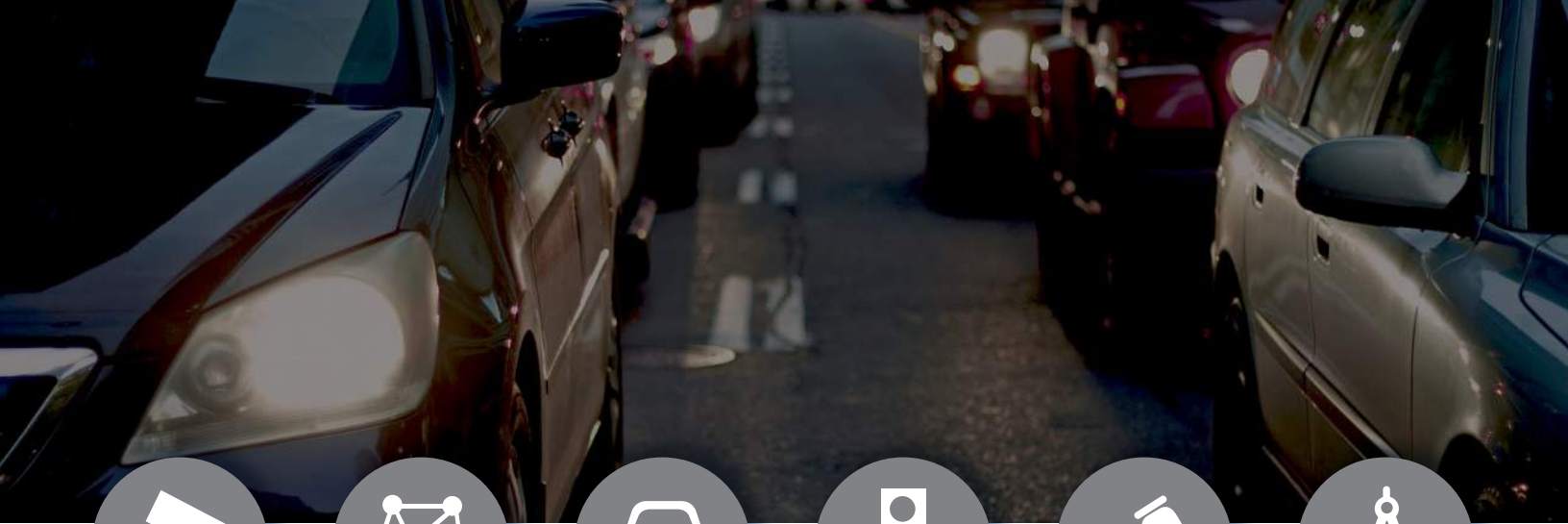




TRAFFIC IMPACT STUDY

QT #7001 Unser Los Volcanes TIS

Draft Report
June 2024

Prepared for
QuikTrip Corporation



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Traffic Impact Study (TIS) QT #7001 Unser Los Volcanes

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Prepared for:
QuikTrip Corporation

Prepared By:



EXECUTIVE SUMMARY

The following contains a Traffic Impact Study (TIS) for a QuikTrip travel center to be developed on the corner of Unser Boulevard and Los Volcanes Road in Albuquerque, New Mexico. Lee Engineering has completed this report for QuikTrip Corporation. All analyses and items contained herein conform to scoping requirements set forth in a scoping meeting held on March 26th, 2024, with QuikTrip Corporation, the City of Albuquerque (CABQ), and the New Mexico Department of Transportation (NMDOT).

BACKGROUND

The proposed development is to construct a travel center on the southwest corner of Unser Boulevard and Los Volcanes Road. The site, which is to include a 7,318 square-foot building, 63 parking spaces, and 22 fuel pumps, is anticipated to generate 128 ingress and 128 egress trips during the AM peak hour, and 160 ingress trips and 162 egress trips during the PM peak hour. The site is also expected to generate 53 ingress and 53 egress pass-by trips during the AM peak hour and 66 ingress and 66 egress pass-by trips during the PM peak hour. The number of vehicle trips generated by the proposed development was based on the trip generation rates and equations provided in the Trip Generation Manual, 11th Edition, by the Institute of Transportation Engineers (ITE) 944 – Gasoline/Service Station and 950 – Truck Stop.

Site access is to be provided via a one site access driveway along Los Volcanes Road, one site-access driveway along Unser Boulevard, and one site access driveway along Saul Bell Road. Access points are shown in Figure 1.

Study intersections include:

- 1) I-40 EB Off-Ramp and Unser Boulevard
- 2) Unser Boulevard and Los Volcanes Road
- 3) Saul Bell Road and Unser Boulevard
- 4) Bluewater Road and Oliver Ross Road
- 5) Los Volcanes Road and Site Access 1
- 6) Unser Boulevard and Site Access 2
- 7) Saul Bell Road and Site Access 3

For the purposes of this analysis, the development is assumed to reach full completion by 2026. The development is to be constructed in one phase.

Analysis scenarios for this study include:

- Existing 2024 – Existing traffic volumes
- Build-Out Year 2026 Background – 2026 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model.
- Build-Out Year 2026 Total – 2026 background volumes plus trips generated by the proposed development.
- Horizon Year 2036 Background – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model.
- Horizon Year 2036 Total – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model, plus trips generated by the proposed development.

Existing turning movement counts were collected on April 10th, 2024, for the following study intersections:

- I-40 EB Off-Ramp and Unser Boulevard
- Unser Boulevard and Los Volcanes Road
- Saul Bell Road and Unser Boulevard
- Bluewater Road and Oliver Ross Road

These volumes were analyzed unaltered in the Existing scenario of the Level of Service and Queueing Analysis section. Volumes for the proposed driveways were balanced using existing counts from surrounding intersections. Site trips for the development site were generated based on ITE 944 – Gasoline/Service Station and ITE 950 – Truck Stop, Peak Hour Generator. Proposed development-generated trips were used to analyze Build-Out Year and Horizon Year Total volumes.

SUMMARY OF TRAFFIC ANALYSIS AND RECOMMENDATIONS

The following presents a summary of the traffic analysis and recommendations included in this report.

CONCLUSIONS

Traffic operation conclusions for the intersection of Unser Boulevard and Los Volcanes Road are summarized as follows:

- NBL operates at LOS E during the AM and PM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, Horizon Full Build, Build Out Full Build Mitigated, and Horizon Build Out Mitigated scenarios.
 - This failure is attributed to signal delay as the movement volume is low and the V/C ratio for this movement is less than one for all scenarios. Therefore, no recommendations are made to mitigate this movement.
- SBL operates at LOS F during the AM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, and Horizon Full Build scenarios.
 - Queue storage for this movement is expected to be exceeded.
- SBL operates at LOS E during the PM peak hours for the Existing Year scenario.
- WBR operates at LOS E during the AM peak hour for the Horizon Background and Horizon Full Build scenarios.
- WBR operates at LOS E during the PM peak hour for the Existing Year and Horizon Background scenarios.
- All other movements operate at acceptable levels of service (LOS) and have adequate storage to accommodate the 95th percentile queue lengths under analyzed scenarios.

Traffic operation conclusions for the intersection of I-40 EB Off-Ramp and Unser Boulevard are summarized as follows:

- All movements with HCM results are expected to experience unacceptable delays during the AM and PM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, and Horizon Full Build scenarios.
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM and PM peak hours.
- All other movements operate at acceptable levels of service (LOS) and have adequate storage to accommodate the 95th percentile queue lengths under Existing Year conditions.

SITE RECOMMENDATIONS

Recommendations for study intersections directly serving and primarily impacted by the proposed development are provided as follows:

- Proposed Access Points and Locations:
 - It is recommended that three access points be constructed to provide adequate site circulation for ingress and egress trips as well as truck flow. A full-access configuration for Site Driveway 1, shown on the north end of the site, will provide adequate access for tanker trucks and trash pick-up. The two additional site driveways, one to the east and one to the south, will provide adequate access for passenger vehicles without creating conflicts with articulated trucks on the north end of the site. Driveway 3 will also provide adequate access for trucks.
 - The north Site Driveway 1 is recommended to be full access.
 - The east Site Driveway 2 is recommended to be partial access.
 - The south Site Driveway 3 is recommended to be full access.
- Unser Boulevard and east Site Driveway 2
 - When the intersection is constructed, a southbound right-turn deceleration lane is recommended on the southbound approach. The lane should be constructed as long as possible without encroaching on the existing intersection to the north.
- Unser Boulevard and Saul Bell Road / Site Driveway 3
 - Upon opening of the development, a northbound left-turn deceleration lane is recommended on the northbound approach, making this a partial access intersection. The lane should be constructed to store 50FT of vehicles with lane transition of 600 to 300 FT reverse curve.
 - It is also recommended that a curb and gutter be constructed along the median of Unser Boulevard between Los Volcanes and Bluewater.
 - Note: The MRCOG RACC includes a provisions for a northbound left turn lane onto Saul Bell Road from Unser Boulevard. See Figure 13 for additional details.

OFF-SITE INTERSECTION RECOMMENDATIONS

Recommendations for intersections within the study area that do not directly serve the proposed development and are impacted by multiple developments in the area are provided as follows:

- Unser Boulevard and Los Volcanes Road
 - It is recommended that this signal be retimed by a Licensed Professional Traffic Operations Engineer (PTOE) to resolve capacity and queuing issues at this intersection. It is recommended that retiming be performed at or after opening day.
- I-40 EB Off-Ramp and Unser Boulevard
 - For all scenarios, the eastbound left and eastbound right are expected to experience unacceptable delays and queuing. While signalization of the intersection is shown to resolve these issues, it is recommended that an interchange study be conducted to determine an appropriate long-term future configuration for this. The interchange study should be conducted as part of a regional planning effort with multi-jurisdictional involvement, the scope of which is outside the purposes of this development traffic study.

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INTRODUCTION

This report details the procedures and findings of a Traffic Impact Study (TIS) performed by Lee Engineering for QuikTrip Corporation. This report and the analyses herein were performed for a travel center development to be constructed on the corner of Unser Boulevard and Los Volcanes Road in Albuquerque, New Mexico. This study examines the impacts of the proposed development on surrounding traffic conditions and discusses the potential impacts of trips generated by the development on the study intersections.

The scope of this report and the analyses performed were completed in agreement with the scoping requirements set forth by the City of Albuquerque (CABQ) and the New Mexico Department of Transportation (NMDOT). Scoping meeting notes from the scoping meeting held on March 26th, 2024, are included in Appendix A. Analysis procedures, conclusions, and recommendations for this study were developed according to the *Highway Capacity Manual (HCM) 6th Edition* and the *Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition*.

For the purposes of this analysis, the development is assumed to be completed in one phase and to reach full completion by 2026. The site plan displayed in Figure 1 shows that the proposed development is a travel center. Traffic generated by the site is anticipated to be 128 ingress and 128 egress trips during the AM peak hour, 160 ingress trips, and 162 egress trips during the PM peak hour. Figure 2 shows the site plan for the development. Lee Engineering conducted a Level of Service and Queuing Analysis for the following AM and PM peak hour scenarios:

Traffic Analysis

- Existing 2024 – Existing traffic volumes
- Build-Out Year 2026 Background – 2026 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model.
- Build-Out Year 2026 Total – 2026 background volumes plus trips generated by the proposed development.
- Horizon Year 2036 Background – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model.
- Horizon Year 2036 Total – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model, plus trips generated by the proposed development.

The Level of Service and Queuing Analysis Reports are presented in full in the Appendix.

BACKGROUND INFORMATION

PROJECT LOCATION & SITE PLAN

The travel center development will be located on Unser Boulevard, south of Los Volcanes Road. Figure 1 shows the proposed site plan and Figure 2 shows the site location, study intersections, and the surrounding area. Nearby intersections include the following:

- 1) I-40 EB Off-Ramp and Unser Boulevard
- 2) Unser Boulevard and Los Volcanes Road
- 3) Saul Bell Road and Unser Boulevard
- 4) Bluewater Road and Oliver Ross Road
- 5) Los Volcanes Road and Site Access 1

- 6) Unser Boulevard and Site Access 2
- 7) Saul Bell Road and Site Access 3

The proposed development would convert approximately 5 acres of land into a convenience store and gas station. For the purposes of this analysis, the development is anticipated to include a 7,318-square-foot convenience store, 22 fuel pumps, and 51 parking spaces. Proposed access points include one driveway on Los Volcanes Road, one driveway on Unser Boulevard, and one driveway on Saul Bell Road. The development Site Plan is presented in Figure 1, and the Vicinity Map, which includes the study area and intersections, is presented in Figure 2.

