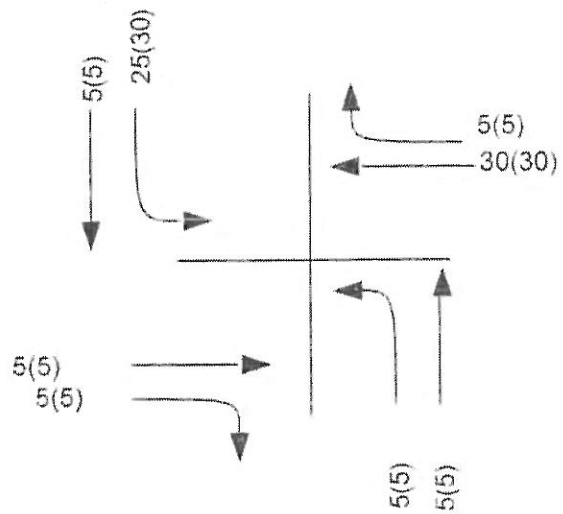


PHELAN RD @ BALDY MESA RD

EXHIBIT 4: EXISTING GEOMETRICS AND CONTROLS

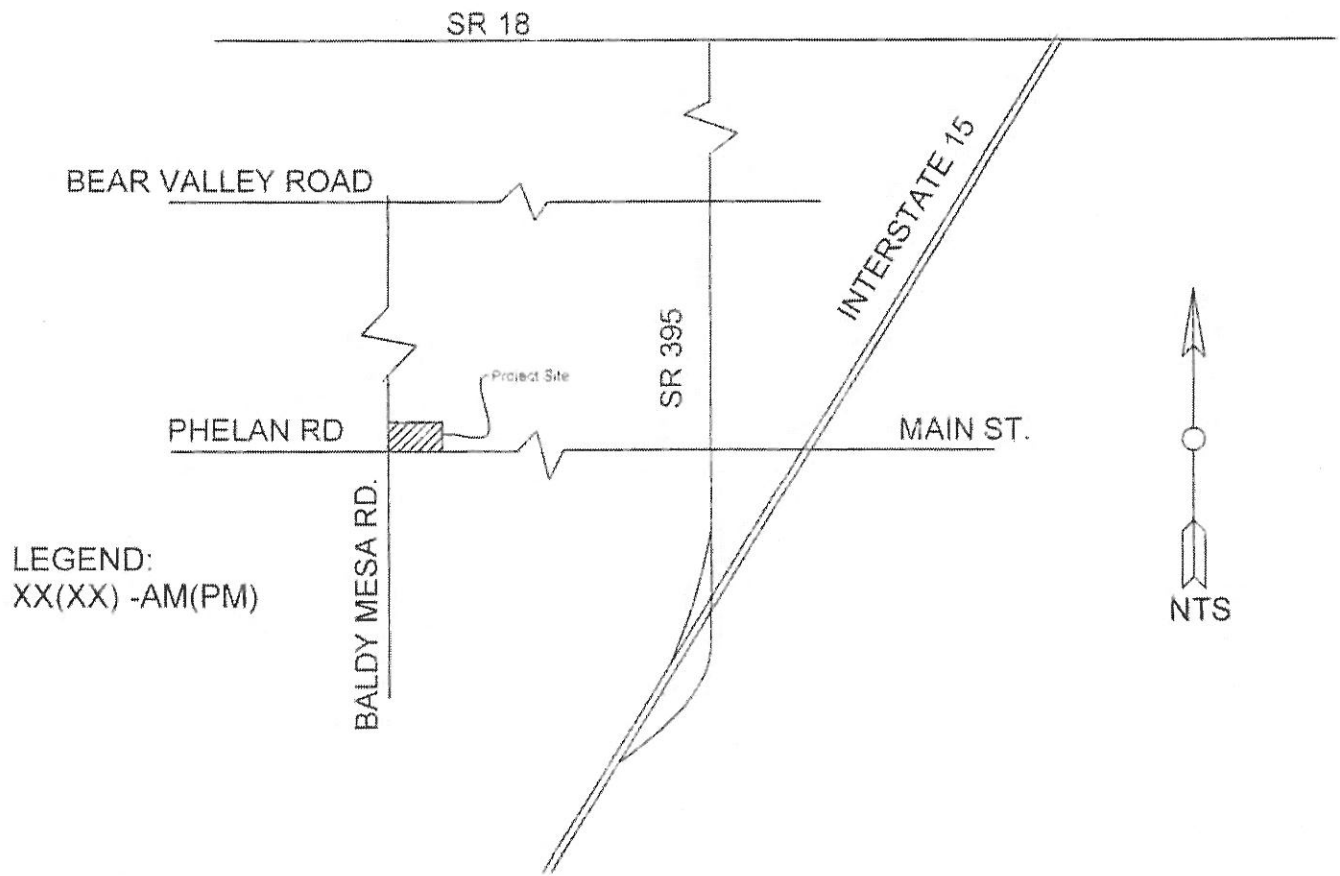


LEGEND:
 XX(XX) - AM(PM)



PHELAN ROAD @ BALDY MESA ROAD

EXHIBIT 5: OTHER PROJECTS TRIPS (9770 BALDY MESA RD)



LEGEND:
XX(X) -AM(PM)

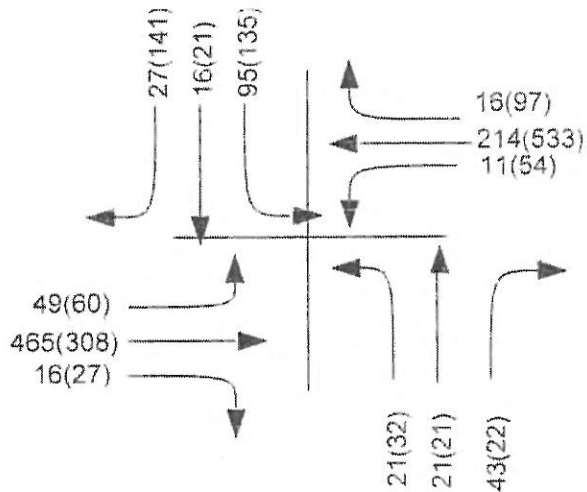


EXHIBIT 6: 2014 PROJECTED PROJECT OPENING YEAR TRAFFIC VOLS.

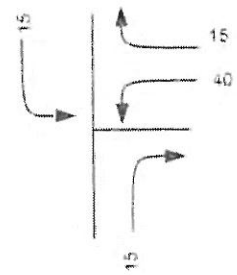
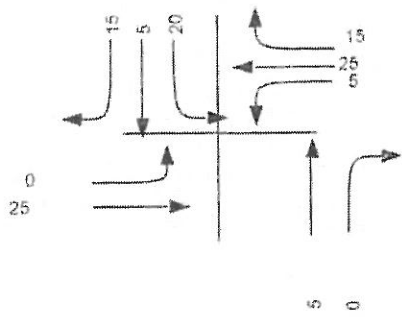
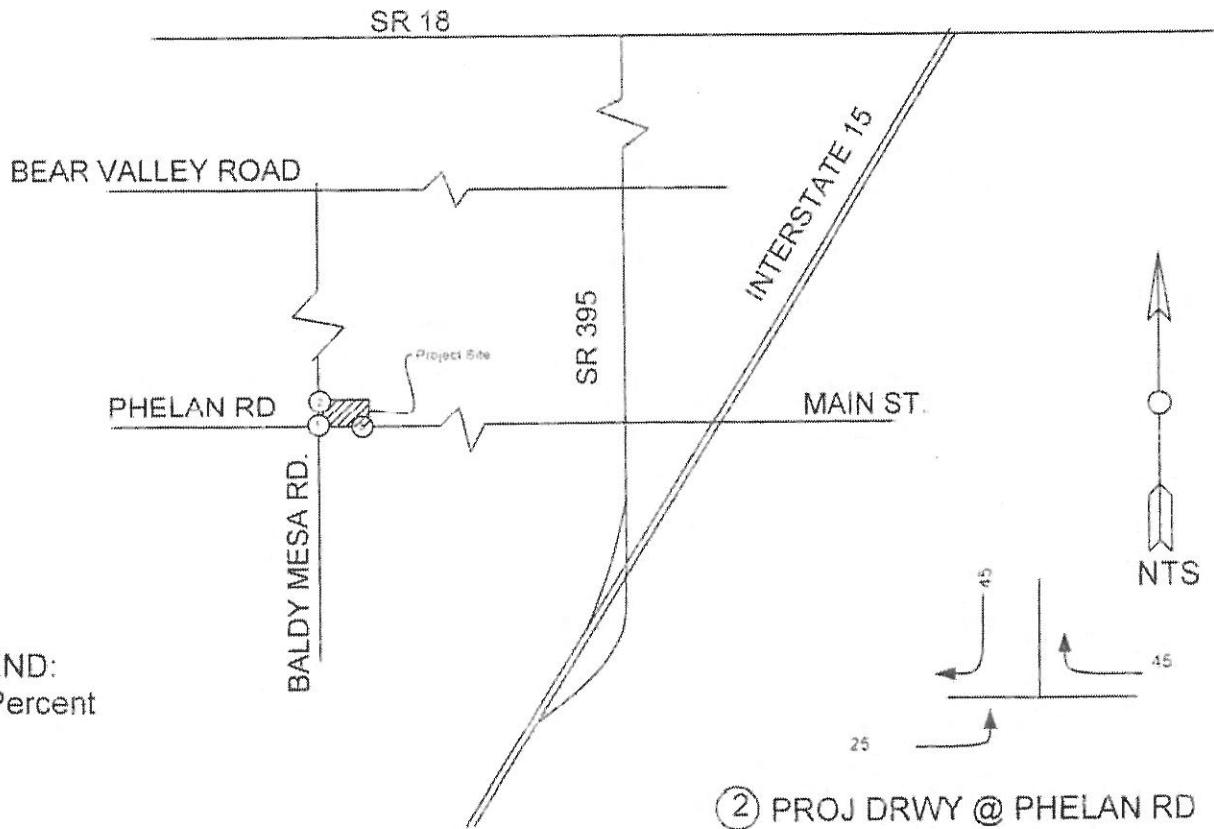
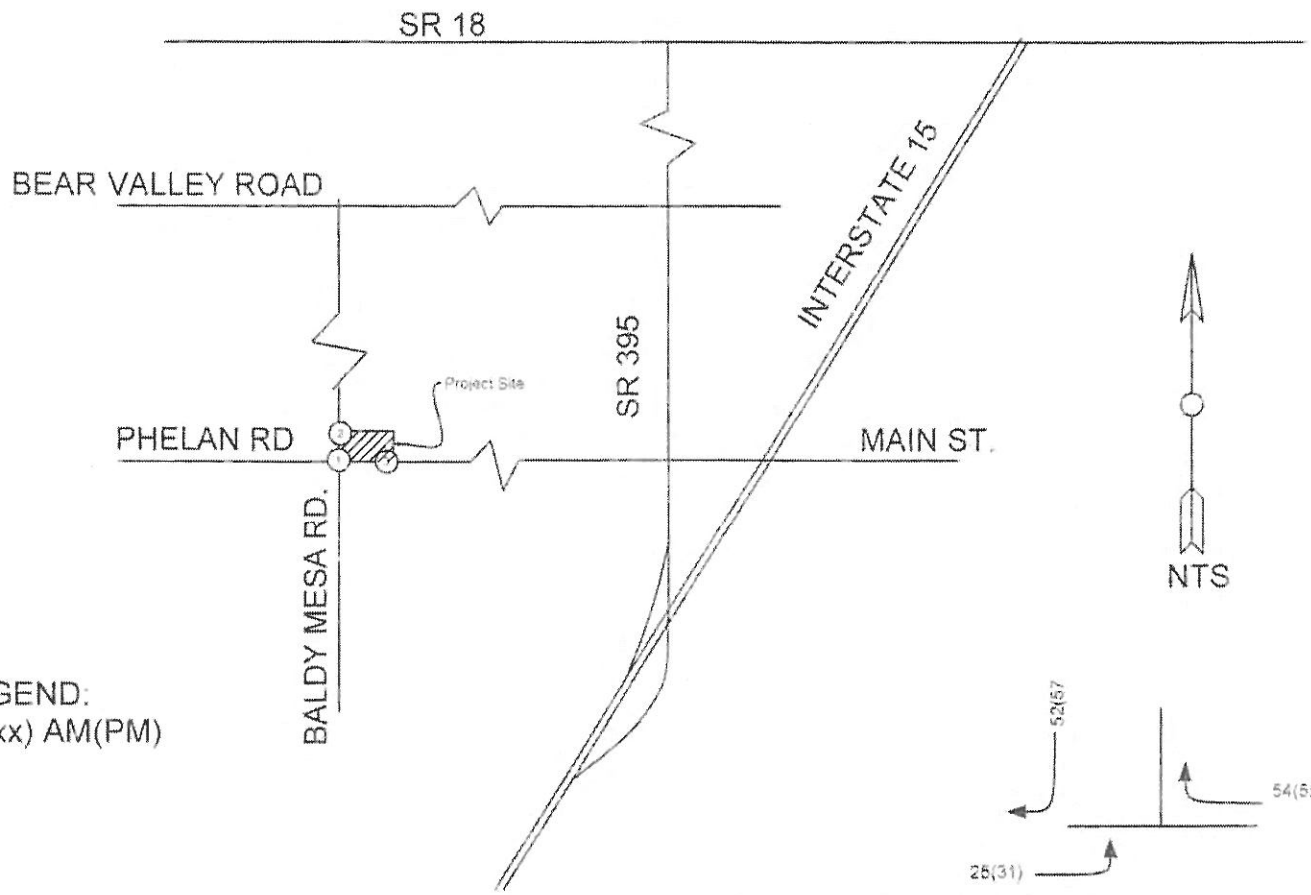
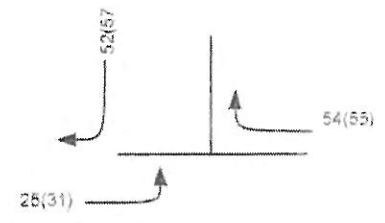


