

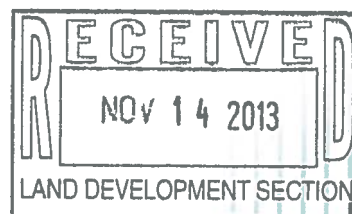
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SunCap Development
(Los Volcanes Rd / Unser Blvd)

Traffic Impact Study

November 5, 2013

DRAFT



Presented to:

City of Albuquerque
Public Works Dept.

NM Dept. of Transportation
Division #3

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**SunCap Development
(Los Volcanes Rd / Unser Blvd)
TRAFFIC IMPACT STUDY**

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**SunCap Development
(Los Volcanes Rd / Unser Blvd)
TRAFFIC IMPACT STUDY**

STUDY PURPOSE

This study is being conducted in conjunction with a request for approval of a 190,000 S.F. distribution / package transfer facility such as the one shown in the Appendix (Page A-2 of this report). The purpose of this study is to identify the impact of the proposed Development on the adjacent transportation system, and to make recommendations to mitigate any significant adverse impact on the adjacent transportation system resulting from the implementation of the new development. This study is based on the assumption that the land uses and densities implemented in the development of the proposed site development plan will be similar to those defined in the table on Page A-6 in the Appendix of this report. Should the developer propose a combination of land uses and / or densities that would significantly increase the overall traffic generation for the SunCap Development, an update to this study would be required reflecting the proposed new conditions.

STUDY PROCEDURES

A scoping report was submitted to the City of Albuquerque Transportation Development staff (Tony Loyd and Kristal Metro) prior to beginning the study to recommend scope and methodology to be utilized within the report. Specific items included format, intersections to be studied, intersection analysis procedures, existing traffic counts, trip distribution methodology, and implementation year definition. Additionally, the proposed scope of the study was reviewed with Antonio Jaramillo, District 3 Traffic Engineer with the New Mexico Department of Transportation.

The basic procedure followed for this traffic impact study is outlined as follows:

- ◆ Calculate the generated trips for the proposed warehouse development consisting of approximately 190,000 S.F. of floor space as specifically defined in the Trip Generation Table on Page A-6 in the Appendix of this report. The trips generated for the implementation year analysis (2015) will assume that 100% of the development has occurred.
- ◆ Calculate trip distribution for the newly generated trips by this development. The new project trips will be distribution based on the year 2015 population data city wide inversely proportional to the distance of the data subarea from the project location.
- ◆ Determine Trip Assignments for the newly generated trips based on the results of the Trip Distribution Analysis and logical routing to and from the new site.
- ◆ Include the generated trips for the proposed Watershed Development in the 2015 NO BUILD Volumes for this project.
- ◆ Obtain recent AM Peak Hour and PM Peak Hour Turning Movement Volumes Traffic Counts for the intersections of Bluewater / Unser Blvd., Los Volcanes Rd. / Unser Blvd., I-40 WB Ramp / Unser Blvd., I-40 EB Ramp / Unser Blvd., Los Volcanes Rd / Daytona Rd and Los Volcanes Rd / Gallatin Rd.

- ◆ Calculate Historic Growth Rates for background traffic volumes based on the Mid-Region Council of Governments' Traffic Flow Maps for the years 2002 through 2011.
- ◆ Calculate background traffic growth from the year of the most recent traffic counts to the implementation year for this analysis (2015).
- ◆ Add trips generated from the proposed Watershed Development to the background traffic volumes. The trips from this previously approved development will be included in the 2015 NO BUILD Volumes for this study.
- ◆ Add data from Trip Assignments Maps and Tables to the 2015 NO BUILD Volumes to obtain 2015 BUILD Volumes for this project.
- ◆ Provide signalized and / or unsignalized intersection analyses for the following intersections:

	INTERSECTION	TYPE CONTROL	NO BUILD ANALYSIS	BUILD ANALYSIS
1	Bluewater Rd / Unser Blvd.	Traffic Signal	2015	2015
2	Los Volcanes Rd / Unser Blvd.	Traffic Signal	2015	2015
3	I-40 WB Ramp / Unser Blvd.	Traffic Signal	2015	2015
4	I-40 EB Ramp / Unser Blvd.	Stop Sign	2015	2015
5	Los Volcanes Rd. / Gallitan Rd.	Stop Sign	2015	2015
6	Los Volcanes Rd. / Daytona Rd	Stop Sign	2015	2015

GENERAL AREA CHARACTERISTICS

This project is located south of Daytona Rd at the west dead end west of Unser Blvd. The surrounding area is primarily zoned for industrial park type of development. The Vicinity Map on Page A-1 of the Appendix shows the zoning of the surrounding properties in the area surrounding this site. The project is located in a mild to moderately active development area.

AREA STREET NETWORK

Access to this new site will be via a proposed full access driveway on Daytona Rd.

Unser Blvd. is classified as a Limited Access Principal Arterial roadway on the Long Range Roadway System Map for the Albuquerque Metropolitan Planning Area. It is a four lane divided paved urban roadway with raised medians from Central Ave. to Montano Rd. The posted speed limit on Unser Blvd. near Los Volcanes Rd is 45 M.P.H. Unser Blvd. has recently been widened to a six lane facility from I-40 to Ouray Rd.

Los Volcanes Rd. is classified as a Collector Street on the Long Range Roadway System Map for the Albuquerque Metropolitan Planning Area. It is a paved urban roadway with curbs and gutters on both sides and no medians from Unser Blvd. to Coors Blvd. West of Unser Blvd., it is not classified.

Bluewater Rd. is classified as a Collector Street on the Long Range Roadway System Map for the Albuquerque Metropolitan Planning Area. It is a paved urban roadway with curbs and gutters on both sides and no medians from Unser Blvd. to Coors Blvd. West of Unser Blvd., it is not classified.

Interstate 40 is a major east-west freeway running through the center of the City of Albuquerque. There are currently ramps connecting Interstate 25 with Unser Blvd. and with Coors Blvd.

Gallatin Rd and Daytona Rd are not classified on the Long Range Roadway Plan for the Albuquerque Metropolitan Area.

EXISTING TRAFFIC VOLUMES

2011 Average Weekday Traffic Volumes (AWDT) for major streets in the site plan area are shown on Page A-5 in the Appendix.

AM and PM Peak Hour turning movement counts were obtained by field traffic counts taken recently for the following intersections:

*Bluewater Rd. / Unser Blvd.
Los Volcanes Rd. / Unser Blvd.
I-40 WB Ramp / Unser Blvd.
I-40 EB Ramp / Unser Blvd.
Los Volcanes Rd. / Gallatin Rd.
Los Volcanes Rd / Daytona Rd*

The counts are included near the end of the Appendix.

EXISTING (2013) LEVELS OF SERVICE

The Highway Capacity Manual defines Level of Service (LOS) for signalized intersections in terms of average controlled delay per vehicle as follows:

LOS A	10.0" or less	Most Vehicles do not stop
LOS B	10.1 to 20.0"	Some Vehicles stop
LOS C	20.1 to 35.0"	Significant number of vehicles stop
LOS D	35.1 to 55.0"	Many vehicles stop.
LOS E	55.1 to 80.0"	Limit of acceptable delay.
LOS F	> 80.0"	Unacceptable delay.

Level of Service D is generally considered acceptable in urban areas and is the desirable base condition for analysis in a traffic study.

This study performs analysis for the 2015 NO BUILD and 2015 BUILD Conditions associated with the development of the SunCap Development.

EXISTING TRANSIT SERVICE

This area currently is serviced by City Bus Route 54 (Bridge Blvd / Westgate) which services this area at approximate one hour intervals from 5:30 am to 8:15 pm on weekdays. No other bus service is available at this time.

PROPOSED DEVELOPMENT

The subject area of land discussed in this report is comprised of approximately 20 acres. See the conceptual site development plan on Page A-2 in the Appendix of this report to acquire more detailed information about the proposed development. This site plan is conceptual at this point in time and is subject to some changes as progress takes place in the design process. The plan should, however, provide a reliable basis upon which to analyze the impact of the development on the adjacent transportation system and provide guidelines for mitigating the impact and establishing access criteria.

There is one proposed primary access point (driveway) along Daytona Rd for the new site (See Site Map on Page A-2 of Appendix). This driveway (Driveway "A") is intended to be a full access unsignalized driveway. Since the driveway is off of a dead end street and there are no conflicting movements, no analysis is required.

TRIP GENERATION

Trip generation rates for proposed developments are generally based on data contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition published in 2012. There is no trip generation data for this type of facility in the manual. Due to the unique nature of this development, local trip generation rates were obtained from the FedEx facility on Renaissance Blvd in Albuquerque. The following table lists the proposed assumed land use in the project plan along with the calculated daily, AM, and PM Peak Hour trip generation rates resulting from application of the trip generation rate equations obtained by the consulting engineer:

Sun Cap Distribution / Package Transfer Facility *Trip Generation Data (ITE Trip Generation Manual - 9th Edition)*

USE (ITE CODE)	24 HOUR TWO-WAY VOLUME	A. M. PEAK HOUR		P. M. PEAK HOUR	
	GROSS	ENTER	EXIT	ENTER	EXIT
Units					
Fedex Transfer Facility w/Customer Center (Local Data)	190.00	2500*	76	168	125
1,000 S.F.					

The Implementation Year Analysis (2015) for this study assumed a development of 100% of the project to be implemented. See Appendix Page A-6 for more detailed information regarding trip generation rates.

TRIP DISTRIBUTION

Primary and Diverted Linked Trips:

Trips were distributed as follows:

Office Land Uses

Primary and diverted linked trips for the land use developments were distributed proportionally to the 2015, 2025 & 2035 projected population / employment of Subareas citywide inversely proportional to the distance from the project to the subarea. Population data for the years 2015 and 2025 were taken from the 2035 Socioeconomic Forecasts for Data Analysis Subzones provided by the Mid Region Council of Governments (MRCOG). Population / employment data from the years 2015 and 2025 was interpolated linearly to obtain 2015 population data to utilize for this analysis. Population Subzones were grouped based on the most likely major street(s) or route(s) to the subject development. The trip distribution worksheets and associated map of subareas and data analysis subzones is shown on Appendix Pages A-7 thru A-10.

TRIP ASSIGNMENTS

Trip assignments for primary and diverted linked trips are first made on a percentage basis derived from data established in the trip distribution determination process and logical routing. Those percentages are then applied to the projected trips to determine individual traffic movements. Percentage trip distribution / trip assignments are shown on Pages A-11 thru A-13 in the Appendix of this report.

BACKGROUND TRAFFIC GROWTH

Background traffic growth rates were considered for each individual approach to an intersection that was targeted for analysis based on data from the Mid-Region Council of Governments' Regional Transportation Model (2030 data set). Forecast AM and PM Peak Hour link volumes on major streets were extracted from the 2005 and 2030 volumes and utilized to establish a background traffic growth rate for projecting turning movements at the intersections to be analyzed in this project. Since there are existing traffic count volumes at the intersections analyzed in this project, the link volumes based on the recent traffic counts were utilized instead of the MRCOG regional model link volumes. Utilizing the growth rates established in such a manner should result in forecast turning movement volumes that are consistent with the Mid-Region Council of Governments forecast link volumes.

PROJECTED PEAK HOUR TURNING MOVEMENTS FOR 2015 BUILDOUT

The calculated growth rates were applied to the most recent peak hour traffic counts and the trips from the approved *Watershed Project* were added in to establish the 2015 background traffic volumes. To these volumes, the generated trips based on implementation of the proposed SunCap Development Site Development Plan (100% development) were added to

obtain 2015 BUILD volumes for the intersection analyses. See Appendix Pages A-26 thru A-27 for further information regarding 2015 turning movement counts.

INTERSECTION CAPACITY ANALYSIS

Intersection capacity analyses were performed in accordance with the procedures for signalized and unsignalized intersections utilized in the Synchro (Version 8, Build 803, Revision 743) Transportation System analysis software program. Synchro software substantially complies with the 2010 Highway Capacity Manual methods. For signalized intersections, the operational method of analysis was used for both the 2015 NO BUILD and BUILD conditions.

Capacity analyses were performed for the following traffic conditions.

2015 without development of the subject property (NO BUILD)

2015 with development as per the Conceptual Site Development Plan (BUILD)

Queuing analysis at signalized intersections is calculated based on Poisson's arrival method considering cycle length and peak hour volumes to achieve a 95% confidence level of maximum queue for the peak hour periods.

Classification of levels-of-service and delay for signalized and unsignalized intersections will be made based on criteria established by Synchro, Version 8 (Build 804, Revision 795) computer modeling software. The average control delay is calculated for each intersection and for each lane group of each leg of the intersection. The control delay then determines the level-of-service based on the following tables:

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

<u>Average Delay</u> <u>(secs)</u>	<u>Level-of-Service</u>
≤ 10	A
> 10 and ≤ 20	B
> 20 and ≤ 35	C
> 35 and ≤ 55	D
> 55 and ≤ 80	E
> 80	F

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

<u>Average Delay</u> <u>(secs)</u>	<u>Level-of-Service</u>
≤ 10	A
> 10 and ≤ 15	B
> 15 and ≤ 25	C
> 25 and ≤ 35	D
> 35 and ≤ 50	E
> 50	F

Generally speaking, a Level-of-Service D or better is an acceptable parameter for design purposes.

Following is a summary of the results of the Synchro Analysis for each of the intersections targeted for evaluation in this report:

RESULTS OF SIGNALIZED INTERSECTION CAPACITY ANALYSES

IMPLEMENTATION YEAR (2015)

1. Bluewater Rd / Unser Blvd. – A-40 thru A-47

The results of the implementation year analysis of the signalized intersection of Bluewater Rd / Unser Blvd. are summarized in the following table:

Intersection: 1 - Bluewater Rd. / Unser Blvd.

<u>2015 AM Peak Hour BUILD</u>						<u>2015 PM Peak Hour BUILD</u>					
		(EXIST. GEOM.)						(EXIST. GEOM.)			
		NO BUILD		BUILD				NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay			Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	D - 36.9	1	D - 37.5	L	1	D - 37.2	1	D - 38.7	
	T	1	C - 30.9	1	C - 31.2	T	1	C - 33.9	1	D - 35.2	
	R	>	C - 30.9	>	C - 31.2	R	>	C - 33.9	>	D - 35.2	
WB	L	1	D - 35.3	1	D - 35.6	L	1	D - 37.2	1	D - 38.6	
	T	1	C - 26.8	1	C - 27.0	T	1	C - 33.0	1	C - 34.2	
	R	1	C - 27.6	1	C - 27.9	R	1	D - 37.9	1	D - 39.5	
NB	L	1	A - 7.0	1	A - 7.1	L	1	A - 5.1	1	A - 5.0	
	T	2	B - 17.7	2	B - 18.2	T	2	A - 8.8	2	A - 8.9	
	R	1	A - 0.0	1	A - 0.0	R	1	A - 0.0	1	A - 0.0	
SB	L	1	B - 15.4	1	B - 16.6	L	1	A - 5.3	1	A - 5.4	
	T	2	A - 0.7	2	A - 0.7	T	2	A - 4.2	2	A - 4.0	
	R	1	A - 0.0	1	A - 0.0	R	1	A - 0.0	1	A - 0.0	
Intersection:		B - 14.9		B - 15.0		B - 10.7		B - 10.7			

Note: ">" designates a shared right or left turn lane.

The operation of the signalized intersection has been demonstrated to be acceptable for the projected 2015 BUILD conditions analyzed in this report. Therefore, there is no recommendation for mitigation of the operation of the signalized intersection of Bluewater Rd. / Unser Blvd.

The following table summarizes the existing and calculated queuing at the signalized intersection:

Queueing Analysis Summary Sheet

Project: SunCap Development (Los Volcanes Rd / Unser Blvd)
 Intersection: Bluewater Rd / Unser Blvd

2015									
Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	195	80	1	71	Cont	0	104	0
AM NO BUILD Queue	1	197	250	1	72	125	0	105	150
AM BUILD Queue	1	198	250	1	72	125	0	105	150
Existing Lane Length	1	74	80	1	46	Cont	0	36	0
PM NO BUILD Queue	1	75	150	1	46	100	0	36	75
PM BUILD Queue	1	76	150	1	46	100	0	36	75
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	49	125	1	40	Cont	1	67	180
AM NO BUILD Queue	1	51	100	1	41	75	1	69	125
AM BUILD Queue	1	51	100	1	41	75	1	71	125
Existing Lane Length	1	57	125	1	60	Cont	1	131	180
PM NO BUILD Queue	1	59	125	1	62	125	1	135	225
PM BUILD Queue	1	59	125	1	62	125	1	138	225
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	70	120	2	1,297	Cont	1	113	150
AM NO BUILD Queue	1	78	125	2	1,440	825	1	125	175
AM BUILD Queue	1	78	125	2	1,462	825	1	125	175
Existing Lane Length	1	52	120	2	904	Cont	1	55	150
PM NO BUILD Queue	1	58	125	2	1,003	700	1	61	125
PM BUILD Queue	1	58	125	2	1,039	700	1	61	125
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	153	150	2	894	Cont	1	123	240
AM NO BUILD Queue	1	160	225	2	937	575	1	129	175
AM BUILD Queue	1	164	225	2	985	600	1	131	200
Existing Lane Length	1	53	150	2	1,185	Cont	1	101	240
PM NO BUILD Queue	1	56	125	2	1,242	825	1	106	175
PM BUILD Queue	1	59	125	2	1,279	850	1	108	175

AM **PM**
 Cycle Length: 110 130

NOTE: Queue lengths are in feet.

The queueing summary table above demonstrates a deficiency in the lengths of the eastbound and the northbound left turn lane. The eastbound left turn lane cannot be lengthened due to the fact that a driveway exists close to the intersection of Bluewater Rd. / Unser Blvd. and, in addition, due to the width restriction of Bluewater Rd. The northbound left turn lane can be

lengthened, but it is not recommended by this report since the lengthening is nominal and, therefore, not beneficial.

2. Los Volcanes Rd. / Unser Blvd. – A-48 thru A-55

The results of the implementation year analysis of the signalized intersection of Los Volcanes Rd. / Unser Blvd. are summarized in the following table:

Intersection: 2 - Los Volcanes Rd. / Unser Blvd.

<u>2015 AM Peak Hour BUILD</u>						<u>2015 PM Peak Hour BUILD</u>					
		(EXIST. GEOM.)						(EXIST. GEOM.)			
		NO BUILD		BUILD				NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay			Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	2	C - 27.4	2	C - 29.0	L	2	D - 36.1	2	C - 33.5	
	T	1	C - 32.2	1	D - 35.6	T	1	D - 52.8	1	E - 69.1	
	R	>	C - 32.2	>	D - 35.6	R	>	D - 52.8	>	E - 69.1	
WB	L	1	C - 27.5	1	C - 28.0	L	1	D - 36.0	1	D - 36.0	
	T	1	C - 30.2	1	C - 30.2	T	1	D - 37.9	1	D - 37.4	
	R	1	C - 24.7	1	C - 24.7	R	1	D - 37.7	1	D - 36.7	
NB	L	1	B - 14.5	1	B - 14.9	L	1	B - 13.1	1	B - 15.8	
	T	3	C - 34.5	3	C - 34.5	T	3	C - 28.8	3	C - 23.3	
	R	1	A - 0.0	1	A - 0.0	R	1	A - 0.0	1	A - 0.0	
SB	L	1	D - 39.3	1	D - 39.5	L	1	B - 12.9	1	B - 13.3	
	T	2	B - 18.1	2	B - 18.1	T	2	B - 18.5	2	C - 20.7	
	R	1	B - 13.3	1	B - 14.0	R	1	B - 12.5	1	B - 15.1	
Intersection:		C - 28.1			C - 28.2			C - 25.6			C - 26.0

Note: ">" designates a shared right or left turn lane.

The operation of the signalized intersection has been demonstrated to be acceptable for the projected 2015 BUILD conditions analyzed in this report. The eastbound thru/right turn movement during the PM Peak Hour period is "E" during the NO BUILD condition and the BUILD condition. The implication of the signalized intersection results is that an eastbound right turn lane would benefit the eastbound thru / right turn movement at the intersection. However, it is clear that the proposed SunCap development does not significantly impact the eastbound thru / right turn movement or the overall intersection operation. Therefore, no recommendation is made for mitigation at this intersection.

The following table summarizes the existing and calculated queuing at the signalized intersection:

Queueing Analysis Summary Sheet

Project: SunCap Development (Los Volcanes Rd / Unser Blvd)
 Intersection: Los Volcanes Rd / Unser Blvd

2015

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	2	194	100	1	84	Cont	0	18	0
AM NO BUILD Queue	2	196	150	1	85	125	0	18	50
AM BUILD Queue	2	296	200	1	91	125	0	72	100
Existing Lane Length	2	98	100	1	32	Cont	0	151	0
PM NO BUILD Queue	2	99	100	1	32	75	0	153	250
PM BUILD Queue	2	176	175	1	42	100	0	194	300
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	85	140	1	29	Cont	1	247	140
AM NO BUILD Queue	1	86	125	1	29	50	1	249	275
AM BUILD Queue	1	86	125	1	29	50	1	249	275
Existing Lane Length	1	98	140	1	29	Cont	1	176	140
PM NO BUILD Queue	1	99	175	1	29	75	1	178	275
PM BUILD Queue	1	99	175	1	29	75	1	178	275
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	17	570	2	1,447	Cont	1	121	150
AM NO BUILD Queue	1	18	50	2	1,516	725	1	127	150
AM BUILD Queue	1	42	75	2	1,516	725	1	127	150
Existing Lane Length	1	19	570	2	1,045	Cont	1	64	150
PM NO BUILD Queue	1	20	50	2	1,095	750	1	67	125
PM BUILD Queue	1	60	125	2	1,095	750	1	67	125
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	301	999	2	977	Cont	1	129	150
AM NO BUILD Queue	1	321	325	2	1,041	525	1	138	175
AM BUILD Queue	1	321	325	2	1,041	525	1	183	200
Existing Lane Length	1	135	999	2	1,179	Cont	1	142	150
PM NO BUILD Queue	1	144	225	2	1,257	825	1	151	250
PM BUILD Queue	1	144	225	2	1,257	825	1	225	325

AM PM
 Cycle Length: 90 130

NOTE: Queue lengths are in feet.

The dual eastbound left turn lanes length can be extended from 100 feet to 200 feet long by re-striping the west leg of the intersection. Similarly, the westbound left turn lane can also be lengthened from 140 feet to 175 feet by re-striping the east leg of the intersection. The

calculated 95th percentile queue lengths in the preceding table for right turn movements can be reduced by 50% to account for right-turns-on-red and overlap phases.

3. I-40 WB Ramp / Unser Blvd. – A-56 thru A-65

The results of the implementation year analysis of the signalized intersection of I-40 WB Ramp / Unser Blvd. are summarized in the following tables:

Intersection: 3 - I-40 WB Ramp / Unser Blvd.

2015 AM Peak Hour BUILD						2015 PM Peak Hour BUILD					
		(EXIST. GEOM.)						(EXIST. GEOM.)			
		NO BUILD		BUILD				NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay			Lanes	LOS-Delay	Lanes	LOS-Delay
WB	L	2	D - 42.7	2	D - 46.9	L	2	D - 53.9	2	D - 49.4	
	T	>	C - 24.3	>	C - 23.6	T	>	B - 12.1	>	A - 10.0	
	R	1	A - 0.0	1	A - 0.0	R	1	A - 0.0	1	A - 0.0	
NB	L	1	C - 25.1	1	C - 25.4	L	1	C - 32.3	1	D - 36.2	
	T	2	B - 13.9	2	B - 14.6	T	2	D - 37.4	2	D - 44.0	
	T	3	D - 36.8	3	D - 41.1	T	3	D - 42.2	3	D - 48.3	
SB	R	1	A - 0.0	1	A - 0.0	R	1	A - 0.0	1	A - 0.0	
	Intersection:		C - 31.6		C - 35.0		D - 44.7		D - 47.2		

Note: ">" designates a shared right or left turn lane.

WB and SB Right Turn movements are free ramps
(not signalized).

The operation of the signalized intersection has been demonstrated to be acceptable for all projected conditions analyzed in this report. No recommendation for mitigation is made.

Note that Synchro 8 was unable to analyze the signalized intersection of I-40 WB Ramp / Unser Blvd. due to a glitch in the software. Therefore, the analysis above is the result of the HCS 2010 software. Trafficware, the makers of Synchro 8 were notified of the problem and intend on issuing a patch to fix the problem in the future. (See Appendix Page A-58).

The following table summarizes the existing and calculated queuing at the signalized intersection:

Queueing Analysis Summary Sheet

Project: SunCap Development (Los Volcanes Rd / Unser Blvd)
 Intersection: I-40 WB Ramp / Unser Blvd

2015									
Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	0	0	0	0	0	Cont	0	0	0
AM NO BUILD Queue	0	0	0	0	0	0	0	0	0
AM BUILD Queue	0	0	0	0	0	0	0	0	0
Existing Lane Length	0	0	0	0	0	Cont	0	0	0
PM NO BUILD Queue	0	0	0	0	0	0	0	0	0
PM BUILD Queue	0	0	0	0	0	0	0	0	0
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	2	427	600+	1	0	Cont	1	1	700
AM NO BUILD Queue	2	461	325	1	0	0	1	8	25
AM BUILD Queue	2	500	325	1	0	0	1	8	25
Existing Lane Length	2	928	600+	1	3	Cont	1	0	700
PM NO BUILD Queue	2	1,002	700	1	3	25	1	20	50
PM BUILD Queue	2	1,066	725	1	3	25	1	20	50
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	1	25	350	2	843	Cont	0	0	0
AM NO BUILD Queue	1	27	75	2	905	550	0	0	0
AM BUILD Queue	1	29	75	2	916	550	0	0	0
Existing Lane Length	1	44	350	2	803	Cont	0	0	0
PM NO BUILD Queue	1	47	100	2	873	600	0	0	0
PM BUILD Queue	1	49	100	2	882	625	0	0	0
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	0	0	0	3	2,131	Cont	1	0	800
AM NO BUILD Queue	0	0	0	3	2,165	850	1	0	0
AM BUILD Queue	0	0	0	3	2,170	850	1	0	0
Existing Lane Length	0	0	0	3	867	Cont	1	0	800
PM NO BUILD Queue	0	0	0	3	911	475	1	2	0
PM BUILD Queue	0	0	0	3	919	475	1	2	0

AM
PM
 Cycle Length: 110 130

NOTE: Queue lengths are in feet.

Based on the table of calculated 95th percentile queueing lengths in the preceding table, there are no significant queueing issues which need to be addressed for this project.

RESULTS OF UNSIGNALIZED INTERSECTION CAPACITY ANALYSES

IMPLEMENTATION YEAR (2015)

4. I-40 EB Ramp / Unser Blvd. – A-66 thru A-69a

The results of the analysis of the unsignalized intersection of I-40 EB Ramp / Unser Blvd. are summarized in the following table:

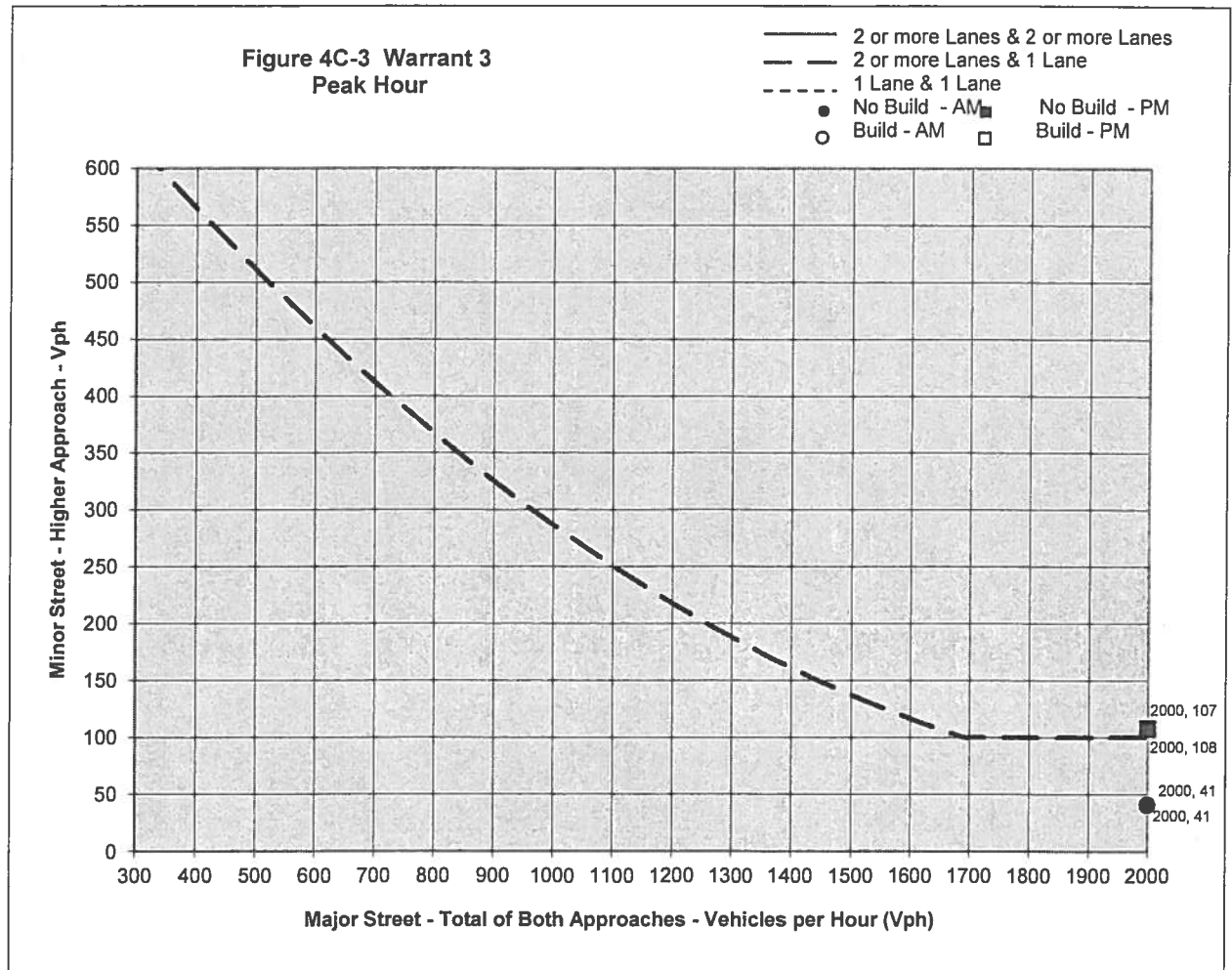
Intersection: 4 - I-40 EB Ramp / Unser Blvd.