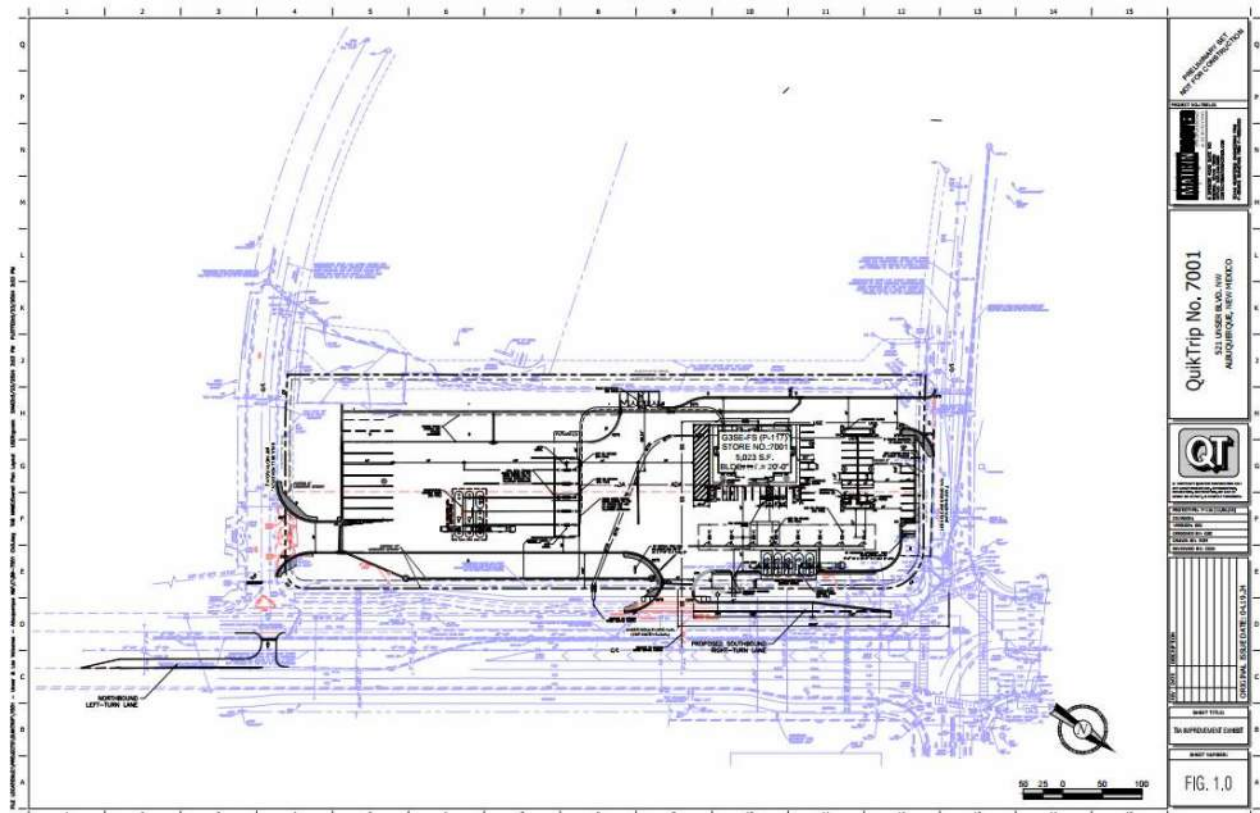


Figure 1: Site Plan



Figure 2: Vicinity Map

STUDY AREA, AREA LAND USE, AND STREETS NARRATIVE SUMMARY

STUDY AREA

The study area is defined as the area just south of Unser Boulevard and Los Volcanes Road intersection. The following intersections were identified for analysis during the scoping meeting:

- 1) I-40 EB Off-Ramp and Unser Boulevard
- 2) Unser Boulevard and Los Volcanes Road
- 3) Saul Bell Road and Unser Boulevard
- 4) Bluewater Road and Oliver Ross Road
- 5) Los Volcanes Road and Site Access 1
- 6) Unser Boulevard and Site Access 2
- 7) Saul Bell Road and Site Access 3

AREA LAND USE

As described, the development is to be located on the southwest corner of Unser Boulevard and Los Volcanes Road. The study area is an urban, largely developed area west of Albuquerque, NM. Adjacent to and surrounding the project site are land uses consisting of the following:

- Commercial: Much of the land to the east of the proposed development is commercial.
- Residential: Much of the land to the west and southwest of the proposed development is single-family residential.
- Undeveloped: Much of the land to the north of the site, southwest and southeast of the I-40 EB-Off Ramp, is currently undeveloped.

STREETS

The following details the characteristics and features of streets included in the study area:

Unser Boulevard is a CABQ-maintained, four-lane, divided roadway that runs north and south. The roadway is classified by MRCOG as a regional principal arterial, and the posted speed limit is 45 MPH. There are two 10-foot travel lanes in each direction. Six-foot sidewalks are present on each side of the roadway. No bicycle facilities are present.

Los Volcanes Road is a CABQ-maintained, four-lane, divided roadway that runs east and west. The roadway is classified by MRCOG as a major collector, and the posted speed limit is 35 MPH. There are two 11-foot travel lanes in each direction with a 13-foot two-way left turn lane. Six-foot sidewalks are present on each side of the roadway. Six-foot bike lanes are present on each side of the roadway.

Saul Bell Road is a CABQ-maintained, undivided local roadway that runs east and west with an assumed speed limit of 25 MPH. It is classified by CABQ as a local urban street. The roadway is 36 feet wide, with five-foot sidewalks present on each side. No bicycle facilities are present.

Oliver Ross Road is a CABQ-maintained, undivided local roadway that runs east and west with an assumed speed limit of 25 MPH. It is classified by CABQ as a local urban street. The roadway is 36 feet wide, with five-foot sidewalks present on each side. No bicycle facilities are present.

Bluewater Road is a CABQ-maintained, two-lane, divided roadway that runs east and west. The roadway is classified by MRCOG as a major collector, and the posted speed limit is 40 MPH. There is one 12-foot travel lane with a 5-foot shoulder in each direction and a 13-foot two-way left turn lane. Six-foot sidewalks are present on each side of the roadway. No bicycle facilities are present.

I-40 EB Off-Ramp is an NMDOT-maintained, one-lane, one-way roadway that provides access to I-40. The roadway is classified by NMDOT as an interstate, and the assumed speed limit is 40 MPH. There is one 18-foot travel lane. No pedestrian or bicycle facilities are present.

INTERSECTIONS

The following details the traffic control and characteristics of the existing intersections in the study area:

I-40 EB Off-Ramp and Unser Boulevard is a 3-legged, one-way unsignalized intersection. It consists of two through lanes and a dedicated right-turn lane that merges onto the I-40 interstate. No pedestrian or bicycle facilities are present at this intersection.

Unser Boulevard and Los Volcanes Road is a 4-legged, signalized intersection. The east leg comprises a left-turn lane, a through lane and a right-turn lane. The west leg comprises a left-turn lane and a shared through/right-turn lane. The north leg comprises two left-turn lanes, two through lanes, and a right-turn lane. The south leg comprises a left-turn lane, three through lanes, and a right-turn lane. Sidewalks are present in every direction, and all crosswalk locations include pedestrian signals and curb ramps. The north and south legs of the intersection consist of protected-only left turn phasing, while the east and west legs consist of protected/permissive left turn phasing. Vehicle detection is present in every direction.

Unser Boulevard and Saul Bell Road is a 3-legged, stop-controlled intersection. The west leg comprises a shared left-turn/through lane. The south leg comprises two through lanes and a right-turn lane. Sidewalks are present on the north, south, and west legs of the intersection. No crosswalks are present.

Bluewater and Oliver Ross Road is a 4-legged, stop-controlled intersection. The east and west legs comprise a shared through/right-turn lane and a left-turn lane. The north and south legs comprise a shared left-turn/through/right-turn lane. Sidewalks are present in every direction. No crosswalks are present. Bicycle lanes are present on Bluewater Road.

BICYCLE FACILITIES

Currently, Bicycle lanes are present on Los Volcanes Road, east of Unser Boulevard. Bicycle lanes are not present within the study area along any other roadway. However, a large multi-use trail abuts Unser Boulevard to the east.

ADJACENT DEVELOPMENTS

Two adjacent developments are under review near the study area, one located at the Unser Boulevard and Bluewater Road intersection, and another located east of Unser Boulevard across from Saul Bell Road. Per the scoping meeting, traffic studies were not required for these developments. Therefore, no specific considerations were made in this report for this development. Rather, MRCOG growth projections were used to analyze background growth for future scenarios.

DATA COLLECTION

The following section details the data collection method used in subsequent analyses of this report. The data discussed below was collected via a combination of field observations and machine/video recordings.

FIELD DATA COLLECTION

On-Street Parking

No dedicated on-street space is provided in the study area.

Pedestrians and Bicycles

Pedestrian and bicycle volumes were collected at all study intersections with turning movement counts (see Turning Movement Counts section below). Pedestrian and bicycle hourly volumes are provided in Appendix B.

Transit

According to the City of Albuquerque's ABQ Ride System Map (2023), no bus routes pass through the study area.

Signal Timings

The City of Albuquerque Traffic Engineering Division provided signal timing for the signalized intersection of Unser Boulevard and Los Volcanes Road. Signal timing sheets used in the capacity analyses are provided in Appendix C.

TRAFFIC SCENARIO DEVELOPMENT

The following sections detail the methods and calculations used to obtain traffic volumes for the existing 2026 and 2036 analysis scenarios. This process used the following tools as described below: Traffic Projections, Site Trip Generation, and Trip Distribution and Assignment. Figures at the end of this section show the resulting traffic volumes determined for the 2026 and 2036 analysis scenarios.

TRAFFIC COUNTS, GROWTH RATES, AND TRIP GENERATIONS

TURNING MOVEMENT COUNTS

Turning movement counts (TMC) were collected for nine hours in three periods: 6:00 AM-9:00 AM, 11:00 AM-2:00 PM, and 3:30 PM-6:30 PM on Wednesday, April 10th, 2024, for four of the study intersections. Turning movement volumes collected at the study intersections show a typical commuter directionally biased distribution with observable AM and PM peak hour periods. Table 1 shows the observed peak hours for each intersection where traffic counts were collected and the peak hours for the entire study area (network peak). AM and PM peak-hour traffic volumes are shown in Figure 3. Complete turning movement counts can be found in Appendix B. Through movement traffic volumes for the proposed driveways were assumed based on existing volumes for the surrounding driveways.