EXHIBIT 7: PROJECT TRIP DISTRIBUTION

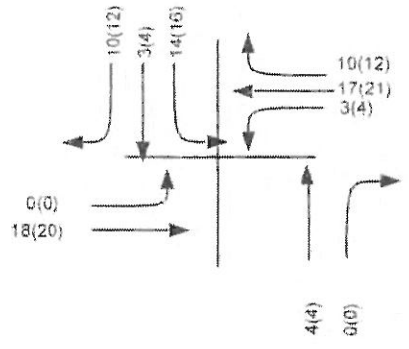


LEGEND:
xx(xx) AM(PM)

② PROJ DRWY @ BALDY MESA RD



① PHELAN RD @ BALDY MESA RD



③ PROJ DRWY @ PHELAN RD

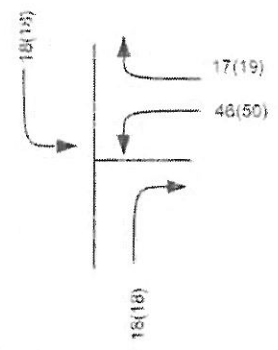


EXHIBIT 8: PROJECT TRIP ASSIGNMENT

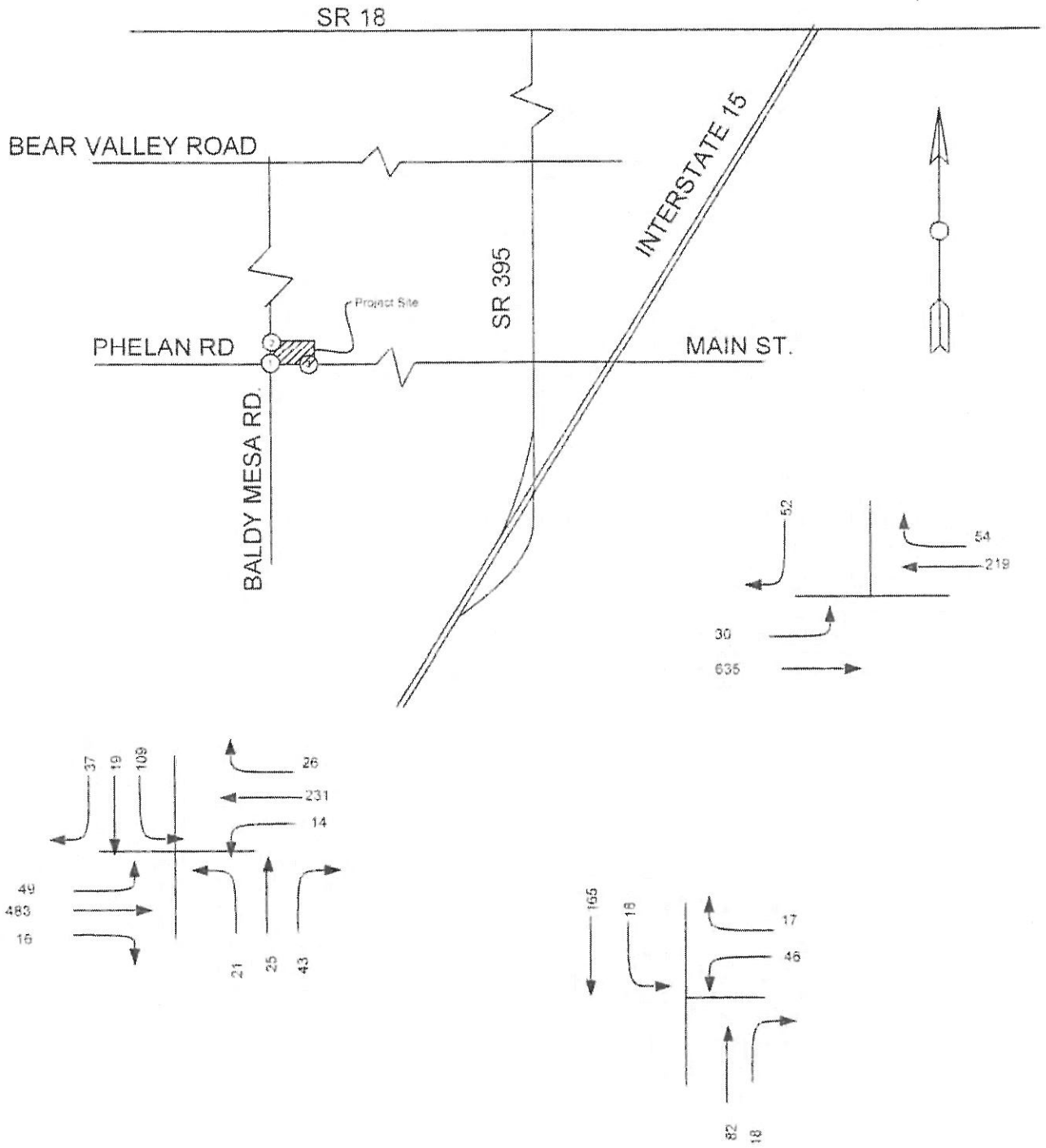


EXHIBIT 9A: AM PROJECT OPENING YEAR 2014 TRAFFIC VOLS W/ PROJ. TRAFFIC.