2015 AM Peak Hour BUILD						2015 PM Peak Hour BUILD					
(EXIST. GEOM.)						(EXIST. GEOM.)					
NO BUILD			BUILD			NO BUILD			BUILD		
Lanes	LOS-Delay		Lanes	LOS-Delay		Lanes	LOS-Delay		Lanes	LOS-Delay	
EB	L	1 F - 256	1	F - 305		L	1 F - 567	1	F - 672		
	T	> A - 0.0	>	A - 0.0		T	> A - 0.0	>	A - 0.0		
	R	1 A - 0.0	1	A - 0.0		R	1 A - 0.0	1	A - 0.0		
NB	L	> A - 0.0	>	A - 0.0		L	> A - 0.0	>	A - 0.0		
	T	2 A - 0.0	2	A - 0.0		T	2 A - 0.0	2	A - 0.0		
	R	1 A - 0.0	1	A - 0.0		R	1 A - 0.0	1	A - 0.0		
SB	T	2 A - 0.0	2	A - 0.0		T	2 A - 0.0	2	A - 0.0		
	R	> A - 0.0	>	A - 0.0		R	> A - 0.0	>	A - 0.0		
Intersection:		u - 3.5		u - 4.0				u - 19.8		u - 22.7	

Note: ">" designates a shared right or left turn lane.

The analysis of the unsignalized intersection of the I-40 South Ramp / Unser Blvd. will operate at unacceptable levels-of-service for the forecast 2015 NO BUILD and BUILD Conditions as an unsignalized intersection. The mathematical analysis of the intersection indicated excessively long delays would be encountered by the eastbound left turn traffic off of the ramp. However, the calculations do not take into account the fact that there is an existing traffic signal approximately 1,650 feet to the north of this intersection and approximately 2,100 feet south of the intersection. The two adjacent intersections will create gaps in northbound and southbound traffic on Unser Blvd. at the I-40 South Ramp, thus permitting eastbound side street traffic to turn out onto Unser Blvd. with greater ease than what the calculations seem to indicate. There are no further measures that can be taken at this time to improve the operation of the intersection.

Rectification of the long delays at the intersection of the I-40 EB Ramp / Unser Blvd. may involve construction of a new traffic signal at the ramp. Current volumes indicate that a traffic signal is marginally warranted at the intersection, See Appendix Page A-69a. Following is the Peak Hour Warrant Graph for this intersection considering the projected 2015 AM and PM Peak Hour volumes:



The signal is already marginally warranted in the PM Peak Hour NO BUILD condition under the Peak Hour Warrant criteria. If in the future, the New Mexico Department of Transportation decides to signalize this intersection, a full traffic signal warrant study should first be conducted before a commitment is made to signalize the intersection.

5. Los Volcanes Rd / Gallatin Rd - Pages A-70 thru A-73

The results of the analysis of the unsignalized intersection of Los Volcanes Rd / Gallatin Rd are summarized in the following table:

Intersection: 5 - Los Volcanes Rd. / Gallatin Rd.

2015 AM Peak Hour BUILD					2015 PM Peak Hour BUILD					
(EXIST. GEOM.)					(EXIST. GEOM.)					
NO BUILD		BUILD			NO BUILD		BUILD			
Lanes	LOS-Delay	Lanes	LOS-Delay		Lanes	LOS-Delay	Lanes	LOS-Delay		
NB	L	1	A - 8.8	1	A - 8.8	L	1	A - 7.8	1	A - 7.8
	L	1	A - 7.9	1	A - 7.9	L	1	A - 7.6	1	A - 7.6
	L	>	F - 63.0	>	F - 67.9	L	>	B - 14.9	>	C - 15.3
	T	1	F - 63.0	1	F - 67.9	T	1	B - 14.9	1	C - 15.3
SB	R	>	F - 63.0	>	F - 67.9	R	>	B - 14.9	>	C - 15.3
	L	>	C - 17.2	>	C - 17.7	L	>	B - 10.3	>	B - 10.4
	T	1	C - 17.2	1	C - 17.7	T	1	B - 10.3	1	B - 10.4
	R	>	C - 17.2	>	C - 17.7	R	>	B - 10.3	>	B - 10.4
Intersection:		u - 7.4		u - 7.5		u - 4.2		u - 4.1		

Note: ">" designates a shared right or left turn lane.

This analysis forecasts that the unsignalized intersection of Los Volcanes Rd / Gallatin Rd will experience long delays on the side street upon implementation of the proposed SunCap. The intersection of Los Volcanes Rd / Gallatin Rd is probably too close to Unser Blvd. for consideration for a traffic signal. Gallatin Rd is approximately 750 feet east of Unser Blvd. (centerline to centerline).

The fact that there is an existing traffic signals to the west of the intersection of Gallatin Rd / Los Volcanes Rd will aid in creating gaps in the eastbound traffic on Los Volcanes Rd so as to facilitate the turning movements from the side streets onto the major street to some degree, but this report still forecasts long delays for the Gallatin Rd traffic at Los Volcanes Rd. No recommendation for mitigation is made.

6. Los Volcanes Rd / Daytona Rd - Pages A-74 thru A-75

The results of the analysis of the unsignalized intersection of Los Volcanes Rd / Daytona Rd are summarized in the following table:

Intersection: 6 - Los Volcanes Rd. / Driveway "A"

<u>2015 AM Peak Hour BUILD</u>						<u>2015 PM Peak Hour BUILD</u>					
		(EXIST. GEOM.)						(EXIST. GEOM.)			
		NO BUILD		BUILD				NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay			Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	A - 7.6	1	A - 7.8	L	1	A - 7.6	1	A - 7.9	
	T	1	A - 0.0	1	A - 0.0	T	1	A - 0.0	1	A - 0.0	
	R	>	A - 0.0	>	A - 0.0	R	>	A - 0.0	>	A - 0.0	
WB	L	1	A - 7.8	1	A - 7.8	L	1	A - 7.4	1	A - 7.4	
	T	1	A - 0.0	1	A - 0.0	T	1	A - 0.0	1	A - 0.0	
	R	>	A - 0.0	>	A - 0.0	R	>	A - 0.0	>	A - 0.0	
NB	L	>	B - 11.1	>	B - 11.4	L	>	A - 9.9	>	B - 10.5	
	T	1	B - 11.1	1	B - 11.4	T	1	A - 9.9	1	B - 10.5	
	R	>	B - 11.1	>	B - 11.4	R	>	A - 9.9	>	B - 10.5	
SB	L	1	B - 12.4	1	C - 15.9	L	1	B - 10.6	1	B - 12.4	
	T	1	B - 11.8	1	B - 13.8	T	1	B - 10.3	1	B - 11.5	
	R	>	B - 11.8	>	B - 13.8	R	>	B - 10.3	>	B - 11.5	
Intersection:		u - 1.0		u - 4.4				u - 2.2		u - 4.1	

Note: ">" designates a shared right or left turn lane.

The operation of the unsignalized intersection has been demonstrated to be acceptable for all projected conditions analyzed in this report. No recommendation for mitigation is made.

CONCLUSIONS

The proposed site plan for the SunCap Commercial Development consisting of commercial / office type of development will present moderate impact to the adjacent transportation system. There are existing (i.e., NO BUILD condition) capacity shortfalls at the intersections of I-40 EB Ramp. / Unser Blvd. and Los Volcanes Rd / Gallatin Rd. This project will contribute additional traffic to both of those intersections. However, the impact to the adjacent transportation system can be mitigated by implementation of the following recommendations:

RECOMMENDATIONS

FROM IMPLEMENTATION YEAR (2015) ANALYSIS

Offsite Recommendations:

Los Volcanes Rd. / Unser Blvd. – Lengthen the dual eastbound left turn lanes from 100 feet to 200 feet long by re-striping the west leg of the intersection and lengthen the westbound left turn lane from 140 feet to 175 feet by re-striping the east leg of the intersection.

I-40 EB Ramp / Unser Blvd. – The intersection of the I-40 South Ramp / Unser Blvd. marginally meets the warrant for a traffic signal based on the peak hour warrant criteria in the Manual on Uniform Traffic Control Devices (2003 Edition). This developer should not be held responsible to signalize the intersection since the signal is marginally warranted based on the NO BUILD conditions. Also, the intersection should not be signalized without a full signal warrant analysis based on existing, and not forecast volumes. It is anticipated that such a study would not show the signal to be warranted at this time.

Access Recommendations:

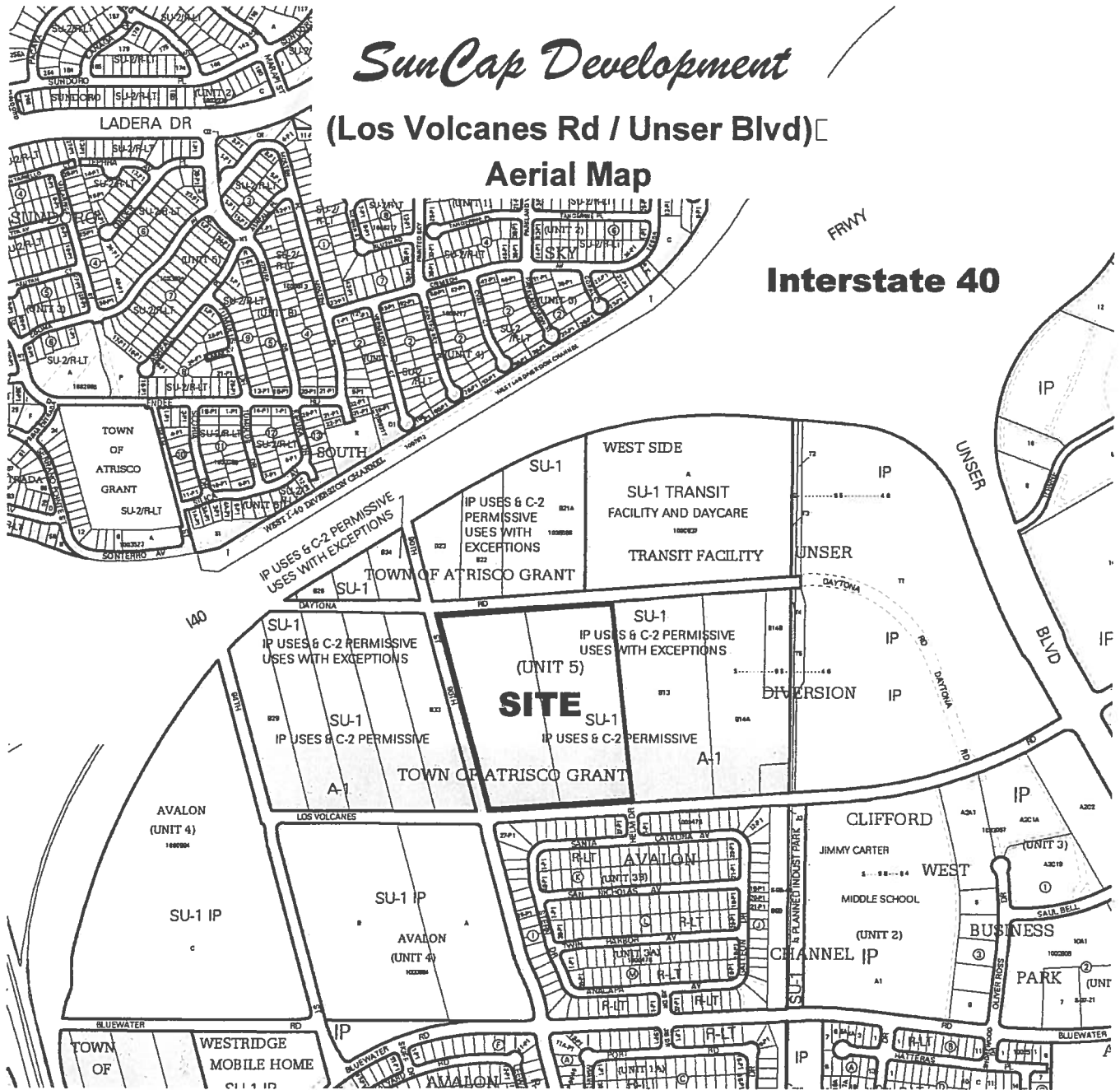
The driveway on Daytona Rd is recommended to be a full access, unsignalized drive at the west end of Daytona Rd.

All design and construction of the project shall provide for adequate sight distances and driveways at existing and proposed intersections and driveways.

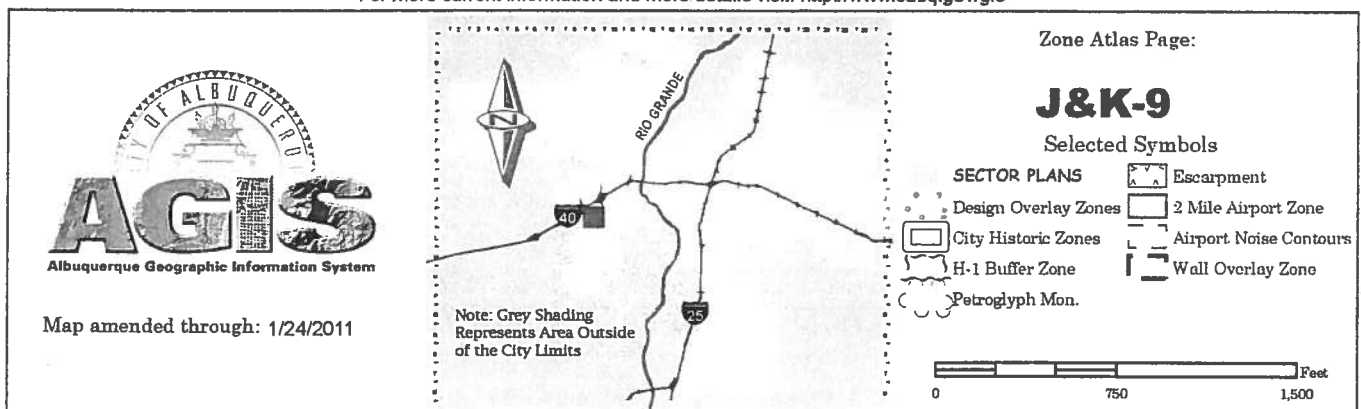
Appendix

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APPENDIX



For more current information and more details visit: <http://www.cabq.gov/gis>





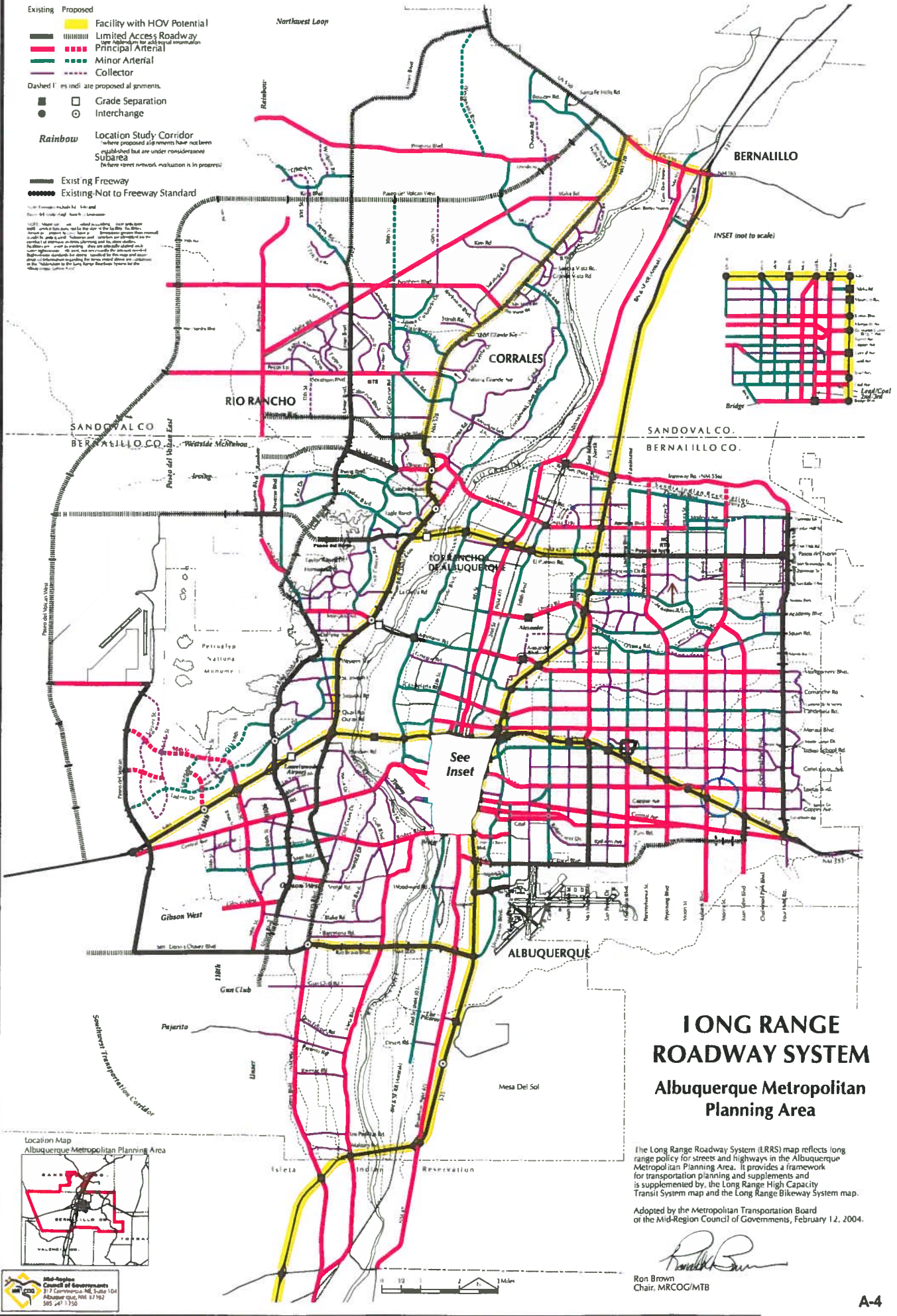
SunCap Development
(Los Volcanes Rd / Unser Blvd)
Aerial Map

- Existing Proposed
- Facility with HOV Potential
 - Limited Access Roadway
 - Principal Arterial
 - Minor Arterial
 - Collector
 - Dashed lines indicate proposed alignments
 - Grade Separation
 - Interchange
 - Location Study Corridor
where proposed alignments have not been established but are under consideration
(where street network evaluation is in progress)
 - Existing Freeway
 - Existing Not to Freeway Standard

Rainbow

Major roadways include the following:

Interstate 405, Interstate 25, Interstate 30, Interstate 210, Interstate 175, Interstate 125, Interstate 10, Interstate 5, Interstate 4, Interstate 3, Interstate 2, Interstate 1, Interstate 0.



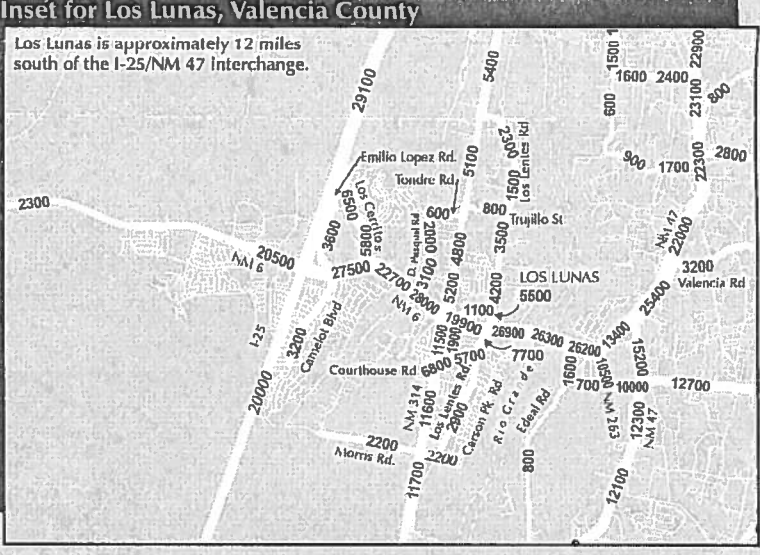
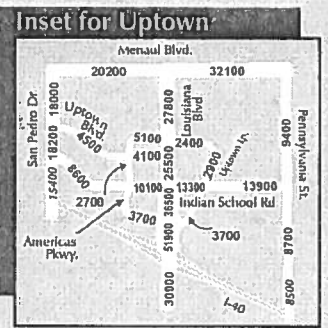
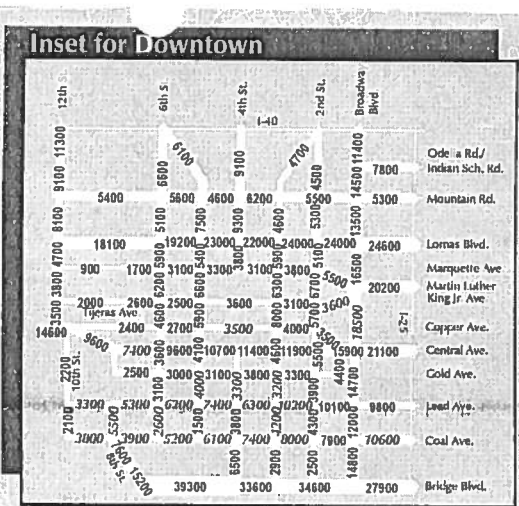
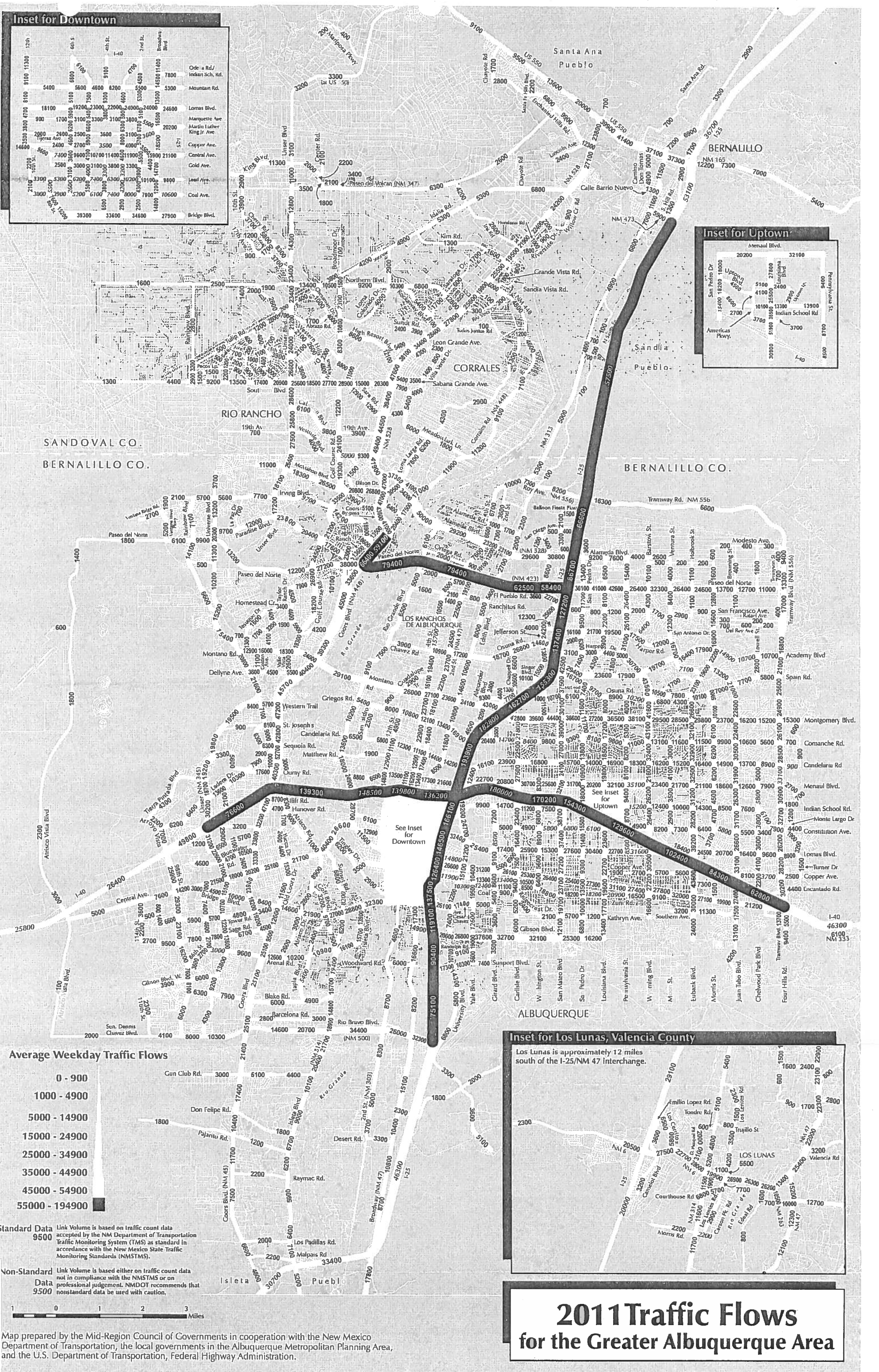
LONG RANGE ROADWAY SYSTEM

Albuquerque Metropolitan Planning Area

The Long Range Roadway System (LRRS) map reflects long range policy for streets and highways in the Albuquerque Metropolitan Planning Area. It provides a framework for transportation planning and supplements and is supplemented by the Long Range High Capacity Transit System map and the Long Range Bikeway System map.

Adopted by the Metropolitan Transportation Board of the Mid-Region Council of Governments, February 12, 2004.

Ron Brown
Ron Brown
Chair, MRCOG/MTB



2011 Traffic Flows for the Greater Albuquerque Area

Average Weekday Traffic Flows

0 - 900
1000 - 4900
5000 - 14900
15000 - 24900
25000 - 34900
35000 - 44900
45000 - 54900
55000 - 194900

Standard Data
Link Volume is based on traffic count data accepted by the NM Department of Transportation Traffic Monitoring System (TMS) as standard in accordance with the New Mexico State Traffic Monitoring Standards (NMSTMS).

Non-Standard Data
Link Volume is based either on traffic count data not in compliance with the NMSTMS or on professional judgement. NMDOT recommends that nonstandard data be used with caution.

1 0 1 2 3 Miles

Map prepared by the Mid-Region Council of Governments in cooperation with the New Mexico Department of Transportation, the local governments in the Albuquerque Metropolitan Planning Area, and the U.S. Department of Transportation, Federal Highway Administration.

Sun Cap Distribution / Package Transfer Facility Trip Generation Data (ITE Trip Generation Manual - 9th Edition)

USE (ITE CODE)	24 HOUR TWO-WAY VOLUME		A. M. PEAK HOUR		P. M. PEAK HOUR	
	GROSS	ENTER	EXIT	ENTER	EXIT	EXIT
Fedex Transfer Facility w/Customer Center (Local Data)						
	190.00	76	168	125	129	
	Units					
	1,000 S.F.					

ITE Trip Generation Equations:

Average Vehicle Trip Ends on a Weekday (24 HOUR TWO-WAY VOLUME)

$$T = \frac{0.402 (X) + 0}{50\% \text{ Enter, } 50\% \text{ Exit}}$$

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7am and 9am (A.M. PEAK HOUR)

$$T = \frac{1.285 (X) + 0}{31\% \text{ Enter, } 69\% \text{ Exit}}$$

Average Vehicle Trip Ends on a Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4pm and 6pm (P.M. PEAK HOUR)

$$T = \frac{1.336 (X) + 0}{49\% \text{ Enter, } 51\% \text{ Exit}}$$

Comments:

Local Trip Generation Data - *Daily Trips are estimated to be 10 times the PM Peak Hour Trips

Based on Local Data Collected at FedEx Facility in Renaissance Center in Albuquerque, NM

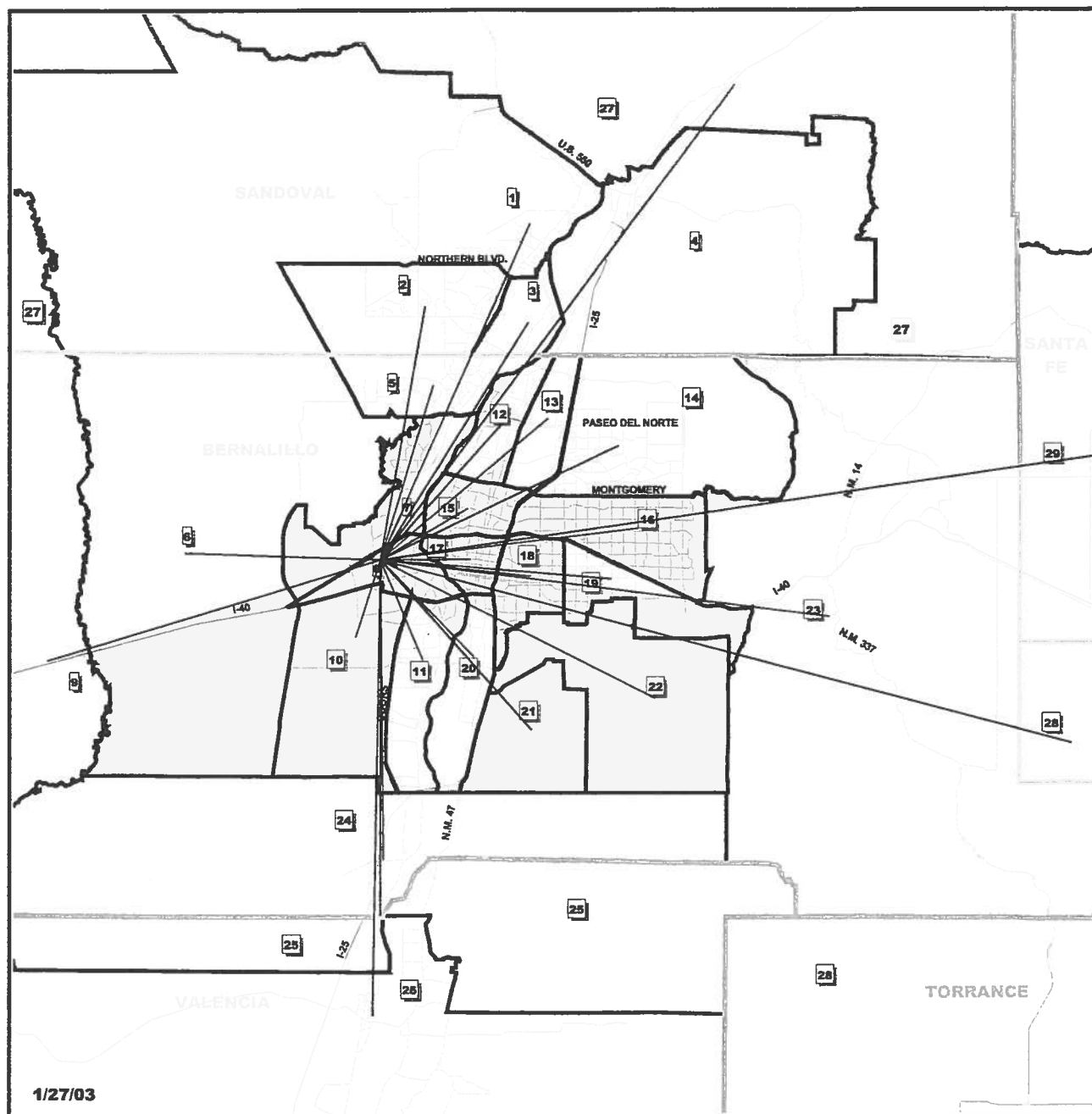


Figure 6

22 Subarea Identification Number

Subareas of the MRCOG Region

**Mid-Region
Council of Governments**
317 Commercial NE, Suite 104
Albuquerque, NM 87102
505-247-1750

Subarea boundaries extend to county boundary
where full extent of subarea not shown except for Subarea 29
which only includes southern Santa Fe County.