Table 1: Intersection and Network Peak Hours

Intersection	AM Peak Hour	PM Peak Hour
I-40 EB Off-Ramp and Unser Boulevard	7:30 AM	3:45 PM
Unser Boulevard and Los Volcanes Road	7:45 AM	3:45 PM
Saul Bell Road and Unser Boulevard	7:15 AM	4:15 PM
Bluewater Road and Oliver Ross Road	8:00 AM	3:45 PM
Network Peak Hours:	7:30 AM	3:45 PM

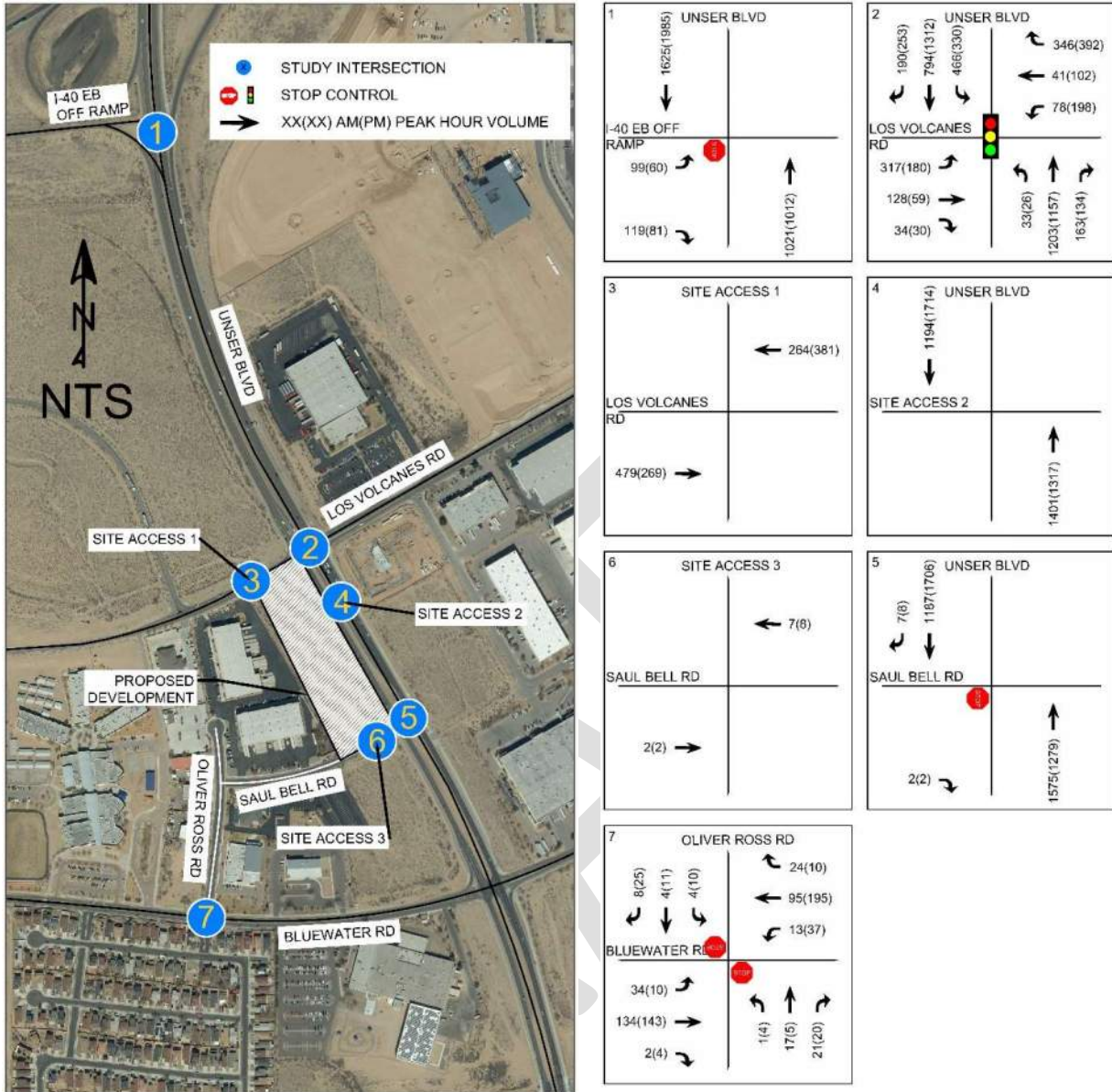


Figure 3: Existing Peak Hour Turning Movement Counts

TRAFFIC GROWTH

For the purposes of this analysis, the future year volumes were forecast from existing traffic volumes using values from 2016 and 2040 (updated) travel demand models provided by MRCOG. These models were then compared using AM and PM peak hour direction volumes (AMPH LOAD and PMPH LOAD) to calculate anticipated growth rates for individual roadways near the study area. Roadways calculated to have a yearly growth rate of less than 1% were analyzed with a 1% per year growth rate to facilitate a conservative analysis. Growth rates were then converted to growth factors for specific analysis scenarios. Values provided by MRCOG are reproduced verbatim in Table 2, in addition to the calculated growth rates used in the analysis. Growth rates were then applied to the 2024 existing volumes to forecast future volumes. Projected turning movement volumes were used along with adjacent developments' site-generated trips for the Build-Out Year 2026 Background scenario. 2026 Background volumes plus the proposed development's site-generated trips were used for the Build-Out Year 2026 Full-Build scenario.

Table 2: Yearly Growth Rates

Roadway			MRCOG 2016 Model "Peak Hour Load"	MRCOG 2040 Model "Peak Hour Load"	Yearly Growth Rate	Average Area Yearly Growth	Growth Rate for Analysis
I-40 EB Off Ramp/ Unser Blvd	West Leg	AM PH	140	491	5.37%	0.61%	1.00%
		PM PH	230	384	2.16%		
	North Leg	AM PH	1296	1466	0.51%		
		PM PH	1291	1072	-0.77%		
	South Leg	AM PH	1355	1329	-0.08%		
		PM PH	1356	2041	1.72%		
Los Volcanes/ Unser Blvd	West Leg	AM PH	112	202	2.49%		
		PM PH	65	55	-0.69%		
	East Leg	AM PH	152	130	-0.65%		
		PM PH	68	444	8.13%		
	North Leg	AM PH	1530	1370	-0.46%		
		PM PH	1645	1402	-0.66%		
	South Leg	AM PH	1050	1279	0.83%		
		PM PH	1351	1391	0.12%		
Saul Bell Rd/ Unser Blvd	North Leg	AM PH	1050	1279	0.83%		
		PM PH	1351	1391	0.12%		
Unser Blvd/ Bluewater Rd	West Leg	AM PH	73	185	3.95%		
		PM PH	219	460	3.14%		
	East Leg	AM PH	156	153	-0.08%		
		PM PH	338	418	0.89%		
	North Leg	AM PH	1050	1279	0.83%		
		PM PH	1351	1391	0.12%		
	South Leg	AM PH	928	1167	0.96%		
		PM PH	1215	1331	0.38%		
Oliver Ross Rd/ Bluewater Rd	West Leg	AM PH	266	276	0.15%		
		PM PH	95	141	1.66%		
	East Leg	AM PH	73	185	3.95%		
		PM PH	219	460	3.14%		

Source: MRCOG 2016 and 2040 Models

SITE TRIP GENERATION

Trip generation for the Proposed Development was performed using the procedures and methodologies provided in the ITE Trip Generation Manual, 11th Edition. The land use categories Gasoline/Service Station (ITE 944) and Truck Stop (ITE 950) were used to generate trips for the Development. Trips were calculated using the rate for Weekday AM and PM Peak Hour Traffic. Trips generated by the proposed development are shown in the tables below. Site-generated trips were added to the Background traffic volumes to create the Total Build-Out and Horizon Year traffic volumes. Table 3 below shows the trip generation volumes and percents.

Table 3: Proposed Development Trip Generation

Use	Units		Weekday AM Peak Hour					Weekday PM Peak Hour				
			Total	Enter	Exit	In	Out	Total	Enter	Exit	In	Out
ITE 944 – Gasoline/Service Station	16	VFP	168	50%	50%	84	84	231	50%	50%	115	116
ITE 944 – Gasoline/Service Station (Pass-By)	16	VFP	106	50%	50%	53	53	132	50%	50%	66	66
ITE 950 – Truck Stop	6	VFP	88	51%	49%	45	43	91	50%	50%	46	45
			Total Trips			129	127	Total Trips			161	161

Trip Distribution and Assignment

The proposed site-generated trip distribution was determined based on the analysis of existing intersection demand characteristics within the study area. These direct trips were routed within the roadway network to and from the Development based on the proportions of existing turning movement counts during the AM and PM peak hours. Figures 4 through 8 show the routing percentages and trips generated by the development.

TRAFFIC VOLUME CALCULATIONS

Traffic volumes used in the Build-Out Year and Horizon Year analyses were calculated as follows:

- Build-Out Year 2026 Background – 2026 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model
- Build-Out Year 2026 Total – 2026 background volumes plus trips generated by the proposed development
- Horizon Year 2036 Background – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model
- Horizon Year 2036 Total – 2036 traffic volumes projected from the Existing traffic volumes via the application of a growth factor developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model, plus trips generated by the proposed development

Figures 9 through 12 show the volumes for each Build-Out and Horizon Year scenario.