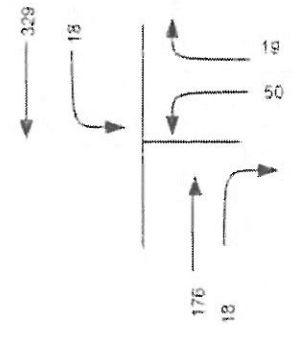
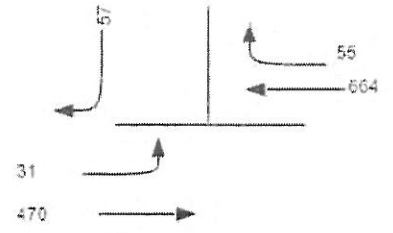
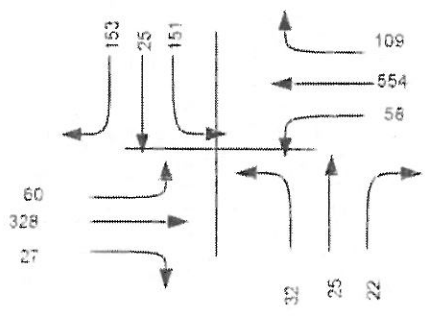
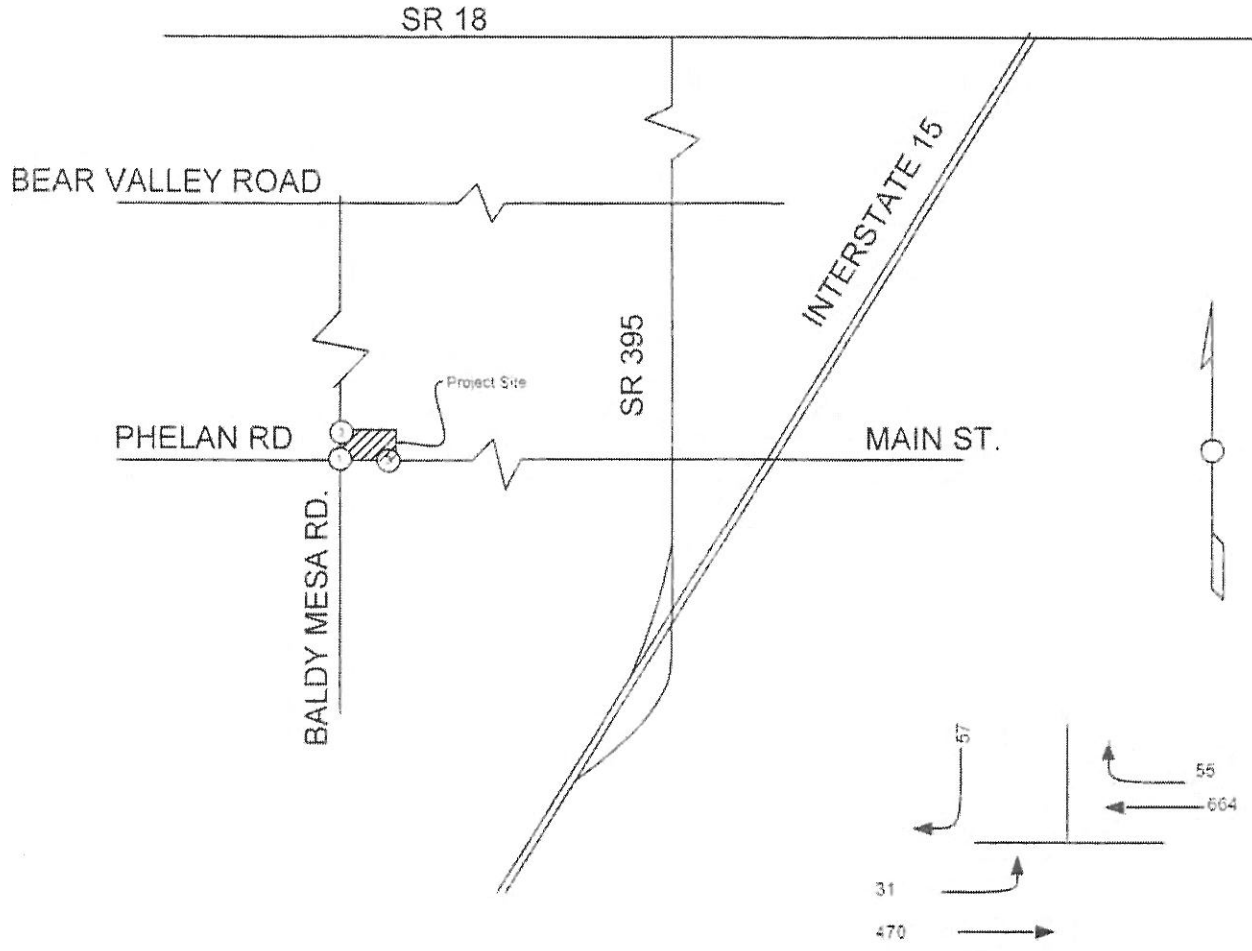


EXHIBIT 9B: PM PROJECT OPENING YR 2014 TRAFFIC VOLUMES.

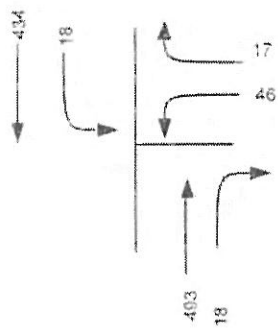
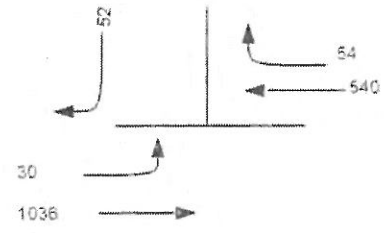
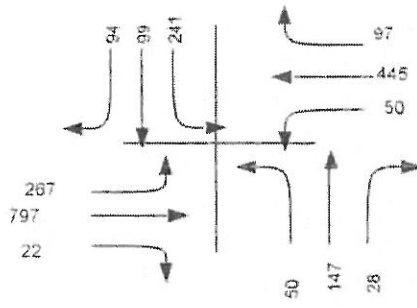
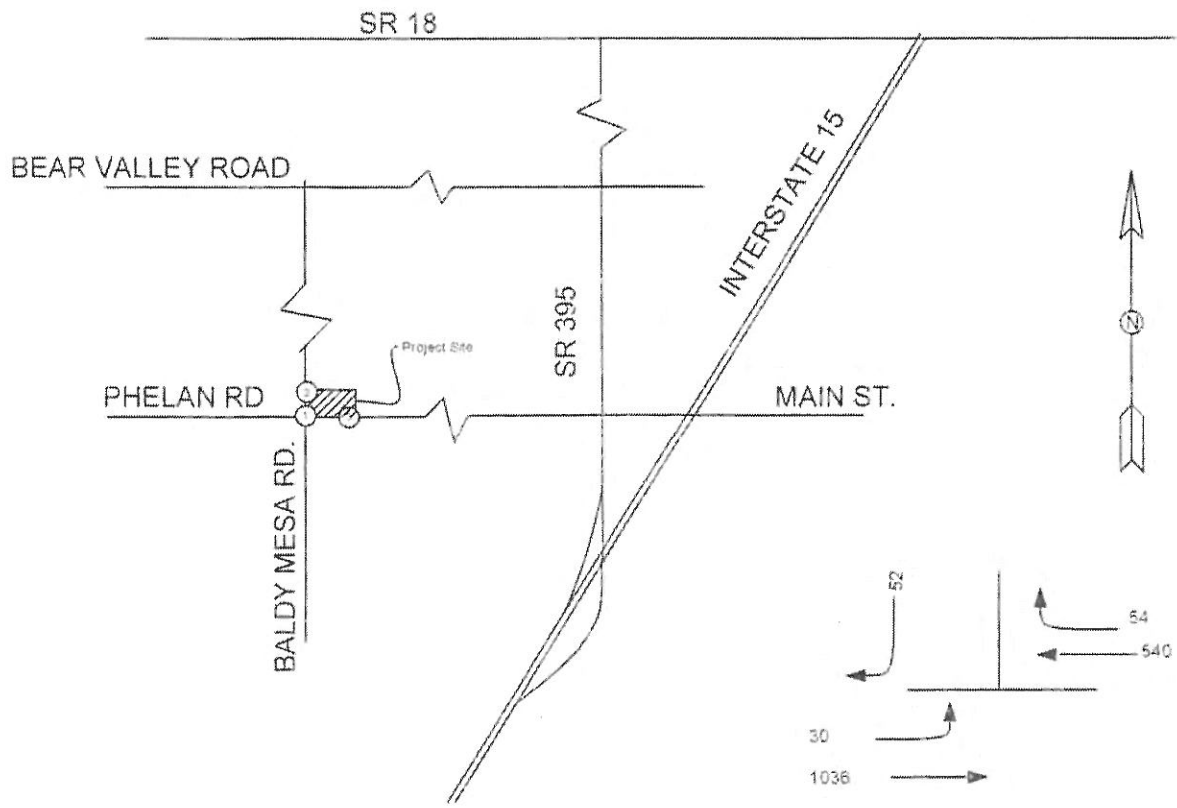