**SunCap Development
(Los Volcanes Rd / Unser Blvd)
Trip Distribution Subarea Map**

Trip Distribution Table

SunCap - Unser (Los Volcanes Rd / Unser Blvd)

Sub Area Population Data:

For determination of Trip Distribution for Proposed Office Development Trips

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035

Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

Sub Area I.D.#	% Sub Area In Study	2015		2025		Interpolated Population for the Year	Population in Study	Dist. (Mi.)	Population / Distance	(UN) Unser Blvd North			(4E) Interstate 40 East			(LE) Las Volcanes Rd East		
		2015	2015	2025	2025					% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	Population
1	100%	58,191	58,191	127,178	127,178	58,191	58,191	15.6	3,730	0%	0.00%	0	100%	2.39%	3,730	0%	0.00%	0
2	100%	51,766	51,766	65,774	65,774	51,766	51,766	10.9	4,749	0%	0.00%	0	100%	3.04%	4,749	0%	0.00%	0
3	100%	8,277	8,277	10,139	10,139	8,277	8,277	11.8	701	0%	0.00%	0	100%	0.45%	701	0%	0.00%	0
4	100%	14,557	14,557	16,645	16,645	14,557	14,557	19.3	764	0%	0.00%	0	100%	0.48%	764	0%	0.00%	0
5	100%	62,713	62,713	67,834	67,834	62,713	62,713	7.7	8,145	0%	0.00%	0	100%	5.22%	8,145	0%	0.00%	0
6	100%	14,282	14,282	52,588	52,588	14,282	14,282	8.3	1,721	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
7	100%	60,860	60,860	79,163	79,163	60,860	60,860	2.9	20,866	50%	6.72%	10,493	50%	6.72%	10,493	0%	0.00%	0
8*	100%	30,322	30,322	30,045	30,045	30,322	30,322	1.0	30,322	0%	0.00%	0	0%	0.00%	0	39%	7.58%	11,826
9	100%	1,878	1,878	2,156	2,156	1,878	1,878	14.7	128	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	65,364	67,358	67,358	65,364	65,364	3.5	18,876	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
11	100%	33,469	33,469	34,155	34,155	33,469	33,469	4.6	7,276	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
12	100%	17,724	17,724	17,964	17,964	17,724	17,724	7.7	2,302	0%	0.00%	0	100%	1.47%	2,302	0%	0.00%	0
13	100%	10,624	10,624	9,340	9,340	10,624	10,624	9.3	1,142	0%	0.00%	0	100%	0.73%	1,142	0%	0.00%	0
14	100%	103,826	103,826	102,925	102,925	103,826	103,826	11.2	9,270	0%	0.00%	0	100%	5.94%	9,270	0%	0.00%	0
15	100%	26,850	26,850	27,053	27,053	26,850	26,850	4.3	6,244	0%	0.00%	0	100%	4.00%	6,244	0%	0.00%	0
16	100%	107,409	107,409	104,793	104,793	107,409	107,409	11.0	9,764	0%	0.00%	0	100%	6.26%	9,764	0%	0.00%	0
17	100%	23,810	23,810	25,804	25,804	23,810	23,810	3.8	6,266	0%	0.00%	0	50%	2.01%	3,133	0%	0.00%	0
18	100%	43,626	43,626	48,198	48,198	43,626	43,626	6.4	6,817	0%	0.00%	0	50%	2.18%	3,408	0%	0.00%	0
19	100%	65,561	65,561	65,783	65,783	65,561	65,561	9.8	6,690	0%	0.00%	0	100%	4.29%	6,690	0%	0.00%	0
20	100%	9,536	9,536	12,198	12,198	9,536	9,536	5.7	1,673	0%	0.00%	0	50%	0.54%	836	0%	0.00%	0
21	100%	4,225	4,225	72,808	72,808	4,225	4,225	9.7	436	0%	0.00%	0	100%	0.28%	436	0%	0.00%	0
22	100%	3,874	3,874	4,214	4,214	3,874	3,874	13.0	298	0%	0.00%	0	100%	0.19%	298	0%	0.00%	0
23	100%	24,135	24,135	32,739	32,739	24,135	24,135	19.2	1,257	0%	0.00%	0	100%	0.81%	1,257	0%	0.00%	0
24	100%	2,815	2,815	3,209	3,209	2,815	2,815	12.7	222	0%	0.00%	0	100%	0.14%	222	0%	0.00%	0
25	100%	995	995	1,136	1,136	995	995	15.1	66	0%	0.00%	0	100%	0.04%	66	0%	0.00%	0
26	100%	86,303	86,303	132,754	132,754	86,303	86,303	19.3	4,472	0%	0.00%	0	100%	2.86%	4,472	0%	0.00%	0
27	100%	23,414	23,414	26,278	26,278	23,414	23,414	25.1	933	0%	0.00%	0	100%	0.60%	933	0%	0.00%	0
28	100%	20,001	20,001	24,230	24,230	20,001	20,001	30.2	662	0%	0.00%	0	100%	0.42%	662	0%	0.00%	0
29	100%	11,554	11,554	14,407	14,407	11,554	11,554	30.5	379	0%	0.00%	0	100%	0.24%	379	0%	0.00%	0
		987,961	987,961	1,278,868	1,278,868	987,961	987,961		166,080	100.00%		10,493	6.72%	51.31%	80,087	7.58%		11,826
												6.72%			51,31%			7,58%

Trip Distribution Table

SunCap - Unser (Los Volcanes Rd / Unser Blvd)

Sub Area Population Data:

For determination of Trip Distribution for Proposed Office Development Trips

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035

Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

Sub Area I.D.#	% Sub Area in Study	2015		2025		Interpolated Population for the Year	Population in Study	Dist. (Mi.)	Population / Distance	(GS)			(BE)			(US)		
		2015	2015	2025	2025					% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	Population
1	100%	58,191	127,178	58,191	127,178	58,191	58,191	15.6	3,730	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
2	100%	51,766	65,774	51,766	65,774	51,766	51,766	10.9	4,749	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
3	100%	8,277	10,139	8,277	10,139	8,277	8,277	11.8	701	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
4	100%	14,557	16,645	14,557	16,645	14,557	14,557	19.3	754	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
5	100%	62,713	67,834	62,713	67,834	62,713	62,713	7.7	8,145	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
6	100%	14,282	52,588	14,282	52,588	14,282	14,282	8.3	1,721	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
7	100%	60,860	79,163	60,860	79,163	60,860	60,860	2.9	20,986	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
8*	100%	30,322	30,045	30,322	30,045	30,322	30,322	1.0	30,322	1%	0.19%	303	11%	2.14%	3,335	37%	7.19%	11,219
9	100%	1,878	2,156	1,878	2,156	1,878	1,878	14.7	128	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	67,358	65,364	67,358	65,364	65,364	3.5	18,675	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
11	100%	33,469	34,155	33,469	34,155	33,469	33,469	4.6	7,276	0%	0.00%	0	0%	0.00%	0	100%	11.97%	18,675
12	100%	17,724	17,964	17,724	17,964	17,724	17,724	7.7	2,302	0%	0.00%	0	0%	0.00%	0	0%	0.00%	7,276
13	100%	10,624	9,340	10,624	9,340	10,624	10,624	9.3	1,142	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
14	100%	103,826	102,925	103,826	102,925	103,826	103,826	11.2	9,270	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
15	100%	26,850	27,053	26,850	27,053	26,850	26,850	4.3	6,244	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
16	100%	107,409	104,793	107,409	104,793	107,409	107,409	11.0	9,764	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
17	100%	23,810	25,804	23,810	25,804	23,810	23,810	3.8	6,266	0%	0.00%	0	0%	0.00%	0	50%	2.01%	3,133
18	100%	43,626	48,198	43,626	48,198	43,626	43,626	6.4	6,817	0%	0.00%	0	0%	0.00%	0	50%	2.18%	3,408
19	100%	65,561	65,783	65,561	65,783	65,561	65,561	9.8	6,690	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
20	100%	9,536	12,198	9,536	12,198	9,536	9,536	5.7	1,873	0%	0.00%	0	0%	0.00%	0	50%	0.54%	836
21	100%	4,225	72,808	4,225	72,808	4,225	4,225	9.7	436	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	4,214	3,874	3,874	13.0	298	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
23	100%	24,135	32,739	24,135	32,739	24,135	24,135	19.2	1,257	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
24	100%	2,815	3,209	2,815	3,209	2,815	2,815	12.7	222	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	1,136	995	995	15.1	66	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	132,754	86,303	86,303	19.3	4,472	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	26,278	23,414	23,414	25.1	933	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
28	100%	20,001	24,230	20,001	24,230	20,001	20,001	30.2	662	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	14,407	11,554	11,554	30.5	378	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
		987,961	1,278,868	987,961	1,278,868	987,961	987,961		156,080		0.19%	303		2.14%	3,335		28.54%	44,548
												0.19%			2.14%			28.54%

Trip Distribution Table

SunCap - Unser (Los Volcanes Rd / Unser Blvd)

Sub Area Population Data:

For determination of Trip Distribution for Proposed Office Development Trips

2015 and 2025 Data Taken from Mid-Region Council of Governments' 2035

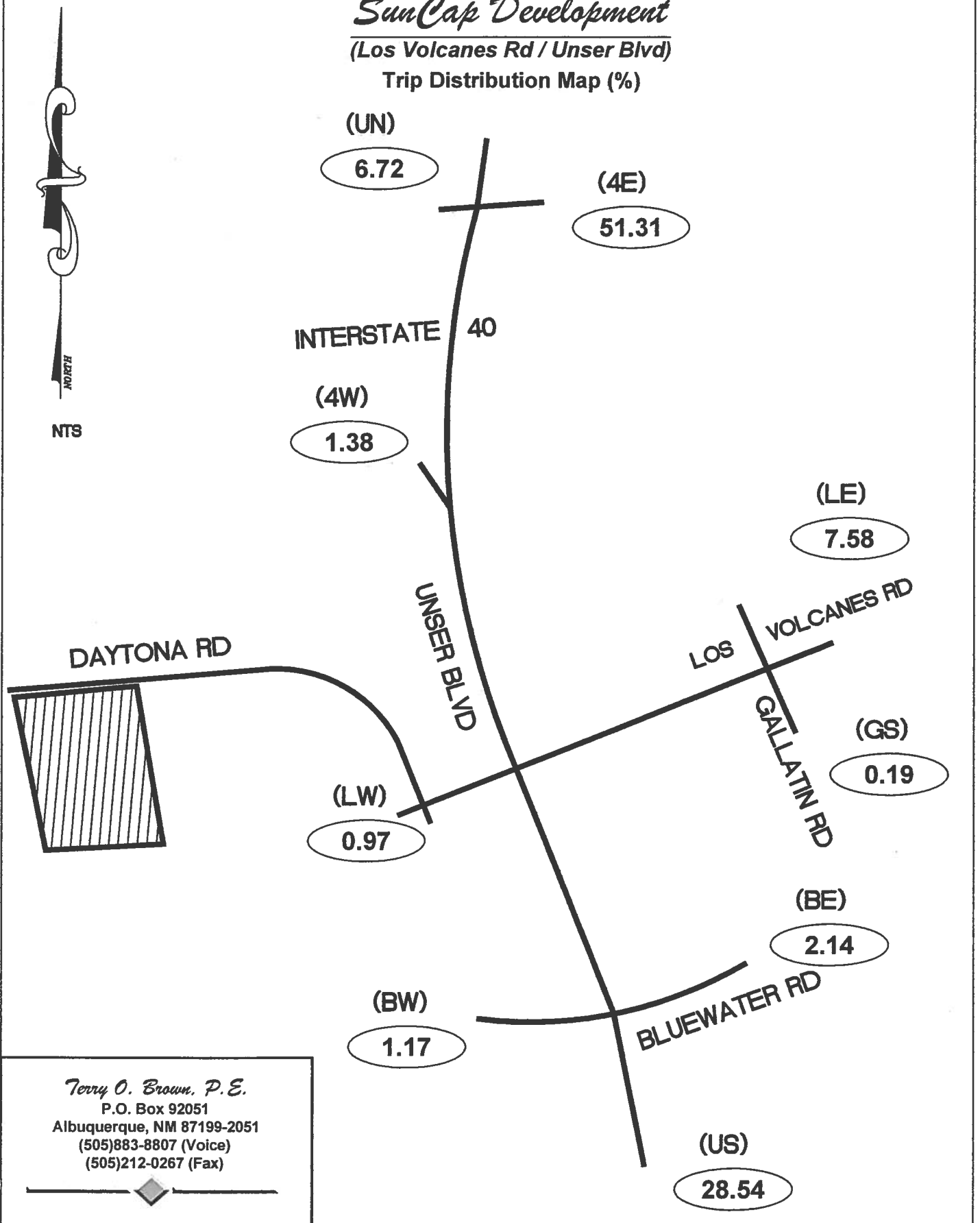
Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico

Sub Area I.D.#	% Sub Area in Study	2015 Population	2025 Population	Interpolated Population for the Year	Population in Study	Dist. (Mi.)	Population / Distance	(BW)			(LW)			(4W)		
		2015	2025	2015				% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	Population	% Utilizing	% Population / Dist Utilizing	
1	100%	58,191	127,178	58,191	58,191	15.6	3,730	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
2	100%	51,766	65,774	51,766	51,766	10.9	4,749	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
3	100%	8,277	10,139	8,277	8,277	11.8	701	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
4	100%	14,557	16,645	14,557	14,557	19.3	754	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
5	100%	62,713	67,834	62,713	62,713	7.7	8,145	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
6	100%	14,282	52,588	14,282	14,282	8.3	1,721	0%	0.00%	0	0%	0.00%	0	100%	1.10%	1,721
7	100%	60,860	79,163	60,860	60,860	2.9	20,986	0%	0.00%	0	5%	0.97%	1,516	1%	0.19%	303
8*	100%	30,322	30,045	30,322	30,322	1.0	30,322	6%	1.17%	1,819	0%	0.00%	0	100%	0.08%	128
9	100%	1,878	2,156	1,878	1,878	14.7	128	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
10	100%	65,364	67,358	65,364	65,364	3.5	18,675	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
11	100%	33,489	34,155	33,489	33,489	4.6	7,276	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
12	100%	17,724	17,964	17,724	17,724	7.7	2,302	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
13	100%	10,624	9,340	10,624	10,624	9.3	1,142	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
14	100%	103,826	102,925	103,826	103,826	11.2	9,270	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
15	100%	26,850	27,053	26,850	26,850	4.3	6,244	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
16	100%	107,409	104,793	107,409	107,409	11.0	9,764	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
17	100%	23,810	25,804	23,810	23,810	3.8	6,266	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
18	100%	43,626	48,198	43,626	43,626	6.4	6,817	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
19	100%	65,561	65,783	65,561	65,561	9.8	6,690	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
20	100%	9,536	12,198	9,536	9,536	5.7	1,673	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
21	100%	4,225	72,808	4,225	4,225	9.7	436	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
22	100%	3,874	4,214	3,874	3,874	13.0	298	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
23	100%	24,135	32,739	24,135	24,135	19.2	1,257	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
24	100%	2,815	3,209	2,815	2,815	12.7	222	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
25	100%	995	1,136	995	995	15.1	66	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
26	100%	86,303	132,754	86,303	86,303	19.3	4,472	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
27	100%	23,414	26,278	23,414	23,414	25.1	933	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
28	100%	20,001	24,230	20,001	20,001	30.2	662	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
29	100%	11,554	14,407	11,554	11,554	30.5	379	0%	0.00%	0	0%	0.00%	0	0%	0.00%	0
		987,961	1,278,868	987,961	987,961		166,080		1.17%	1,819		0.97%	1,516		1.38%	2,152
																1,38%

SunCap Development

(Los Volcanes Rd / Unser Blvd)

Trip Distribution Map (%)



SunCap Development

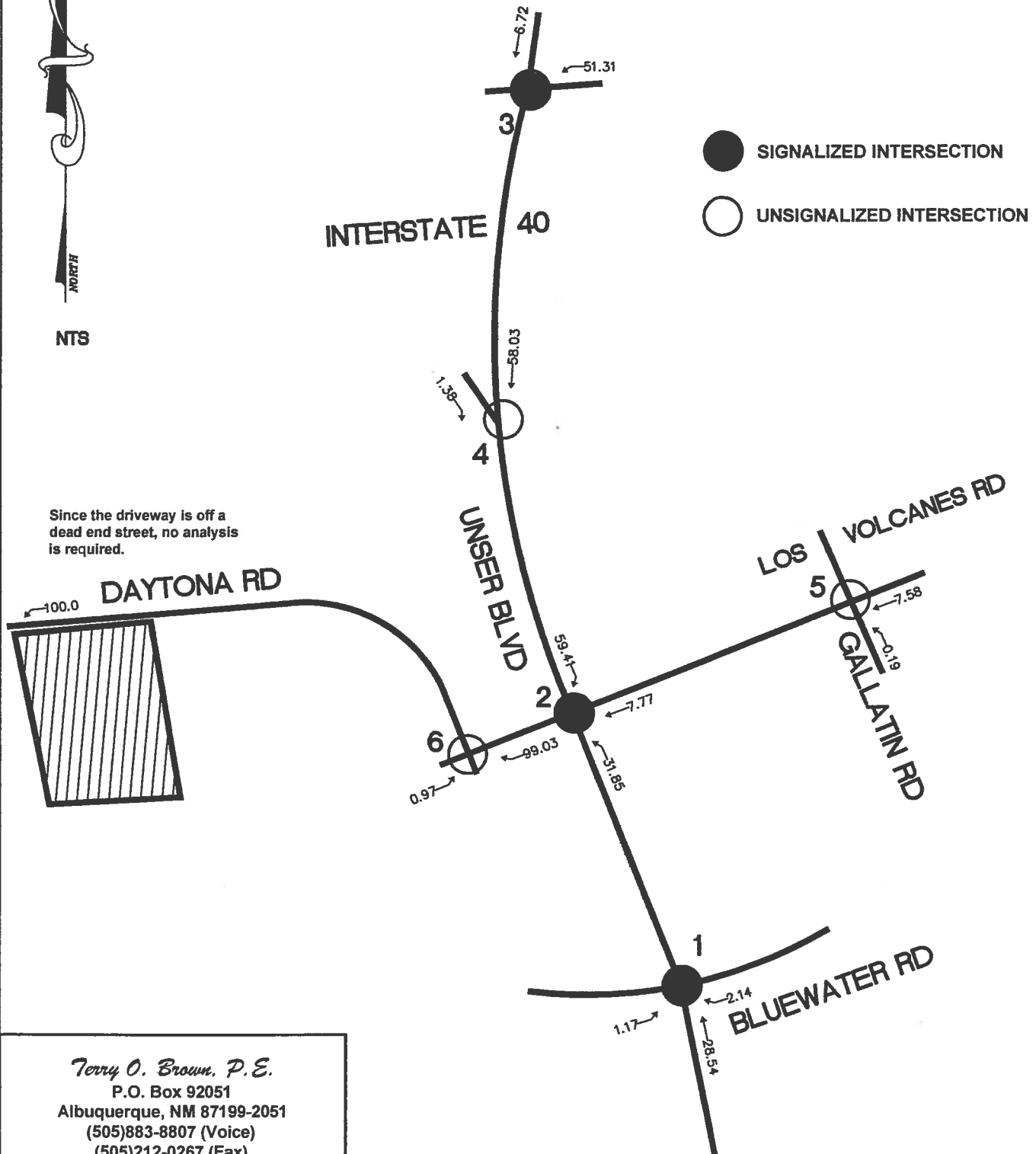
(Los Volcanes Rd / Unser Blvd)

Trip Assignments (% Entering)



NTS

Since the driveway is off a dead end street, no analysis is required.



Terry O. Brown, P.E.

P.O. Box 92051

Albuquerque, NM 87199-2051

(505)883-8807 (Voice)

(505)212-0267 (Fax)

SunCap Development

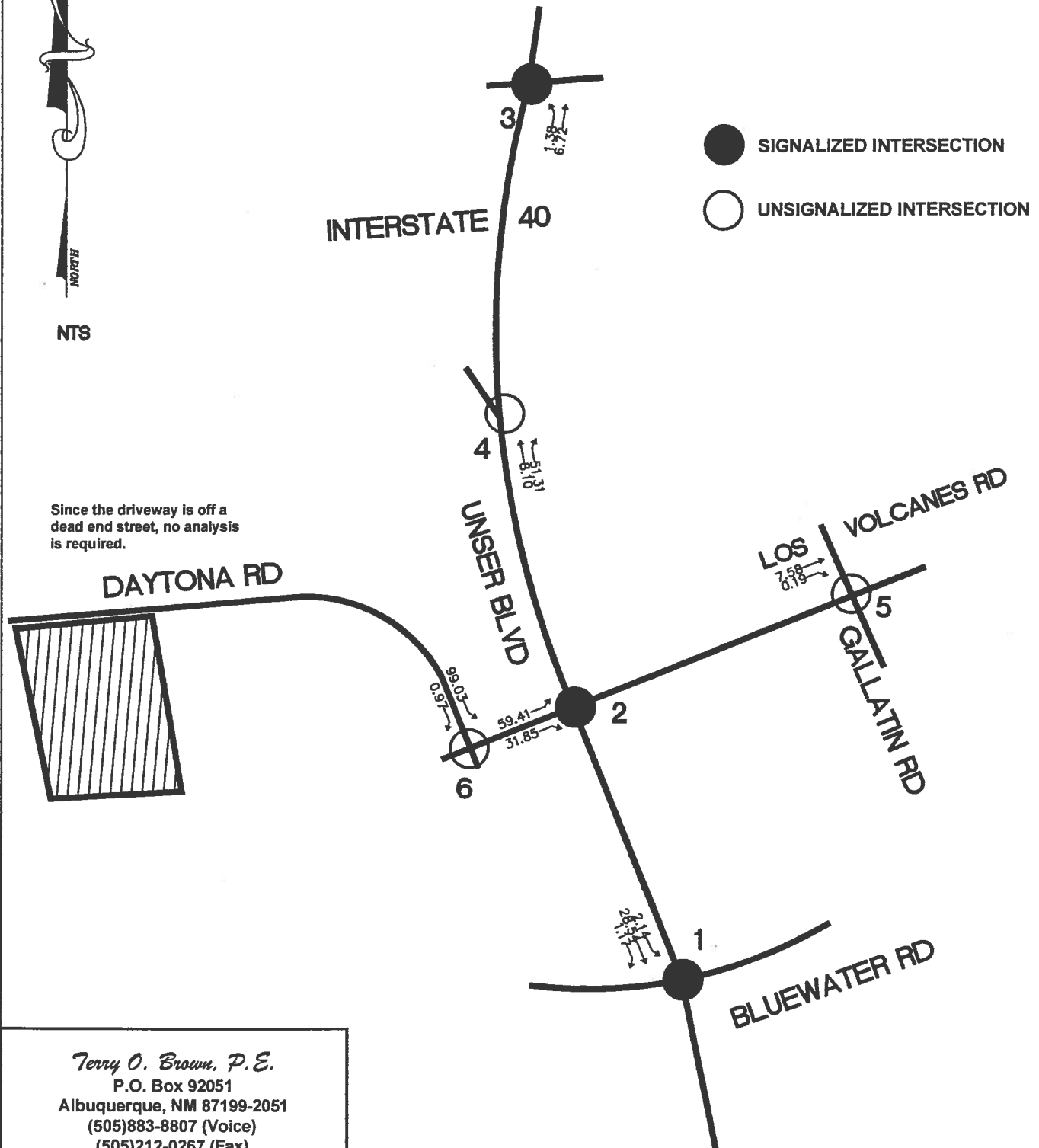
(Los Volcanes Rd / Unser Blvd)

Trip Assignments (% Exiting)



NTS

Since the driveway is off a dead end street, no analysis is required.



Terry O. Broun, P.E.

P.O. Box 92051

Albuquerque, NM 87199-2051

(505)883-8807 (Voice)

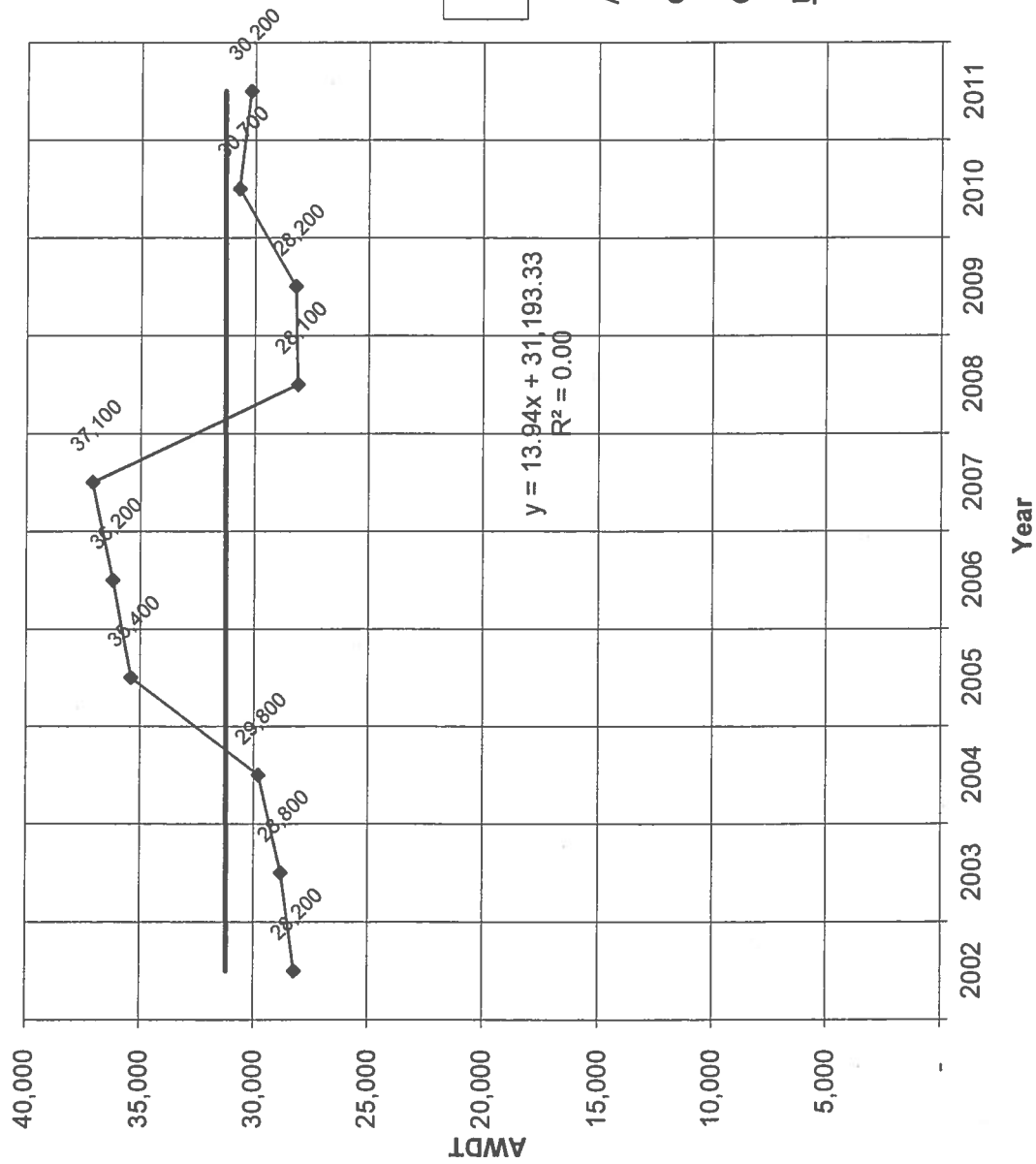
(505)212-0267 (Fax)

SunCap Development (Los Volcanes Rd / Unser Blvd)
Historic Growth Rate Table

Traffic Flows from MRCOG Map

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Unser Blvd North of Interstate 40	28,200	28,800	29,800	35,400	36,200	37,100	28,100	28,200	30,700	30,200
Interstate 40 East of Unser Blvd	54,000	62,400	74,400	68,100	74,900	77,300	84,600	90,200	86,900	76,600
Bluewater Rd East of Unser Blvd	3,600	3,700	5,600	5,700	5,800	5,900	5,900	4,800	4,700	4,700
Unser Blvd South of Bluewater Rd	12,900	18,700	19,100	19,600	19,900	20,200	31,800	31,800	21,300	21,000
Bluewater Rd West of Unser Blvd	-	-	5,600	5,700	5,800	3,200	3,200	3,200	4,700	4,600
Interstate 40 West of Unser Blvd	34,200	38,100	48,900	45,300	48,800	47,200	59,500	65,900	60,800	49,800
Unser Blvd South of Interstate 40	20,100	20,500	20,900	38,900	39,400	40,000	25,400	27,200	31,600	31,200
Unser Blvd North of Bluewater Rd	17,200	18,200	18,600	33,800	31,000	31,400	28,200	23,300	22,900	22,600

Historic Growth Chart Unser Blvd North of Interstate 40 (2002-2011)