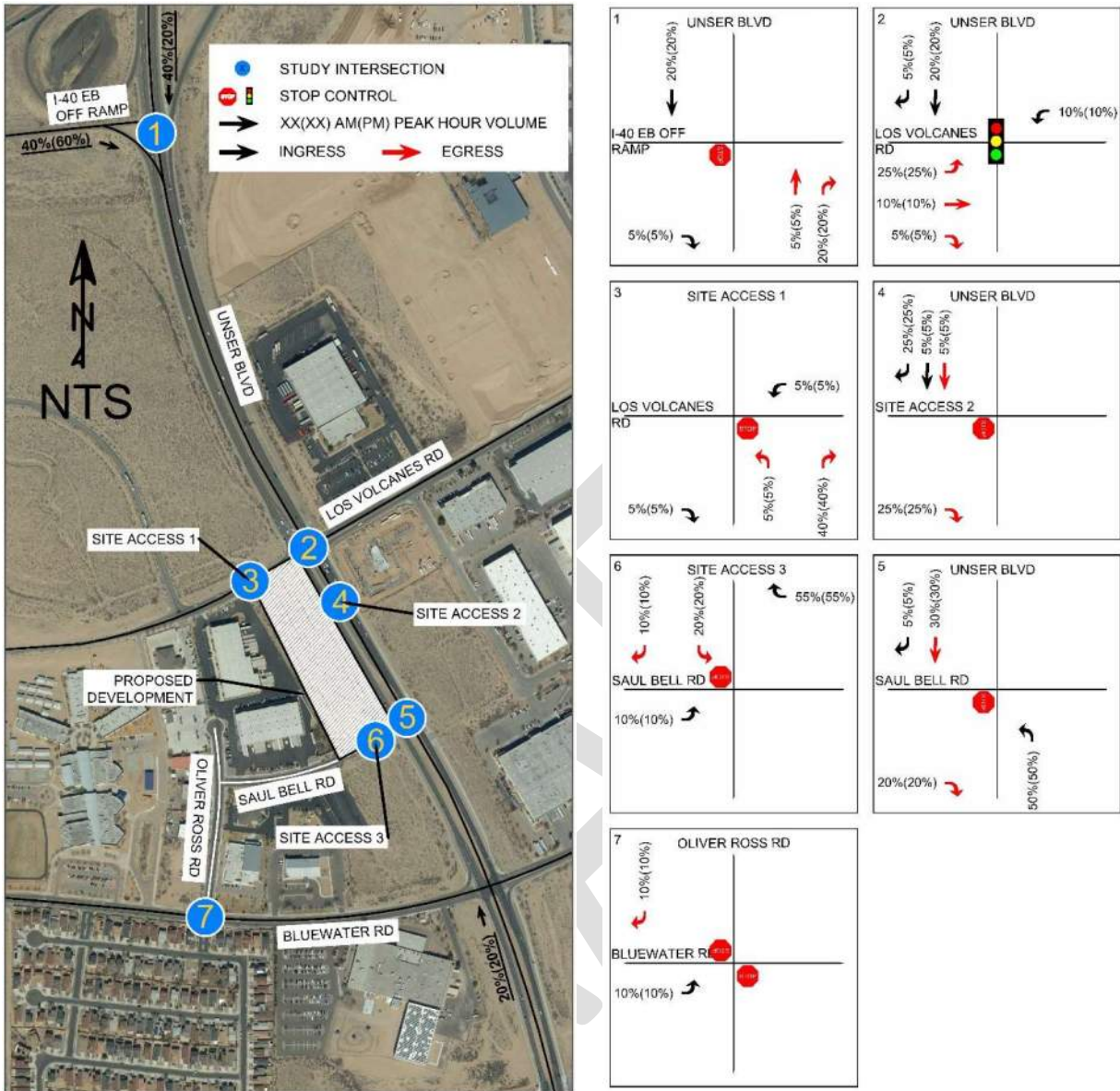


Figure 4: Site-Generated Direct Trip Routing Percentages

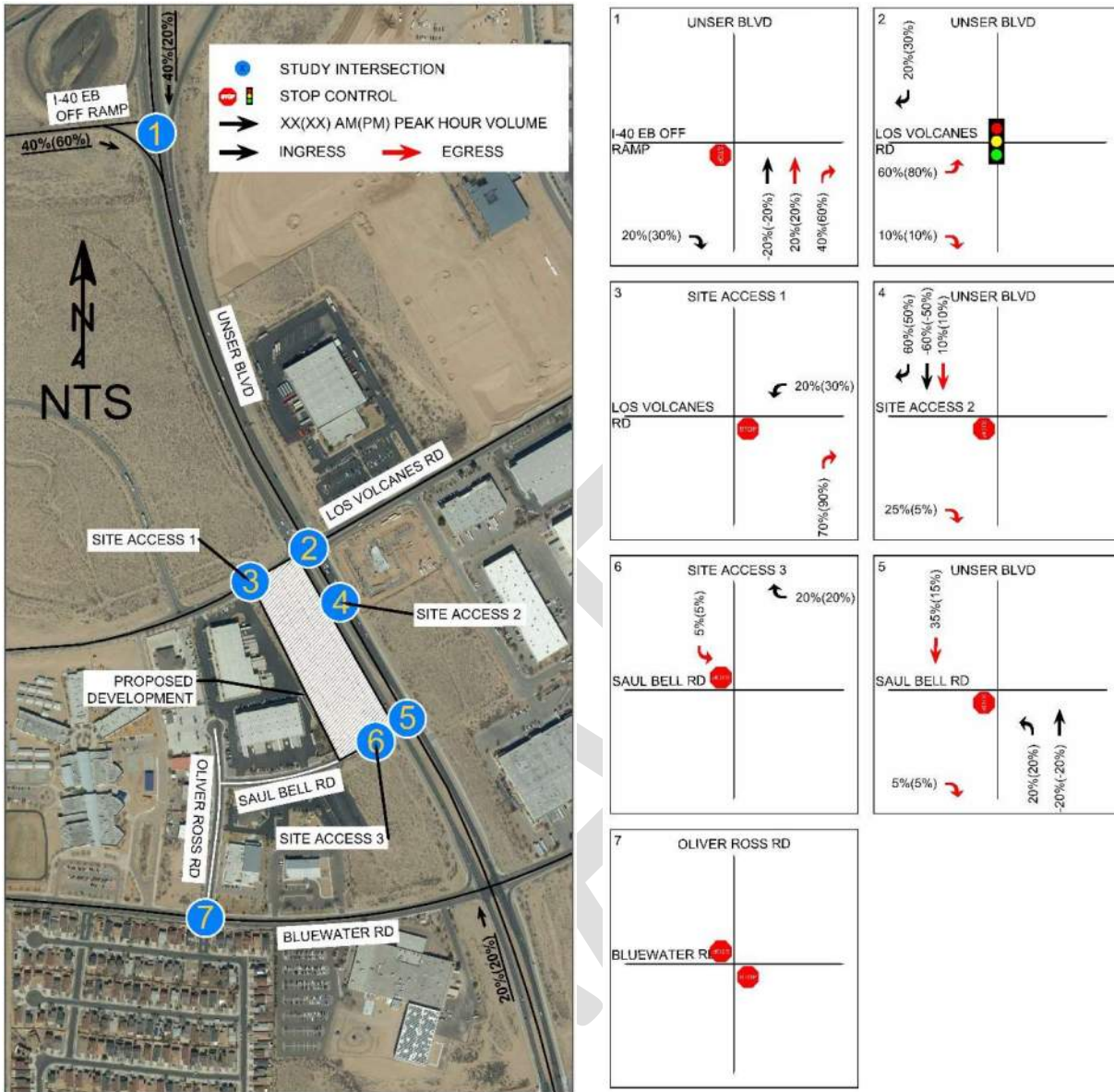


Figure 5: Site Generated Pass-By Trip Routing Percentages

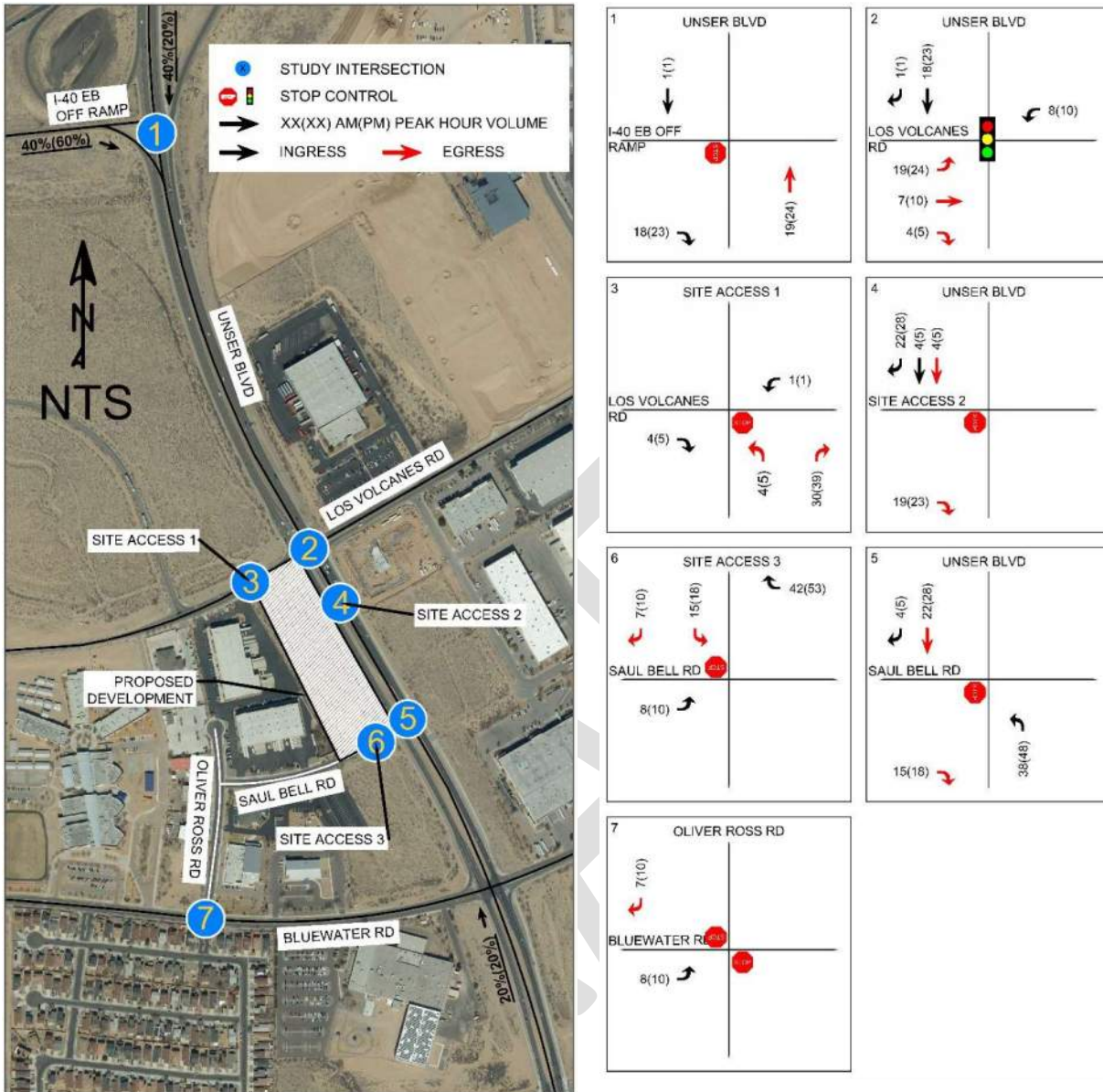


Figure 6: Site Generated Direct Trips

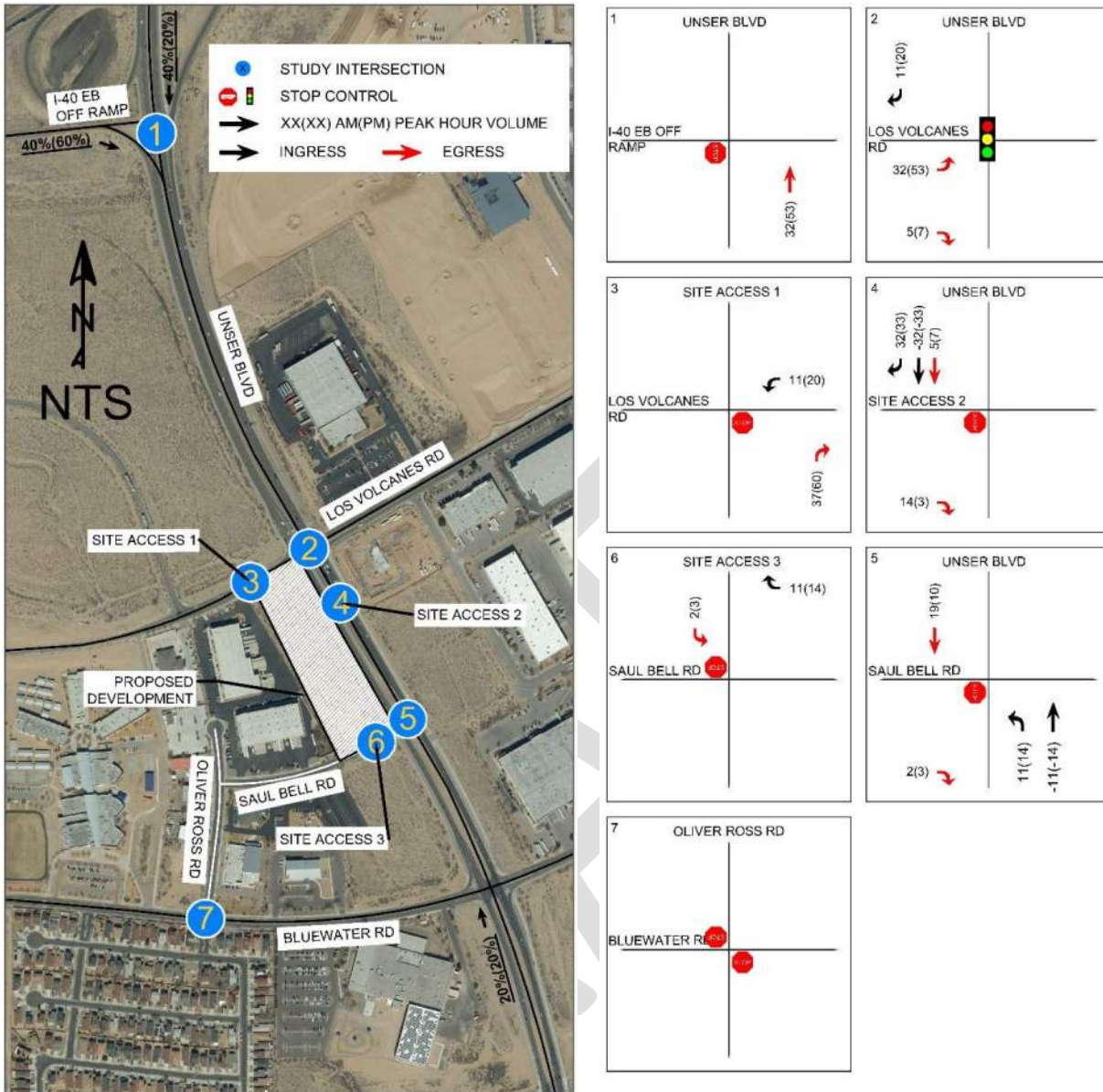


Figure 7: Site Generated Pass-By Trips

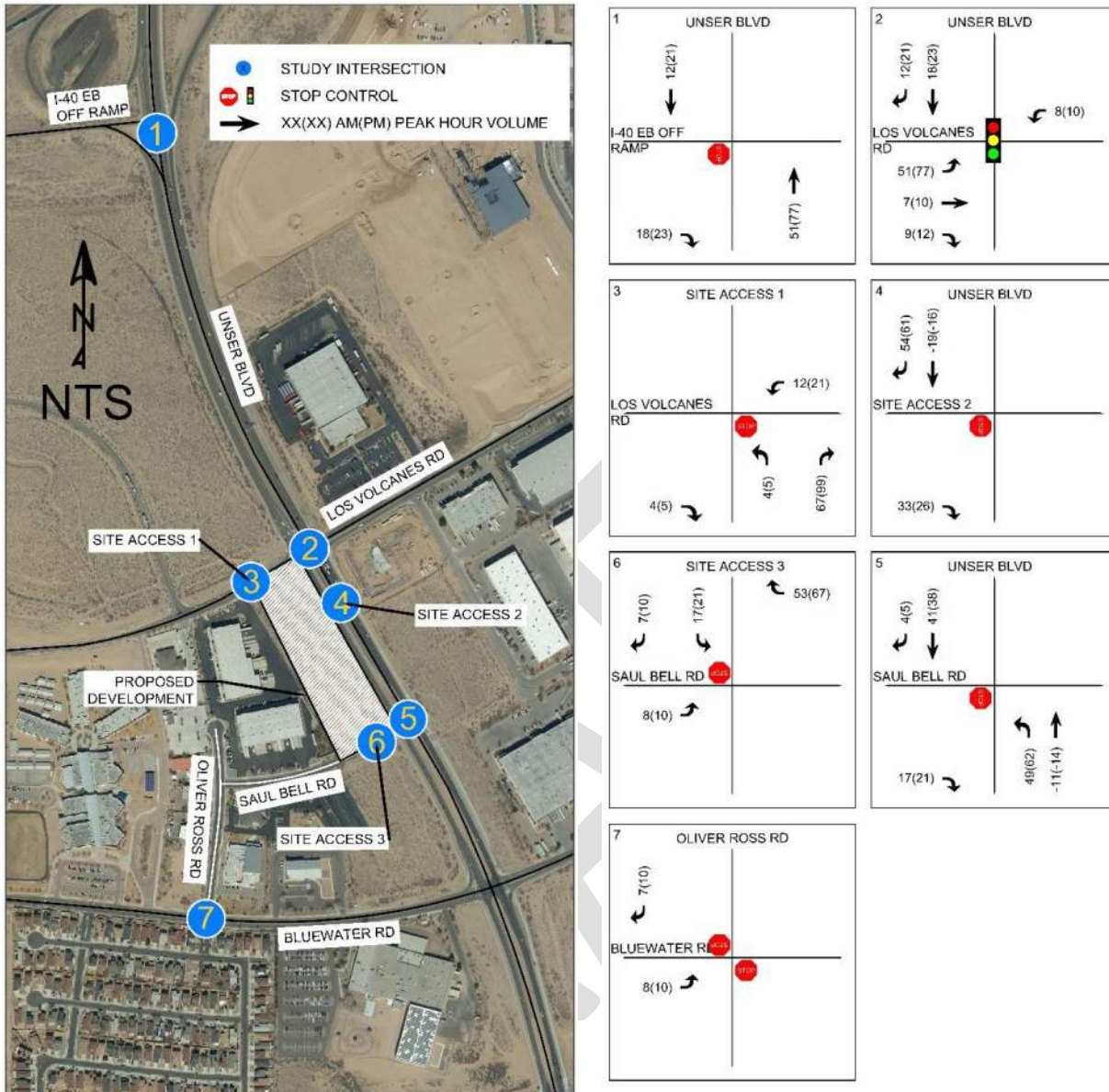


Figure 8: Site Generated Total Trips

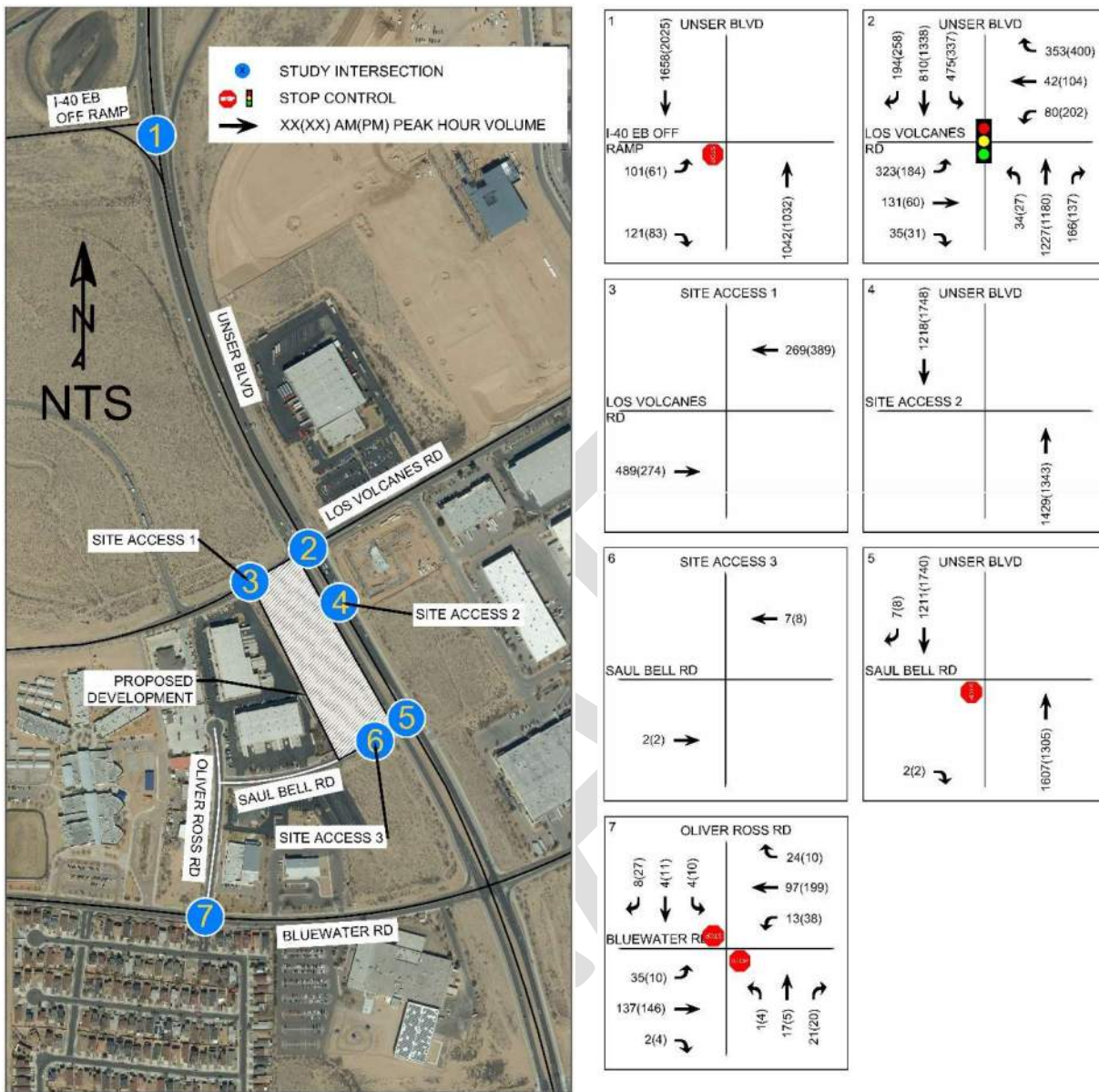


Figure 9: Build-Out Year 2026 Background Volumes

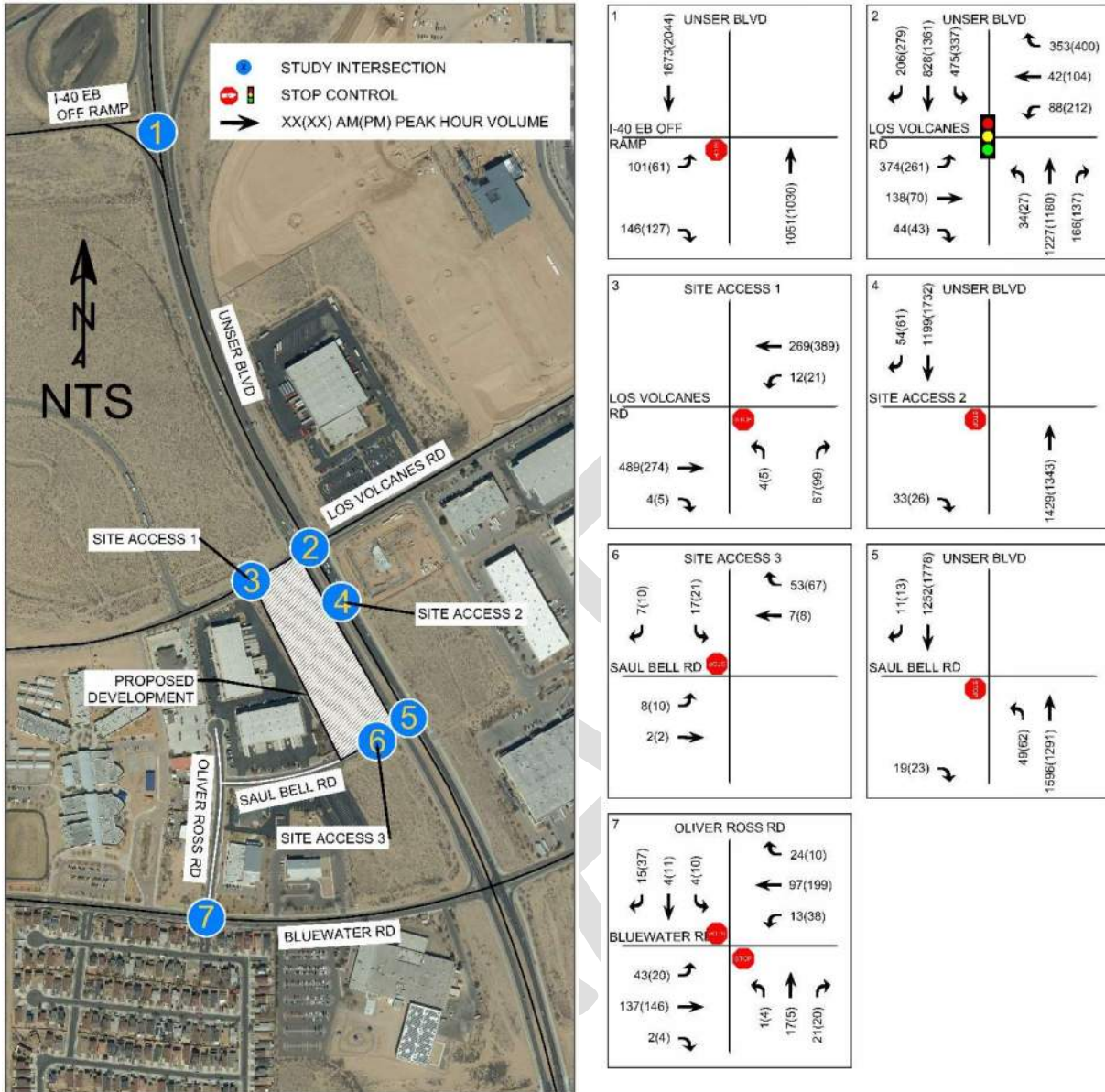


Figure 10: Build-Out Year 2026 Full-Build Volumes

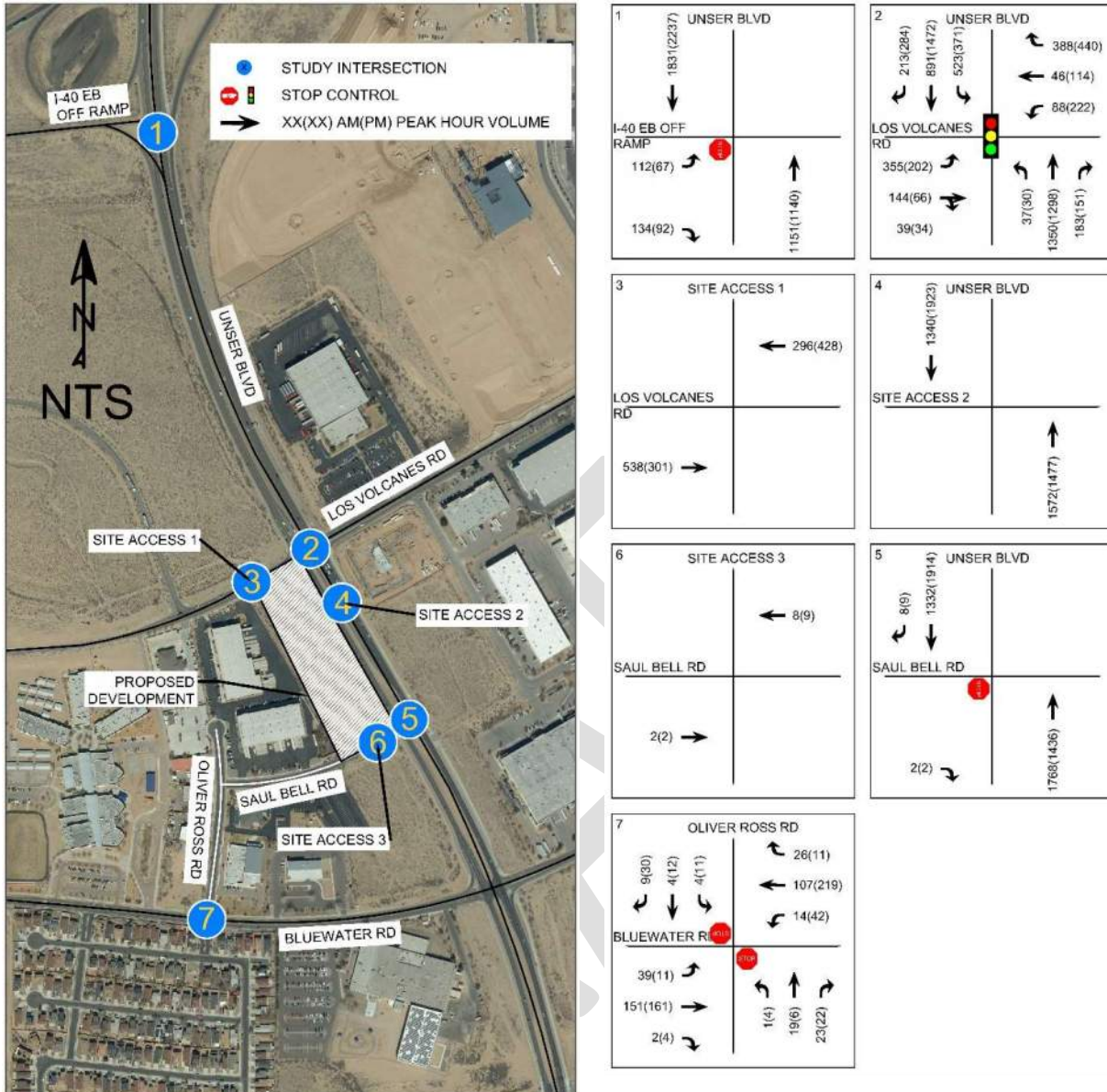


Figure 11: Horizon Year 2036 Background Volumes

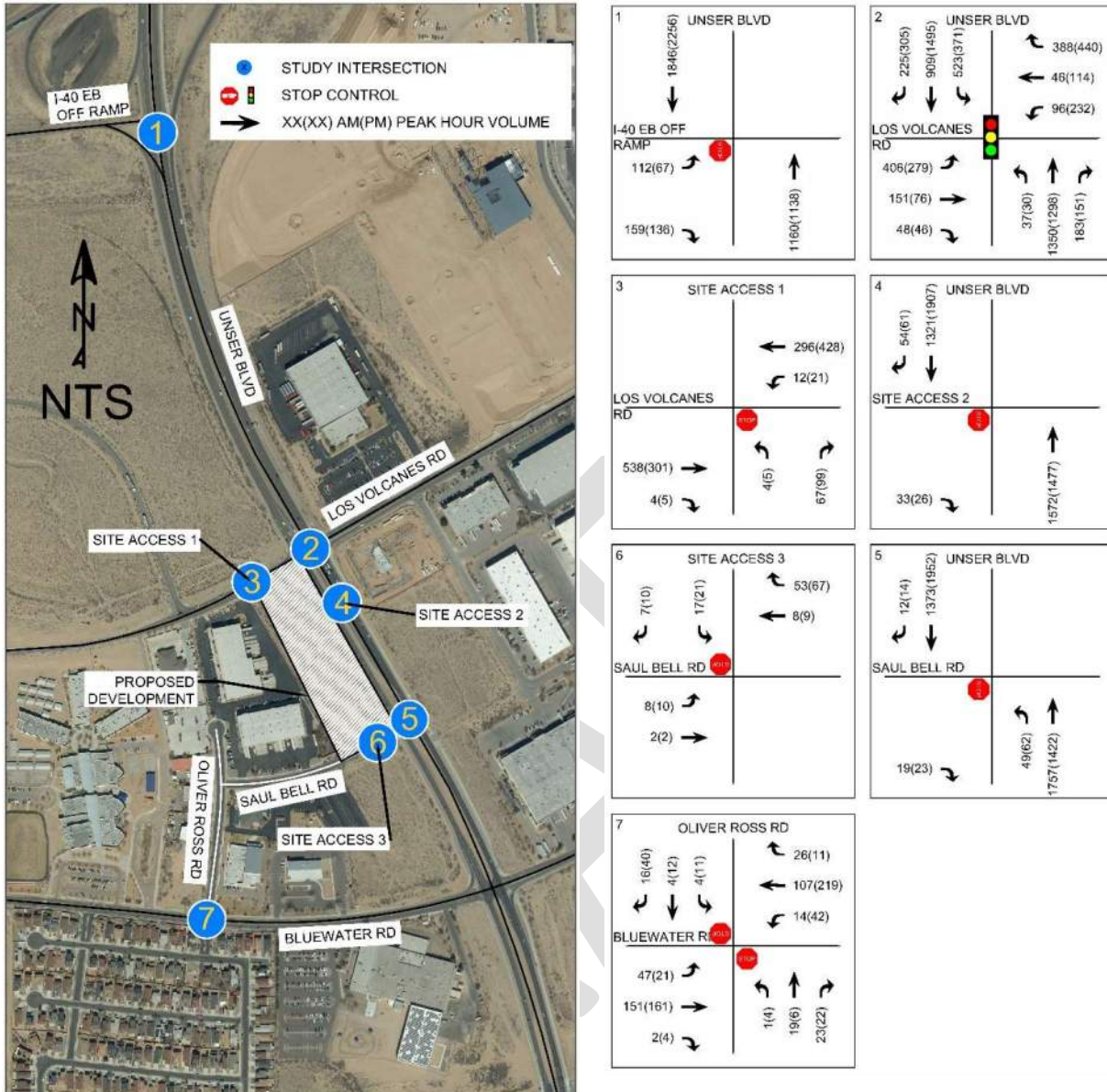


Figure 12: Horizon Year 2036 Full Build Volumes

SITE CONDITIONS AND SITE ANALYSIS

ASSUMPTIONS

The following assumptions regarding new developments in the roadway network were made for the Build-Out Year scenarios based on the information discussed in the scoping meeting:

- Site Access 2 on Unser Boulevard will operate as a right-in, right-out driveway.
- Access at Unser Boulevard and Saul Bell Road will construct a NBL lane.
- Per the scoping meeting, the NBR heading to the I-40 EB On-Ramp is not considered in this analysis as it is an uncontrolled, channelized right turn.

SITE ACCESS ANALYSIS AND JUSTIFICATION

Site access is to be provided via three driveways: One on the north side of the site accessing Los Volcanes Road, one on the east side of the site accessing Unser Boulevard, and one on the south side of the site accessing Saul Bell Road. CABQ DPM requirements were reviewed for the two access driveways. DPM Table 7.4.45 provides a minimum distance between commercial site access points and intersections, and DPM Table 7.4.46 provides the maximum number of commercial site access points per site. The results of this analysis are shown in Table 4 below.

Table 4: Access Spacing Requirements from CABQ DPM

City of Albuquerque Development Process Manual Recommended Access Spacing							
Site Access	Major Street	Cross Street	Design Speed (MPH)	DPM Tables 7.4.45 Minimum Distance Between Commercial Site Access and Intersection		DPM Tables 7.4.46 Maximum Number of Commercial Site Access Points per Site	Distance Between Site Access Point and Intersection
				Approach Distance	Departure Distance		Approach Distance
Site Driveway 1	Los Volcanes (Major Collector)	Unser Blvd (Principal Arterial)	45	150 ft	150 ft	1 access point per 100 ft. frontage	215 ft
Site Driveway 2	Unser Blvd (Principal Arterial)	Los Volcanes (Major Collector)	35	200 ft	150 ft	1-2 access points per 300 ft. frontage	305 ft
Site Driveway 3	Saul Bell Rd (Local Collector)	Unser Blvd (Principal Arterial)	25	75 ft	75 ft	1 access point per 100 ft. frontage	75 ft