EXHIBIT 10A: AM FORECAST YEAR TRAFFIC VOLUMES W/ PROJ TRAFFIC

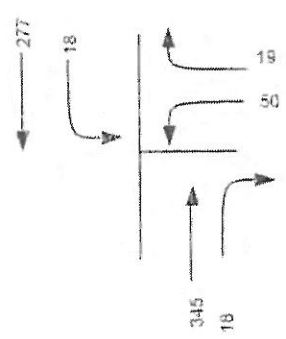
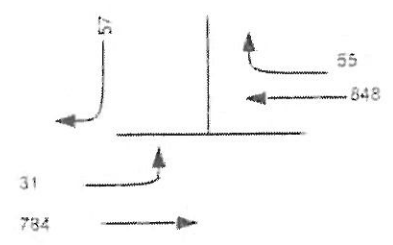
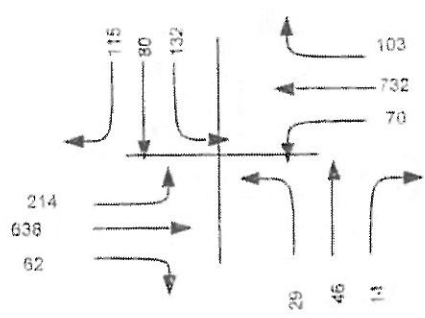
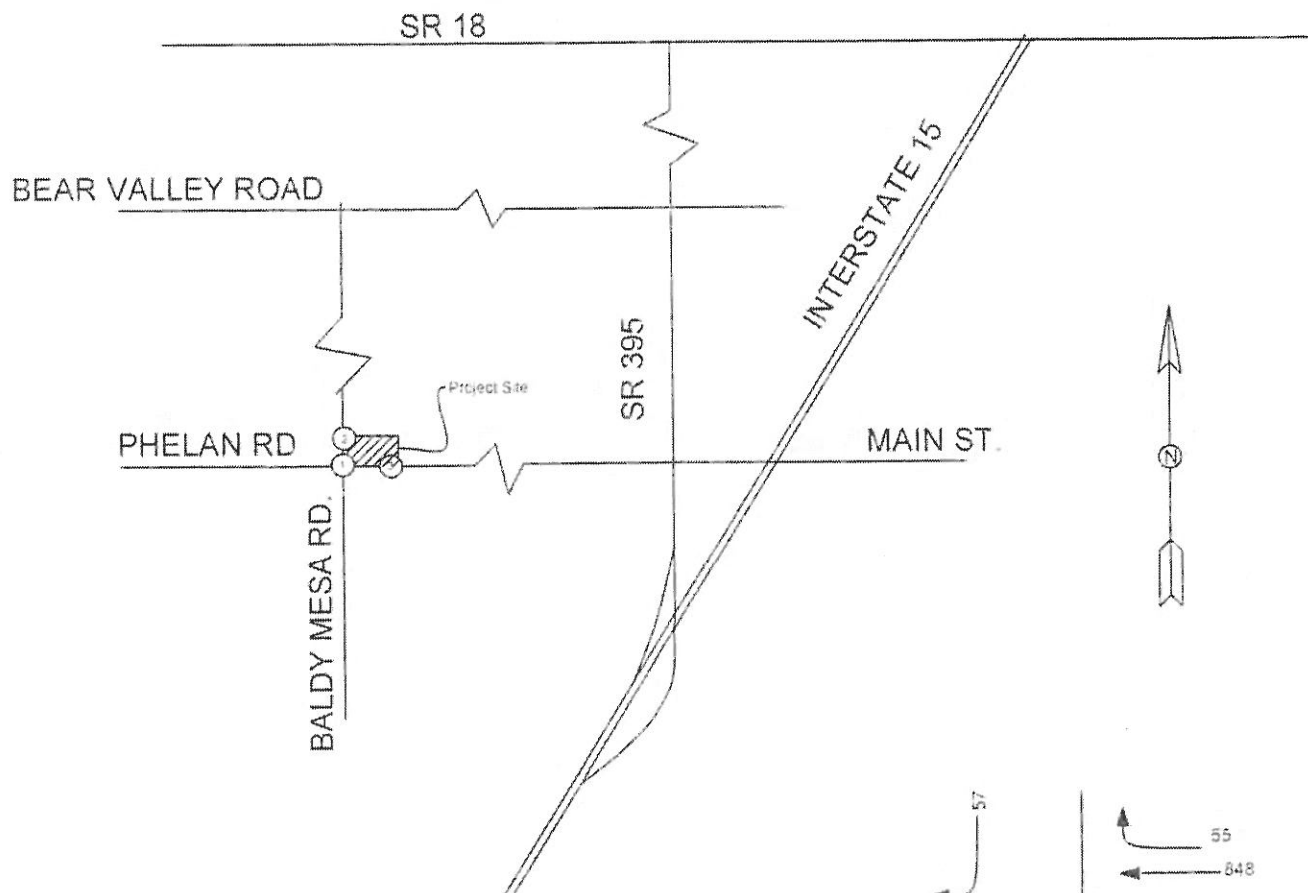


EXHIBIT 10B: PM FORECAST YEAR 2035 TRAFFIC VOLS W/PROJ. TRAF.

APPENDIX A
OPERATIONAL ANALYSIS WORKSHEETS

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2010 Traffic with Existing Lane Geometrics

BALDY MESA RD & PHELAN ROAD

ALBERT WILSON & ASSO.

AM Peak Hour

Input	Eastbound		Westbound		Northbound		Southbound		Parameter Values (using default set 'SANBAG (Existing)')		
	L	*T*	L	T	R	L	T	R	Duration of Peak Period (min)	Other	Default
Movement Times									Lost Time (sec)		15
Movement 1 - 12 secs	X		X						Min. Time (Left Turns, sec)		2
Movement 2 - 43 secs		X		X					Min/Ped Time (Thru Lanes, sec)		10
Movement 3 - 13 secs					X			X	Sat Flow (1 Left lane, vphg)	1700	1800
Movement 4 - 22 secs						X		X	Sat Flow (2 Left lanes, vphg)	3200	3500
Movement 5 - 0 secs									Sat Flow (1 Thru lane, vphg)	1800	1900
Movement 6 - 0 secs									Sat Flow (1 Right lane, vphg)		1800
# of Lanes (# S, P)	1	2	1	2	1	1	1	1	Vehicle Length (feet)		20
Unadjusted Volume	45	425	10	170	10	15	10	25			
Peak Hour Factor (PHF)	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87			
Growth Factor (%)											
Project Trip Volume (vph)											
Sat. Flow Override (vph)											
Min. Time or Ped. Time	10	20	10	20	20	10	20	20			
Permissive Veh/Cycle											
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00			
Output	***		***		***		***		Summary		
Pk. Hr. Vol (vph)	52	489	11	195	11	17	17	29	Whole Intersection		
Saturation Flow (vph)	1700	3600	Shrd	3600	Shrd	1700	1800	1800	Weighted Avg Delay (sec) = 21		
X or V/C	0.28	0.30	-	0.06	0.13	0.08	0.04	0.07	Level of Service - LOS = C+		
Effective green (sec)	10	41	-	10	41	11	20	20	Critical Movements		
Split Time (sec)	12	43	-	12	43	13	22	22	Weighted Avg Delay (sec) = 22		
Min. Time or Ped. Time (sec)	10	20	-	10	20	10	20	20	Level of Service - LOS = C+		
Delay - 15 min pk (sec/veh)	40	16	-	36	14	36	28	28	Intersection Capacity Utilization - ICU = 0.26		
Level of Service (LOS)	D	B	-	D+	B	D+	C	C	Predetermined Cycle Length is 90 sec		
Average 'O' (veh/in)	1	3	-	1	1	1	1	1	Min./Ped. Times Satisfied		
Design 'O' - ft/in	40	100	-	40	40	40	40	40			
Do Vehicles Clear?	YES	YES	-	YES	YES	YES	YES	YES			

WEBSTER
Webster Based Signal Timing Evaluation Routine
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay
2014 Project Opening Day Conditions w/o Proj. Traffic

BALDY MESA RD & PHELAN ROAD
ALBERT WILSON & ASSO.
AM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Other	Default	
	L	T	R	L*	T	R	L	T	R	L*	T	R			
Movement Times															
Movement 1 - 12 secs	X			X											15
Movement 2 - 38 secs		X			X										2
Movement 3 - 20 secs			X			X									10
Movement 4 - 20 secs							X					X			20
Movement 5 - 0 secs															1800
Movement 6 - 0 secs															3500
# of Lanes (# S, P)	1	1	1	1	2	S	1	1	1	1	1	1			1900
Unadjusted Volume	49	465	16	54	532	97	21	21	43	95	16	27			1800
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			20
Growth Factor (%)															
Project Trip Volume (vph)															
Sat. Flow Override (vph)															
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20			
Permissive Veh/Cycle															
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00			

Parameter Values (using default set 'SANBAG (Future)')												
Summary												
Whole Intersection												
Weighted Avg Delay (sec) = 25												
Level of Service - LOS = C												
Critical Movements												
Weighted Avg Delay (sec) = 28												
Level of Service - LOS = C												
Intersection Capacity Utilization - ICU = 0.40												
Predetermined Cycle Length is 90 sec												
Min./Pcd. Times Satisfied												
Analysis Based on User Selected Splits												

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2014 Project Opening Day Conditions w Proj. Traffic

BALDY MESA RD & PHELAN ROAD

ALBERT WILSON & ASSO.

AM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG_Future')		
	L	T	R	L*	T	R	L	T	R*	L*	T	R	Duration of Peak Period (min)	Other	Default
Movement Times															
Movement 1 - 13 secs	X			X									15		15
Movement 2 - 35 secs		X			X								2		2
Movement 3 - 22 secs			X			X							10		10
Movement 4 - 20 secs							X		X			X	20		20
Movement 5 - 0 secs													1800		1800
Movement 6 - 0 secs													3500	3400	3500
# of Lanes (L, S, P)	1	2	S	1	2	S	1	1	1	1	1	1	1900	1900	1900
Unadjusted Volume	49	465	16	54	214	16	21	21	43	95	16	27			
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Growth Factor (%)															
Project Trip Volume (vph)		20		3	17	10	4			14	3	10			
Sat. Flow Override (vph)			Shrd			Shrd									
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20			
Permissive Veh/Cycle															
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00			
Output	***												Summary		
Pk. Hr. Vol. (vph)	52	509	17	60	242	27	22	26	45	114	20	36	Whole Intersection		
Saturation Flow (vph)	1800	3800	Shrd	1800	3800	Shrd	1600	1900	1900	1800	1900	1900	Weighted Avg Delay (sec) = 25		
X or V/C	0.24	0.38	-	0.27	0.19	-	0.06	0.07	0.12	0.29	0.05	0.10	Level of Service - LOS = C+		
Effective green (sec)	11	33	-	11	33	-	20	18	18	20	18	18	Critical Movements		
Split Time (sec)	13	35	-	13	35	-	22	20	20	22	20	20	Weighted Avg Delay (sec) = 25		
Min. Time or Ped. Time (sec)	10	20	-	10	20	-	10	20	20	10	20	20	Level of Service - LOS = C		
Delay - 15 min pk (sec/veh)	38	22	-	39	20	-	28	30	30	31	29	30	Intersection Capacity Utilization - ICU = 0.28		
Level of Service (LOS)	D+	C+	-	D+	B	-	C	C	C-	C-	C	C	Predicted Cycle Length is 90 sec		
Average 'Q' (veh/in)	1	4	-	1	2	-	1	1	1	2	1	1	Min./Ped. Times Satisfied		
Design 'Q' ft/in	40	120	-	40	60	-	40	40	40	60	40	40	Analysis Based on User Selected Splits		
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES			

WEBSTER

Webster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2035 Background Traffic w/o Project Traffic

BALDY MESA RD & PHELAN ROAD

ALBERT WILSON & ASSO.