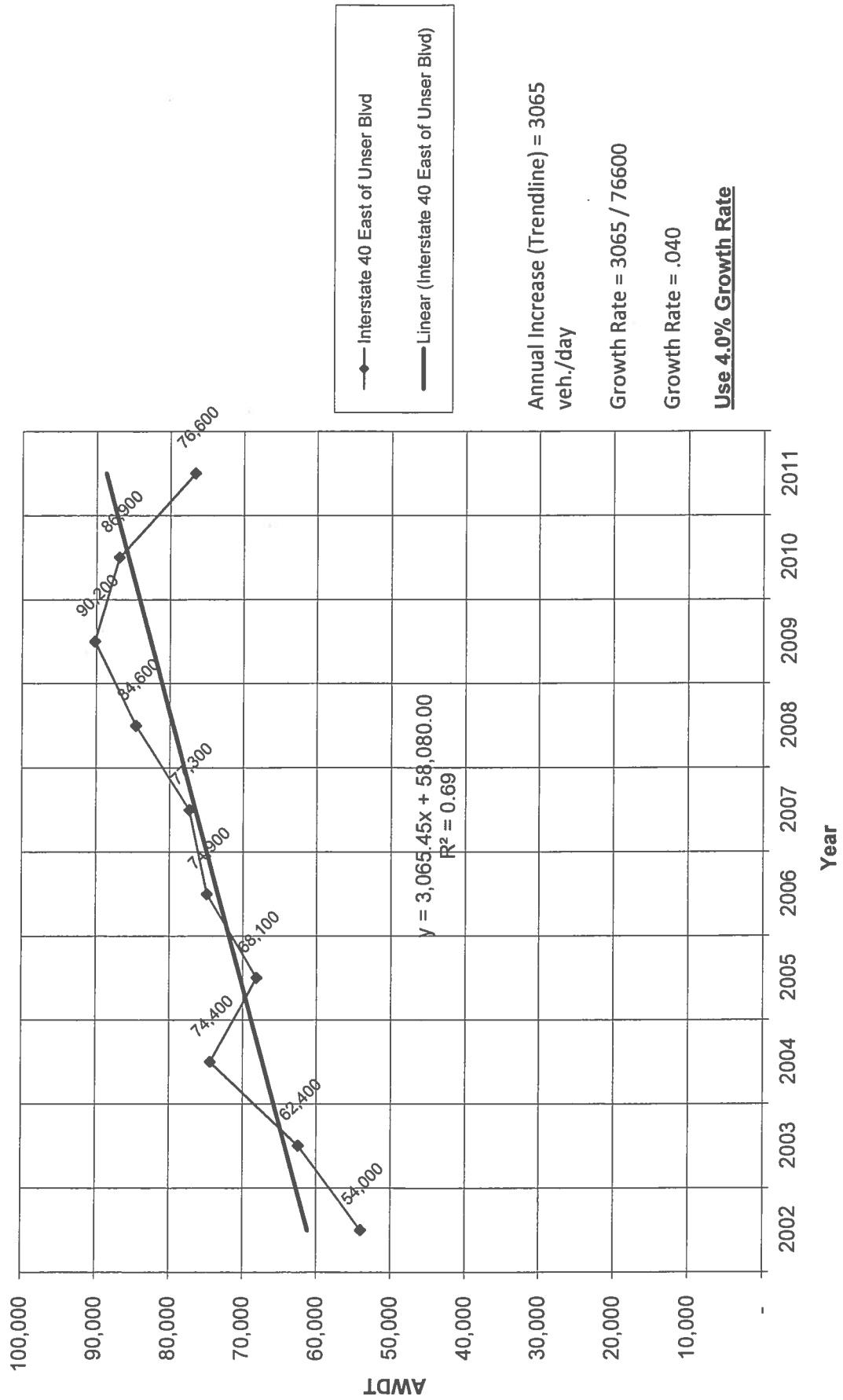
Annual Increase (Trendline) = 14 veh./day

Growth Rate = 14 / 30200

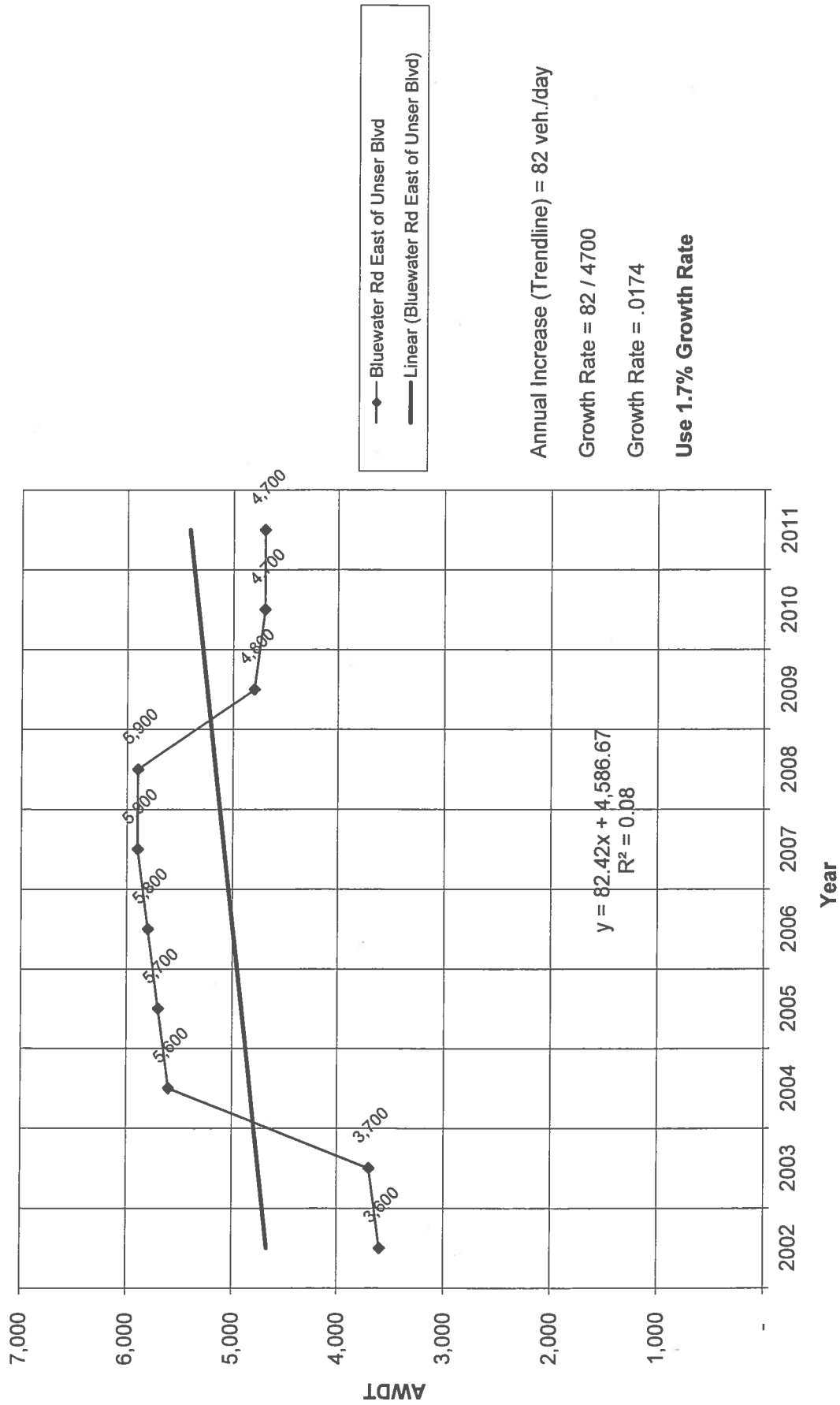
Growth Rate = .00046

Use 0.5% Growth Rate

Historic Growth Chart Interstate 40 East of Unser Blvd (2002-2011)



Historic Growth Chart Bluewater Rd East of Unser Blvd (2002-2011)



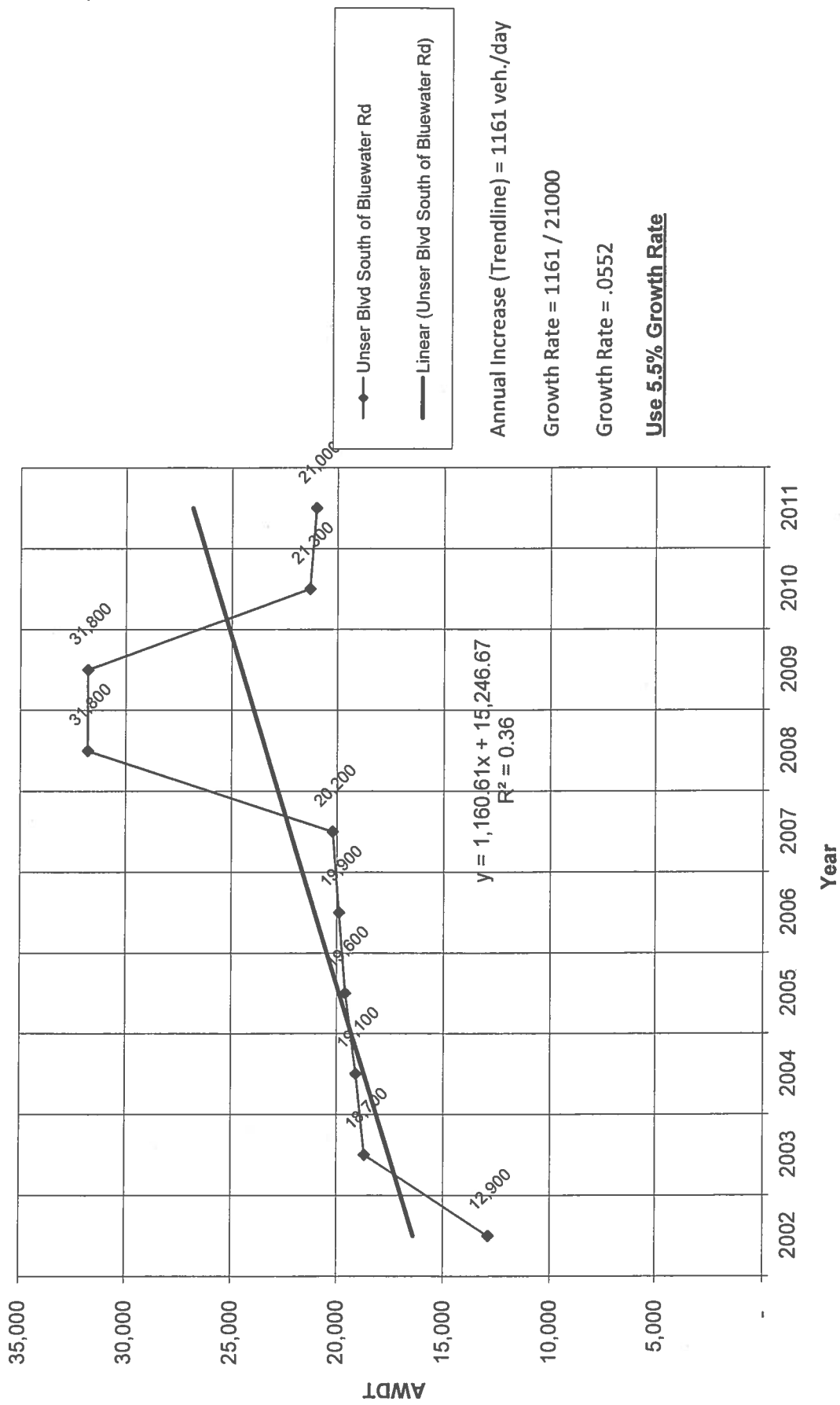
Annual Increase (Trendline) = 82 veh./day

Growth Rate = 82 / 4700

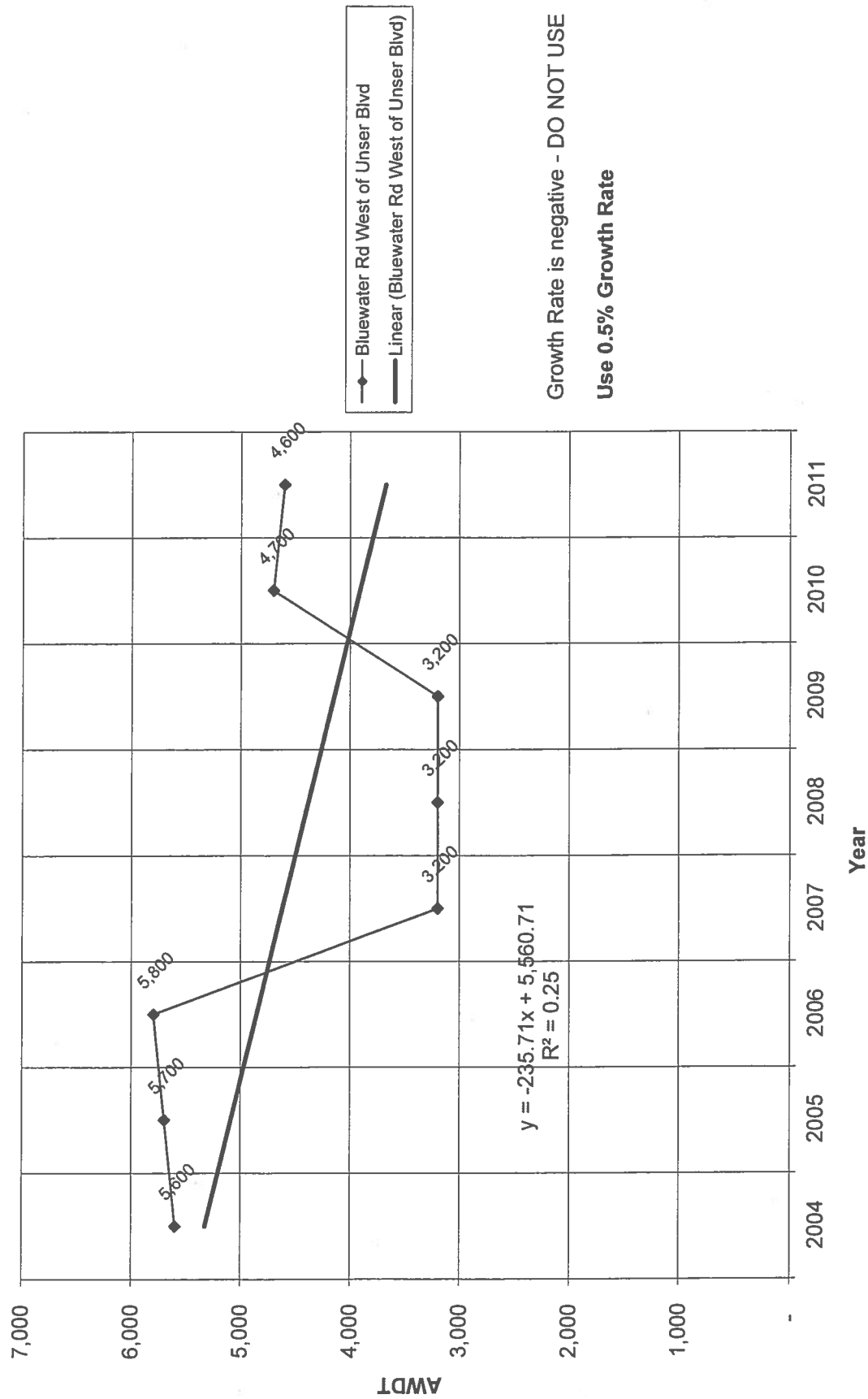
Growth Rate = .0174

Use 1.7% Growth Rate

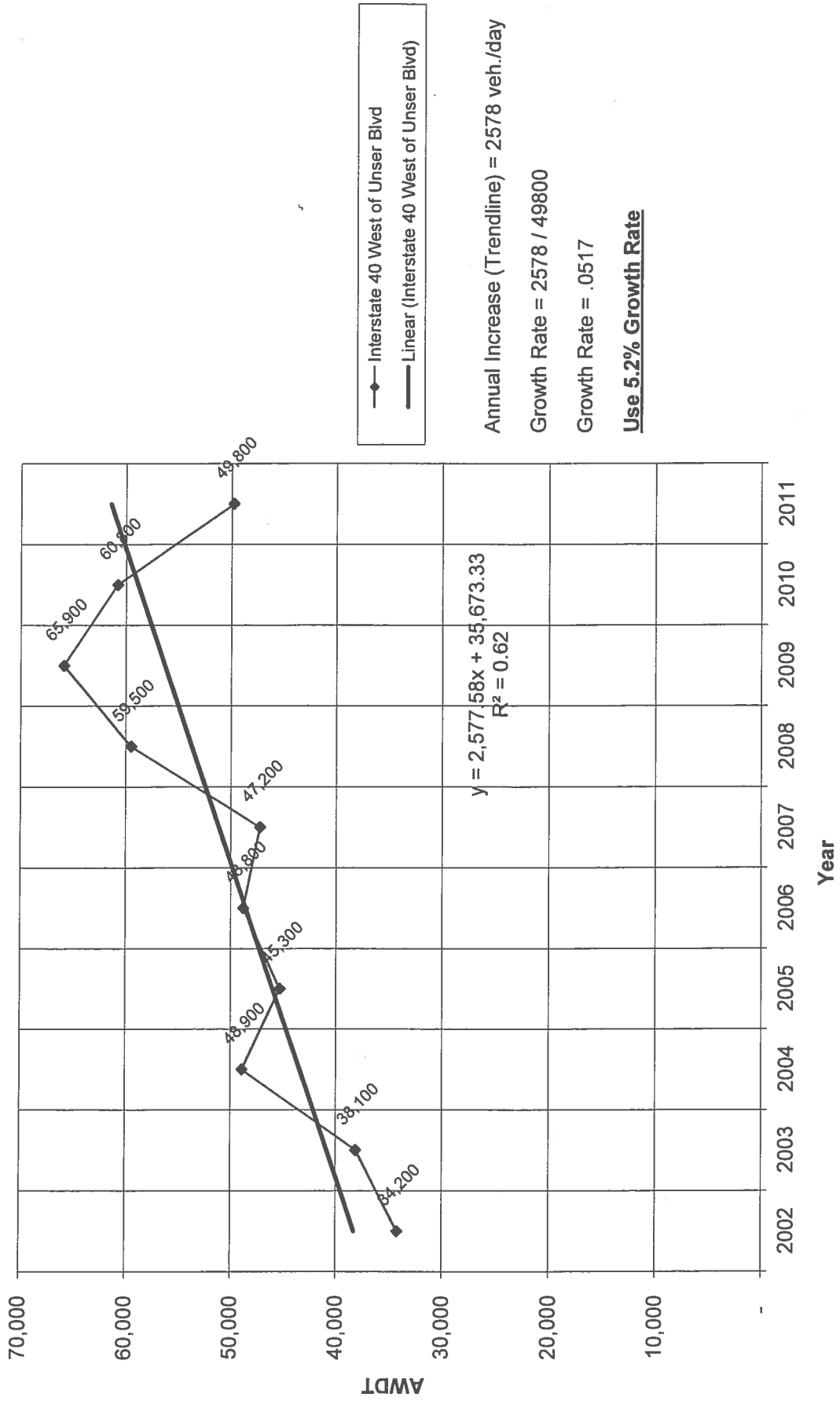
Historic Growth Chart Unser Blvd South of Bluewater Rd (2002-2011)



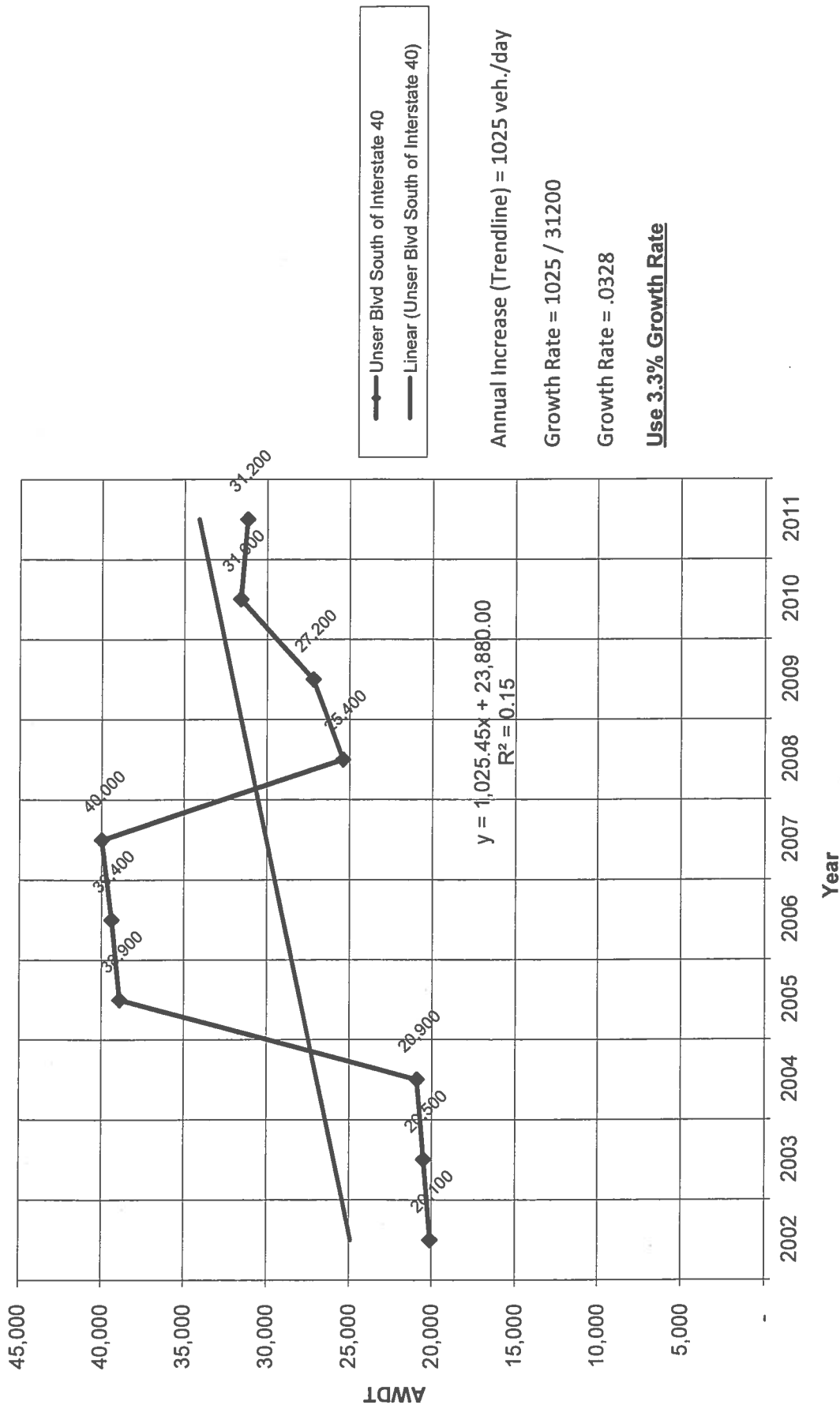
Historic Growth Chart Bluewater Rd West of Unser Blvd (2002-2011)



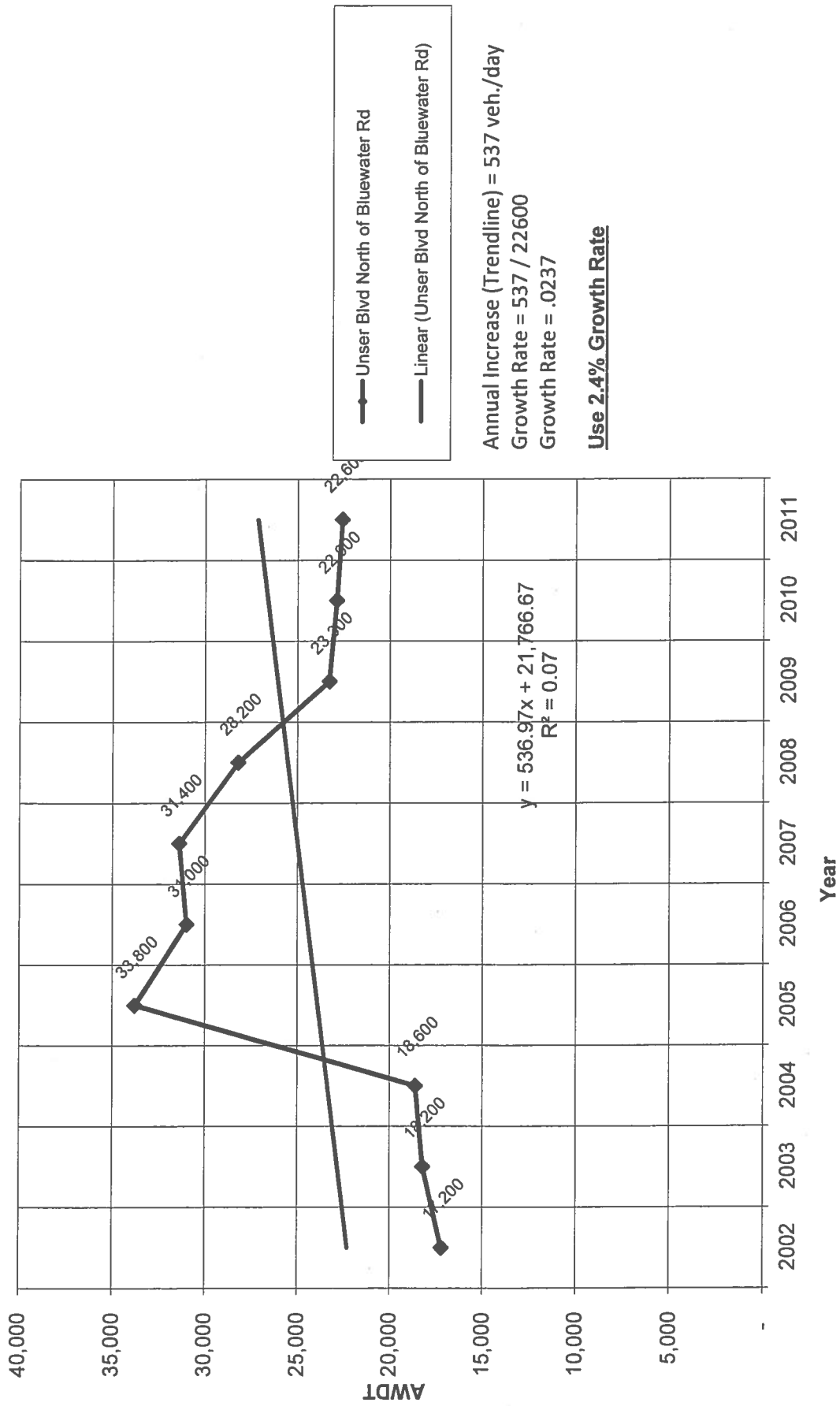
Historic Growth Chart Interstate 40 West of Unser Blvd (2002-2011)



Historic Growth Chart Unser Blvd South of Interstate 40 (2002-2011)



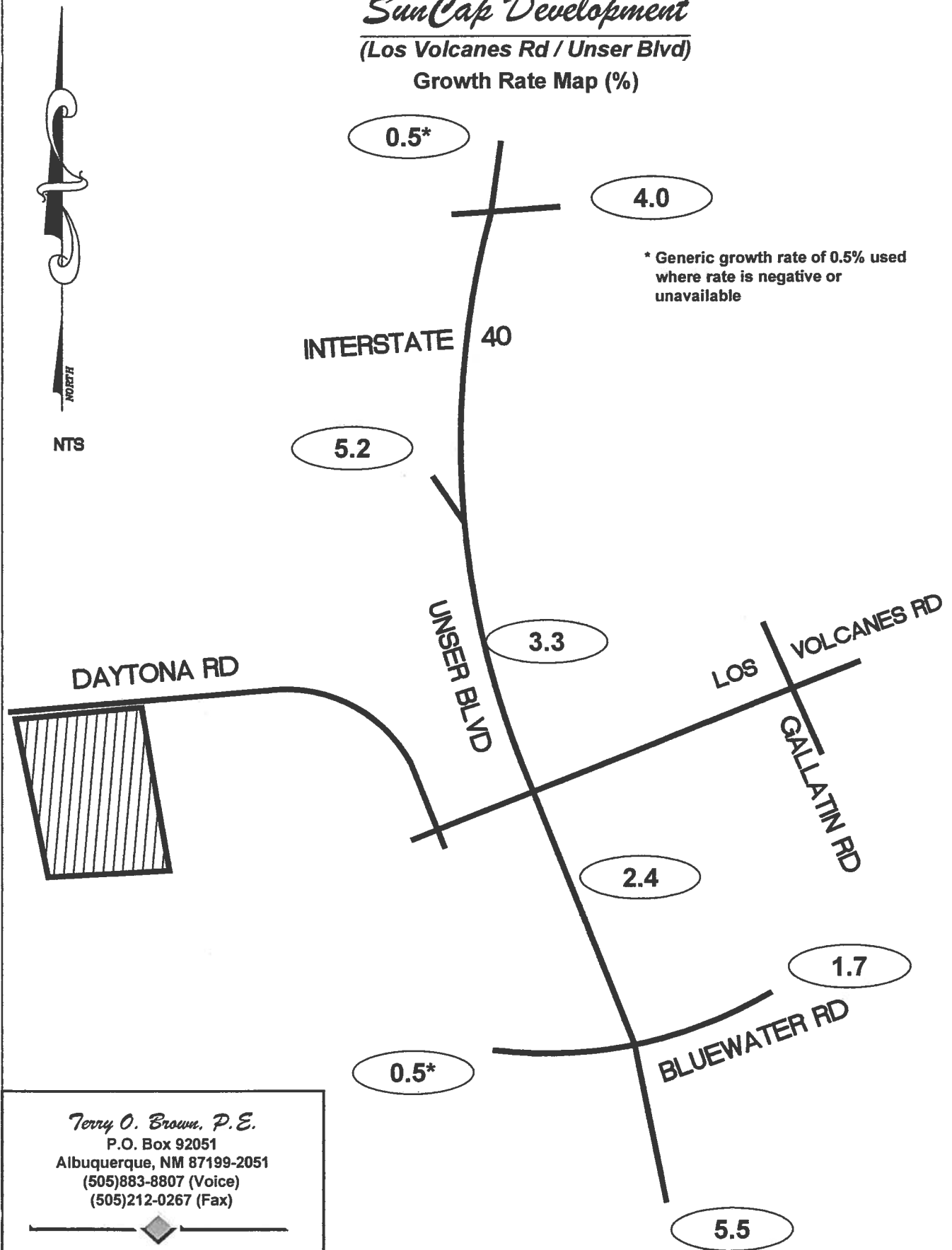
Historic Growth Chart Unser Blvd North of Bluewater Rd (2002-2011)



SunCap Development

(Los Volcanes Rd / Unser Blvd)

Growth Rate Map (%)



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SunCap Development (Los Volcanes Rd / Unser Blvd)

Projected Turning Movements SUMMARY **PROPOSED DEVELOPMENT (2015) - 100% Development**

INTERSECTION: Summary

Bluewater Rd / Unser Blvd

(1)	3.0% Truck	Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		195	71	104	49	40	67	70	1,297	113	153	894	123	
Existing (2013)		197	72	105	51	41	69	78	1,440	125	160	937	129	
2015 (NO BUILD - A.M.)		198	72	105	51	41	71	78	1,462	125	164	985	131	
2015 (BUILD - A.M.)														
		0.96			0.96			0.96			0.96			PHF
		Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		74	46	36	57	60	131	52	904	55	53	1,185	101	
Existing (2013)		75	46	36	59	62	135	58	1,003	61	56	1,242	106	
2015 (NO BUILD - P.M.)		76	46	36	59	62	138	58	1,039	61	59	1,279	108	
2015 (BUILD - P.M.)														