Per the information above, the driveways on Los Volcanes Road, Unser Boulevard, and Saul Bell Road meet CABQ DPM requirements. Although the Saul Bell Road driveway meets minimum CABQ DPM access spacing requirements, the auxiliary lane analysis presented before recommends additional distance between the driveway and the intersection of Unser Boulevard and Saul Bell Road to accommodate a westbound right turn lane.

SITE ACCESS JUSTIFICATION

The proposed Development will accommodate fueling operations for both heavy trucks and passenger vehicles, with passenger vehicle facilities at the south and east end of the site and heavy truck facilities at the north end. As designed, trucks would enter and exit the site from Site Driveway 1. This will ensure adequate turning space for trucks and mitigate the potential for exiting trucks to obstruct on-site traffic flow. This may include tanker trucks and trash pick-up. Site Driveway 1 provides direct access to the underground storage tanks and trash enclosure. Passenger vehicles would be able to enter and exit via Site Driveways 1, 2, or 3.

The access configuration shown in the site plan will accommodate anticipated ingress and egress movements as well as provide space for on-site and truck circulation. It should also be noted that recording devices at the intersection captured 10 vehicles making a northbound left turn into Saul Bell Road by maneuvering across the unpaved median. Articulated vehicles and passenger vehicles were observed making this maneuver.

The proposed Site Driveway 3 along Saul Bell Road will be served at the intersection of Unser Boulevard and Saul Bell Road, which is controlled by MRCOG Roadway Access Control Committee (RACC). In the MRCOG RACC plans, this policy includes provisions for a northbound left turn lane onto Saul Bell Road from Unser Boulevard. Figure 13 below is an excerpt from the MRCOG RACC.

Unser Boulevard between Central Avenue and Los Volcanes Road		
II. Between Central Avenue and Los Volcanes Road	A). This section is mostly developed and shall have existing access and future modifications under full management and jurisdiction of the City of Albuquerque with no review requirements by the RAC comm. Refer to section VII of the RAC Policy document. Pre-2019 Access is noted.	1). Central Avenue - full intersection
		2). Sarracino Place - Access to the east at Sarracino Place until the adjacent properties redevelop or when the ultimate roadway is constructed. Permanent access will be reevaluated at that time through a traffic study. As of 2019 this is a full intersection.
		3). Bluewater Road - full intersection
		4). Property access right-in/right-out on east side just south of Saul Bell Road (approx. 700 feet north of Bluewater Rd)
		5). Saul Bell Road - Left-turn bay from Unser Blvd northbound to Saul Bell Road westbound. R-12-01 TCC (it is right-in/right-out only in 2019)

Figure 13: MRCOG RACC Information for Unser Boulevard

AUXILIARY LANE ANALYSIS