AM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANEAS (Future)')	
	L	*T*	R	L	T	R	L	T	*R*	*L*	T	R	Other	Default
Movement Times														
Movement 1: 12 secs	X			X									Duration of Peak Period (min)	15
Movement 2: 48 secs		X			X								Lost Time (sec)	2
Movement 3: 10 secs			X			X							Min. Time (Left Turns, sec)	10
Movement 4: 20 secs											X	X	Min/Ped Time (Thru Lanes, sec)	20
Movement 5: 0 secs													Sat Flow (1 Left lane, vphg)	1800
Movement 6: 0 secs													Sat Flow (2 Left lanes, vphg)	3500
# of Lanes (#, S, P)	1	2	S	1	2	S	1	1	1	1	1	1	Sat Flow (1 Thru lane, vphg)	1900
Unadjusted Volume	45	425	10	10	170	10	15	15	40	65	10	25	Sat Flow (1 Right lane, vphg)	1800
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	Vehicle Length (feet)	20
Growth Factor (%)	64	64	64	64	64	64	64	64	64	64	64	64		
Project Trip Volume (vph)														
Sat. Flow Override (vph)			Shrd											
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20		
Permissive Veh/Cycle														
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00		

Output	Eastbound			Westbound			Northbound			Southbound			Summary	
	L	*T*	R	L	T	R	L	T	*R*	*L*	T	R	Whole Intersection	Critical Movements
Pk. Hr Vol (vph)	78	734	17	17	293	17	26	26	69	112	17	43		
Saturation Flow (vph)	1800	3800	Shrd	1800	3800	Shrd	1800	1900	1900	1800	1900	1900	Weighted Avg Delay (sec) =	21
X or V/C	0.39	0.39	-	0.09	0.16	-	0.16	0.07	0.18	0.70	0.04	0.11	Level of Service - LOS =	C+
Effective green (sec)	10	46	-	10	46	-	8	18	18	8	18	18		
Split Time (sec)	12	48	-	12	48	-	10	20	20	10	20	20	Weighted Avg Delay (sec) =	23
Min. Time or Ped. Time (sec)	10	20	-	10	20	-	10	20	20	10	20	20	Level of Service - LOS =	C+
Delay - 15 min pk (sec/veh)	43	14	-	37	12	-	40	30	31	62	29	30	Intersection Capacity Utilization - ICU =	0.37
Level of Service (LOS)	D	B	-	D+	B	-	D	C	C-	E	C	C-		
Average 'Q' (veh/m)	2	5	-	1	2	-	1	1	1	3	1	1	Predetermined Cycle Length is 90 sec	
Design 'Q' - ft/m	60	160	-	40	60	-	40	40	40	100	40	40	Min./Ped. Times Satisfied	
Do Vehicles Clear?	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES	Analysis Based on User Selected Splits	

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2035 Background Traffic w/o Project Traffic

BALDY MESA RD & PHELAN ROAD

ALBERT WILSON & ASSO.

AM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG (Future))			
	L	*T*	R	L	T	R	L	T	*R*	*L*	T	R	Duration of Peak Period (min) Lost Time (sec)	Other	Default	
Movement Times																
Movement 1: 16 secs	X			X											15	
Movement 2: 30 secs		X			X										2	
Movement 3: 24 secs			X			X									10	
Movement 4: 20 secs							X		X						20	
Movement 5: 0 secs															1800	
Movement 6: 0 secs															3500	
# of Lanes (# S, P)	1	2	S	1	2	S	1	1	1	1	1	1		3400	1900	
Unadjusted Volume	45	425	10	10	170	10	15	15	40	65	10	25		1900	1800	
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		1900	1800	
Growth Factor (%)	64	64	64	64	64	64	64	64	64	64	64	64		1900	1800	
Project Trip Volume (vph)		20		3	17	10		4		14	3	10			20	
Sat. Flow Override (vph)			Shrd		3600	Shrd		1800			1800					
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20				
Permissive Veh/Cycle																
Progression Adj. Factor (PAF)	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00				

Output	***			***			***			***			Summary		
	78	754	17	20	310	27	26	30	69	126	53	20	53	Whole Intersection	Weighted Avg Delay (sec) = 29 Level of Service - LOS = C
Pk. Hr. Vol. (vph)	1800	3800	Shrd	1800	3600	Shrd	1800	1800	1900	1800	1900	1800	1900		
Saturation Flow (vph) X or V/C	0.28	0.65		0.07	0.30		0.06	0.08	0.18	0.29	0.14	0.06	0.14		
Effective green (sec)	14	28		14	28		22	18	18	22	16	18	16		
Split Time (sec)	16	30		16	30		24	20	20	24	20	20	20		
Min. Time or Ped. Time (sec)	10	20		10	20		10	20	20	10	20	20	20		
Delay - 15 min pk (sec/veh)	36	30		33	24		26	30	31	29	30	29	30		
Level of Service (LOS)	D+	C		C-	C+		C	C	C-	C	C-	C	C-		
Average 'Q' (veh/ln)	2	7		1	3		1	1	1	2	1	1	1		
Design 'Q' - ft/ln	60	220		40	100		40	40	40	60	40	40	40		
Do Vehicles Clear?	YES	YES		YES	YES		YES	YES	YES	YES	YES	YES	YES		
Critical Movements Weighted Avg Delay (sec) = 30 Level of Service - LOS = C- Intersection Capacity Utilization - ICU = 0.39															
Predetermined Cycle Length is 90 sec Min./Ped. Times Satisfied Analysis Based on User Selected Splits															

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2012 Projected Traffic with Existing Lane Geometrics

PHELAN RD @ BALDY MESA RD

ALBERT WILSON & ASSOCS.

PM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG (Existing)')	
	L	T	R	L	T	R	L	T	R	*L*	T	*R*	Other	Default
Movement Times														
Movement 1 17 secs	X			X										15
Movement 2 40 secs		X			X									2
Movement 3 13 secs			X			X								10
Movement 4 20 secs							X				X			20
Movement 5 0 secs												X		1800
Movement 6 0 secs														3500
# of Lanes (#, S, P)	1	1	1	1	2	S	1	1	1	1	1	1	1700	1800
Unadjusted Volume	55	280	20	50	465	85	25	15	20	45	15	130	3200	1500
Peak Hour Factor (PHF)	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.97	0.87	0.87	0.87	0.87	1800	1800
Growth Factor (%)														20
Project Trip Volume (vph)														
Sat. Flow Override (vph)														
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20		
Permissive Veh/Cycle														
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00		
*** Summary ***														
Pk. Hr. Vol (vph)	63	322	23	57	534	98	29	17	23	52	17	149		
Saturation Flow (vph)	1700	1800	1800	1700	3600	Shrd	1700	1800	1800	1700	1800	1800		
X or V/C	0.22	0.42	0.03	0.20	0.42	-	0.14	0.05	0.06	0.25	0.05	0.41		Weighted Avg Delay (sec) = 24
Effective green (sec)	15	38	38	15	38	-	11	18	18	11	18	18		Level of Service - LOS = C+
Split Time (sec)	17	40	40	17	40	-	13	20	20	13	20	20		
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	10	20	20		Weighted Avg Delay (sec) = 27
Delay - 15 min pk (sec/veh)	34	20	15	34	19	-	37	29	30	39	29	35		Level of Service - LOS = C
Level of Service (LOS)	C-	C+	B	C-	B	-	D+	C	C	D+	C	C-		Intersection Capacity Utilization - ICU = 0.36
Average 'Q' (veh/m)	1	5	1	1	5	-	1	1	1	1	1	1		
Design 'Q' (veh/m)	40	160	40	40	160	-	40	40	40	40	40	100		Predetermined Cycle Length is 90 sec
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES		Min./Ped. Times Satisfied
														Analysis Based on User Selected Splits

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2014 Project Opening Year Traffic w/o Proj Traffic

PHELAN RD @ BALDY MESA RD

ALBERT WILSON & ASSOCS.

PM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG_Future')		
	L	T	R	L	*T*	R	L	T	R	*L*	T	*R*	Duration of Peak Period (min)	Other	Default
Movement Times													Lost Time (sec)		15
Movement 1 - 10 secs	X				X								Min Time (Left Turns, sec)		2
Movement 2 - 40 secs		X				X				X		X	Min/Ped Time (Thru Lanes, sec)		10
Movement 3 - 20 secs			X				X						Min/Ped Time (Thru Lanes, sec)		20
Movement 4 - 20 secs				X				X					Sat Flow (1 Left lane, vphg)	2400	1800
Movement 5 - 0 secs													Sat Flow (2 Left lanes, vphg)		3500
Movement 6 - 0 secs													Sat Flow (1 Thru lane, vphg)		1900
# of Lanes (#, S, P)	1	1	1	1	2	S	1	1	1	1	1	1	Sat Flow (1 Right lane, vphg)	1900	1800
Unadjusted Volume	60	308	27	32	533	97	32	21	22	135	21	141	Vehicle Length (feet)		20
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Growth Factor (%)															
Project Trip Volume (vph)						Shrd									
Sat. Flow Override (vph)															
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20			
Permissive Veh/Cycle															
Progression Adj. Factor (PAF)	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00			
Output	***												Summary		
Pk. Hr Vol (vph)	63	324	28	57	561	102	34	22	23	142	22	148	Whole Intersection	Weighted Avg Delay (sec) =	25
Saturation Flow (vph)	1800	1900	1900	1800	3800	Shrd	1800	1900	1900	1800	1900	1900		Level of Service - LOS =	C+
X or V/C	0.39	0.40	0.03	0.35	0.41	-	0.69	0.06	0.06	0.39	0.06	0.39	Critical Movements	Weighted Avg Delay (sec) =	25
Effective green (sec)	8	38	38	8	38	-	18	18	18	18	18	18		Level of Service - LOS =	C
Split Time (sec)	10	40	40	10	40	-	20	20	20	20	20	20		Intersection Capacity Utilization - ICU =	0.40
Min. Time or Ped. Time (sec)	10	20	20	10	20	-	10	20	20	10	20	20	Predetermined Cycle Length is 90 sec		
Delay - 15 min pk (sec/veh)	46	20	15	45	19	-	30	29	29	34	29	34	Min./Pod. Times Satisfied		
Level of Service (LOS)	D	B	B	D	B	-	C	C	C	C-	C	C-	Analysis Based on User Selected Splits		
Average 'Q' (veh/ftm)	1	5	1	1	5	-	1	1	1	3	1	3			
Design 'Q' - ft/m	40	160	40	40	160	-	40	40	40	100	40	100			
Do Vehicles Clear?	YES	YES	YES	YES	YES	-	YES	YES	YES	YES	YES	YES			

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2014 Project Opening Year Traffic w Proj Traffic

PHELAN RD @ BALDY MESA RD

ALBERT WILSON & ASSOCS.