Los Volcanes Rd / Unser Blvd

(2)	3.0% Truck			0.94			0.94			0.94			PHF			
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)						
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
Existing (2013)				194	84	18	85	29	247	17	1,447	121	301	977	129	
2015 (NO BUILD - A.M.)				196	85	18	86	29	249	18	1,516	127	321	1,041	138	
2015 (BUILD - A.M.)				296	91	72	86	29	249	42	1,516	127	321	1,041	183	
				0.95			0.95			0.95			0.95			PHF
				Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)			
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing (2013)				98	32	151	98	29	176	19	1,045	64	135	1,179	142	
2015 (NO BUILD - P.M.)				99	32	153	99	29	178	20	1,095	67	144	1,257	151	
2015 (BUILD - P.M.)				176	42	194	99	29	178	60	1,095	67	144	1,257	225	

I-40 WB Ramp / Unser Blvd

(3)	3.0% Truck Existing (2013) 2015 (NO BUILD - A.M.) 2015 (BUILD - A.M.)	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		0	0	0	427	0	1	25	843	0	0	2,131	0	
		0	0	0	461	0	8	27	905	0	0	2,165	0	
		0	0	0	500	0	8	29	916	0	0	2,170	0	
		0.98			0.98			0.98			0.98			PHF
		Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		0	0	0	928	3	0	44	803	0	0	867	0	0
		0	0	0	1,002	3	20	47	873	0	0	911	2	2
0	0	0	1,066	3	20	49	882	0	0	919	2	2		

SunCap Development (Los Volcanes Rd / Unser Blvd)

Projected Turning Movements SUMMARY **PROPOSED DEVELOPMENT (2015) - 100% Development**

INTERSECTION: Summary

I-40 EB Ramp / Unser Blvd

(4)	3.0% Truck			0.98			0.98			0.98			0.98			PHF
	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)						
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
Existing (2013)				30	0	14	0	0	0	0	838	0	0	2,558	0	
2015 (NO BUILD - A.M.)				33	0	15	0	0	0	0	899	0	0	1,506	7	
2015 (BUILD - A.M.)				33	0	16	0	0	0	0	913	86	0	1,550	7	
				0.98			0.98			0.98			0.98			PHF
	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)						
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
	77	0	35	0	0	0	0	770	0	0	1,795	0				
Existing (2013)				87	0	39	0	0	0	0	836	0	0	1,567	20	
2015 (NO BUILD - P.M.)				87	0	41	0	0	0	0	846	66	0	1,640	20	
2015 (BUILD - P.M.)																

Los Volcanes Rd / Gallitan Pl

(5)	0.75			0.75			0.75			0.75			PHF
3.0% Truck	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Gallitan Pl)			Southbound (Gallitan Pl)			
Existing (2013)	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2015 (NO BUILD - A.M.)	208	200	21	9	222	20	15	1	5	9	4	186	
2015 (BUILD - A.M.)	210	202	21	9	224	20	15	1	5	9	4	188	
2015 (BUILD - A.M.)	210	215	21	9	230	20	15	1	5	9	4	188	

	0.88			0.88			0.88			0.88			PHF
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Gallitan Pl)			Southbound (Gallitan Pl)			
Existing (2013)	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2015 (NO BUILD - P.M.)	86	146	3	2	139	5	14	1	4	8	1	112	
2015 (BUILD - P.M.)	87	147	3	2	140	5	14	1	4	8	1	113	
2015 (BUILD - P.M.)	87	157	3	2	149	5	14	1	4	8	1	113	

Los Volcanes Rd / Daytona Rd

(6)	0.91			0.91			0.91			0.91			PHF
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Daytona Rd)			Southbound (Daytona Rd)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	Existing (2013)	1	243	0	3	135	52	0	0	2	30	0	
	2015 (NO BUILD - A.M.)	1	245	0	3	136	53	0	0	2	30	0	2
	2015 (BUILD - A.M.)	2	245	0	3	136	128	0	0	2	196	0	4

	0.95			0.95			0.95			0.95			PHF
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Daytona Rd)			Southbound (Daytona Rd)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	Existing (2013)	1	78	0	0	141	44	0	0	0	61	0	
	2015 (NO BUILD - P.M.)	1	79	0	0	142	44	0	0	0	62	0	3
	2015 (BUILD - P.M.)	2	79	0	0	142	168	0	0	0	190	0	4

SunCap Development (Los Volcanes Rd / Unser Blvd)**Projected Turning Movements Worksheet****Bluewater Rd / Unser Blvd****INTERSECTION :**E-W Street: **Bluewater Rd** (1)N-S Street: **Unser Blvd**

Year of Existing Counts

2013

Implementation Year

2015

Growth Rates

0.50%

1.70%

5.50%

2.40%

Existing Volumes

Background Traffic Growth

Subtotal (NO BUILD - A.M.)

Percent Office Trips Generated(Entering)

Percent Office Trips Generated(Exiting)

Total Trips Generated

Total AM Peak Hour BUILD Volumes

Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
195	71	104	49	40	67	70	1,297	113	153	894	123
2	1	1	2	1	2	8	143	12	7	43	6
197	72	105	51	41	69	78	1,440	125	160	937	129
1.17%	0.00%	0.00%	0.00%	0.00%	2.14%	0.00%	28.54%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.14%	28.54%	1.17%
1	0	0	0	0	2	0	22	0	4	48	2
198	72	105	51	41	71	78	1,462	125	164	985	131

Existing Volumes

Background Traffic Growth

Subtotal (NO BUILD - P.M.)

Percent Office Trips Generated(Entering)

Percent Office Trips Generated(Exiting)

Total Trips Generated

Total PM Peak Hour BUILD Volumes

Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
74	46	36	57	60	131	52	904	55	53	1,185	101
1	0	0	2	2	4	6	99	6	3	57	5
75	46	36	59	62	135	58	1,003	61	56	1,242	106
1.17%	0.00%	0.00%	0.00%	0.00%	2.14%	0.00%	28.54%	0.00%	0.00%	0.00%	0.00%
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.14%	28.54%	1.17%
1	0	0	0	0	3	0	36	0	3	37	2
76	46	36	59	62	138	58	1,039	61	59	1,279	108

Number of Office Trips Generated

Entering Exiting

76 168 A.M.

125 129 P.M.

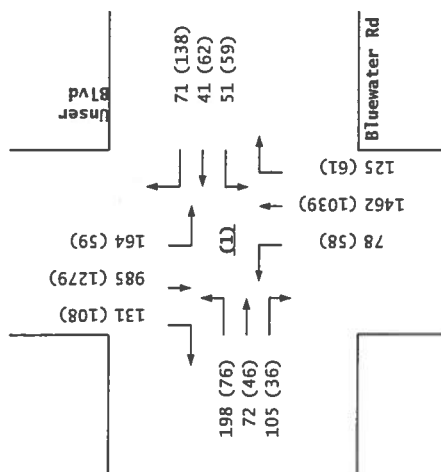
100% Office Development

2013 AM Peak Hr. Volumes

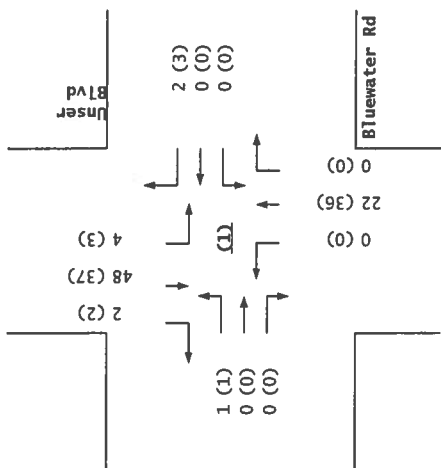
2013 PM Peak Hr. Volumes

Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
195	71	104	49	40	67	70	1,297	113	153	894	123
74	46	36	57	60	131	52	904	55	53	1,185	101

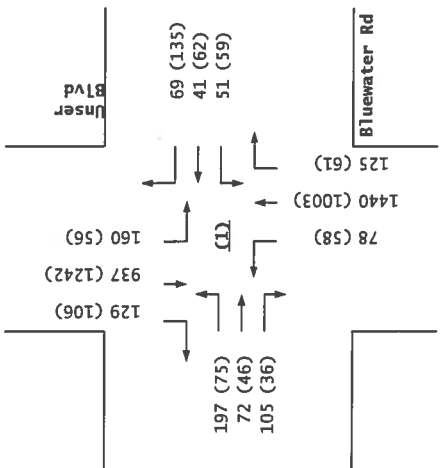
2015
BUILD



Trips



2015
NO BUILD



Bluewater Rd / Unser Blvd

SunCap Development (Los Volcanes Rd / Unser Blvd)

Projected Turning Movements Worksheet

Los Volcanes Rd / Unser Blvd

INTERSECTION : E-W Street: Los Volcanes Rd (2)
 N-S Street: Unser Blvd
 Year of Existing Counts: 2013
 Implementation Year: 2015

	0.50%			0.50%			2.40%			3.30%		
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	194	84	18	85	29	247	17	1,447	121	301	977	129
Background Traffic Growth	2	1	0	1	0	2	1	69	6	20	64	9
Subtotal (NO BUILD - A.M.)	196	85	18	86	29	249	18	1,516	127	321	1,041	138
Percent Office Trips Generated(Entering)	0.00%	7.77%	0.00%	0.00%	0.00%	0.00%	31.85%	0.00%	0.00%	0.00%	0.00%	59.41%
Percent Office Trips Generated(Exiting)	59.41%	0.00%	31.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	100	6	54	0	0	0	24	0	0	0	0	45
Total AM Peak Hour BUILD Volumes	296	91	72	86	29	249	42	1,516	127	321	1,041	183

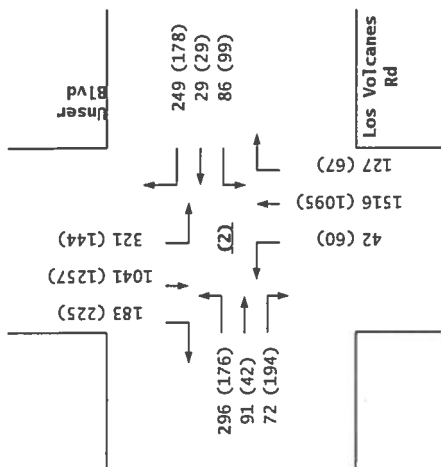
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	98	32	151	98	29	176	19	1,045	64	135	1,179	142
Background Traffic Growth	1	0	2	1	0	2	1	50	3	9	78	9
Subtotal (NO BUILD - P.M.)	99	32	153	99	29	178	20	1,095	67	144	1,257	151
Percent Office Trips Generated(Entering)	0.00%	7.77%	0.00%	0.00%	0.00%	0.00%	31.85%	0.00%	0.00%	0.00%	0.00%	59.41%
Percent Office Trips Generated(Exiting)	59.41%	0.00%	31.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	77	10	41	0	0	0	40	0	0	0	0	74
Total PM Peak Hour BUILD Volumes	176	42	194	99	29	178	60	1,095	67	144	1,257	225

Number of Office Trips Generated

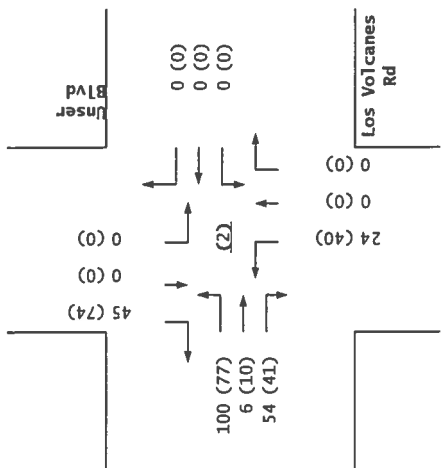
Entering	76	168	A.M.	100% Office Development
Exiting	125	129	P.M.	

	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2013 AM Peak Hr. Volumes	194	84	18	85	29	247	17	1,447	121	301	977	129
2013 PM Peak Hr. Volumes	98	32	151	98	29	176	19	1,045	64	135	1,179	142

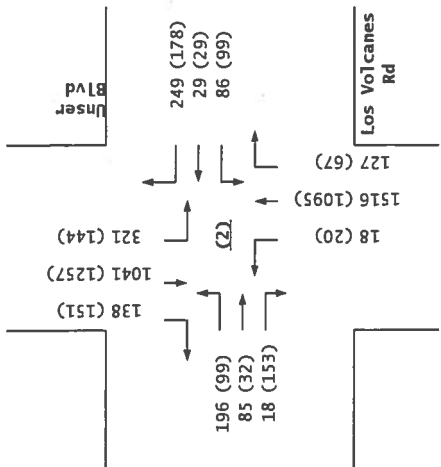
2015
BUILD



Trips



2015
NO BUILD



Los Volcanes Rd / Unser Blvd

SunCap Development (Los Volcanes Rd / Unser Blvd)

Projected Turning Movements Worksheet

I-40 WB Ramp / Unser Blvd

INTERSECTION :

E-W Street: I-40 WB Ramp (3)

N-S Street: Unser Blvd

Year of Existing Counts 2013

Implementation Year 2015

Growth Rates

	0.50%			4.00%			3.30%			0.50%		
	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	0	0	427	0	1	25	843	0	0	2,131	0
Background Traffic Growth	0	0	0	34	0	0	2	56	0	0	21	0
Subtotal	0	0	0	461	0	1	27	899	0	0	2,152	0
Watershed Estrella	0	0	0	0	0	7	0	6	0	0	13	0
Subtotal (NO BUILD - A.M.)	0	0	0	461	0	8	27	905	0	0	2,165	0
Percent Office Trips Generated(Entering)	0.00%	0.00%	0.00%	51.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.72%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.38%	6.72%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	0	39	0	0	2	11	0	0	5	0
Total AM Peak Hour BUILD Volumes	0	0	0	500	0	8	29	916	0	0	2,170	0

	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	0	0	0	928	3	0	44	803	0	0	867	0
Background Traffic Growth	0	0	0	74	0	0	3	53	0	0	9	0
Subtotal	0	0	0	1,002	3	0	47	856	0	0	876	0
Watershed Estrella	0	0	0	0	0	20	0	17	0	0	35	2
Subtotal (NO BUILD - P.M.)	0	0	0	1,002	3	20	47	873	0	0	911	2
Percent Office Trips Generated(Entering)	0.00%	0.00%	0.00%	51.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.72%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.38%	6.72%	0.00%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	0	64	0	0	2	9	0	0	8	0
Total PM Peak Hour BUILD Volumes	0	0	0	1,066	3	20	49	882	0	0	919	2

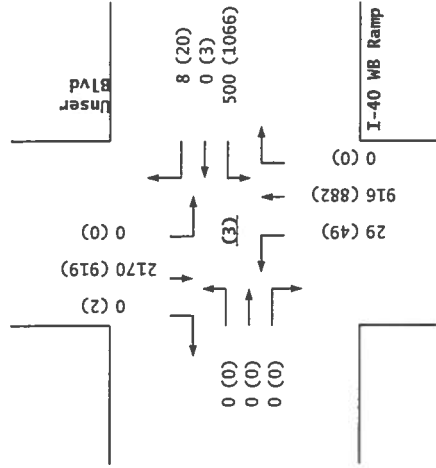
Number of Office Trips Generated

Entering	76	168	A.M.	100% Office Development
Exiting	125	129	P.M.	

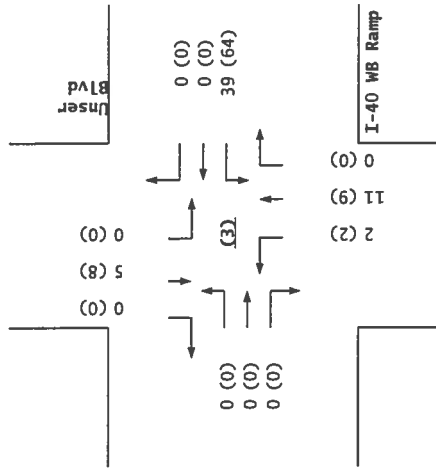
2013 AM Peak Hr. Volumes
2013 PM Peak Hr. Volumes

	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2013 AM Peak Hr. Volumes	0	0	0	427	0	1	25	843	0	0	2,131	0
2013 PM Peak Hr. Volumes	0	0	0	928	3	0	44	803	0	0	867	0

2015
BUILD

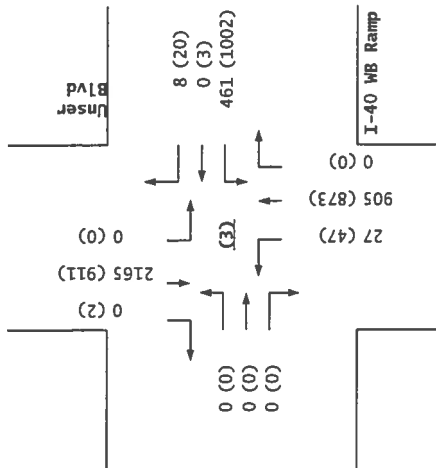


Trips



I-40 WB Ramp / Unser Blvd

2015
NO BUILD



SunCap Development (Los Volcanes Rd / Unser Blvd)
Projected Turning Movements Worksheet
I-40 EB Ramp / Unser Blvd

INTERSECTION : E-W Street: I-40 EB Ramp (4)

N-S Street: Unser Blvd

Year of Existing Counts 2013

Implementation Year 2015

Growth Rates

	5.20%			0.50%			3.30%			3.30%		
	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	30	0	14	0	0	0	0	838	0	0	2,558	0
Background Traffic Growth	3	0	1	0	0	0	0	55	0	0	169	0
Subtotal	33	0	15	0	0	0	0	893	0	0	1,500	0
Watershed Estrella	0	0	0	0	0	0	0	6	0	0	6	7
Subtotal (NO BUILD - A.M.)	33	0	15	0	0	0	0	899	0	0	1,506	7
Percent Office Trips Generated(Entering)	0.00%	0.00%	1.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	58.03%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.10%	51.31%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	1	0	0	0	0	14	86	0	44	0
Total AM Peak Hour BUILD Volumes	33	0	16	0	0	0	0	913	86	0	1,550	7

	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	77	0	35	0	0	0	0	770	0	0	1,795	0
Background Traffic Growth	8	0	4	0	0	0	0	51	0	0	118	0
Subtotal	85	0	39	0	0	0	0	821	0	0	1,552	0
Watershed Estrella	2	0	0	0	0	0	0	15	0	0	15	20
Subtotal (NO BUILD - P.M.)	87	0	39	0	0	0	0	836	0	0	1,567	20
Percent Office Trips Generated(Entering)	0.00%	0.00%	1.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	58.03%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.10%	51.31%	0.00%	0.00%	0.00%
Total Trips Generated	0	0	2	0	0	0	0	10	66	0	73	0
Total PM Peak Hour BUILD Volumes	87	0	41	0	0	0	0	846	66	0	1,640	20

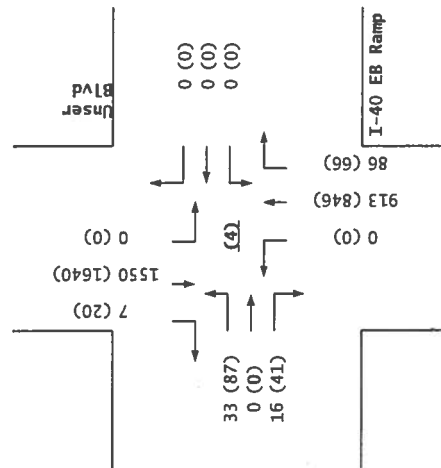
Number of Office Trips Generated

Entering	76	168	A.M.	100% Office Development
Exiting	125	129	P.M.	

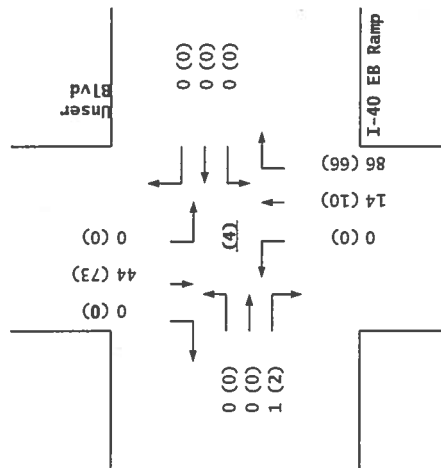
2013 AM Peak Hr. Volumes
 2013 PM Peak Hr. Volumes

	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2013 AM Peak Hr. Volumes	30	0	14	0	0	0	0	838	0	0	2,558	0
2013 PM Peak Hr. Volumes	77	0	35	0	0	0	0	770	0	0	1,795	0

2015
BUILD

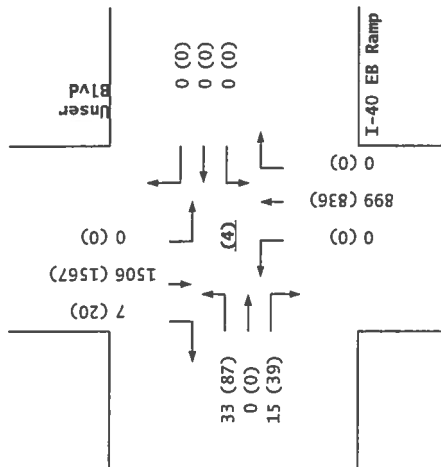


Trips



I-40 EB Ramp / Unser Blvd

2015
NO BUILD



SunCap Development (Los Volcanes Rd / Unser Blvd)

Projected Turning Movements Worksheet

Los Volcanes Rd / Gallitan Pl

INTERSECTION :

E-W Street: Los Volcanes Rd (5)

N-S Street: Gallitan Pl

Year of Existing Counts 2013

Implementation Year 2015

Growth Rates

0.50%

0.50%

0.50%

0.50%

Existing Volumes

Background Traffic Growth

Subtotal (NO BUILD - A.M.)

Percent Office Trips Generated(Entering)

Percent Office Trips Generated(Exiting)

Total Trips Generated

Total AM Peak Hour BUILD Volumes

Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Gallitan Pl)			Southbound (Gallitan Pl)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
208	200	21	9	222	20	15	1	5	9	4	186
2	2	0	0	2	0	0	0	0	0	0	2
210	202	21	9	224	20	15	1	5	9	4	188
0.00%	0.00%	0.00%	0.00%	7.58%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	7.58%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0	13	0	0	6	0	0	0	0	0	0	0
210	215	21	9	230	20	15	1	5	9	4	188

Existing Volumes

Background Traffic Growth

Subtotal (NO BUILD - P.M.)

Percent Office Trips Generated(Entering)

Percent Office Trips Generated(Exiting)

Total Trips Generated

Total PM Peak Hour BUILD Volumes

Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Gallitan Pl)			Southbound (Gallitan Pl)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
86	146	3	2	139	5	14	1	4	8	1	112
1	1	0	0	1	0	0	0	0	0	0	1
87	147	3	2	140	5	14	1	4	8	1	113
0.00%	0.00%	0.00%	0.00%	7.58%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%
0.00%	7.58%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
0	10	0	0	9	0	0	0	0	0	0	0
87	157	3	2	149	5	14	1	4	8	1	113

Number of Office Trips Generated

Entering Exiting

76 168 A.M.

125 129 P.M.

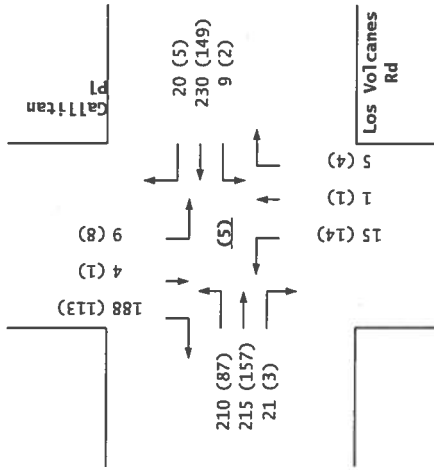
100% Office Development

2013 AM Peak Hr. Volumes

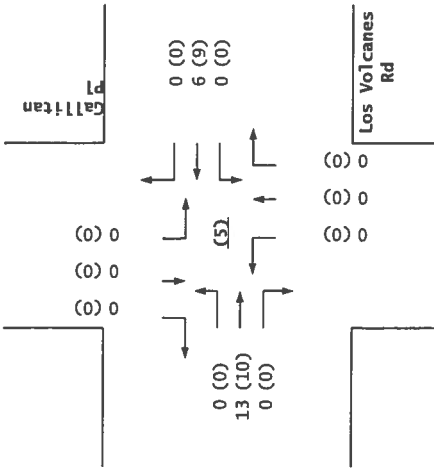
2013 PM Peak Hr. Volumes

Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Gallitan Pl)			Southbound (Gallitan Pl)		
Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
208	200	21	9	222	20	15	1	5	9	4	186
86	146	3	2	139	5	14	1	4	8	1	112

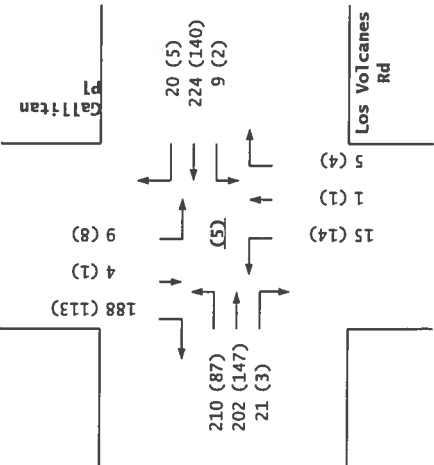
2015
BUILD



Trips



2015
NO BUILD



Los Volcanes Rd / Gallitan PI

SunCap Development (Los Volcanes Rd / Unser Blvd)
Projected Turning Movements Worksheet
Los Volcanes Rd / Daytona Rd

INTERSECTION: E-W Street: **Los Volcanes Rd** (6)
 N-S Street: **Daytona Rd**

Year of Existing Counts: **2013**
 Implementation Year: **2015**

Growth Rates

	0.50%			0.50%			0.50%			0.50%		
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Daytona Rd)			Southbound (Daytona Rd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	1	243	0	3	135	52	0	0	2	30	0	2
Background Traffic Growth	0	2	0	0	1	1	0	0	0	0	0	0
Subtotal (NO BUILD - A.M.)	1	245	0	3	136	53	0	0	2	30	0	2
Percent Office Trips Generated(Entering)	0.97%	0.00%	0.00%	0.00%	0.00%	99.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.03%	0.00%	0.97%
Total Trips Generated	1	0	0	0	0	75	0	0	0	166	0	2
Total AM Peak Hour BUILD Volumes	2	245	0	3	136	128	0	0	2	196	0	4

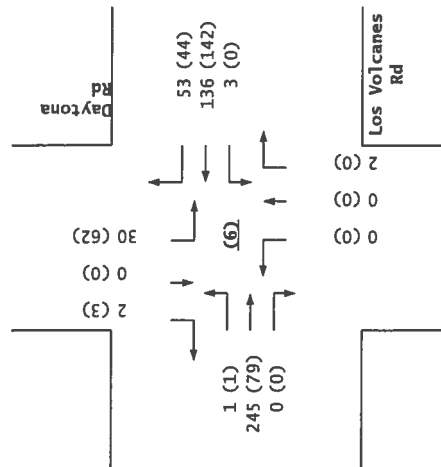
	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Daytona Rd)			Southbound (Daytona Rd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing Volumes	1	78	0	0	141	44	0	0	0	61	0	3
Background Traffic Growth	0	1	0	0	1	0	0	0	0	1	0	0
Subtotal (NO BUILD - P.M.)	1	79	0	0	142	44	0	0	0	62	0	3
Percent Office Trips Generated(Entering)	0.97%	0.00%	0.00%	0.00%	0.00%	99.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent Office Trips Generated(Exiting)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	99.03%	0.00%	0.97%
Total Trips Generated	1	0	0	0	0	124	0	0	0	128	0	1
Total PM Peak Hour BUILD Volumes	2	79	0	0	142	168	0	0	0	190	0	4

Number of Office Trips Generated

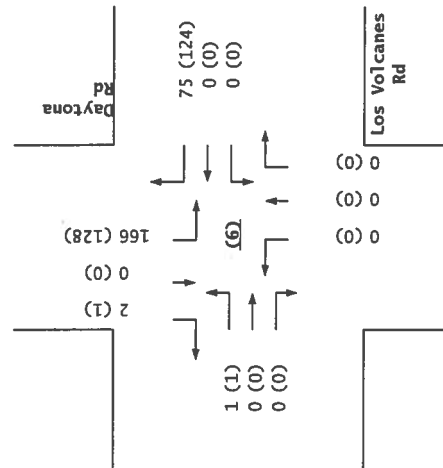
Entering	76	168	A.M.	100% Office Development
Exiting	125	129	P.M.	

	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Daytona Rd)			Southbound (Daytona Rd)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2013 AM Peak Hr. Volumes	1	243	0	3	135	52	0	0	2	30	0	2
2013 PM Peak Hr. Volumes	1	78	0	0	141	44	0	0	0	61	0	3

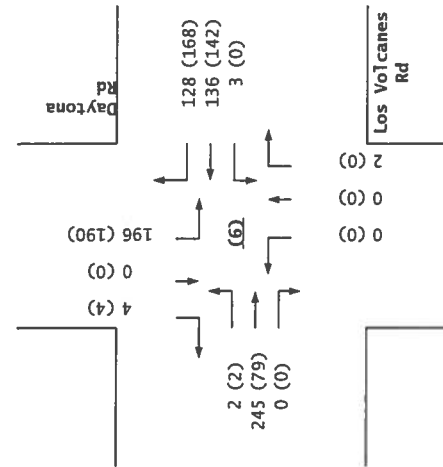
2015
NO BUILD



Trips



2015
BUILD



Los Volcanes Rd / Daytona Rd

Timings
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.