CABQ DPM auxiliary lane analysis warrants were reviewed for the site access driveways. DPM Table 7.4.67 was used to determine if right or left-turn auxiliary lanes would be warranted for the site access points. DPM Tables 7.4.68 and 7.4.70 were used to assess deceleration and taper length, if applicable. It is important to note that 2023 Build-Out traffic volumes were used in the analysis. The results of this analysis are shown in Table 5. Build-Out Year Full-Build traffic volumes were used for the analysis.

Table 5: Site Driveway Auxiliary Lane Warrants

Location	Access/Turn Type	Speed	DPM Table 7.4.67 Turning Volume per Hour	Turning Volume per Hour (Build-Out Year Total)	Warrant Result	DPM Tables 7.4.68 Minimum Storage Length (ft)	DPM Tables 7.4.68/70 Lane Transition Length (ft)
Site Driveway 1 (Full Access)	Left In	35	40	12 (21)	Not Required	---	---
	Right In	35	50	4 (5)	Not Required	---	---
Site Driveway 2 (Partial Access)	Right In	45	45	54 (61)	Required	350-405	600-300 Reverse Curve
Site Driveway 3 (Full Access)	Left In	25	50	8 (10)	Not Required	---	---
	Right In	25	60	53 (67)	Required	240	150-150 Reverse Curve
NBL at Saul Bell Rd & Unser Blvd	Left In	45	50	49 (62)	Required	---	600-300 Reverse Curve

It is recommended that all development driveways adhere to the auxiliary lane provisions detailed in the CABQ DPM Section 7-4(l)(7) (iii(d)). Site Driveways 2, 3, and the NBL at the Unser Boulevard and Saul Bell Road intersection warrant the consideration of an auxiliary lane.

Site Driveway 2 is recommended to be constructed with a transition length of 600 FT with a 300 FT reverse curve. However, due to its proximity to the intersection of Unser Boulevard and Los Volcanes Road, it is recommended that the lane be constructed as long as possible without encroaching on the eastbound left turn lane.

Although an auxiliary lane is warranted for right turns at Driveway 3, a right turn auxiliary lane is not recommended for this driveway as the driveway's proximity to Unser Boulevard prevents its installation. Additionally, volumes on Saul Bell Road are anticipated to be lower than a typical city collector street.

The NBL at the Unser Boulevard and Saul Bell Road intersection warrants the consideration of a left turn lane. The left turn lane is recommended to be constructed with a lane transition of 600 to 300 FT reverse curve. Queueing considerations are analyzed and discussed in subsequent sections of this report.

SITE DRIVEWAYS SIGHT DISTANCE

The following presents a narrative detailing the development's recommended intersection sight distance requirements. Intersection sight distance requirements were calculated based on the CABQ DPM Section 7-4(l)(5)(iii) and the 2018 AASHTO "Green Book" chapter 9.5. Two sight distance cases were used for this analysis:

- Case B1 – A stopped vehicle turning left from a minor street approach onto a major road.
- Case B2 – A stopped vehicle turning right from a minor street approach onto a major road.