PM Peak Hour

Input	Eastbound		Westbound		Northbound		Southbound		Parameter Values (using default set 'SANBAG (Future)')		
	L	T	R	L	T	R	L	T	*R*	Other	Default
Movement Times											
Movement 1: 40 secs	X										15
Movement 2: 40 secs		X									2
Movement 3: 20 secs			X								10
Movement 4: 20 secs				X							20
Movement 5: 0 secs											1800
Movement 6: 0 secs											3500
# of Lanes (#, S, P)	1	2	S	1	2	S	1	1	1		1900
Unadjusted Volume	60	308	27	54	533	97	32	21	22	135	21
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (%)				4	21	12				16	4
Project Trip Volume (vph)					3600	Shrd					1800
Sat Flow Override (vph)							10	20	20	10	20
Min Time or Ped Time	10	20	20	10	20	20	10	20	20	10	20
Permissive Veh/Cycle											
Progression Adj. Factor (PAF)	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00

Output	Eastbound		Westbound		Northbound		Southbound		Summary	
	***	***	***	***	***	***	***	***	***	***
Pk Hr Vol (vph)	63	344	26	34	26	23	26	160	Weighted Avg Delay (sec) = 25	
Saturation Flow (vph)	1800	3800	Shrd	1800	1800	1900	1800	1900	Level of Service - LOS = C+	
X or V/C	0.39	0.23		0.09	0.07	0.06	0.44	0.07	Critical Movements	
Effective green (sec)	8	38		18	18	18	18	18	Weighted Avg Delay (sec) = 26	
Split Time (sec)	10	40		20	20	20	20	20	Level of Service - LOS = C	
Min Time or Ped Time (sec)	10	20		10	20	20	10	20	Intersection Capacity Utilization - ICU = 0.44	
Delay - 15 min pk (sec/veh)	46	17		30	30	29	35	30	Predetermined Cycle Length is 90 sec	
Level of Service (LOS)	D	B		C	C	C	D+	C	Min./Ped. Times Satisfied	
Average Q' (veh/h)	1	3		1	1	1	3	1	Analysis Based on User Selected Splits	
Design Q' - ft/h	40	100		40	40	40	100	40		
Do Vehicles Clear?	YES	YES		YES	YES	YES	YES	YES		

WEBSTER

Webster Based Signal Timing Evaluation Routine

For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2035 Future Traffic with Existing Lane Geometrics

PHELAN RD @ BALDY MESA RD

ALBERT WILSON & ASSOCS.

PM Peak Hour

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG (Future)')	
	L	T	R	L	*T*	R	L	T	R	*L*	T	*R*	Other	Default
Movement Times														
Movement 1: 11 secs	X													15
Movement 2: 46 secs		X			X									2
Movement 3: 10 secs			X			X				X				10
Movement 4: 23 secs				X			X				X			20
Movement 5: 0 secs														1800
Movement 6: 0 secs														3500
# of Lanes (#, S, P)	1	2	S	1	2	S	1	1	1	1	1	1	3400	1900
Unadjusted Volume	55	280	20	50	465	85	25	15	20	45	15	130		
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Growth Factor (%)	64	64	64	64	64	64	64	64	64	64	64	64		
Project Trip Volume (vph)			Shrd			Shrd								
Sat. Flow Override (vph)	10	20	20	10	20	20	10	20	20	10	20	20		
Min. Time or Ped. Time														
Permissive Veh./Cycle														
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00		

Output	95	483	35	86	803	147	43	26	35	78	26	224		
Pk. Hr. Vol (vph)	1800	3800	Shrd	1800	3800	Shrd	1800	1900	1900	1800	1900	1900		
Saturation Flow (vph)	0.53	0.28	-	0.48	0.51	-	0.27	0.06	0.05	0.49	0.06	0.51	Weighted Avg Delay (sec) = 23	
X or V/C	9	44	-	9	44	-	8	21	21	8	21	21	Level of Service - LOS = C+	
Effective green (sec)	11	45	-	11	46	-	10	23	23	10	23	23	Weighted Avg Delay (sec) = 24	
Split Time (sec)	10	20	-	10	20	-	10	20	20	10	20	20	Level of Service - LOS = C+	
Min. Time or Ped. Time (sec)	49	14	-	47	17	-	42	27	27	49	27	34	Intersection Capacity Utilization - ICU = 0.51	
Delay - 15 min pk (sec/veh)	D	B	-	D	B	-	D	C	C	D	C	C	Predetermined Cycle Length is 90 sec	
Level of Service (LOS)	2	3	-	2	6	-	1	1	1	2	1	4	Min./Ped. Times Satisfied	
Average Q' (veh/min)	60	100	-	60	180	-	40	40	40	60	40	120	Analysis Based on User Selected Splits	
Design Q' (fl/h)	YES	YES	-	YES	YES	-	YES	YES	YES	YES	YES	YES		
Do Vehicles Clear?														

Summary														
													Whole Intersection	
													Critical Movements	
													Predetermined Cycle Length is 90 sec	
													Min./Ped. Times Satisfied	
													Analysis Based on User Selected Splits	

WEBSTER

Webster Based Signal Timing Evaluation Routine
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

2035 Future Traffic with Existing Lane Geometrics w proj traffic

PM Peak Hour

ALBERT WILSON & ASSOCS.

PHELAN RD @ BALDY MESA RD

Input	Eastbound			Westbound			Northbound			Southbound			Parameter Values (using default set 'SANBAG (Future)')		
	L	T	R	L	*T*	R	L	T	R	*L*	T	*R*	Duration of Peak Period (min)	Other	Default
Movement Times													Duration of Peak Period (min)		15
Movement 1: 11 secs	X												Lost Time (sec)		2
Movement 2: 45 secs		X			X					X			Min. Time (Left Turn, sec)		10
Movement 3: 11 secs			X			X					X		Min/Ped Time (Thru Lanes, sec)		20
Movement 4: 23 secs				X			X					X	Sat Flow (1 Left lane, vphg)	3400	1900
Movement 5: 0 secs													Sat Flow (2 Left lanes, vphg)		3500
Movement 6: 0 secs													Sat Flow (1 Thru lane, vphg)		1900
# of Lanes (# S P)	1	2	S	1	2	S	1	1	1	1	1	1	Sat Flow (1 Right lane, vphg)	1900	1800
Unadjusted Volume	55	280	20	50	465	85	25	15	20	45	15	130	Vehicle Length (feet)		20
Peak Hour Factor (PHF)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Growth Factor (%)	64	64	64	64	64	64	64	64	64	64	64	64			
Project Trip Volume (vph)		20		4	21	12		4		16	4	12			
Sat. Flow Override (vph)			Shrd			Shrd									
Min. Time or Ped. Time	10	20	20	10	20	20	10	20	20	10	20	20			
Permissive Veh/Cycle															
Progression Adj. Factor (PAF)	1.00	1.00	-	1.00	1.00	-	1.00	1.00	1.00	1.00	1.00	1.00			

Output	***			***			***			***			Summary		
	95	1800	0.53	90	1800	0.50	43	1800	0.24	94	1800	0.52	Whole Intersection	Weighted Avg Delay (sec) =	Level of Service - LOS =
Pk Hr Vol (vph)	503	3800	0.30	35	3800	0.30	35	3800	0.30	35	3800	0.30	236	24	C+
Saturation Flow (vph)	3800	3800	0.30	Shrd	3800	0.30	Shrd	3800	0.30	Shrd	3800	0.30	1900	25	C+
X or V/C	0.30	0.30	0.30	-	0.50	0.50	-	0.50	0.50	-	0.50	0.50	0.53	Level of Service - LOS =	C+
Effective green (sec)	9	43	43	9	43	43	9	43	43	9	43	43	21	Intersection Capacity Utilization - ICU =	0.54
Split Time (sec)	11	45	45	11	45	45	11	45	45	11	45	45	23	Weighted Avg Delay (sec) =	25
Min. Time or Ped. Time (sec)	10	20	20	10	20	20	10	20	20	10	20	20	20	Level of Service - LOS =	C+
Delay - 15 min pk (sec/veh)	49	15	15	48	18	18	40	27	27	49	27	35	35	Intersection Capacity Utilization - ICU =	0.54
Level of Service (LOS)	D	B	B	D	B	B	D	C	C	D	C	C-	C-	Predetermined Cycle Length is	90 sec
Average 'Q' (veh/mn)	2	4	4	2	6	6	1	1	1	2	1	5	5	Min./Ped. Times Satisfied	
Design 'Q' (veh/mn)	60	120	120	60	180	180	40	40	40	60	40	160	160	Analysis Based on User Selected Splits	
Do Vehicles Clear?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		

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Chidi Onumonu
 Albert Wilson & Associates
 10987 Deer Canyon Drive
 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
 E-Mail: onumenuc@aol.com

Fax: 909-989-1576

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: CHIDI ONUMONU
 Agency/Co.: ALBERT WILSON & ASSOCIATES
 Date Performed: 9/28/2012
 Analysis Time Period: AM PEAK
 Intersection: PROJ DRWY @ PHELAN RD
 Jurisdiction: COUNTY OF SAN BERNARDINO
 Units: U. S. Customary
 Analysis Year: 2014 OPENING YEAR
 Project ID: DAVID EUM PROJ
 East/West Street: PHELAN ROAD
 North/South Street: PROJ DRWY
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	Vehicle Volumes and Adjustments					
	1 L	2 T	3 R	4 L	5 T	6 R
Volume	30	635			219	54
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Peak-15 Minute Volume	8	167			58	14
Hourly Flow Rate, HFR	31	668			230	56
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume					0	52
Peak Hour Factor, PHF					0.95	0.95
Peak-15 Minute Volume					0	14
Hourly Flow Rate, HFR					0	54
Percent Heavy Vehicles					0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes					1	0
Configuration						TR

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

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 Albert Wilson & Associates
 10987 Deer Canyon Drive
 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
 E-Mail: onumonuc@aol.com

Fax: 909-989-1576

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 Units: U. S. Customary
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 Project ID: DAVID EUM PROJ
 East/West Street: PHELAN ROAD
 North/South Street: PROJ DRWY
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	31	470			664	55
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Peak-15 Minute Volume	8	124			175	14
Hourly Flow Rate, HFR	32	494			698	57
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	
Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume					0	57
Peak Hour Factor, PHF					0.95	0.95
Peak-15 Minute Volume					0	15
Hourly Flow Rate, HFR					0	60
Percent Heavy Vehicles					0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes					1	0
Configuration						TR