10/8/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	197	72	51	41	69	78	1440	125	160	937	129
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0	10.0	53.0	53.0	14.0	57.0	57.0
Total Split (%)	25.6%	25.6%	25.6%	25.6%	25.6%	11.1%	58.9%	58.9%	15.6%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	16.7	16.7	16.7	16.7	16.7	55.3	49.9	49.9	61.2	52.9	52.9
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.61	0.55	0.55	0.68	0.59	0.59
v/c Ratio	0.84	0.51	0.32	0.13	0.20	0.23	0.79	0.14	0.70	0.48	0.14
Control Delay	64.2	24.7	36.5	30.8	7.2	6.7	20.1	2.4	33.7	8.5	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	24.7	36.5	30.8	7.2	6.7	20.1	2.4	33.7	8.5	1.9
LOS	E	C	D	C	A	A	C	A	C	A	A
Approach Delay		45.5		22.5			18.2			11.1	
Approach LOS		D		C			B			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 58 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 18.8

Intersection LOS: B

Intersection Capacity Utilization 80.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Unser Blvd & Bluewater Rd

					
14 s	53 s			23 s	
					
10 s	57 s			23 s	

HCM 2010 Signalized Intersection Summary
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.
10/8/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	197	72	105	51	41	69	78	1440	125	160	937	129
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Cap, veh/h	325	142	207	214	385	328	494	2002	851	279	2031	863
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.06	0.54	0.00	0.14	1.00	0.00
Sat Flow, veh/h	1258	680	990	1178	1845	1568	1757	3689	1568	1757	3689	1568
Grp Volume(v), veh/h	210	0	189	54	44	73	83	1532	0	170	997	0
Grp Sat Flow(s),veh/h/ln	1258	0	1670	1178	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	13.5	0.0	8.4	3.6	1.6	3.2	1.6	27.0	0.0	3.5	0.0	0.0
Cycle Q Clear(g_c), s	15.1	0.0	8.4	12.0	1.6	3.2	1.6	27.0	0.0	3.5	0.0	0.0
Prop In Lane	1.00		0.59	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	0	349	214	385	328	494	2002	851	279	2031	863
V/C Ratio(X)	0.65	0.00	0.54	0.25	0.11	0.22	0.17	0.77	0.00	0.61	0.49	0.00
Avail Cap(c_a), veh/h	334	0	361	223	399	339	494	2129	905	350	2306	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.80	0.80	0.00
Uniform Delay (d), s/veh	32.8	0.0	29.4	34.7	26.7	27.3	6.9	14.9	0.0	14.0	0.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	1.5	0.6	0.1	0.3	0.2	2.9	0.0	1.7	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.6	0.0	3.6	1.1	0.7	1.2	0.6	12.3	0.0	3.4	0.2	0.0
Lane Grp Delay (d), s/veh	36.9	0.0	30.9	35.3	26.8	27.6	7.0	17.7	0.0	15.8	0.7	0.0
Lane Grp LOS	D		C	D	C	C	A	B		B	A	
Approach Vol, veh/h	399			171			1615			1167		
Approach Delay, s/veh	34.0			29.8			17.2			2.9		
Approach LOS	C			C			B			A		
Timer												
Assigned Phs	4			8			5	2		1	6	
Phs Duration (G+Y+Rc), s	22.4			22.4			10.0	50.1		10.7	50.8	
Change Period (Y+Rc), s	5.0			5.0			5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	18.0			18.0			5.0	48.0		9.0	52.0	
Max Q Clear Time (g_c+I1), s	17.1			14.0			3.6	29.0		5.5	2.0	
Green Ext Time (p_c), s	0.3			1.0			0.0	16.1		0.1	34.6	
Intersection Summary												
HCM 2010 Ctrl Delay	14.9											
HCM 2010 LOS	B											
Notes												

Timings
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.

10/8/2013

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	198	72	51	41	71	78	1462	125	164	985	131
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0	10.0	53.0	53.0	14.0	57.0	57.0
Total Split (%)	25.6%	25.6%	25.6%	25.6%	25.6%	11.1%	58.9%	58.9%	15.6%	63.3%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	16.8	16.8	16.8	16.8	16.8	55.2	49.9	49.9	61.2	52.8	52.8
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.61	0.55	0.55	0.68	0.59	0.59
v/c Ratio	0.84	0.51	0.31	0.13	0.21	0.25	0.80	0.14	0.71	0.51	0.14
Control Delay	64.5	24.7	36.4	30.8	7.8	6.9	20.7	2.4	33.7	9.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	24.7	36.4	30.8	7.8	6.9	20.7	2.4	33.7	9.6	1.9
LOS	E	C	D	C	A	A	C	A	C	A	A
Approach Delay		45.7		22.5			18.7			11.9	
Approach LOS		D		C			B			B	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 58 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 19.3
 Intersection Capacity Utilization 81.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service D

Splits and Phases: 1: Unser Blvd & Bluewater Rd

14 s	53 s	23 s	
10 s	57 s	23 s	

HCM 2010 Signalized Intersection Summary
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.
10/8/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	198	72	105	51	41	71	78	1462	125	164	985	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Cap, veh/h	324	142	207	213	386	328	479	2004	852	276	2038	866
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.06	0.54	0.00	0.14	1.00	0.00
Sat Flow, veh/h	1254	680	990	1178	1845	1568	1757	3689	1568	1757	3689	1568
Grp Volume(v), veh/h	211	0	189	54	44	76	83	1555	0	174	1048	0
Grp Sat Flow(s),veh/h/ln	1254	0	1670	1178	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	13.8	0.0	8.5	3.6	1.6	3.4	1.7	27.9	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	15.4	0.0	8.5	12.1	1.6	3.4	1.7	27.9	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.59	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	0	349	213	386	328	479	2004	852	276	2038	866
V/C Ratio(X)	0.65	0.00	0.54	0.25	0.11	0.23	0.17	0.78	0.00	0.63	0.51	0.00
Avail Cap(c_a), veh/h	330	0	358	219	395	336	479	2109	896	343	2285	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.78	0.78	0.00
Uniform Delay (d), s/veh	33.1	0.0	29.6	35.0	26.9	27.6	6.9	15.1	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	4.4	0.0	1.6	0.6	0.1	0.4	0.2	3.0	0.0	2.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.7	0.0	3.7	1.1	0.8	1.4	0.6	12.7	0.0	3.5	0.2	0.0
Lane Grp Delay (d), s/veh	37.5	0.0	31.2	35.6	27.0	27.9	7.1	18.2	0.0	16.6	0.7	0.0
Lane Grp LOS	D		C	D	C	C	A	B		B	A	
Approach Vol, veh/h	400				174				1638		1222	
Approach Delay, s/veh	34.5				30.1				17.6		3.0	
Approach LOS	C				C				B		A	
Timer												
Assigned Phs	4				8		5		2	1		6
Phs Duration (G+Y+Rc), s	22.6				22.6		10.0		50.6	10.8		51.4
Change Period (Y+Rc), s	5.0				5.0		5.0		5.0	5.0		5.0
Max Green Setting (Gmax), s	18.0				18.0		5.0		48.0	9.0		52.0
Max Q Clear Time (g_c+1), s	17.4				14.1		3.7		29.9	5.6		2.0
Green Ext Time (p_c), s	0.2				1.0		0.0		15.7	0.1		35.8
Intersection Summary												
HCM 2010 Ctrl Delay	15.0											
HCM 2010 LOS	B											
Notes												

Timings
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.
10/8/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	75	46	59	62	135	58	1003	61	56	1242	106
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	26.0	26.0	26.0	26.0	14.0	92.0	92.0	12.0	90.0	90.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	10.8%	70.8%	70.8%	9.2%	69.2%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	13.0	13.0	13.0	13.0	13.0	102.0	95.7	95.7	102.0	95.6	95.6
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.78	0.74	0.74	0.78	0.74	0.74
v/c Ratio	0.60	0.44	0.51	0.35	0.50	0.18	0.41	0.05	0.14	0.50	0.09
Control Delay	73.1	44.4	68.8	58.4	14.3	4.0	7.5	1.6	2.2	3.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	44.4	68.8	58.4	14.3	4.0	7.5	1.6	2.2	3.7	0.3
LOS	E	D	E	E	B	A	A	A	A	A	A
Approach Delay		58.1		37.5			7.0			3.4	
Approach LOS		E		D			A			A	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 36 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 10.6
 Intersection Capacity Utilization 61.8%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 1: Unser Blvd & Bluewater Rd

 p1	 p2 (R)	 p4
12 s	92 s	26 s
 p5	 p6 (R)	 p8
14 s	90 s	25 s

HCM 2010 Signalized Intersection Summary
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.

10/8/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	46	36	59	62	135	58	1003	61	56	1242	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Cap, veh/h	207	130	103	203	251	213	407	2307	981	445	2307	981
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.06	0.63	0.00	0.08	0.83	0.00
Sat Flow, veh/h	1160	955	756	1293	1845	1568	1757	3689	1568	1757	3689	1568
Grp Volume(v), veh/h	78	0	86	61	65	141	60	1045	0	58	1294	0
Grp Sat Flow(s),veh/h/ln	1160	0	1711	1293	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	5.4	0.0	3.8	3.8	2.6	7.2	0.9	12.4	0.0	0.9	9.3	0.0
Cycle Q Clear(g_c), s	8.1	0.0	3.8	7.6	2.6	7.2	0.9	12.4	0.0	0.9	9.3	0.0
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	0	232	203	251	213	407	2307	981	445	2307	981
V/C Ratio(X)	0.38	0.00	0.37	0.30	0.26	0.66	0.15	0.45	0.00	0.13	0.56	0.00
Avail Cap(c_a), veh/h	340	0	429	351	462	393	491	3831	1628	487	3743	1591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.78	0.78	0.00
Uniform Delay (d), s/veh	36.0	0.0	32.9	36.4	32.4	34.4	4.9	8.2	0.0	5.2	3.4	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.0	0.8	0.5	3.5	0.2	0.6	0.0	0.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.6	0.0	1.7	1.3	1.3	3.0	0.3	5.1	0.0	0.3	2.6	0.0
Lane Grp Delay (d), s/veh	37.2	0.0	33.9	37.2	33.0	37.9	5.1	8.8	0.0	5.3	4.2	0.0
Lane Grp LOS	D		C	D	C	D	A	A		A	A	
Approach Vol, veh/h	164			267			1105			1352		
Approach Delay, s/veh	35.5			36.5			8.6			4.2		
Approach LOS	D			D			A			A		
Timer												
Assigned Phs	4			8			5		2		1	6
Phs Duration (G+Y+Rc), s	16.4			16.4			10.0		57.4		10.0	57.4
Change Period (Y+Rc), s	5.0			5.0			5.0		5.0		5.0	5.0
Max Green Setting (Gmax), s	21.0			21.0			9.0		87.0		7.0	85.0
Max Q Clear Time (g_c+l1), s	10.1			9.6			2.9		14.4		2.9	11.3
Green Ext Time (p_c), s	1.3			1.4			0.0		38.0		0.0	38.3
Intersection Summary												
HCM 2010 Ctrl Delay	10.7											
HCM 2010 LOS	B											
Notes												

Timings
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.
10/8/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	76	46	59	62	138	58	1039	61	59	1279	108
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	4	4	8	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	26.0	26.0	26.0	26.0	26.0	14.0	92.0	92.0	12.0	90.0	90.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	10.8%	70.8%	70.8%	9.2%	69.2%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	13.1	13.1	13.1	13.1	13.1	101.9	95.5	95.5	101.9	95.5	95.5
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.78	0.73	0.73	0.78	0.73	0.73
v/c Ratio	0.60	0.44	0.50	0.35	0.50	0.19	0.42	0.05	0.15	0.52	0.10
Control Delay	73.1	44.2	68.3	58.2	14.2	4.1	7.7	1.6	2.3	4.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	44.2	68.3	58.2	14.2	4.1	7.7	1.6	2.3	4.1	0.4
LOS	E	D	E	E	B	A	A	A	A	A	A
Approach Delay		58.1		37.0			7.2			3.8	
Approach LOS		E		D			A			A	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 36 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 10.8
 Intersection Capacity Utilization 62.9%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 1: Unser Blvd & Bluewater Rd

		
12 s	92 s	26 s
		
14 s	90 s	26 s

HCM 2010 Signalized Intersection Summary
1: Unser Blvd & Bluewater Rd

Terry O. Brown, P.E.

10/8/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	76	46	36	59	62	138	58	1039	61	59	1279	108
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Cap, veh/h	203	129	102	199	250	212	397	2340	995	432	2340	995
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.06	0.63	0.00	0.08	0.84	0.00
Sat Flow, veh/h	1157	955	756	1293	1845	1568	1757	3689	1568	1757	3689	1568
Grp Volume(v), veh/h	79	0	86	61	65	144	60	1082	0	61	1332	0
Grp Sat Flow(s),veh/h/ln	1157	0	1711	1293	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	5.7	0.0	4.0	3.9	2.7	7.6	0.9	13.2	0.0	1.0	9.4	0.0
Cycle Q Clear(g_c), s	8.5	0.0	4.0	7.9	2.7	7.6	0.9	13.2	0.0	1.0	9.4	0.0
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	232	199	250	212	397	2340	995	432	2340	995
V/C Ratio(X)	0.39	0.00	0.37	0.31	0.26	0.68	0.15	0.46	0.00	0.14	0.57	0.00
Avail Cap(c_a), veh/h	326	0	414	336	446	379	478	3695	1570	473	3610	1534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.75	0.75	0.00
Uniform Delay (d), s/veh	37.4	0.0	34.2	37.8	33.7	35.8	4.9	8.2	0.0	5.3	3.2	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.0	0.9	0.5	3.8	0.2	0.7	0.0	0.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.7	0.0	1.8	1.3	1.3	3.2	0.3	5.5	0.0	0.3	2.5	0.0
Lane Grp Delay (d), s/veh	38.7	0.0	35.2	38.6	34.2	39.5	5.0	8.9	0.0	5.4	4.0	0.0
Lane Grp LOS	D		D	D	C	D	A	A		A	A	
Approach Vol, veh/h		165			270			1142			1393	
Approach Delay, s/veh		36.8			38.0			8.7			4.0	
Approach LOS		D			D			A			A	
Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		16.8			16.8		10.0	60.1		10.0	60.1	
Change Period (Y+Rc), s		5.0			5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s		21.0			21.0		9.0	87.0		7.0	85.0	
Max Q Clear Time (g_c+l1), s		10.5			9.9		2.9	15.2		3.0	11.4	
Green Ext Time (p_c), s		1.3			1.4		0.0	39.9		0.0	40.4	
Intersection Summary												
HCM 2010 Ctrl Delay			10.7									
HCM 2010 LOS			B									
Notes												

Timings

2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.

10/31/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	196	85	86	29	249	18	1516	127	321	1041	138
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	1	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	10.0	21.0	10.0	21.0	22.0	10.0	37.0	37.0	22.0	49.0	49.0
Total Split (%)	11.1%	23.3%	11.1%	23.3%	24.4%	11.1%	41.1%	41.1%	24.4%	54.4%	54.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	15.6	10.3	15.4	10.2	32.2	43.4	37.5	37.5	59.5	48.6	48.6
Actuated g/C Ratio	0.17	0.11	0.17	0.11	0.36	0.48	0.42	0.42	0.66	0.54	0.54
v/c Ratio	0.42	0.51	0.37	0.15	0.43	0.07	0.77	0.17	0.83	0.58	0.16
Control Delay	31.3	41.6	32.7	35.9	15.6	5.7	16.6	1.0	38.3	16.0	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	41.6	32.7	35.9	15.6	5.7	16.6	1.0	38.3	16.0	2.7
LOS	C	D	C	D	B	A	B	A	D	B	A
Approach Delay		34.8		21.3			15.3			19.6	
Approach LOS		C		C			B			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 20 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 19.1

Intersection LOS: B

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Unser Blvd & Los Volcanes Rd

				
22 s	37 s		10 s	21 s
				
10 s	49 s		10 s	21 s

HCM 2010 Signalized Intersection Summary

2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.

10/31/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	196	85	18	86	29	249	18	1516	127	321	1041	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	2	1	0	1	1	1	1	3	1	1	2	1
Cap, veh/h	686	247	52	331	308	498	300	2151	610	382	1772	753
Arrive On Green	0.06	0.17	0.17	0.06	0.17	0.17	0.02	0.13	0.00	0.15	0.48	0.48
Sat Flow, veh/h	3408	1478	312	1757	1845	1568	1757	5534	1568	1757	3689	1568
Grp Volume(v), veh/h	209	0	109	91	31	265	19	1613	0	341	1107	147
Grp Sat Flow(s), veh/h/ln	1704	0	1790	1757	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	4.3	0.0	4.6	3.6	1.2	11.8	0.5	23.9	0.0	10.3	19.0	4.6
Cycle Q Clear(g_c), s	4.3	0.0	4.6	3.6	1.2	11.8	0.5	23.9	0.0	10.3	19.0	4.6
Prop In Lane	1.00		0.17	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	686	0	299	331	308	498	300	2151	610	382	1772	753
V/C Ratio(X)	0.30	0.00	0.36	0.27	0.10	0.53	0.06	0.75	0.00	0.89	0.62	0.20
Avail Cap(c_a), veh/h	686	0	336	331	347	531	300	2151	610	469	1908	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.55	0.55	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	31.4	27.0	30.0	23.9	14.5	33.1	0.0	22.7	16.4	12.7
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.4	0.1	0.9	0.0	1.4	0.0	16.6	1.7	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.8	0.0	2.1	1.6	0.6	4.6	0.2	12.3	0.0	9.1	8.7	1.8
Lane Grp Delay (d), s/veh	27.4	0.0	32.2	27.5	30.2	24.7	14.5	34.5	0.0	39.3	18.1	13.3
Lane Grp LOS	C		C	C	C	C	B	C		D	B	B
Approach Vol, veh/h		318			387			1632			1595	
Approach Delay, s/veh		29.1			25.8			34.2			22.2	
Approach LOS		C			C			C			C	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	19.2		10.0	19.2		10.0	38.1		17.8	45.9	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	5.0	16.0		5.0	16.0		5.0	32.0		17.0	44.0	
Max Q Clear Time (g_c+l1), s	6.3	6.6		5.6	13.8		2.5	25.9		12.3	21.0	
Green Ext Time (p_c), s	0.0	1.2		0.0	0.4		0.0	5.8		0.5	19.9	
Intersection Summary												
HCM 2010 Ctrl Delay				28.1								
HCM 2010 LOS				C								
Notes												

Timings
2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.
10/31/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	296	91	86	29	249	42	1516	127	321	1041	183
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	1	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	10.0	21.0	10.0	21.0	22.0	10.0	37.0	37.0	22.0	49.0	49.0
Total Split (%)	11.1%	23.3%	11.1%	23.3%	24.4%	11.1%	41.1%	41.1%	24.4%	54.4%	54.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	17.3	12.1	17.2	12.0	33.2	42.3	36.5	36.5	57.7	46.9	46.9
Actuated g/C Ratio	0.19	0.13	0.19	0.13	0.37	0.47	0.41	0.41	0.64	0.52	0.52
v/c Ratio	0.57	0.66	0.42	0.13	0.42	0.16	0.79	0.18	0.86	0.61	0.22
Control Delay	33.6	40.1	32.6	33.7	15.1	7.0	17.3	1.0	43.0	17.4	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	40.1	32.6	33.7	15.1	7.0	17.3	1.0	43.0	17.4	3.5
LOS	C	D	C	C	B	A	B	A	D	B	A
Approach Delay		35.9		20.7			15.8			21.0	
Approach LOS		D		C			B			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 20 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 20.5

Intersection LOS: C

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Unser Blvd & Los Volcanes Rd

				
22 s	37 s	10 s	21 s	
				
10 s	49 s	10 s	21 s	

HCM 2010 Signalized Intersection Summary

2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.

10/31/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	296	91	72	86	29	249	42	1516	127	321	1041	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	2	1	0	1	1	1	1	3	1	1	2	1
Cap, veh/h	687	160	127	275	310	499	295	2150	609	382	1772	753
Arrive On Green	0.06	0.17	0.17	0.06	0.17	0.17	0.02	0.13	0.00	0.15	0.48	0.48
Sat Flow, veh/h	3408	954	757	1757	1845	1568	1757	5534	1568	1757	3689	1568
Grp Volume(v), veh/h	315	0	174	91	31	265	45	1613	0	341	1107	195
Grp Sat Flow(s), veh/h/ln	1704	0	1711	1757	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	5.0	0.0	8.0	3.6	1.2	11.8	1.3	24.0	0.0	10.4	19.0	6.3
Cycle Q Clear(g_c), s	5.0	0.0	8.0	3.6	1.2	11.8	1.3	24.0	0.0	10.4	19.0	6.3
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	687	0	287	275	310	499	295	2150	609	382	1772	753
V/C Ratio(X)	0.46	0.00	0.61	0.33	0.10	0.53	0.15	0.75	0.00	0.89	0.62	0.26
Avail Cap(c_a), veh/h	687	0	321	275	346	530	295	2150	609	468	1903	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.53	0.53	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	32.9	27.3	30.0	23.8	14.8	33.2	0.0	22.8	16.5	13.2
Incr Delay (d2), s/veh	0.5	0.0	2.7	0.7	0.1	0.9	0.1	1.3	0.0	16.7	1.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.0	3.6	1.6	0.6	4.6	0.5	12.3	0.0	5.2	8.7	2.4
Lane Grp Delay (d), s/veh	29.0	0.0	35.6	28.0	30.2	24.7	14.9	34.5	0.0	39.5	18.1	14.0
Lane Grp LOS	C		D	C	C	C	B	C		D	B	B
Approach Vol, veh/h		489			387			1658			1643	
Approach Delay, s/veh		31.3			25.9			34.0			22.1	
Approach LOS		C			C			C			C	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	19.3		10.0	19.3		10.0	38.2		17.8	46.0	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	5.0	16.0		5.0	16.0		5.0	32.0		17.0	44.0	
Max Q Clear Time (g_c+I1), s	7.0	10.0		5.6	13.8		3.3	26.0		12.4	21.0	
Green Ext Time (p_c), s	0.0	1.1		0.0	0.5		0.0	5.7		0.5	20.0	
Intersection Summary												
HCM 2010 Ctrl Delay				28.2								
HCM 2010 LOS				C								
Notes												

Timings
2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.
11/1/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	99	32	99	29	178	20	1095	67	144	1257	151
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	1	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	13.0	29.0	15.0	31.0	17.0	10.0	69.0	69.0	17.0	76.0	76.0
Total Split (%)	10.0%	22.3%	11.5%	23.8%	13.1%	7.7%	53.1%	53.1%	13.1%	58.5%	58.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effect Green (s)	18.3	10.1	23.0	12.4	26.6	86.3	80.2	80.2	92.4	83.3	83.3
Actuated g/C Ratio	0.14	0.08	0.18	0.10	0.20	0.66	0.62	0.62	0.71	0.64	0.64
v/c Ratio	0.25	0.74	0.53	0.18	0.46	0.08	0.37	0.07	0.43	0.59	0.15
Control Delay	43.1	33.5	52.6	53.6	22.2	6.9	12.3	0.1	10.0	15.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	33.5	52.6	53.6	22.2	6.9	12.3	0.1	10.0	15.7	4.7
LOS	D	C	D	D	C	A	B	A	B	B	A
Approach Delay		36.9		35.1			11.5			14.1	
Approach LOS		D		D			B			B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 128 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Unser Blvd & Los Volcanes Rd

			
17 s	69 s	15 s	29 s
			
10 s	76 s	13 s	31 s

HCM 2010 Signalized Intersection Summary 2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.
11/1/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	99	32	153	99	29	178	20	1095	67	144	1257	151
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	2	1	0	1	1	1	1	3	1	1	2	1
Cap, veh/h	624	42	198	222	313	356	254	2993	848	339	2035	865
Arrive On Green	0.05	0.15	0.15	0.07	0.17	0.17	0.02	0.18	0.00	0.06	0.55	0.55
Sat Flow, veh/h	3408	281	1329	1757	1845	1568	1757	5534	1568	1757	3689	1568
Grp Volume(v), veh/h	104	0	195	104	31	187	21	1153	0	152	1323	159
Grp Sat Flow(s),veh/h/ln	1704	0	1610	1757	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	2.7	0.0	12.6	5.2	1.5	11.3	0.6	19.8	0.0	4.0	27.0	5.4
Cycle Q Clear(g_c), s	2.7	0.0	12.6	5.2	1.5	11.3	0.6	19.8	0.0	4.0	27.0	5.4
Prop In Lane	1.00		0.83	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	624	0	240	222	313	356	254	2993	848	339	2035	865
V/C Ratio(X)	0.17	0.00	0.81	0.47	0.10	0.53	0.08	0.39	0.00	0.45	0.65	0.18
Avail Cap(c_a), veh/h	719	0	359	267	446	469	254	3291	932	434	2434	1034
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.91	0.91	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	44.4	34.5	37.7	36.5	13.0	28.4	0.0	12.0	16.9	12.0
Incr Delay (d2), s/veh	0.1	0.0	8.4	1.5	0.1	1.2	0.1	0.3	0.0	0.9	1.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	0.0	5.8	2.4	0.7	4.6	0.2	10.0	0.0	1.7	12.4	2.1
Lane Grp Delay (d), s/veh	36.1	0.0	52.8	36.0	37.9	37.7	13.1	28.8	0.0	12.9	18.5	12.5
Lane Grp LOS	D		D	D	D	D	B	C		B	B	B
Approach Vol, veh/h		299			322			1174			1634	
Approach Delay, s/veh		47.0			37.2			28.5			17.4	
Approach LOS		D			D			C			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	21.0		12.2	23.2		10.0	63.2		11.2	64.4	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	8.0	24.0		10.0	26.0		5.0	64.0		12.0	71.0	
Max Q Clear Time (g_c+I1), s	4.7	14.6		7.2	13.3		2.6	21.8		6.0	29.0	
Green Ext Time (p_c), s	0.1	1.4		0.1	1.6		0.0	30.5		0.2	30.4	
Intersection Summary												
HCM 2010 Ctrl Delay			25.6									
HCM 2010 LOS			C									
Notes												

Timings
2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.
11/1/2013

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	176	42	99	29	178	60	1095	67	144	1257	225
Turn Type	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	1	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	21.0	10.0	21.0	10.0	10.0	21.0	21.0	10.0	21.0	21.0
Total Split (s)	15.0	25.0	24.0	34.0	38.0	11.0	43.0	43.0	38.0	70.0	70.0
Total Split (%)	11.5%	19.2%	18.5%	26.2%	29.2%	8.5%	33.1%	33.1%	29.2%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	Min	C-Min	C-Min
Act Effct Green (s)	24.5	14.2	26.4	15.2	31.3	80.1	73.4	73.4	88.1	77.8	77.8
Actuated g/C Ratio	0.19	0.11	0.20	0.12	0.24	0.62	0.56	0.56	0.68	0.60	0.60
v/c Ratio	0.33	0.80	0.50	0.14	0.43	0.27	0.41	0.07	0.43	0.63	0.24
Control Delay	40.3	39.9	46.5	48.6	26.0	15.8	23.2	2.0	12.3	20.2	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	39.9	46.5	48.6	26.0	15.8	23.2	2.0	12.3	20.2	6.6
LOS	D	D	D	D	C	B	C	A	B	C	A
Approach Delay		40.0		34.8			21.7			17.7	
Approach LOS		D		C			C			B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 23.1

Intersection LOS: C

Intersection Capacity Utilization 75.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Unser Blvd & Los Volcanes Rd

			
ø1	ø2 (R)	ø3	ø4
38 s	43 s	24 s	25 s
			
ø5	ø6 (R)	ø7	ø8
11 s	70 s	15 s	34 s

HCM 2010 Signalized Intersection Summary

2: Unser Blvd & Los Volcanes Rd

Terry O. Brown, P.E.

11/1/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	176	42	194	99	29	178	60	1095	67	144	1257	225
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	184.5	184.5	190.0	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Lanes	2	1	0	1	1	1	1	3	1	1	2	1
Cap, veh/h	713	49	229	211	326	373	234	2840	805	344	1949	828
Arrive On Green	0.06	0.17	0.17	0.07	0.18	0.18	0.03	0.34	0.00	0.06	0.53	0.53
Sat Flow, veh/h	3408	286	1325	1757	1845	1568	1757	5534	1568	1757	3689	1568
Grp Volume(v), veh/h	185	0	248	104	31	187	63	1153	0	152	1323	237
Grp Sat Flow(s), veh/h/ln	1704	0	1611	1757	1845	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	4.7	0.0	16.3	5.1	1.5	11.2	1.8	17.2	0.0	4.2	28.5	9.1
Cycle Q Clear(g_c), s	4.7	0.0	16.3	5.1	1.5	11.2	1.8	17.2	0.0	4.2	28.5	9.1
Prop In Lane	1.00		0.82	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	713	0	279	211	326	373	234	2840	805	344	1949	828
V/C Ratio(X)	0.26	0.00	0.89	0.49	0.10	0.50	0.27	0.41	0.00	0.44	0.68	0.29
Avail Cap(c_a), veh/h	810	0	298	400	495	516	250	2840	805	773	2217	942
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.90	0.90	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	43.7	34.2	37.3	35.7	15.3	22.9	0.0	12.4	18.8	14.2
Incr Delay (d2), s/veh	0.2	0.0	25.4	1.8	0.1	1.0	0.6	0.4	0.0	0.9	1.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.1	0.0	8.7	2.4	0.7	4.5	0.8	8.4	0.0	1.8	13.4	3.6
Lane Grp Delay (d), s/veh	33.5	0.0	69.1	36.0	37.4	36.7	15.8	23.3	0.0	13.3	20.7	15.1
Lane Grp LOS	C		E	D	D	D	B	C		B	C	B
Approach Vol, veh/h		433			322			1216			1712	
Approach Delay, s/veh		53.9			36.5			22.9			19.3	
Approach LOS		D			D			C			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	11.9	23.7		12.3	24.1		10.0	60.5		11.6	62.1	
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Max Green Setting (Gmax), s	10.0	20.0		19.0	29.0		6.0	38.0		33.0	65.0	
Max Q Clear Time (g_c+I1), s	6.7	18.3		7.1	13.2		3.8	19.2		6.2	30.5	
Green Ext Time (p_c), s	0.2	0.4		0.2	2.2		0.0	16.1		0.4	26.6	
Intersection Summary												
HCM 2010 Ctrl Delay			26.0									
HCM 2010 LOS			C									
Notes												

Timings
3: I40 WB & Unser Blvd

Terry O. Brown, P.E.
10/8/2013

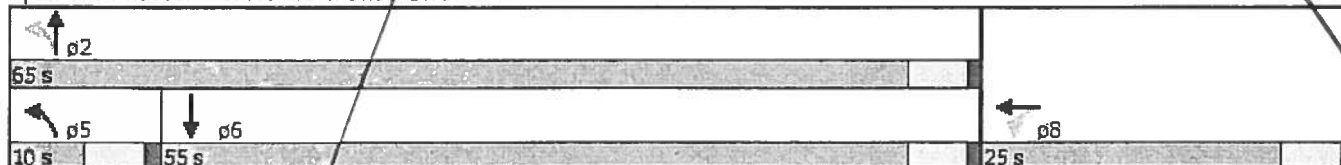
	←	←	←	↑	↓
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↰	↰	↰	↑↑	↑↑↑
Volume (vph)	461	1	27	905	2165
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	10.0	21.0	21.0
Total Split (s)	25.0	25.0	10.0	65.0	55.0
Total Split (%)	27.8%	27.8%	11.1%	72.2%	61.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	Min	Min	Min	Min	Min
Act Effect Green (s)	17.3	17.3	60.1	60.1	50.1
Actuated g/C Ratio	0.20	0.20	0.69	0.69	0.57
v/c Ratio	0.77	0.77	0.16	0.41	0.82
Control Delay	49.5	49.7	6.9	6.9	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	49.7	6.9	6.9	18.7
LOS	D	D	A	A	B
Approach Delay		49.6		6.9	18.7
Approach LOS		D		A	B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 87.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 19.7
 Intersection Capacity Utilization 71.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 3: I40 WB & Unser Blvd



HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Terry O. Brown

From: donotreply@trafficware.com
Sent: Wednesday, October 09, 2013 10:36 AM
To: tobe@swcp.com
Subject: [T-2290-2812013175552] Ticket Reply - Inability to Produce Signalized Analysis

A reply to the ticket ([T-2290-2812013175552](#)) has been posted.