The intersection sight distance for Case B2 at all access driveways was calculated based on the assumption that the design vehicle turns into the nearest traffic lane. A combination truck was used as the design vehicle. The required sight distance values provided in Table 6 are rounded up to the nearest 5-foot increment. CABQ roadway characteristic cases are denoted as right turns (RT), left turns (LT), two-

lane (2L), four-lane (4L), divided (D), and undivided (U). Formulas, values, and calculations used in the sight distance analysis can be found in Appendix F.

Table 6: Required Sight Distance Values

Access Location	Posted Speed Limit (MPH)	AASHTO Case	AASHTO Sight Distance (FT)	CABQ Case	CABQ DPM Sight Distance (FT)
Los Volcanes Road & Site Access 1	35	B1	595	LT 2L-U	390
		B2	545	RT 2L-U	340
Unser Boulevard & Site Access 2	45	B1	N/A	N/A	N/A
		B2	695	RT 4L-D	430
Saul Bell Road & Site Access 3	25	B1	425	LT 2L-U	280
		B2	390	RT 2L-U	240

Using the values shown above, all development driveways are recommended to adhere to the sight distance provisions detailed in the AASHTO "Green Book," and CABQ DPM Section 7-4(I)(5)(iii). An area bounded by the above sight distances with the decision point placed 15 feet back from the edge of the shoulder midway between the outbound driving lane should be maintained clear of any obstructions. Sight distance for left-turning vehicles (Case B1) does not need to be provided on Unser Boulevard since this proposed intersection is partial access.

SITE ACCESS RECOMMENDATION

Trip generation and routing to and from the site would require three access points to provide adequate site circulation. The proposed site plan includes three access points: one on the north, one on the east, and one on the south end of the site. Three site driveways are recommended to accommodate anticipated ingress and egress movements as well as provide space for on-site and truck circulation.

Trip generation and routing through Site Driveway 3 would require the construction of a northbound left turn lane at the intersection of Unser Boulevard and Saul Bell Road. Including a northbound left turn lane at this intersection would also minimize delays and queuing impacts on the adjacent roads due to development traffic. Therefore, it is recommended that a northbound left turn lane be constructed at Unser Boulevard and Saul Bell Road, making this a partial access intersection. It is also recommended that a curb and gutter be constructed along the median of Unser Boulevard at the same time as the northbound left turn lane at Unser Boulevard and Saul Bell Road.

TRAFFIC ANALYSIS

Highway Capacity Software (HCS) was used to analyze the NMDOT owned study intersections for Level of Service (LOS) and 95th percentile queueing conditions. HCS implements methods and procedures detailed by the Highway Capacity Manual (HCM). For CABQ owned intersections, PTV Vistro was used to analyze the CABQ study intersections for Level of Service (LOS) and 95th percentile queueing conditions. Vistro implements methods and procedures detailed by the HCM. Detailed capacity output sheets showing all individual movements can be found in Appendix D.

LOS, CAPACITY, AND QUEUEING ANALYSIS

Per the HCM, LOS is presented as a letter grade (A through F) based on the calculated average delay for an intersection or movement. Delay is calculated as a function of several variables, including signal phasing operations, cycle length, traffic volumes, and opposing traffic volumes, but it is a measurement of the average wait time a driver can expect when moving through an intersection. Factors such as total cycle time (for all movements), queueing restrictions, and vehicle volumes can affect measurements of delay, especially for lower-volume movements and side streets. Generally, these factors are only realized when delays reach or exceed LOS E thresholds. In such cases, a narrative is offered in subsequent sections specific to the individual movement in question.

Table 1 and Table 2 below, reproduced from the HCM, show delay thresholds and the associated Level of service assigned to delay ranges for signalized intersections and stop-controlled intersections, respectively. Generally, a LOS of D or better is considered an acceptable level of service.

Table 7: LOS Criteria and Descriptions for Signalized Intersections

Level of service	Average Control Delay (sec/vehicle)	General Description (Signalized Intersections)
A	≤10	Free flow
B	>10 – 20	Stable flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Table 8: LOS Criteria for Unsignalized Intersections

Level of service	Average Control Delay (sec/vehicle)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Queueing is reported in feet for all intersections with queue lengths greater than one vehicle, with a base assumption of 20 feet queue length per vehicle. Queues are reported for queue measurements falling within the 95th percentile. It should be noted that 95th percentile queues are statistically expected to occur during only 5% of the peak hour's sign cycles. It is also noted that unreported average queueing at an intersection would statistically be much shorter than 95th-percentile queueing.

The volume-to-capacity (V/C) ratio is a performance measure that shows the ratio of traffic volume to the lane group capacity. A V/C ratio greater than 1.00 indicates that demand creates a residual queue for the analysis period.

For the purposes of this analysis, acceptable levels of service (LOS) are defined to be a LOS D or better. Based on procedures outlined in the HCM, intersection delay and level of service for stop-controlled intersections are reported as the delay and level of service for the worst-case movement at each intersection. For all other control types, they are taken for the whole intersection. Detailed output sheets can be found in Appendix D.

EXISTING YEAR 2024 CONDITIONS

Table 9 summarizes the intersection delay, level of service, and queueing under Existing Year 2024 conditions. The following conclusions are made from the Existing Conditions analysis:

Delay and LOS Results

At all intersections where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - NBL operates at LOS E during the AM and PM peak hours.
 - SBL operates at LOS F and LOS E during the AM and PM peak hours, respectively.
 - WBR operates at LOS E during the PM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard, both movements operate at unacceptable LOS during the AM and PM peak hours.

Queueing Results

At all intersections where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - SBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM and PM peak hours.

Table 9: HCM Results for Existing Year (2024) Conditions

Unser Blvd & Los Volcanes Rd (Signalized)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	50.3	0.79	70.5	E	35.3	D		NBL	44.5	0.80	79.8	E	31.2	C
	NBT	335.5	0.57	28.1	C				NBT	320.3	0.49	25.4	C		
	NBR	138.4	0.25	24.0	C				NBR	110.5	0.19	21.4	C		
	SBL	334.5	1.00	79.4	F				SBL	227.9	0.87	59.1	E		
	SBT	267.5	0.43	18.4	B				SBT	497.3	0.68	23.0	C		
	SBR	75.6	0.15	15.2	B				SBR	109.8	0.19	15.3	B		
	EBL	314.0	0.68	36.6	D				EBL	196.0	0.45	34.5	C		
	EBT/R	171.7	0.36	36.7	D				EBT/R	105.8	0.27	44.9	D		
	WBL	70.8	0.18	28.5	C				WBL	219.2	0.40	36.1	D		
WBT	46.4	0.13	42.0	D	WBT			128.7	0.13	45.9	D				
WBR	28.0	0.91	53.9	D	WBR	328.2	0.92	57.6	E						
Unser Blvd & Saul Bell Rd (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBT	0.0	---	---	A	---	---		NBT	0.0	---	---	A	---	---
	SBT	0.0	---	---	A				SBT	0.0	---	---	A		
	SBR	0.0	---	---	A				SBR	0.0	---	---	A		
	EBR	0.4	0.01	15.5	C				EBR	0.7	0.01	21.4	C		
Bluewater Rd & Oliver Ross Dr (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	4.4	0.00	11.4	B	---	---		NBL	3.2	0.01	12.8	B	---	---
	NBT	4.4	0.03	11.7	B				NBT	3.2	0.01	12.5	B		
	NBR	4.4	0.02	9.2	A				NBR	3.2	0.02	9.2	A		
	SBL	1.7	0.01	11.6	B				SBL	5.8	0.02	12.8	B		
	SBT	1.7	0.01	11.5	B				SBT	5.8	0.02	12.7	B		
	SBR	1.7	0.01	8.9	A				SBR	5.8	0.03	9.7	A		
	EBL	1.5	0.02	7.5	A				EBL	0.4	0.01	7.6	A		
	EBT	1.5	---	---	A				EBT	0.4	---	---	A		
	EBR	1.5	---	---	A				EBR	0.4	---	---	A		
	WBL	0.6	0.01	7.5	A				WBL	1.6	0.03	7.5	A		
	WBT	0.6	---	---	A				WBT	1.6	---	---	A		
	WBR	0.6	---	---	A				WBR	1.6	---	---	A		
I-40 EB Off Ramp & Unser Blvd (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	522.5	1.29	704.6	F	---	---		EBL	367.5	1.29	803.6	F	---	---
	EBR	85.0	0.55	36.7	E				EBR	87.5	0.56	53.6	F		

BUILD-OUT YEAR (2026) BACKGROUND CONDITIONS

For the 2026 background volumes, existing TMCs were used with an applied annual growth rate developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model. Table 10 summarizes the intersection delay, level of service, and queueing under Build-Out Year 2026 Background conditions. The following conclusions are made for the Build-Out Year Background analysis:

Delay and LOS Results

At all intersections where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - NBL operates at LOS E during the AM and PM peak hours.
 - SBL operates at LOS F during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard, both movements operate at unacceptable LOS during the AM and PM peak hours.

Queueing Results

At all intersections where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - SBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hours.

Table 10: HCM Results for Build-Out Year (2026) Background Conditions

Unser Blvd & Los Volcanes Rd (Signalized)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	51.6	0.79	70.0	E	39.0	D		NBL	42.6	0.79	74.2	E	30.3	C
	NBT	345.8	0.59	28.8	C				NBT	315.7	0.53	25.8	C		
	NBR	142.7	0.26	24.4	C				NBR	108.6	0.20	21.6	C		
	SBL	389.9	1.02	104.8	F				SBL	215.9	0.86	54.4	D		
	SBT	276.4	0.44	19.0	B				SBT	496.1	0.72	24.1	C		
	SBR	79.5	0.15	15.7	B				SBR	109.3	0.21	15.6	B		
	EBL	319.3	0.69	36.7	D				EBL	181.6	0.44	30.9	C		
	EBT/R	175.5	0.37	36.4	D				EBT/R	98.2	0.26	40.8	D		
	WBL	72.1	0.19	28.1	C				WBL	200.0	0.39	31.4	C		
	WBT	47.3	0.13	41.5	D				WBT	119.0	0.30	41.7	D		
	WBR	293.6	0.91	53.6	D				WBR	312.1	0.91	52.5	D		
Unser Blvd & Saul Bell Rd (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBT	0.0	---	---	A	---	---		NBT	0.0	---	---	A	---	---
	SBT	0.0	---	---	A				SBT	0.0	---	---	A		
	SBR	0.0	---	---	A				SBR	0.0	---	---	A		
	EBR	0.4	0.01	15.7	C				EBR	0.7	0.01	21.9	C		
Bluewater Rd & Oliver Ross Dr (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	4.4	0.00	11.5	B	---	---		NBL	3.2	0.01	13.0	B	---	---
	NBT	4.4	0.03	11.8	B				NBT	3.2	0.01	12.6	B		
	NBR	4.4	0.02	9.2	A				NBR	3.2	0.02	9.2	A		
	SBL	1.8	0.01	11.7	B				SBL	6.1	0.02	13.0	B		
	SBT	1.8	0.01	11.5	B				SBT	6.1	0.02	12.8	B		
	SBR	1.8	0.01	8.9	A				SBR	6.1	0.03	9.7	A		
	EBL	1.5	0.02	7.5	A				EBL	0.4	0.01	7.6	A		
	EBT	1.5	---	---	A				EBT	0.4	---	---	A		
	EBR	1.5	---	---	A				EBR	0.4	---	---	A		
	WBL	0.6	0.01	7.5	A				WBL	1.6	0.03	7.5	A		
	WBT	0.6	---	---	A				WBT	1.6	---	---	A		
	WBR	0.6	---	---	A				WBR	1.6	---	---	A		
I-40 EB Off Ramp & Unser Blvd (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	582.5	1.37	853.5	F	---	---		EBL	227.5	0.96	328.0	F	---	---
	EBR	95.0	0.58	39.6	E				EBR	60.0	0.45	39.2	E		

BUILD-OUT YEAR (2026) FULL-BUILD CONDITIONS

Trips generated by the proposed development were added to the 2026 Background volumes for analysis. Trip generation was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Table 11 summarizes the intersection delay, level of service, and queueing under Build-Out Year 2026 Full-Build conditions. The following conclusions are made for the Build-Out Year Full-Build analysis:

Delay and LOS Results

At all other intersections where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - NBL operates at LOS E during the AM and PM peak hours.
 - SBL operates at LOS F during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard, both movements operate at unacceptable LOS during the AM and PM peak hours.