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

TWO-WAY STOP CONTROL SUMMARY

Analyst: CHIDI ONUMONU
 Agency/Co.: ALBERT WILSON & ASSOCIATES
 Date Performed: 9/28/2012
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 Intersection: PROJ DRWY @ BALDY MESA RD
 Jurisdiction: COUNTY OF SAN BERNARDINO
 Units: U. S. Customary
 Analysis Year: 2014 OPENING YEAR
 Project ID: DAVID EUM PROJ
 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		82	18	18	165			
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95			
Hourly Flow Rate, HFR		86	18	18	173			
Percent Heavy Vehicles		--	--	0	--	--		
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound				Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R	
Volume		46	0	17				
Peak Hour Factor, PHF		0.95	0.95	0.95				
Hourly Flow Rate, HFR		48	0	17				
Percent Heavy Vehicles		0	0	0				
Percent Grade (%)			0			0		
Flared Approach: Exists?/Storage				No	/		/	
Lanes		0	1	0				
Configuration			LTR					

Delay, Queue Length, and Level of Service

Approach Movement	NB	SB	Westbound			Eastbound		
			4	7	8	9	10	11
Lane Config	1	LT		LTR				
v (vph)		18		65				
C(m) (vph)		1500		741				
v/c		0.01		0.09				
95% queue length		0.04		0.29				
Control Delay		7.4		10.3				
LOS		A		B				
Approach Delay				10.3				
Approach LOS				B				

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Chidi Onumonu
 Albert Wilson & Associates
 10987 Deer Canyon Drive
 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
 E-Mail: onumonuc@aol.com

Fax: 909-989-1576

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

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 Project ID: DAVID EUM PROJ
 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS
 Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		82	18	18	165	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		22	5	5	43	
Hourly Flow Rate, HFR		86	18	18	173	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	46	0	17			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Peak-15 Minute Volume	12	0	4			
Hourly Flow Rate, HFR	48	0	17			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

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TWO-WAY STOP CONTROL SUMMARY

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 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		176	18	18	18	329		
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR		185	18	18	18	346		
Percent Heavy Vehicles		--	--	0	--	--		
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		50	0	19			
Peak Hour Factor, PHF		0.95	0.95	0.95			
Hourly Flow Rate, HFR		52	0	20			
Percent Heavy Vehicles		0	0	0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0	1	0			
Configuration			LTR				

Delay, Queue Length, and Level of Service

Approach Movement	Delay, Queue Length, and Level of Service								
	NE 1	SB 4	Westbound 7	8	9	Eastbound 10	11	12	
Lane Config		LT		LTR					
v (vph)		18		72					
C(m) (vph)		1381		543					
v/c		0.01		0.13					
95% queue length		0.04		0.46					
Control Delay		7.6		12.6					
LOS		A		B					
Approach Delay				12.6					
Approach LOS				B					

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Chidi Onumonu
 Albert Wilson & Associates
 10987 Deer Canyon Drive
 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
 E-Mail: onumonuc@aol.com

Fax: 909-989-1576

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

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 Project ID: DAVID EUM PROJ
 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS
 Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		176	18	18	329	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		46	5	5	87	
Hourly Flow Rate, HFR		185	18	18	346	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0		0	1
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	50	0	19			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Peak-15 Minute Volume	13	0	5			
Hourly Flow Rate, HFR	52	0	20			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

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Chidi Onumonu
 Albert Wilson & Associates
 10987 Deer Canyon Drive
 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
 E-Mail: onumonuc@aol.com

Fax: 909-989-1576

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 Analysis Time Period: AM PEAK
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 Jurisdiction: COUNTY OF SAN BERNARDINO
 Units: U. S. Customary
 Analysis Year: 2035 FORECAST
 Project ID: DAVID EUM PROJ
 East/West Street: PHELAN ROAD
 North/South Street: PROJ DRWY
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	30	1036			569	54
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Peak-15 Minute Volume	8	273			150	14
Hourly Flow Rate, HFR	31	1090			598	56
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume					0	57
Peak Hour Factor, PHF					0.95	0.95
Peak-15 Minute Volume					0	15
Hourly Flow Rate, HFR					0	60
Percent Heavy Vehicles					0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes					1	0
Configuration						TR

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

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Chidi Onumonu
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 Rancho Cucamonga
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 East/West Street: PHELAN ROAD
 North/South Street: PROJ DRWY
 Intersection Orientation: EW
 Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	31	470			664	55
Peak-Hour Factor, PHF	0.95	0.95			0.95	0.95
Peak-15 Minute Volume	8	124			175	14
Hourly Flow Rate, HFR	32	494			698	57
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume					0	57
Peak Hour Factor, PHF					0.95	0.95
Peak-15 Minute Volume					0	15
Hourly Flow Rate, HFR					0	60
Percent Heavy Vehicles					0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes					1	0
Configuration						TR

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

TWO-WAY STOP CONTROL SUMMARY

Analyst: CHIDI ONUMONU
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 Analysis Year: 2035 FORECAST YEAR
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 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound			
		1 L	2 T	3 R	4 L	5 T	6 R		
Volume		176	18	18	329				
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95				
Hourly Flow Rate, HFR		185	18	18	346				
Percent Heavy Vehicles		--	--	0	--	--			
Median Type/Storage		Undivided				/			
RT Channelized?									
Lanes		1	0		0	1			
Configuration			TR			LT			
Upstream Signal?		No				No			

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		50	0	19			
Peak Hour Factor, PHF		0.95	0.95	0.95			
Hourly Flow Rate, HFR		52	0	20			
Percent Heavy Vehicles		0	0	0			
Percent Grade (%)						0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0	1	0			
Configuration			LTR				

Delay, Queue Length, and Level of Service

Approach Movement	NB 1	SB 4	Westbound			Eastbound		
			7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		18		72				
C(m) (vph)		1381		543				
v/c		0.01		0.13				
95% queue length		0.04		0.46				
Control Delay		7.6		12.6				
LOS		A		B				
Approach Delay				12.6				
Approach LOS				B				

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 Rancho Cucamonga
 Ca. 91737
 Phone: 909-483-4876
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Fax: 909-989-1576

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 East/West Street: DRWY
 North/South Street: BALDY MESA RD
 Intersection Orientation: NS
 Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		176	18	18	329	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		46	5	5	87	
Hourly Flow Rate, HFR		185	18	18	346	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	
Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	50	0	19			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Peak-15 Minute Volume	13	0	5			
Hourly Flow Rate, HFR	52	0	20			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

TWO-WAY STOP CONTROL SUMMARY

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Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound				Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		176	18	18	329			
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95			
Hourly Flow Rate, HFR		185	18	18	346			
Percent Heavy Vehicles		--	--	0	--	--		
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No				No		

Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		50	0	19			
Peak Hour Factor, PHF		0.95	0.95	0.95			
Hourly Flow Rate, HFR		52	0	20			
Percent Heavy Vehicles		0	0	0			
Percent Grade (%)						0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0	1	0			
Configuration			LTR				

Delay, Queue Length, and Level of Service

Approach Movement	NB 1	SB 4	Westbound			Eastbound		
			7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		18		72				
C(m) (vph)		1381		543				
v/c		0.01		0.13				
95% queue length		0.04		0.46				
Control Delay		7.6		12.6				
LOS		A		B				
Approach Delay				12.6				
Approach LOS				B				

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 Rancho Cucamonga
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 Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		176	18	18	329	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		46	5	5	87	
Hourly Flow Rate, HFR		185	18	18	346	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street Movements	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	50	0	19			
Peak Hour Factor, PHF	0.95	0.95	0.95			
Peak-15 Minute Volume	13	0	5			
Hourly Flow Rate, HFR	52	0	20			
Percent Heavy Vehicles	0	0	0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