You can check the status or reply to a ticket by going online and logging in to your account.

Ticket Information:

Ticket Key :T-2290-2812013175552
Subject :Inability to Produce Signalized Analysis
Replied On :10/9/2013 11:35:55 AM

Author	Comments
Terry Brown	Posted: 10/8/2013 5:55:52 PM I am trying to generate a report for a signalized freeway ramp that contains an exclusive left turn lane plus a left / thru lane. Synchro reports that HCM 2010 does not allow that configuration to be analyzed. ! Synchro's statement reads "HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes." I am suspicious of this message since I produce HCM signalized reports frequently with shared and exclusive lanes (i.e., a thru and a thru/right). I can only assume that it allows the analysis with right turn lanes, but not left turn lanes. Am I correct? Also, what are we to do with such real-life conditions if HCM 2010 cannot handle the analysis? I am attaching a Sample.syn file for your use if you need it. It will demonstrate the problem. <u>Attachments:</u> Sample.syn
Michael Trueblood	Posted: 10/9/2013 10:00:33 AM What Build do you have? Release 795 should allow this
Terry Brown	Posted: 10/9/2013 10:22:41 AM I am running Version 8.0, build 804, revision 795.
Michael Trueblood	Posted: 10/9/2013 11:35:55 AM A new release will be available in a few weeks that addresses this issue. We have added the flexibility to allow the calculations.

Please let us know if we can assist you any further.

Timings
3: I40 WB & Unser Blvd

Terry O. Brown, P.E.
10/8/2013

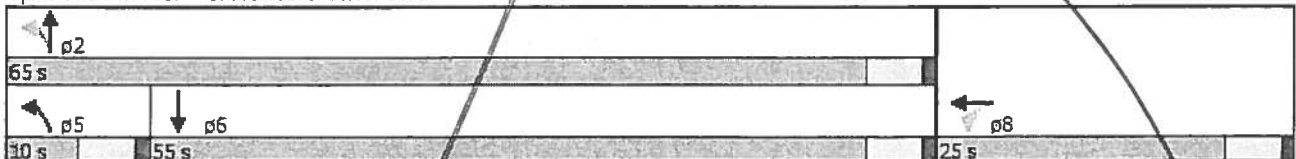
	WBL	WBT	NBL	NBT	SBT
Lane Group	←	←	←	↑	↓
Lane Configurations	↖	↖	↖	↑↑	↑↑↑
Volume (vph)	500	1	29	916	2170
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	10.0	21.0	21.0
Total Split (s)	25.0	25.0	10.0	65.0	55.0
Total Split (%)	27.8%	27.8%	11.1%	72.2%	61.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	Min	Min	Min	Min	Min
Act Effct Green (s)	17.9	17.9	60.1	60.1	50.1
Actuated g/C Ratio	0.20	0.20	0.68	0.68	0.57
v/c Ratio	0.81	0.81	0.17	0.42	0.83
Control Delay	52.9	53.2	7.2	7.1	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	53.2	7.2	7.1	19.3
LOS	D	D	A	A	B
Approach Delay		53.0		7.1	19.3
Approach LOS		D		A	B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 88
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 20.8
 Intersection Capacity Utilization 72.5%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 3: I40 WB & Unser Blvd



Timings
3: I40 WB & Unser Blvd

Terry O. Brown, P.E.
10/8/2013

	WBL	WBT	NBL	NBT	SBT
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↰	↰	↰	↑↑	↑↑↑
Volume (vph)	1002	3	47	873	911
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	10.0	21.0	21.0
Total Split (s)	72.0	72.0	13.0	58.0	45.0
Total Split (%)	55.4%	55.4%	10.0%	44.6%	34.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	Min	Min	Min	Min	Min
Act Effect Green (s)	35.7	35.7	37.1	37.1	24.6
Actuated g/C Ratio	0.43	0.43	0.44	0.44	0.29
v/c Ratio	0.72	0.72	0.19	0.57	0.63
Control Delay	26.4	26.5	18.1	20.5	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	26.5	18.1	20.5	28.7
LOS	C	C	B	C	C
Approach Delay		26.5		20.4	28.7
Approach LOS		C		C	C

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 83.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 25.2
 Intersection Capacity Utilization 62.1%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 3: I40 WB & Unser Blvd

↑ p2			
58 s			
↰ p5	↓ p6		↰ p8
13 s	45 s		72 s

Timings
3: I40 WB & Unser Blvd

Terry O. Brown, P.E.
10/8/2013

	WBL	WBT	NBL	NBT	SBT
Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↖	↖	↖	↑↑	↑↑↑
Volume (vph)	1066	3	49	882	919
Turn Type	Perm	NA	pm+pt	NA	NA
Protected Phases		8	5	2	6
Permitted Phases	8		2		
Detector Phase	8	8	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	21.0	21.0	10.0	21.0	21.0
Total Split (s)	72.0	72.0	13.0	58.0	45.0
Total Split (%)	55.4%	55.4%	10.0%	44.6%	34.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	Min	Min	Min	Min	Min
Act Effct Green (s)	39.2	39.2	38.3	38.3	25.6
Actuated g/C Ratio	0.44	0.44	0.43	0.43	0.29
v/c Ratio	0.74	0.74	0.20	0.59	0.64
Control Delay	27.2	27.2	20.0	22.5	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	27.2	20.0	22.5	30.6
LOS	C	C	B	C	C
Approach Delay		27.2		22.4	30.6
Approach LOS		C		C	C

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 88.1
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 26.7
 Intersection Capacity Utilization 64.0%
 Analysis Period (min) 15

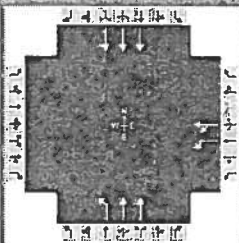
Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 3: I40 WB & Unser Blvd

↑ p2			
58 s			
↖ p5	↓ p6		↖ p8
13 s	45 s		72 s

HCS 2010 Signalized Intersection Results Summary

General Information						Intersection Information							
Agency						Duration, h		0.25					
Analyst						Analysis Date		10/8/2013					
Location						Area Type		Other					
Time Period						PHF		0.91					
Intersection		I-40 North Ramp / Unser Blvd				Analysis Year		2013		Analysis Period		1> 7:00	
File Name		2015ANX.xus											
Project Description		2015 AM Peak Hour NO BUILD Condition											



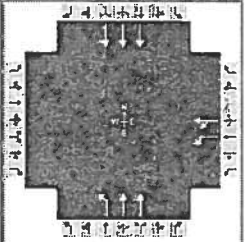
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							461	5		27	905			2165	

Signal Information															
Cycle, s	110.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	5.0	53.0	37.0	0.0	0.0	0.0					
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					

Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase							8	5	2		6
Phase Number							10.0	1.0	4.0		8.3
Phase Duration, s							42.0	10.0	68.0		58.0
Change Period, (Y+R _c), s							5.0	5.0	5.0		5.0
Max Allow Headway (MAH), s							3.0	3.0	2.9		2.9
Queue Clearance Time (g _s), s							30.4	2.8	19.8		50.5
Green Extension Time (g _e), s							0.6	0.0	15.5		2.2
Call Probability							1.00	1.00	1.00		1.00
Max Out Probability							0.11	1.00	0.11		1.00

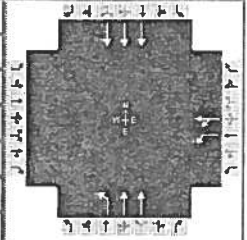
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement							3	8		5	2		6		
Adjusted Flow Rate (v), veh/h							507	5		30	995		2379		
Adjusted Saturation Flow Rate (s), veh/h/ln							1810	1900		1810	1809		1725		
Queue Service Time (g _s), s							28.4	0.2		0.8	17.8		48.5		
Cycle Queue Clearance Time (g _c), s							28.4	0.2		0.8	17.8		48.5		
Green Ratio (g/C)							0.34	0.34		0.55	0.57		0.48		
Capacity (c), veh/h							609	639		154	2072		2494		
Volume-to-Capacity Ratio (X)							0.832	0.009		0.193	0.480		0.954		
Available Capacity (c _a), veh/h							609	639		154	2072		2494		
Back of Queue (Q), veh/ln (50th percentile)							13.3	0.1		0.4	6.5		20.2		
Queue Storage Ratio (RQ) (50th percentile)							0.00	0.00		0.00	0.00		0.00		
Uniform Delay (d ₁), s/veh							33.6	24.3		24.8	13.8		27.3		
Incremental Delay (d ₂), s/veh							9.1	0.0		0.2	0.1		9.4		
Initial Queue Delay (d ₃), s/veh							0.0	0.0		0.0	0.0		0.0		
Control Delay (d), s/veh							42.7	24.3		25.1	13.9		36.8		
Level of Service (LOS)							D	C		C	B		D		
Approach Delay, s/veh / LOS				0.0			42.5			14.2			36.8		
Intersection Delay, s/veh / LOS							31.6						C		

Multinodal Results				EB		WB		NB		SB	
Pedestrian LOS Score / LOS				3.2	C	2.9	C	1.7	A	1.9	A
Bicycle LOS Score / LOS						1.3	A	1.3	A	1.8	A



HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Project				Area Type	Other
Location				PHF	0.91
Intersection	I-40 North Ramp / Unser Blvd	Analysis Date	10/8/2013	Analysis Period	1> 7:00
File Name	2015ABX.xus				
Project Description	2015 AM Peak Hour BUILD Condition				



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							500	5		29	916		2170		

Signal Information															
Cycle, s	110.0	Reference Phase	6												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

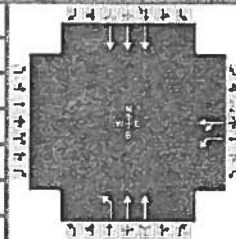
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase							8	5	2		6
Phase Number							10.0	1.0	4.0		8.3
Phase Duration, s							43.0	10.0	67.0		57.0
Change Period, (Y+R _c), s							5.0	5.0	5.0		5.0
Max Allow Headway (MAH), s							0.0	0.0	0.0		0.0
Queue Clearance Time (g _s), s							0.0	0.0	0.0		0.0
Green Extension Time (g _e), s							0.0	0.0	0.0		0.0
Call Probability							0.00	0.00	0.00		0.00
Max Out Probability							0.00	0.00	0.00		0.00

Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement							3	8		5	2		6		
Adjusted Flow Rate (v), veh/h							0	0		0	0		0		
Adjusted Saturation Flow Rate (s), veh/h/ln							0	0		0	0		0		
Queue Service Time (g _s), s							0.0	0.0		0.0	0.0		0.0		
Cycle Queue Clearance Time (g _c), s							0.0	0.0		0.0	0.0		0.0		
Green Ratio (g/C)							0.35	0.35		0.54	0.56		0.47		
Capacity (c), veh/h							625	656		151	2039		2447		
Volume-to-Capacity Ratio (X)							0.879	0.008		0.211	0.494		0.975		
Available Capacity (c _a), veh/h							0	0		0	0		0		
Back of Queue (Q), veh/ln (50th percentile)							15.2	0.1		0.4	6.8		21.4		
Queue Storage Ratio (RQ) (50th percentile)							0.00	0.00		0.00	0.00		0.00		
Uniform Delay (d ₁), s/veh							33.8	23.6		25.2	14.5		28.4		
Incremental Delay (d ₂), s/veh							13.1	0.0		0.3	0.1		12.7		
Initial Queue Delay (d ₃), s/veh							0.0	0.0		0.0	0.0		0.0		
Control Delay (d), s/veh							46.9	23.6		25.4	14.6		41.1		
Level of Service (LOS)							D	C		C	B		D		
Approach Delay, s/veh / LOS				0.0			46.7		D	14.9		B	41.1		D
Intersection Delay, s/veh / LOS				35.0						D					

Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				3.2		C	2.9		C	1.7		A	1.9		A
Bicycle LOS Score / LOS							1.4		A	1.3		A	1.8		A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst				Area Type	Other
Location				PHF	0.98
Intersection	I-40 North Ramp / Unser Blvd	Analysis Date	10/8/2013	Analysis Period	1 > 7:00
File Name	2015PNX.xus				
Project Description	2015 PM Peak Hour NO BUILD Condition				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				1002	3		47	873			911	

Signal Information											
Cycle, s	130.0	Reference Phase	2								
Offset, s	0	Reference Point	End								
Incoordinated	Yes	Simult. Gap E/W	On	Green	5.0	36.0	74.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
				Red	1.0	1.0	1.0	0.0	0.0	0.0	

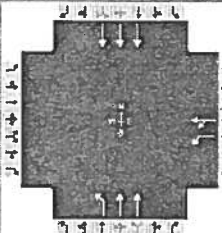
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8	5	2		6
Phase Number				10.0	1.0	4.0		8.3
Phase Duration, s				79.0	10.0	51.0		41.0
Change Period, (Y+R _c), s				5.0	5.0	5.0		5.0
Max Allow Headway (MAH), s				3.0	3.0	2.9		2.9
Queue Clearance Time (g _s), s				74.7	4.4	29.4		22.6
Green Extension Time (g _e), s				0.0	0.0	2.9		4.2
Call Probability				1.00	1.00	1.00		1.00
Max Out Probability				1.00	1.00	0.47		0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8		5	2			6	
Adjusted Flow Rate (v), veh/h				1022	3		48	891			930	
Adjusted Saturation Flow Rate (s), veh/h/ln				1810	1900		1810	1809			1725	
Queue Service Time (g _s), s				72.7	0.1		2.4	27.4			20.6	
Cycle Queue Clearance Time (g _c), s				72.7	0.1		2.4	27.4			20.6	
Green Ratio (g/C)				0.57	0.57		0.33	0.35			0.28	
Capacity (c), veh/h				1030	1082		197	1280			1433	
Volume-to-Capacity Ratio (X)				0.993	0.003		0.243	0.696			0.649	
Available Capacity (c _a), veh/h				1030	1082		197	1280			1433	
Back of Queue (Q), veh/ln (50th percentile)				35.7	0.0		1.0	11.9			8.6	
Queue Storage Ratio (RQ) (50th percentile)				0.00	0.00		0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh				27.7	12.1		32.0	36.0			41.4	
Incremental Delay (d ₂), s/veh				26.1	0.0		0.2	1.4			0.8	
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0			0.0	
Control Delay (d), s/veh				53.9	12.1		32.3	37.4			42.2	
Level of Service (LOS)				D	B		C	D			D	
Approach Delay, s/veh / LOS	0.0			53.7		D	37.1		D	42.2		D
Intersection Delay, s/veh / LOS	44.7						D					

Modal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	1.7	A	1.9	A
Bicycle LOS Score / LOS			2.2	B	1.3	A	1.0	A

HCS 2010 Signalized Intersection Results Summary

General Information					Intersection Information							
Agency					Duration, h		0.25					
Analyst					Analysis Date		10/8/2013					
Junction					Area Type		Other					
					Time Period		PHF					
							0.98					
Intersection		I-40 North Ramp / Unser Blvd			Analysis Year		2013		Analysis Period		1> 7:00	
File Name		2015PBX.xus										
Project Description		2015 PM Peak Hour BUILD Condition										



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							1066	3		49	882			911	

Signal Information															
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	5.0	31.0	79.0	0.0	0.0	0.0					
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					

Timer Results		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase					8	5	2		6
Phase Number					10.0	1.0	4.0		8.3
Phase Duration, s					84.0	10.0	46.0		36.0
Change Period, (Y+Rc), s					5.0	5.0	5.0		5.0
Max Allow Headway (MAH), s					3.0	3.0	2.9		2.9
Queue Clearance Time (gs), s					78.9	4.6	31.5		23.7
Green Extension Time (ge), s					0.1	0.0	0.0		3.1
Call Probability					1.00	1.00	1.00		1.00
Max Out Probability					1.00	1.00	1.00		0.40

Movement Group Results		EB			WB			NB			SB				
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R		
Assigned Movement					3	8		5	2			6			
Adjusted Flow Rate (v), veh/h					1088	3		50	900			930			
Adjusted Saturation Flow Rate (s), veh/h/ln					1810	1900		1810	1809			1725			
Queue Service Time (gs), s					76.9	0.1		2.6	29.5			21.7			
Cycle Queue Clearance Time (gc), s					76.9	0.1		2.6	29.5			21.7			
Green Ratio (g/C)					0.61	0.61		0.29	0.32			0.24			
Capacity (c), veh/h					1100	1155		169	1141			1234			
Volume-to-Capacity Ratio (X)					0.989	0.003		0.296	0.789			0.753			
Available Capacity (ca), veh/h					1100	1155		169	1141			1234			
Back of Queue (Q), veh/ln (50th percentile)					36.3	0.0		1.1	13.2			9.3			
Queue Storage Ratio (RQ) (50th percentile)					0.00	0.00		0.00	0.00			0.00			
Uniform Delay (d1), s/veh					25.1	10.0		35.8	40.6			45.9			
Incremental Delay (d2), s/veh					24.4	0.0		0.4	3.5			2.4			
Initial Queue Delay (d3), s/veh					0.0	0.0		0.0	0.0			0.0			
Control Delay (d), s/veh					49.5	10.0		36.2	44.0			48.3			
Level of Service (LOS)					D	B		D	D			D			
Approach Delay, s/veh / LOS		0.0			49.4			43.6			48.3			D	
Intersection Delay, s/veh / LOS		47.2											D		

Multimodal Results		EB		WB		NB		SB	
Pedestrian LOS Score / LOS		3.2	C	2.9	C	1.7	A	1.9	A
Bicycle LOS Score / LOS				2.3	B	1.3	A	1.0	A

Intersection	
Intersection Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	33	0	0	899	1506	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	36	0	0	988	1655	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2149	827	1655
Stage 1	1655	-	-
Stage 2	494	-	-
Follow-up Headway	3.53	3.33	2.23
Pot Capacity-1 Maneuver	41	313	381
Stage 1	139	-	-
Stage 2	576	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	41	313	381
Mov Capacity-2 Maneuver	41	-	-
Stage 1	139	-	-
Stage 2	576	-	-

Approach	EB	NB	SB
HCM Control Delay, s	255.6	0	0
HCM LOS	F		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	381	-	41	-	-
HCM Lane V/C Ratio	-	-	0.884	-	-
HCM Control Delay (s)	0	-	255.6	-	-
HCM Lane LOS	A		F		
HCM 95th %tile Q(veh)	0	-	3.404	-	-

Notes
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM 2010 TWSC
4: Unser Blvd & I40 EB

Terry O. Brown, P.E.

10/8/2013

Intersection

Intersection Delay, s/veh 4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	33	0	0	913	1550	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	36	0	0	1003	1703	0

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	2205	852	1703	0	-	0
Stage 1	1703	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Follow-up Headway	3.53	3.33	2.23	-	-	-
Pot Capacity-1 Maneuver	37	301	365	-	-	-
Stage 1	131	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	37	301	365	-	-	-
Mov Capacity-2 Maneuver	37	-	-	-	-	-
Stage 1	131	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	\$ 305	0	0
HCM LOS	F		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	365	-	37	-	-
HCM Lane V/C Ratio	-	-	0.98	-	-
HCM Control Delay (s)	0	-	\$ 305	-	-
HCM Lane LOS	A		F		
HCM 95th %tile Q(veh)	0	-	3.642	-	-

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection						
Intersection Delay, s/veh	19.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	87	0	0	836	1567	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	89	0	0	853	1599	0
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	2026	799	1599	0	-	0
Stage 1	1599	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Follow-up Headway	3.53	3.33	2.23	-	-	-
Pot Capacity-1 Maneuver	# 49	326	401	-	-	-
Stage 1	150	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	# 49	326	401	-	-	-
Mov Capacity-2 Maneuver	# 49	-	-	-	-	-
Stage 1	150	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	\$ 566.5	0			0	
HCM LOS	F					
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	401	-	49	-	-	
HCM Lane V/C Ratio	-	-	1.812	-	-	
HCM Control Delay (s)	0	-	\$ 566.5	-	-	
HCM Lane LOS	A		F			
HCM 95th %tile Q(veh)	0	-	8.769	-	-	
Notes						
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined						

Intersection	
Intersection Delay, s/veh	22.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	87	0	0	846	1640	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	89	0	0	863	1673	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	2105	837	1673	0	0
Stage 1	1673	-	-	-	-
Stage 2	432	-	-	-	-
Follow-up Headway	3.53	3.33	2.23	-	-
Pot Capacity-1 Maneuver	# 44	308	375	-	-
Stage 1	136	-	-	-	-
Stage 2	619	-	-	-	-
Time blocked-Platoon, %				-	-
Mov Capacity-1 Maneuver	# 44	308	375	-	-
Mov Capacity-2 Maneuver	# 44	-	-	-	-
Stage 1	136	-	-	-	-
Stage 2	619	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	\$ 671.7	0	0
HCM LOS	F		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	375	-	44	-	-
HCM Lane V/C Ratio	-	-	2.018	-	-
HCM Control Delay (s)	0	-	\$ 671.7	-	-
HCM Lane LOS	A		F		
HCM 95th %tile Q(veh)	0	-	9.211	-	-

Notes	
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined	

Project Name
 SunCap Development - Unser Blvd
Intersection
 I-40 EB Ramp / Unser Blvd.
Analysis Year
 2015

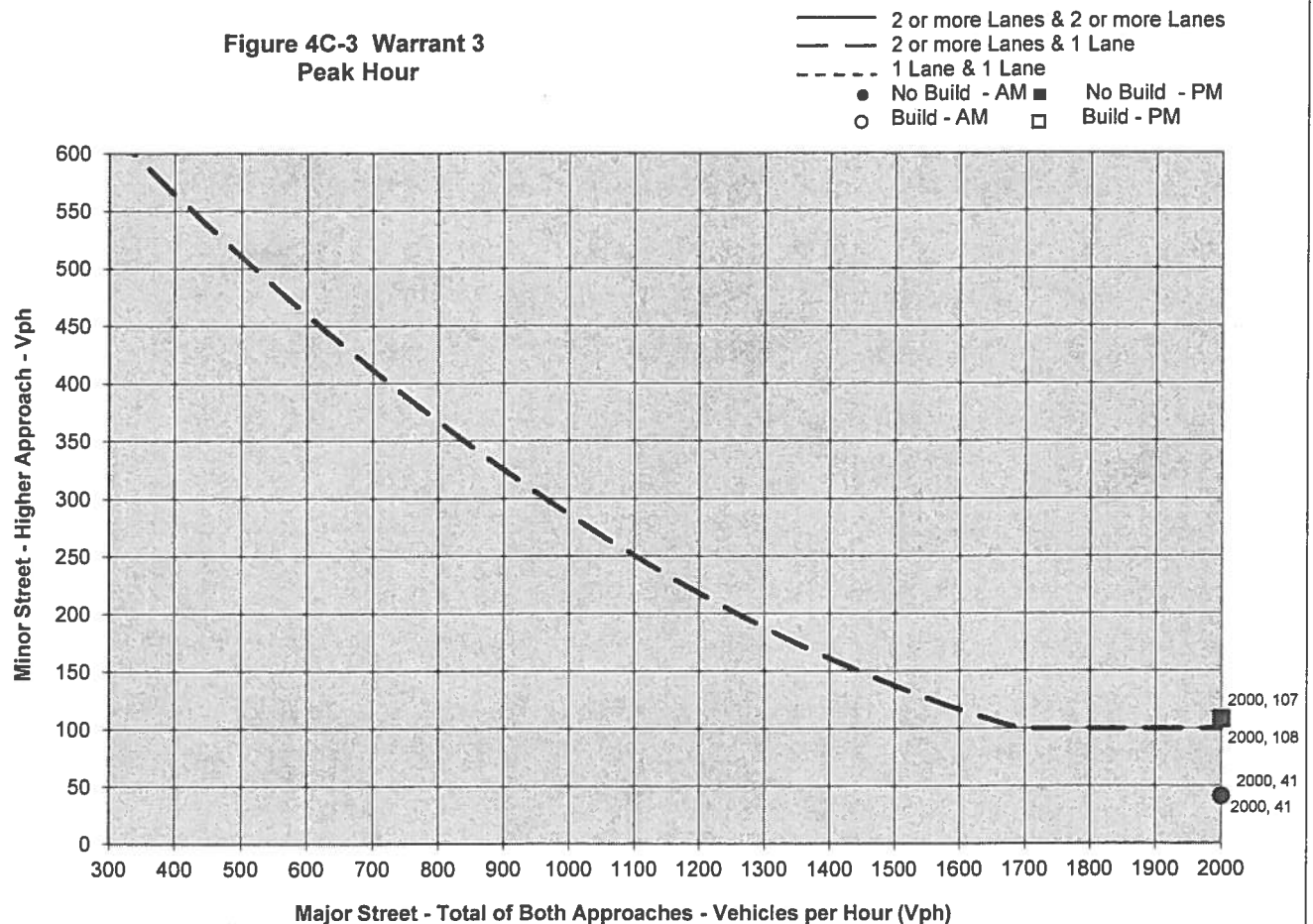
Analysis Year Traffic Volumes

AM	Major	Minor	PM	Major	Minor
No Build	2412	41	No Build	2423	107
Build	2556	41	Build	2572	108

Number of Lanes

Major St. 2
 Minor St. 1

**Figure 4C-3 Warrant 3
 Peak Hour**



Comments - Actual NO BUILD and BUILD volumes along Unser Blvd. exceed 2,000 vph (AM NO BUILD-2,412 vph, BUILD-2,556 vph and PM NO BUILD-2,423 vph, BUILD- 2,572 vph). 2,000 vph was used for graphing purposes.

Intersection

Intersection Delay, s/veh 7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	210	202	21	9	224	20	15	1	5	9	4	188
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	280	269	28	12	299	27	20	1	7	12	5	251

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	325	0	0	297	0	0	1307	1192	283	1183	1193	312
Stage 1	-	-	-	-	-	-	843	843	-	336	336	-
Stage 2	-	-	-	-	-	-	464	349	-	847	857	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1229	-	-	1259	-	-	136	186	754	166	186	726
Stage 1	-	-	-	-	-	-	357	378	-	676	640	-
Stage 2	-	-	-	-	-	-	576	632	-	355	373	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1229	-	-	1259	-	-	68	133	754	128	133	726
Mov Capacity-2 Maneuver	-	-	-	-	-	-	68	133	-	128	133	-
Stage 1	-	-	-	-	-	-	259	274	-	491	632	-
Stage 2	-	-	-	-	-	-	369	624	-	254	271	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0.3	63	17.2
HCM LOS			F	C

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	89	1229	-	-	1259	-	-	559
HCM Lane V/C Ratio	0.315	0.228	-	-	0.01	-	-	0.479
HCM Control Delay (s)	63	8.791	0	-	7.887	0	-	17.2
HCM Lane LOS	F	A	A		A	A		C
HCM 95th %tile Q(veh)	1.191	0.879	-	-	0.029	-	-	2.58

Notes

- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection												
Intersection Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	210	215	21	9	230	20	15	1	5	9	4	188
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	280	287	28	12	307	27	20	1	7	12	5	251
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	333	0	0	315	0	0	1333	1218	301	1209	1219	320
Stage 1	-	-	-	-	-	-	861	861	-	344	344	-
Stage 2	-	-	-	-	-	-	472	357	-	865	875	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1221	-	-	1240	-	-	130	180	736	159	179	718
Stage 1	-	-	-	-	-	-	349	371	-	669	635	-
Stage 2	-	-	-	-	-	-	571	627	-	347	366	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1221	-	-	1240	-	-	64	128	736	122	128	718
Mov Capacity-2 Maneuver	-	-	-	-	-	-	64	128	-	122	128	-
Stage 1	-	-	-	-	-	-	252	267	-	482	627	-
Stage 2	-	-	-	-	-	-	364	619	-	247	264	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.2			0.3			67.9			17.7		
HCM LOS							F			C		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	84	1221	-	-	1240	-	-	548				
HCM Lane V/C Ratio	0.333	0.229	-	-	0.01	-	-	0.489				
HCM Control Delay (s)	67.9	8.824	0	-	7.932	0	-	17.7				
HCM Lane LOS	F	A	A		A	A		C				
HCM 95th %tile Q(veh)	1.27	0.886	-	-	0.029	-	-	2.668				
Notes												
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection

Intersection Delay, s/veh 4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	87	147	3	2	140	5	14	1	4	8	1	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	99	167	3	2	159	6	16	1	5	9	1	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	165	0	0	170	0	0	597	535	169	535	534	162
Stage 1	-	-	-	-	-	-	366	366	-	166	166	-
Stage 2	-	-	-	-	-	-	231	169	-	369	368	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1407	-	-	1401	-	-	413	450	872	455	451	880
Stage 1	-	-	-	-	-	-	651	621	-	834	759	-
Stage 2	-	-	-	-	-	-	770	757	-	649	620	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1407	-	-	1401	-	-	331	414	872	424	415	880
Mov Capacity-2 Maneuver	-	-	-	-	-	-	331	414	-	424	415	-
Stage 1	-	-	-	-	-	-	600	573	-	769	757	-
Stage 2	-	-	-	-	-	-	655	755	-	594	572	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0.1	14.9	10.3
HCM LOS	B	B	B	B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	385	1407	-	-	1401	-	-	815
HCM Lane V/C Ratio	0.056	0.07	-	-	0.002	-	-	0.17
HCM Control Delay (s)	14.9	7.752	0	-	7.574	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.178	0.226	-	-	0.005	-	-	0.611