APPENDIX B

2101 TRAFFIC COUNT DATA

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: BALDY MESA
 EAST-WEST STREET: PHELAN RD
 JURISDICTION: BALDY MESA

DATE: 07-13-10

PEAK HOUR: 07:00AM

NORTH LEG

TOTAL: 96

23	9	64
7	2	11
13	2	19
1	3	18
2	2	16

Total

1st

2nd

3rd

4th

Rt 25
 Thru 10
 Lt 65

EAST LEG TOTAL: 191

3	3	2	2	10
36	34	54	47	171
2	3	3	2	10

1st 2nd 3rd 4th Total

Total 1st 2nd 3rd 4th

46	13	17	9	7
423	72	106	126	119
8	4	2	1	1

WEST LEG TOTAL: 477

Lt 45
 Thru 425
 Rt 10

Lt 15
 Thru 15
 Rt 40

1st	4	2	8
2nd	1	1	11
3rd	6	6	12
4th	6	7	10
Total	17	16	41

SOUTH LEG

PEAK HOUR FACTORS

NORTH LEG = 0.71

SOUTH LEG = 0.77

EAST LEG = 0.81

WEST LEG = 0.88

ALL LEGS = 0.87

TOTAL: 74

HOURLY TOTAL: 838

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: BALDY MESA
 EAST-WEST STREET: PHELAN RD
 JURISDICTION: BALDY MESA

DATE: 07-13-10

PEAK HOUR: 05:00PM

NORTH LEG

TOTAL: 188

128	16	44
29	1	10
26	4	7
25	2	9
48	9	18

Total
1st
2nd
3rd
4th

Rt 130
Thru 15
Lt 45

EAST LEG TOTAL: 599

20	12	21	33	86
97	98	131	139	465
7	10	16	15	48

1st 2nd 3rd 4th Total

Total 1st 2nd 3rd 4th

55	14	16	13	12
278	53	68	76	81
22	4	7	9	2

WEST LEG TOTAL: 355

Lt 50
Thru 280
Rt 20

PEAK HOUR FACTORS

NORTH LEG = 0.63
 SOUTH LEG = 0.67
 EAST LEG = 0.80
 WEST LEG = 0.91
 ALL LEGS = 0.81

25
Lt Thru Rt

1st	3	2	1
2nd	5	4	5
3rd	7	5	9
4th	9	3	3
Total	24	14	18

TOTAL: 56

SOUTH LEG

HOURLY TOTAL: 1,198

Prepared by NEWPORT TRAFFIC STUDIES

APPENDIX C
PENDING PROJECTS

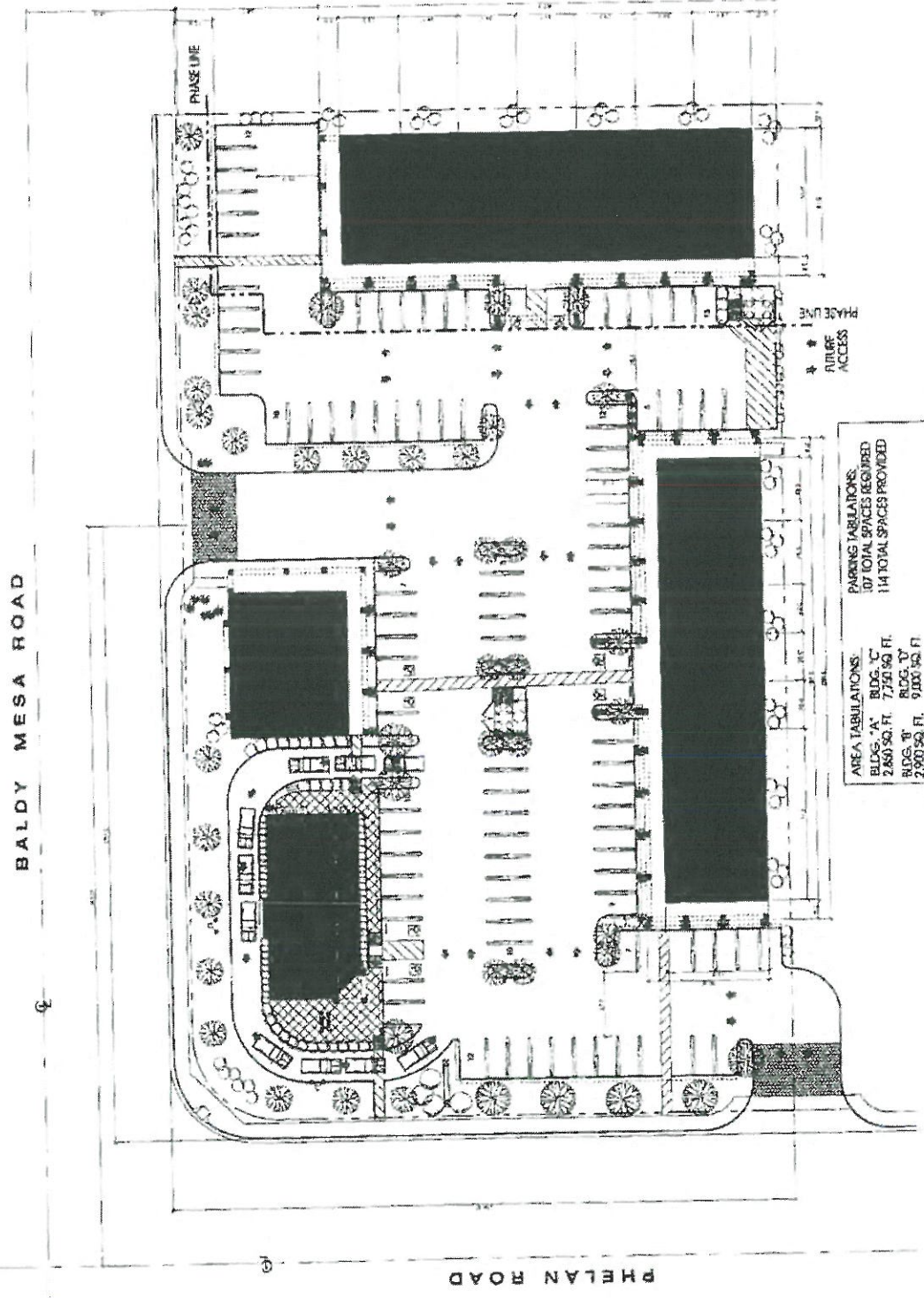
STEINBERG
 ARCHITECTURE, INTERIOR DESIGN & PLANNING
 1111 WEST 10TH AVENUE, SUITE 200
 DENVER, COLORADO 80202
 TEL: 303.733.1111 FAX: 303.733.1112
 WWW.STEINBERGARCHITECTS.COM

DATE: 01/20/2009
 PROJECT: COMMERCIAL DEVELOPMENT
 DRAWING NO.: 101
 SHEET NO.: 5
 DESIGNER: DAVID EUM
 CHECKED: []
 APPROVED: []

PROJECT COMMERCIAL DEVELOPMENT
 JOB NO. 101
 SHEET NO. 5



SITE PLAN

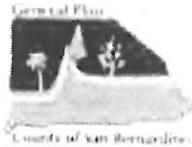


AREA TABULATIONS:	
BLDG. "A"	2,850 SQ. FT.
BLDG. "B"	2,900 SQ. FT.
BLDG. "C"	7,750 SQ. FT.
BLDG. "D"	9,000 SQ. FT.
TOTAL: 24,500 SQ. FT.	
PARKING TABULATIONS:	
107 TOTAL SPACES REQUIRED	
114 TOTAL SPACES PROVIDED	

BALDY MESA ROAD

PHELAN ROAD

APPENDIX D
COUNTY GENERAL PLAN INFORMATION



establishing, maintaining, and enforcing San Bernardino County's Congestion Management Program.

A large portion of the funding allotted to SANBAG to conduct the activities is generated through the Measure I half-cent transportation tax. A smaller portion of the necessary revenue is obtained through federal grant activity. SANBAG's estimated 2004/2005 revenue is approximately \$170,600,000. This is nearly a 4 percent increase over the 2003/2004 budget of \$163,400,000. The increase in revenue is anticipated to occur through Measure I. As a part of the Measure I program, SANBAG is expecting to receive nearly \$33 million in Regional Improvement Program funds. SANBAG's 2004/2005 budget is estimated to be approximately \$194,800,000, including prior-year encumbrances. A majority of this money is delineated for use in the Valley Major Projects portion of the Measure I program.

1. CIRCULATION MAP

The Circulation map depicts graphically the County's policy for the designation of the major streets and roads under their jurisdiction. The Circulation Maps contain three maps, one for the Valley planning region, one for the Mountain planning region, and one for the Desert Planning Region. The detailed Circulation Maps may be viewed on the 2007 General Plan CD adopted concurrent with the text.

2. CONGESTION MANAGEMENT PROGRAM (CMP)

The Congestion Management Program (CMP) in San Bernardino County was created in June 1990 as a provision of Proposition 111. Under this proposition, urbanized areas with populations of more than 50,000 would be required to undertake a congestion management program that was adopted by a designated Congestion Management Agency (CMA). As stated earlier, SANBAG was designated as the CMA by the County Board of Supervisors.

The CMP's level of service (LOS) standard requires all CMP segments to operate at LOS E or better, with the exception of those facilities identified in the list below. The following roadway segments have been designated LOS F in the 2001 CMP, updated in December of 2001:

A. FREEWAYS

- I-10 Westbound, Milliken Avenue to Central Avenue
- I-10 Westbound, Waterman Avenue to EB SR-30



- I-10 Eastbound, Central Avenue to Milliken Avenue
- I-10 Eastbound, NB SR-15 to SB SR-15
- I-10 Eastbound, SB Waterman Avenue to California Street
- SR-60 Westbound, Milliken Avenue to Central Avenue
- SR-60 Eastbound, Central Avenue to Milliken Avenue
- I-215 Northbound, Inland Center Drive to SR-30 / Highland Avenue

B. VALLEY EAST / WEST ARTERIAL SEGMENTS

- Foothill Boulevard between Mountain Avenue and Archibald Avenue

C. VALLEY NORTH / SOUTH ARTERIAL SEGMENTS

- Citrus Avenue between Slover Avenue and Valley Boulevard
- Cedar Avenue between Slover Avenue and Valley Boulevard
- Mountain View Avenue between Barton Road and Redlands Boulevard
- Mountain Avenue between Mission Boulevard and Holt Avenue

D. VICTOR VALLEY ARTERIAL SEGMENTS

- Bear Valley Road between Amargosa Road and Mariposa Road
- Bear Valley Road between Hesperia Road and Peach Avenue
- SR-18 between I-15 (North) and Stoddard Wells Road

The procedures in the 2000 Highway Capacity Manual (HCM) were adopted as the LOS procedures to be utilized in analyzing CMP facilities.

Through the use of traffic impact analysis (TIA) reports and Comprehensive Transportation Plan (CTP) model forecasts, the CMP evaluates proposed land use decisions to ensure adequate transportation network improvements are developed to accommodate future growth in population. If a CMP facility is found to fall below the level of service standard, either under existing or future conditions, a deficiency plan must be prepared, adopted, and implemented by local jurisdictions that contribute to such situations. Annual monitoring activities provide a method

APPENDIX E
COUNTY EXPANSION FACTORS

TRAFFIC VOLUME EXPANSION FACTORS
 TRAFFIC DIVISION
 TRAFFIC PLANNING RESEARCH SECTION
 JAN 2012

YARD NUMBER	MASTER STATION	LOCATION	UPDATING FACTORS					PROJECTING YEARS		
			1 YEAR (2012)	2 YEAR (2013)	3 YEAR (2014)	4 YEAR (2015)	5 YEAR (2016)	10 YEARS 2021	20 YEAR 2031	24 YEAR 2035
1	1	CENTRAL AVE S MISSION AVE	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
3	22	SLOVER AVE E LOCUST	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
5	5	BASE LINE ST EW STERLING AVE	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
5	6	LUGONIA AVE EW ALABAMA ST	1.030	1.051	1.093	1.126	1.159	1.344	1.805	2.035
6	7	YUCAIPA BLVD EW 14TH ST	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
7,8	8	SH 18 E LAKE GREGORY DR	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
9	19	BALDWIN LANE W SR38	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
10	10	SH 62 E OLD WOMAN SPRINGS RD (SH 247)	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
11	20	NATIONAL TRAILS S VISTA RD	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
11	18	PHELAN RD EW JOHNSON RD	1.020	1.040	1.061	1.082	1.104	1.215	1.455	1.605
12	12	OLD HWY 58 E DOBBS RD	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
13	13	TRONARD RD N LAKE VIEW DR	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
15,2	15	RIO MESA DR S AQUEDUCT RD(SH 52)	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
16	21	CRYSTAL CREEK RD S SR15	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270
16	16	CENTRAL RD N BEAR VALLEY RD	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270

	COUNTY AVERAGE	1.012	1.024	1.037	1.049	1.062	1.128	1.277	1.343
	EAST VALLEY AVERAGE	1.017	1.034	1.051	1.069	1.087	1.184	1.415	1.524
	WEST VALLEY AVERAGE	1.010	1.020	1.030	1.041	1.051	1.105	1.220	1.270

* Based on last year counts