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection												
Intersection Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	87	157	3	2	149	5	14	1	4	8	1	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	99	178	3	2	169	6	16	1	5	9	1	128
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	175	0	0	182	0	0	619	558	180	558	557	172
Stage 1	-	-	-	-	-	-	378	378	-	177	177	-
Stage 2	-	-	-	-	-	-	241	180	-	381	380	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1395	-	-	1387	-	-	400	437	860	439	437	869
Stage 1	-	-	-	-	-	-	642	613	-	822	751	-
Stage 2	-	-	-	-	-	-	760	749	-	639	612	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1395	-	-	1387	-	-	319	402	860	409	402	869
Mov Capacity-2 Maneuver	-	-	-	-	-	-	319	402	-	409	402	-
Stage 1	-	-	-	-	-	-	591	565	-	757	749	-
Stage 2	-	-	-	-	-	-	645	748	-	584	564	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	2.7		0.1			15.3			10.4			
HCM LOS						C			B			
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	372	1395	-	-	1387	-	-	802				
HCM Lane V/C Ratio	0.058	0.071	-	-	0.002	-	-	0.173				
HCM Control Delay (s)	15.3	7.777	0	-	7.6	0	-	10.4				
HCM Lane LOS	C	A	A		A	A		B				
HCM 95th %tile Q(veh)	0.184	0.229	-	-	0.005	-	-	0.622				
Notes												
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection												
Intersection Delay, s/veh		1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	245	1	3	136	53	1	1	2	30	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	269	1	3	149	58	1	1	2	33	1	2
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	208	0	0	270	0	0	459	486	270	459	458	179
Stage 1	-	-	-	-	-	-	272	272	-	185	185	-
Stage 2	-	-	-	-	-	-	187	214	-	274	273	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1357	-	-	1288	-	-	511	480	766	511	498	861
Stage 1	-	-	-	-	-	-	732	683	-	814	745	-
Stage 2	-	-	-	-	-	-	812	724	-	730	682	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1357	-	-	1288	-	-	507	478	766	507	496	861
Mov Capacity-2 Maneuver	-	-	-	-	-	-	507	478	-	507	496	-
Stage 1	-	-	-	-	-	-	731	682	-	813	743	-
Stage 2	-	-	-	-	-	-	806	722	-	726	681	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0			0.1			11.1			12.2		
HCM LOS							B			B		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	599	1357	-	-	1288	-	-	507	540			
HCM Lane V/C Ratio	0.007	0.001	-	-	0.003	-	-	0.043	0.026			
HCM Control Delay (s)	11.1	7.655	0	-	7.802	0	-	12.4	11.8			
HCM Lane LOS	B	A	A		A	A		B	B			
HCM 95th %tile Q(veh)	0.022	0.002	-	-	0.008	-	-	0.136	0.081			
Notes												
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection												
Intersection Delay, s/veh		4.4										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	245	1	3	136	128	1	1	2	196	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	269	1	3	149	141	1	1	2	215	1	4
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	290	0	0	270	0	0	503	571	270	502	501	220
Stage 1	-	-	-	-	-	-	274	274	-	226	226	-
Stage 2	-	-	-	-	-	-	229	297	-	276	275	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1266	-	-	1288	-	-	477	429	766	478	471	817
Stage 1	-	-	-	-	-	-	730	681	-	774	715	-
Stage 2	-	-	-	-	-	-	772	666	-	728	681	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1266	-	-	1288	-	-	472	427	766	474	469	817
Mov Capacity-2 Maneuver	-	-	-	-	-	-	472	427	-	474	469	-
Stage 1	-	-	-	-	-	-	729	680	-	772	713	-
Stage 2	-	-	-	-	-	-	764	664	-	723	680	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0.1		0.1			11.4			15.2			
HCM LOS						B			C			
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	566	1266	-	-	1288	-	-	474	486			
HCM Lane V/C Ratio	0.008	0.002	-	-	0.003	-	-	0.303	0.159			
HCM Control Delay (s)	11.4	7.849	0	-	7.802	0	-	15.9	13.8			
HCM Lane LOS	B	A	A		A	A		C	B			
HCM 95th %tile Q(veh)	0.023	0.005	-	-	0.008	-	-	1.265	0.561			
Notes												
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection												
Intersection Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	79	1	1	142	44	1	1	1	62	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	83	1	1	149	46	1	1	1	65	1	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	196	0	0	84	0	0	263	284	84	262	261	173
Stage 1	-	-	-	-	-	-	86	86	-	175	175	-
Stage 2	-	-	-	-	-	-	177	198	-	87	86	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1371	-	-	1506	-	-	688	623	972	689	642	868
Stage 1	-	-	-	-	-	-	919	822	-	824	752	-
Stage 2	-	-	-	-	-	-	822	735	-	918	822	-
Time blocked-Platoon, %		-	-		-	-						
Mov Capacity-1 Maneuver	1371	-	-	1506	-	-	684	622	972	686	641	868
Mov Capacity-2 Maneuver	-	-	-	-	-	-	684	622	-	686	641	-
Stage 1	-	-	-	-	-	-	918	821	-	823	751	-
Stage 2	-	-	-	-	-	-	817	734	-	915	821	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0			9.9			10.5		
HCM LOS							A			B		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	732	1371	-	-	1506	-	-	686	702			
HCM Lane V/C Ratio	0.004	0.001	-	-	0.001	-	-	0.063	0.037			
HCM Control Delay (s)	9.9	7.628	0	-	7.392	0	-	10.6	10.3			
HCM Lane LOS	A	A	A		A	A		B	B			
HCM 95th %tile Q(veh)	0.013	0.002	-	-	0.002	-	-	0.203	0.115			
Notes												
- : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection												
Intersection Delay, s/veh	4.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	79	1	1	142	168	1	1	1	190	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	83	1	1	149	177	1	1	1	200	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	84	0	0	331	416	84	329	328	238
Stage 1	-	-	-	-	-	-	88	88	-	240	240	-
Stage 2	-	-	-	-	-	-	243	328	-	89	88	-
Follow-up Headway	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Capacity-1 Maneuver	1228	-	-	1506	-	-	620	526	972	622	589	798
Stage 1	-	-	-	-	-	-	917	820	-	761	705	-
Stage 2	-	-	-	-	-	-	758	645	-	916	820	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1228	-	-	1506	-	-	614	524	972	619	587	798
Mov Capacity-2 Maneuver	-	-	-	-	-	-	614	524	-	619	587	-
Stage 1	-	-	-	-	-	-	915	818	-	759	704	-
Stage 2	-	-	-	-	-	-	752	644	-	912	818	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	10.5	12.1
HCM LOS			B	B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	657	1228	-	-	1506	-	-	619	627
HCM Lane V/C Ratio	0.005	0.002	-	-	0.001	-	-	0.215	0.115
HCM Control Delay (s)	10.5	7.937	0	-	7.392	0	-	12.4	11.5
HCM Lane LOS	B	A	A		A	A		B	B
HCM 95th %tile Q(veh)	0.014	0.005	-	-	0.002	-	-	0.813	0.387

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Traffic Count Data Sheet

Year Counts Taken:

2013

E-W Street Bluewater Rd

N-S Street: Unser Blvd

Speed Limit (Bluewater Rd)=

25

Speed Limit (Unser Blvd)=

35

9/13/13

UNSIGNALIZED

Begin Time	End Time	Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	43	13	16	11	2	12	6	328	28	199	23	
7:15 AM	7:30 AM	40	17	16	11	11	16	8	385	32	215	28	
7:30 AM	7:45 AM	55	15	26	19	13	31	24	320	30	238	36	
7:45 AM	8:00 AM	57	26	46	8	14	8	32	264	23	242	36	
8:00 AM	8:15 AM	36	40	45	11	7	7	8	280	46	499	45	
8:15 AM	8:30 AM	28	5	42	6	4	14	11	254	44	149	7	
8:30 AM	8:45 AM	24	5	40	6	4	8	6	254	43	146	11	
8:45 AM	9:00 AM	9	12	3	0	2	7	9	444	46	123	0	
AM Peak Hour Volumes		195	71	104	49	40	67	70	1297	113	894	123	
% of Total Traffic		6.1%	2.2%	3.3%	1.5%	1.3%	2.1%	2.2%	40.8%	3.6%	28.1%	0.0%	
% Directional			11.6%			4.9%	Intersection		46.6%		33.0%		
AM Peak Hour Factor			0.72			0.62	0.94		0.87		0.89		

Begin Time	End Time	Eastbound (Bluewater Rd)			Westbound (Bluewater Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	44	42	7	43	40	24	7	244	46	270	47	
4:15 PM	4:30 PM	16	13	7	20	15	21	9	212	11	332	38	
4:30 PM	4:45 PM	18	11	8	12	16	39	15	195	16	265	19	
4:45 PM	5:00 PM	26	10	11	13	11	35	16	249	17	298	21	
5:00 PM	5:15 PM	14	12	10	12	18	36	12	248	11	290	23	
5:15 PM	5:30 PM	46	43	3	7	47	29	45	493	42	236	24	
5:30 PM	5:45 PM	20	8	4	42	47	25	44	229	7	300	24	
5:45 PM	6:00 PM	45	8	5	4	42	20	44	246	44	274	30	
PM Peak Hour Volumes		74	46	36	57	60	131	52	904	55	1185	101	
% of Total Traffic		2.7%	1.7%	1.3%	2.1%	2.2%	4.8%	1.9%	32.8%	2.0%	43.0%	3.7%	
% Directional			5.7%			9.0%	Intersection		36.7%		48.6%		
PM Peak Hour Factor			0.83			0.93	0.96		0.90		0.88		

Traffic Count Data Sheet

Year Counts Taken:

2013

E-W Street Los Volcanes Rd

Speed Limit (Los Volcanes Rd)= 25

N-S Street: Unser Blvd

Speed Limit (Unser Blvd)= 35

9/19/13

UNSIGNALIZED

Begin Time	End Time	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	44	19	7	10	3	37	2	336	34	91	204	27
7:15 AM	7:30 AM	58	45	4	32	12	73	4	350	57	72	215	37
7:30 AM	7:45 AM	53	8	4	25	7	76	1	434	10	68	255	26
7:45 AM	8:00 AM	39	12	3	18	7	61	10	327	20	70	303	39
8:00 AM	8:15 AM	32	5	3	10	5	28	4	319	24	52	243	34
8:15 AM	8:30 AM	23	5	5	6	2	18	2	264	46	29	202	18
8:30 AM	8:45 AM	46	7	0	4	9	28	2	280	9	19	168	16
8:45 AM	9:00 AM	18	3	3	12	0	30	2	225	12	39	175	26
AM Peak Hour Volumes		194	84	18	85	29	247	17	1447	121	301	977	129
% of Total Traffic		5.3%	2.3%	0.5%	2.3%	0.8%	6.8%	0.5%	39.7%	3.3%	8.2%	26.8%	0.0%
% Directional			8.1%			9.9%	Intersection	Intersection	43.4%			35.0%	
AM Peak Hour Factor			0.69			0.77	0.94		0.89			0.85	

Begin Time	End Time	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	22	3	24	23	2	23	2	232	16	54	345	26
4:15 PM	4:30 PM	17	11	24	18	11	31	6	208	11	45	296	38
4:30 PM	4:45 PM	16	11	31	12	8	36	5	255	17	29	303	30
4:45 PM	5:00 PM	38	7	33	38	8	46	1	271	17	35	296	40
5:00 PM	5:15 PM	25	9	44	24	7	45	5	243	12	33	296	35
5:15 PM	5:30 PM	19	5	43	24	6	49	8	276	18	38	284	37
5:30 PM	5:45 PM	15	8	24	16	10	34	2	225	14	37	295	43
5:45 PM	6:00 PM	14	8	26	12	6	30	4	247	17	48	260	24
PM Peak Hour Volumes		98	32	151	98	29	176	19	1045	64	135	1179	142
% of Total Traffic		3.1%	1.0%	4.8%	3.1%	0.9%	5.6%	0.6%	33.0%	2.0%	4.3%	37.2%	4.5%
% Directional			8.9%			9.6%	Intersection	Intersection	35.6%			45.9%	
PM Peak Hour Factor			0.90			0.82	0.95		0.93			0.98	

Traffic Count Data Sheet

Year Counts Taken:

2013

E-W Street I-40 WB Ramp
N-S Street Unser BlvdSpeed Limit (I-40 WB Ramp)= 25
Speed Limit (Unser Blvd)= 35
8/10/13

UNSIGNALIZED

Begin Time	End Time	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	0	0	0	90	4	0	43	440	0	0	389	0
7:15 AM	7:30 AM	0	0	0	111	0	0	4	149	0	0	504	0
7:30 AM	7:45 AM	0	0	0	104	0	0	9	237	0	0	512	0
7:45 AM	8:00 AM	0	0	0	103	0	1	3	235	0	0	595	0
8:00 AM	8:15 AM	0	0	0	109	0	0	9	222	0	0	520	0
8:15 AM	8:30 AM	0	0	0	100	0	0	8	154	0	0	404	0
8:30 AM	8:45 AM	0	0	0	91	0	0	5	139	0	0	290	0
8:45 AM	9:00 AM	0	0	0	49	0	0	0	126	0	0	180	0
AM Peak Hour Volumes		0	0	0	427	0	1	25	843	0	0	2131	0
% of Total Traffic		0.0%			12.5%			0.7%			0.0%		
% Directional		0.0%			12.5%			Intersection			25.3%		
AM Peak Hour Factor					0.96			0.91			0.88		

Begin Time	End Time	Eastbound (I-40 WB Ramp)			Westbound (I-40 WB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	0	0	0	211	4	0	7	147	0	0	245	0
4:15 PM	4:30 PM	0	0	0	284	0	0	4	155	0	0	196	0
4:30 PM	4:45 PM	0	0	0	234	0	0	8	163	0	0	191	0
4:45 PM	5:00 PM	0	0	0	219	0	0	11	170	0	0	212	0
5:00 PM	5:15 PM	0	0	0	226	0	0	16	215	0	0	221	0
5:15 PM	5:30 PM	0	0	0	238	1	0	14	200	0	0	220	0
5:30 PM	5:45 PM	0	0	0	231	0	0	7	217	0	0	215	0
5:45 PM	6:00 PM	0	0	0	233	2	0	7	171	0	0	211	0
PM Peak Hour Volumes		0	0	0	928	3	0	44	803	0	0	867	0
% of Total Traffic		0.0%			35.1%			1.7%			0.0%		
% Directional		0.0%			35.2%			Intersection			32.0%		
PM Peak Hour Factor					0.97			0.98			0.92		

Traffic Count Data Sheet

Year Counts Taken: 2013 E-W Street I-40 EB Ramp Speed Limit (I-40 EB Ramp)= 25 MPH
 N-S Street: Unser Blvd Speed Limit (Unser Blvd)= 35 MPH
 8/10/13

UNSIGNALIZED

Begin Time	End Time	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	4	0	2	0	0	0	0	449	0	0	479	0
7:15 AM	7:30 AM	3	0	2	0	0	0	0	150	0	0	615	0
7:30 AM	7:45 AM	5	0	5	0	0	0	0	241	0	0	616	0
7:45 AM	8:00 AM	10	0	6	0	0	0	0	228	0	0	698	0
8:00 AM	8:15 AM	12	0	1	0	0	0	0	219	0	0	629	0
8:15 AM	8:30 AM	44	0	2	0	0	0	0	454	0	0	504	0
8:30 AM	8:45 AM	5	0	3	0	0	0	0	439	0	0	384	0
8:45 AM	9:00 AM	8	0	2	0	0	0	0	448	0	0	229	0
AM Peak Hour Volumes		30	0	14	0	0	0	0	838	0	0	2558	0
% of Total Traffic		0.9%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	24.4%	0.0%	0.0%	74.4%	0.0%
% Directional			1.3%			0.0%		Intersection	24.4%			74.4%	
AM Peak Hour Factor						#DIV/0!		0.91	0.87			0.92	

Begin Time	End Time	Eastbound (I-40 EB Ramp)			Westbound (I-40 EB Ramp)			Northbound (Unser Blvd)			Southbound (Unser Blvd)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	42	0	7	0	0	0	0	442	0	0	456	0
4:15 PM	4:30 PM	22	0	9	0	0	0	0	437	0	0	477	0
4:30 PM	4:45 PM	20	0	7	0	0	0	0	454	0	0	422	0
4:45 PM	5:00 PM	22	0	8	0	0	0	0	459	0	0	434	0
5:00 PM	5:15 PM	19	0	4	0	0	0	0	212	0	0	447	0
5:15 PM	5:30 PM	21	0	11	0	0	0	0	193	0	0	458	0
5:30 PM	5:45 PM	21	0	9	0	0	0	0	203	0	0	446	0
5:45 PM	6:00 PM	16	0	11	0	0	0	0	162	0	0	444	0
PM Peak Hour Volumes		77	0	35	0	0	0	0	770	0	0	1795	0
% of Total Traffic		2.9%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	28.8%	0.0%	0.0%	67.1%	0.0%
% Directional			4.2%			0.0%		Intersection	28.8%			67.1%	
PM Peak Hour Factor						#DIV/0!		0.98	0.91			0.98	

NOTE: NB Right Turn and Southbound Right Turn movements do not turn at the intersection. SB Left Turn is clover loop that does not occur at intersection.

Traffic Count Data Sheet

Year Counts Taken:

2013

E-W Street Los Volcanes Rd

Speed Limit (Los Volcanes Rd)= 25

N-S Street: Galatin St

Speed Limit (Galatin St)= 35

9/10/13

UNSIGNALIZED

Begin Time	End Time	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Galatin St)			Southbound (Galatin St)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	35	39	2	2	54	6	2	1	2	2	2	55
7:15 AM	7:30 AM	128	41	2	4	48	8	1	0	0	4	1	74
7:30 AM	7:45 AM	21	56	9	3	61	1	6	0	2	2	1	47
7:45 AM	8:00 AM	24	64	8	0	59	5	6	0	1	1	0	10
8:00 AM	8:15 AM	48	42	2	4	23	2	3	4	2	0	0	44
8:15 AM	8:30 AM	44	26	2	4	47	2	0	4	2	0	4	40
8:30 AM	8:45 AM	7	22	4	0	27	2	2	0	0	0	0	44
8:45 AM	9:00 AM	9	36	5	4	23	4	3	0	4	2	4	40
AM Peak Hour Volumes		208	200	21	9	222	20	15	1	5	9	4	186
% of Total Traffic		23.1%	22.2%	2.3%	1.0%	24.7%	2.2%	1.7%	0.1%	0.6%	1.0%	0.4%	0.0%
% Directional			47.7%			27.9%	Intersection		2.3%			1.4%	
AM Peak Hour Factor			0.63			0.97	0.72		0.66			0.63	

Begin Time	End Time	Eastbound (Los Volcanes Rd)			Westbound (Los Volcanes Rd)			Northbound (Galatin St)			Southbound (Galatin St)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	22	44	2	4	33	2	2	4	3	2	4	33
4:15 PM	4:30 PM	46	39	4	4	35	4	3	2	4	4	4	25
4:30 PM	4:45 PM	47	44	2	0	34	0	3	0	0	0	0	48
4:45 PM	5:00 PM	49	30	2	4	30	4	2	3	0	4	4	27
5:00 PM	5:15 PM	17	44	0	1	38	1	4	1	3	3	1	35
5:15 PM	5:30 PM	20	22	1	0	30	2	5	0	0	3	0	39
5:30 PM	5:45 PM	22	41	0	0	36	2	2	0	0	1	0	19
5:45 PM	6:00 PM	27	39	2	1	35	0	3	0	1	1	0	19
PM Peak Hour Volumes		86	146	3	2	139	5	14	1	4	8	1	112
% of Total Traffic		16.5%	28.0%	0.6%	0.4%	26.7%	1.0%	2.7%	0.2%	0.8%	1.5%	0.2%	21.5%
% Directional			45.1%			28.0%	Intersection		3.6%			23.2%	
PM Peak Hour Factor			0.86			0.91	0.88		0.59			0.72	

Traffic Count Data Sheet

Year Counts Taken: 2013

E-W Street Los Volcanes
N-S Street: Daytona StSpeed Limit (Los Volcanes)= 35
Speed Limit (Daytona St)= 25
10/28/13

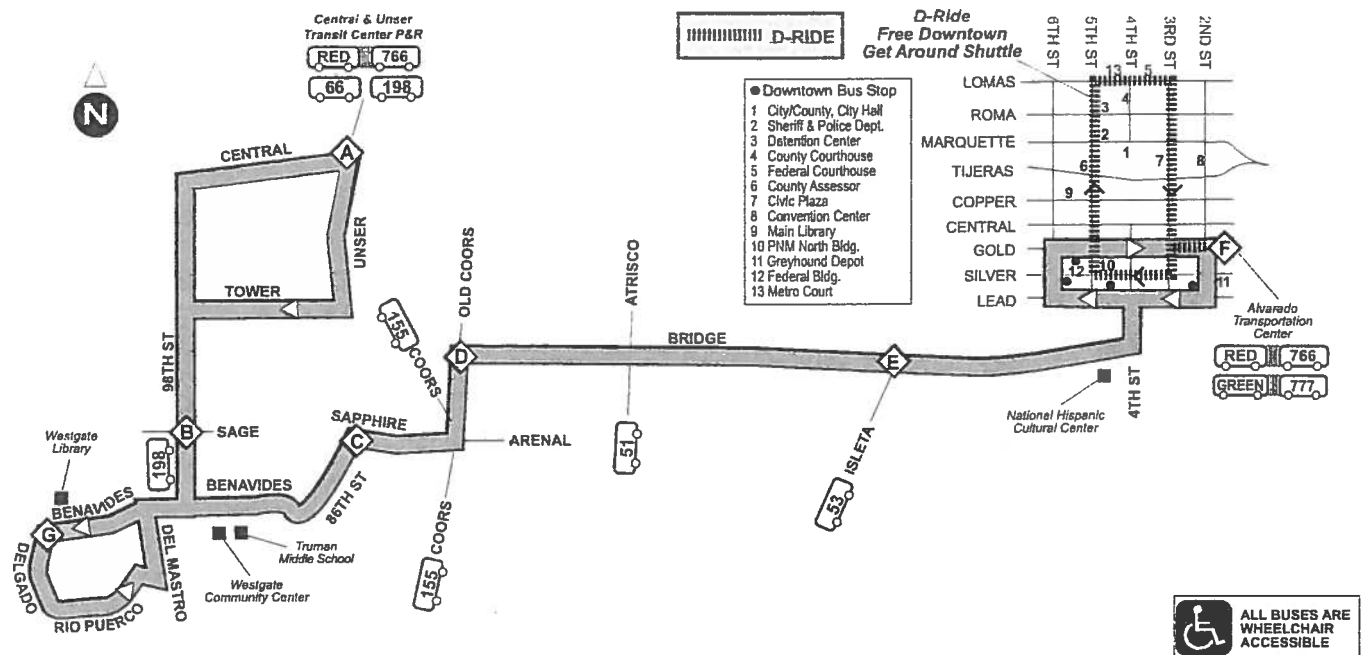
UNSIGNALIZED

Begin Time	End Time	Eastbound (Los Volcanes)			Westbound (Los Volcanes)			Northbound (Daytona St)			Southbound (Daytona St)		
		L	T	R	L	T	R	L	T	R	L	T	R
7:00 AM	7:15 AM	0	65	0	4	25	14	0	0	0	7	0	0
7:15 AM	7:30 AM	0	69	0	2	23	22	0	0	1	10	0	1
7:30 AM	7:45 AM	0	64	0	0	30	7	0	0	1	8	0	1
7:45 AM	8:00 AM	0	60	0	0	32	11	0	0	0	7	0	0
8:00 AM	8:15 AM	1	50	0	1	50	12	0	0	0	5	0	0
8:15 AM	8:30 AM	0	32	0	0	18	15	0	0	0	6	0	0
8:30 AM	8:45 AM	1	30	0	0	20	3	0	0	0	11	0	2
8:45 AM	9:00 AM	1	33	0	0	22	6	0	0	0	8	0	1
AM Peak Hour Volumes		1	243	0	3	135	52	0	0	2	30	0	2
% of Total Traffic		0.2%	51.9%	0.0%	0.6%	28.8%	11.1%	0.0%	0.0%	0.4%	6.4%	0.0%	0.0%
% Directional			52.1%			40.6%	Intersection		0.4%			6.4%	
AM Peak Hour Factor			0.88			0.75	0.91		0.50			0.73	

Begin Time	End Time	Eastbound (Los Volcanes)			Westbound (Los Volcanes)			Northbound (Daytona St)			Southbound (Daytona St)		
		L	T	R	L	T	R	L	T	R	L	T	R
4:00 PM	4:15 PM	1	25	0	0	38	13	0	0	0	9	0	0
4:15 PM	4:30 PM	0	23	0	0	39	10	0	0	0	12	0	1
4:30 PM	4:45 PM	0	12	0	0	35	14	0	0	0	21	0	1
4:45 PM	5:00 PM	0	18	0	0	29	7	0	0	0	19	0	1
5:00 PM	5:15 PM	0	17	0	0	27	11	0	0	0	15	0	0
5:15 PM	5:30 PM	0	18	0	0	33	9	0	0	0	12	0	2
5:30 PM	5:45 PM	0	19	0	0	28	9	0	0	0	13	0	1
5:45 PM	6:00 PM	0	15	0	0	30	6	0	0	0	10	0	1
PM Peak Hour Volumes		1	78	0	0	141	44	0	0	0	61	0	3
% of Total Traffic		0.3%	23.8%	0.0%	0.0%	43.0%	13.4%	0.0%	0.0%	0.0%	18.6%	0.0%	0.9%
% Directional			24.1%			56.4%	Intersection		0.0%			19.5%	
PM Peak Hour Factor			0.76			0.91	0.95		0.0%			0.73	

Route / Ruta 54 Bridge Blvd./Westgate

Effective: 12/15/2012



Route 54 - Weekday Eastbound

ALVARADO TRANSPORTATION CENTER	BRIDGE & ISLETA	BRIDGE & OLD COORS	86TH STREET & SAPPHIRE	98TH STREET & SAGE	CENTRAL & UNSER TRANSIT CENTER P&R
A	B	C	D	E	F
5:40a	5:46a	5:50a	5:58a	6:04a	6:13a
6:38a	6:44a	6:48a	6:56a	7:03a	7:13a
7:24a	7:32a	7:37a	7:46a	7:54a	8:04a
8:10a	8:18a	8:23a	8:32a	8:40a	8:50a
8:59a	9:05a	9:09a	9:17a	9:23a	9:32a
9:46a	9:52a	9:56a	10:04a	10:10a	10:19a
10:31a	10:37a	10:41a	10:49a	10:55a	11:04a
11:16a	11:22a	11:26a	11:34a	11:40a	11:49a
12:01p	12:07p	12:11p	12:19p	12:25p	12:34p
12:46p	12:52p	12:56p	1:04p	1:10p	1:19p
1:31p	1:37p	1:41p	1:49p	1:56p	2:05p
2:18p	2:24p	2:28p	2:36p	2:43p	2:52p
3:07p	3:13p	3:17p	3:25p	3:32p	3:43p
3:52p	4:00p	4:06p	4:14p	4:21p	4:32p
4:38p	4:46p	4:53p	5:03p	5:10p	5:21p
5:19p	5:27p	5:34p	5:44p	5:51p	6:02p
5:57p	6:05p	6:12p	6:22p	6:29p	6:39p
6:46p	6:52p	6:56p	7:04p	7:10p	7:18p
8:13p	8:19p	8:23p	8:31p	8:37p	8:45p

Route 54 - Weekday Westbound

ALVARADO TRANSPORTATION CENTER	BRIDGE & ISLETA	BRIDGE & OLD COORS	86TH STREET & SAPPHIRE	98TH STREET & SAGE	CENTRAL & UNSER TRANSIT CENTER P&R
F	E	D	C	B	A
5:47a	5:55a	6:01a	6:08a	6:16a	6:28a
6:32a	6:40a	6:46a	6:53a	7:01a	7:13a
7:21a	7:29a	7:36a	7:44a	7:52a	8:04a
8:10a	8:18a	8:25a	8:33a	8:41a	8:53a
9:00a	9:08a	9:14a	9:22a	9:30a	9:42a
9:45a	9:53a	9:59a	10:07a	10:15a	10:27a
10:30a	10:38a	10:44a	10:52a	11:00a	11:12a
11:15a	11:23a	11:29a	11:37a	11:45a	11:57a
12:00p	12:08p	12:14p	12:22p	12:30p	12:42p
12:45p	12:53p	12:59p	1:07p	1:15p	1:27p
1:30p	1:38p	1:44p	1:52p	2:00p	2:14p
2:15p	2:23p	2:33p	2:41p	2:49p	3:03p
3:00p	3:08p	3:18p	3:26p	3:34p	3:48p
3:40p	3:48p	3:58p	4:06p	4:14p	4:29p
4:20p	4:28p	4:39p	4:47p	4:55p	5:10p
5:05p	5:13p	5:24p	5:32p	5:40p	5:55p
5:50p	5:58p	6:09p	6:17p	6:25p	6:38p
6:43p	6:51p	7:00p	7:08p	7:16p	7:29p
7:25p	7:33p	7:39p	7:47p	7:55p	8:08p
8:15p	8:23p	8:29p	8:36p	8:44p	8:56p
9:07p	9:15p	9:21p	9:28p	9:36p	9:48p

Route 54 - Saturday Eastbound

6:00a	6:08a	6:13a	6:18a	6:25a	6:40a
7:00a	7:08a	7:13a	7:18a	7:25a	7:40a
8:00a	8:08a	8:13a	8:18a	8:25a	8:40a
9:00a	9:08a	9:13a	9:18a	9:25a	9:40a
10:00a	10:08a	10:13a	10:18a	10:25a	10:40a
11:00a	11:08a	11:13a	11:18a	11:25a	11:40a
12:00p	12:08p	12:13p	12:18p	12:25p	12:40p
1:00p	1:08p	1:13p	1:18p	1:25p	1:40p
2:00p	2:08p	2:13p	2:18p	2:25p	2:40p
3:00p	3:08p	3:13p	3:18p	3:25p	3:40p
4:00p	4:08p	4:13p	4:18p	4:25p	4:40p
5:00p	5:08p	5:13p	5:18p	5:25p	5:40p
6:00p	6:08p	6:13p	6:18p	6:25p	6:40p
7:00p	7:08p	7:13p	7:18p	7:25p	7:40p
8:00p	8:08p	8:13p	8:18p	8:25p	8:40p
9:00p	9:08p	9:13p	9:18p	9:25p	9:40p

Route 54 - Saturday Westbound

7:00a	7:09a	7:15a	7:21a	7:28a	7:34a	7:40a
8:00a	8:09a	8:15a	8:21a	8:28a	8:34a	8:40a
9:00a	9:09a	9:15a	9:21a	9:28a	9:34a	9:40a
10:00a	10:09a	10:15a	10:21a	10:28a	10:34a	10:40a
11:00a	11:09a	11:15a	11:21a	11:28a	11:34a	11:40a
12:00p	12:09p	12:15p	12:21p	12:28p	12:34p	12:40p
1:00p	1:09p	1:15p	1:21p	1:28p	1:34p	1:40p
2:00p	2:09p	2:15p	2:21p	2:28p	2:34p	2:40p
3:00p	3:09p	3:15p	3:21p	3:28p	3:34p	3:40p
4:00p	4:09p	4:15p	4:21p	4:28p	4:34p	4:40p
5:00p	5:09p	5:15p	5:21p	5:28p	5:34p	5:40p
6:12p	6:21p	6:27p	6:33p	6:40p	6:46p	6:52p
7:10p	7:19p	7:25p	7:31p	7:38p	7:44p	7:50p
8:00p	8:09p	8:15p	8:21p	8:28p	8:34p	8:40p
9:00p	9:09p	9:15p	9:21p	9:28p	9:34p	9:40p