Queueing Results

At all intersections where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths.

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - SBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hours.

HORIZON YEAR (2036) BACKGROUND CONDITIONS

For the 2036 background volumes, 2026 background volumes were used with an applied annual growth rate developed from the MRCOG Metropolitan Transportation Plan (MTP) CUBE/2 Regional Model. Table 12 summarizes the intersection delay, level of service, and queueing under Horizon Year 2036 Background conditions. The following conclusions are made for the Horizon Year analysis:

Delay and LOS Results

At all other intersections where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - NBL operates at LOS E during the AM and PM peak hours.
 - SBL operates at LOS F during the AM peak hour.
 - WBR operates at LOS E during the AM and PM peak hours.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard, both movements operate at unacceptable LOS during the AM and PM peaks.

Queueing Results

At all intersections where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths.

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - SBL is expected to not accommodate the 95th percentile queue lengths during the AM peak hour.
- At the stop-controlled intersection of I-40 EB Off-Ramp and Unser Boulevard
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM and PM peak hours.

Table 12: HCM Results for Horizon Year (2036) Background Conditions

Unser Blvd & Los Volcanes Rd (Signalized)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	54.8	0.79	67.2	E	64.3	E		NBL	46.5	0.79	72.2	E	34.8	C
	NBT	402.3	0.69	32.8	C				NBT	378.6	0.65	31.2	C		
	NBR	167.5	0.30	26.9	C				NBR	132.5	0.25	25.3	C		
	SBL	777.4	1.13	283.9	F				SBL	232.8	0.88	54.0	D		
	SBT	324.1	0.51	22.0	C				SBT	629.6	0.85	32.1	C		
	SBR	99.6	0.19	17.7	B				SBR	141.0	0.26	18.5	B		
	EBL	349.5	0.73	38.0	D				EBL	190.5	0.46	28.4	C		
	EBT/R	189.6	0.38	34.8	C				EBT/R	104.7	0.26	38.3	D		
	WBL	76.4	0.20	26.4	C				WBL	209.5	0.40	29.2	C		
	WBT	50.2	0.13	39.3	D				WBT	126.2	0.29	39.2	D		
	WBR	337.1	0.92	56.1	E				WBR	367.9	0.92	57.4	E		
Unser Blvd & Saul Bell Rd (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBT	0.0	---	---	A	---	---		NBT	0.0	---	---	A	---	---
	SBT	0.0	---	---	A				SBT	0.0	---	---	A		
	SBR	0.0	---	---	A				SBR	0.0	---	---	A		
	EBR	0.4	0.01	16.9	C				EBR	0.4	0.01	24.8	C		
Bluewater Rd & Oliver Ross Dr (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBL	5.1	0.00	12.0	B	---	---		NBL	3.7	0.01	13.7	B	---	---
	NBT	5.1	0.04	12.2	B				NBT	3.7	0.01	13.2	B		
	NBR	5.1	0.03	9.4	A				NBR	3.7	0.02	9.3	A		
	SBL	1.9	0.01	12.2	B				SBL	7.2	0.02	13.7	B		
	SBT	1.9	0.01	11.9	B				SBT	7.2	0.03	13.4	B		
	SBR	1.9	0.01	9.0	A				SBR	7.2	0.04	10.0	A		
	EBL	1.7	0.03	7.5	A				EBL	0.5	0.01	7.7	A		
	EBT	1.7	---	---	A				EBT	0.5	---	---	A		
	EBR	1.7	---	---	A				EBR	0.5	---	---	A		
	WBL	0.6	0.01	7.5	A				WBL	1.8	0.03	7.6	A		
	WBT	0.6	---	---	A				WBT	1.8	---	---	A		
	WBR	0.6	---	---	A				WBR	1.8	---	---	A		
	I-40 EB Off Ramp & Unser Blvd (Stop-Controlled)														
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	915.0	1.95	1868.7	F	---	---		EBL	405.0	1.39	970.0	F	---	---
	EBR	175.0	0.75	68.8	F				EBR	100.0	0.60	60.2	F		

HORIZON YEAR (2036) TOTAL CONDITIONS

Trips generated by the proposed development were added to the 2036 Background volumes for analysis. Trip generation was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Table 13 summarizes the intersection delay, level of service, and queueing under Horizon Year 2036 Full-Build conditions. Horizon Year 2036 Conditions were analyzed with existing signal timing. The following conclusions are made for the Horizon Year analysis:

Delay and LOS Results

At all intersections where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - NBL operates at LOS E during the AM and PM peak hours.
 - SBL operates at LOS F during the AM peak hour.
 - WBR operates at LOS E during the AM peak hour.

Queueing Results

At all intersections where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths except:

- At the signalized intersection of Unser Boulevard and Los Volcanes Road
 - SBL is expected to not accommodate the 95th percentile queue lengths during the AM and PM peak hours.

OFF-SITE CAPACITY MITIGATIONS

I-40 EB Off-Ramp Mitigations

The Intersection of the I-40 EB Off-Ramp and Unser Boulevard is expected to experience capacity and queueing issues in the Existing Background, Full Build, and Horizon conditions. Signalization of the intersection will resolve these issues. However, it is recommended that an interchange study be conducted as part of a regional effort with multi-jurisdictional involvement to determine an appropriate long-term future configuration for this interchange. For the purposes of this report, Table 14 below shows the capacity and queueing results under signalized control.

Delay and LOS Results

At the intersection where LOS results are present, all movements operate at acceptable LOS during the AM and PM peak hours.

Queueing Results

At the intersection where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths.

Table 14: I-40 EB Off-Ramp Summary with Mitigations

I-40 EB Off Ramp & Unser Blvd															
Existing (2024) Conditions (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	522.5	1.29	704.6	F	---	---		EBL	367.5	1.29	803.6	F	---	---
	EBR	85.0	0.55	36.7	E	---	---		EBR	87.5	0.56	53.6	F	---	---
Build-Out (2026) Background Conditions (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	582.5	1.37	853.5	F	---	---		EBL	227.5	0.96	328.0	F	---	---
	EBR	95.0	0.58	39.6	E	---	---		EBR	60.0	0.45	39.2	E	---	---
Build-Out (2026) Full Build Conditions (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	600.0	1.40	904.7	F	---	---		EBL	235.0	0.98	355.3	F	---	---
	EBR	152.5	0.70	53.8	F	---	---		EBR	147.5	0.70	66.5	F	---	---
Build-Out (2026) Full Build Mitigated (Signalized)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBT	373.6	0.59	21.5	C	27.6	C		NBT	265.6	0.48	12.9	B	25.8	C
	SBT	742.3	0.93	34.1	C				SBT	823.3	0.96	33.9	C		
	WBT	---	---	---	---				WBT	---	---	---	---		
	EBL	82.8	0.13	23.0	C				EBL	54.0	0.10	28.3	C		
	EBR	---	---	---	---				EBR	---	---	---	---		
Horizon (2036) Background Conditions (Stop-Controlled)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	PM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	EBL	915.0	1.95	1868.7	F	---	---		EBL	405.0	1.39	970.0	F	---	---
	EBR	175.0	0.75	68.8	F	---	---		EBR	100.0	0.60	60.2	F	---	---
Horizon (2036) Full Build Conditions (Signalized)															
AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS	AM Peak	Movement	95% Queue Length (ft/lane)	V/C	Delay (s/veh)	LOS	Intersection Delay	Intersection LOS
	NBT	378.2	0.59	18.4	B	26.0	C		NBT	267.6	0.50	11.2	B	37.3	D
	SBT	799.1	0.94	32.9	C				SBT	1080.8	0.99	52.9	D		
	WBT	---	---	---	---				WBT	---	---	---	---		
	EBL	101.3	0.16	27.1	C				EBL	63.5	0.13	31.5	C		
	EBR	---	---	---	---				EBR	---	---	---	---		

UNSER BOULEVARD AND LOS VOLCANES ROAD MITIGATIONS

The intersection of Unser Boulevard and Los Volcanes Road is expected to experience capacity and queueing issues in the Existing, Background, Full Build, and Horizon scenarios. It is recommended that signal timing changes be implemented to resolve these issues as well as account for added traffic from the development. Table 15 and Table 16 summarize the intersection delay, level of service, and queueing under the Existing Background, Full Build, Mitigated Full Build, and Mitigated Horizon Full Build conditions. The following conclusions are made for the Mitigated analysis:

Delay and LOS Results

For the Build-Out Year (2026) Full Build Mitigated Conditions:

Where LOS results are present, all movements operate at acceptable LOS during the AM and PM peaks except:

- NBL operates at LOS E during the AM and PM peak hours. However, this failure is present in Existing, Background and Full Build scenarios.

For the Horizon Year (2036) Full Build Mitigated Conditions:

- NBL operates at LOS E during the AM and PM peak hours. NBL operates at LOS E during the AM and PM peak hours. However, this failure is present in Existing, Background, Full Build, Horizon Background, and Horizon Full Build scenarios. This low-volume movement failure can be attributed to signal delay. It should also be noted that the V/C ratio for this movement is less than one for all aforementioned scenarios. Therefore, no recommendations are made at this time.

Queueing Results

For the Build-Out Year (2026) Full Build and Horizon Year (2036) Full Build Conditions:

Where queue length results are present, existing storage lengths are sufficient to accommodate 95th percentile queue lengths.

CRASH DATA SUMMARY

At the request of the NMDOT, a crash summary for the major intersections within the study area has been completed. The purpose of this analysis is to highlight trends and observations from summarized crash data. Crash data provided by the New Mexico Department of Transportation (NMDOT) for the years 2017 to 2021 is summarized in Table 17.

From the table below, the following observations are made:

- For the intersection of Unser Boulevard and Los Volcanes Road
 - Within the years 2018 to 2022, 161 crashes were reported.
 - The most common crash type was Other Vehicle – From Same Direction/ Both Going Straight
 - 55% of reported crashes occurred during daylight hours, and 32% occurred under Dark-Lighted or Dark-Not Lighted conditions.
 - No fatal crashes were reported from 2018 to 2022.
 - 36 injury crashes were reported, and 125 crashes were classified as Property Damage Only.
 - There was one pedestrian-involved crash reported.
 - The most common contributing factors were Driver Inattention and Failed to Yield Right of Way.
- For the intersection of Unser Boulevard and I-40 EB Off Ramp
 - Within the years 2018 to 2022, 29 crashes were reported.
 - The most common crash type was Other Vehicle – Both Going Straight/ Entering at Angle
 - 66% of reported crashes occurred during daylight hours, and 17% occurred under Dark-Lighted or Dark-Not Lighted conditions.
 - No fatal crashes were reported from 2018 to 2022.
 - Eight injury crashes were reported, and 21 crashes were classified as Property Damage Only.
 - There was one bicyclist-involved crash reported.
 - The most common contributing factors were Driver Inattention and Failed to Yield Right of Way.

Table 17: Crash Summary

Crash Summary		Unser Los Volcanes	I40 EB Off Ramp
Total Crashes		161	29
By Year	2018	29	7
	2019	34	8
	2020	26	5
	2021	40	4
	2022	32	5
CONTRIBUTING FACTORS	Avoid No Contact Vehicle	5	3
	Cell Phone	1	0
	Defective Tires	2	0
	Disregarded Traffic Signal	23	0
	Driver Inattention	96	16
	Drove Left Of Center	1	0
	Excessive Speed	13	0
	Failed To Yield For Police Vehicle	1	0
	Failed To Yield Right Of Way	29	9
	Following Too Closely	16	0
	Improper Backing	1	0
	Improper Lane Change	4	0
	Improper Overtaking	2	0
	Inadequate Brakes	2	0
	Made Improper Turn	3	1
	None	53	14
	Other Improper Driving	12	4
	Other Mechanical Defect	1	0
	Other, No Driver Error	92	16
	Passed Stop Sign	0	2
	Speed Too Fast For Conditions	1	0
	Under The Influence Of Alcohol	4	0
	Vehicle Skidded Before Braking	1	0
	Traffic Congestion	9	0
	Low Visibility Due To Glare	1	0
	Driver Distracted By Other Activity	7	0
	Other Visual Obstruction(S)	0	1
	%Driver Inattention	25%	24%
	%Failure To Yield Right Of Way	8%	14%
	%Disregarded Traffic Signal	6%	0%
	%Following Too Closely	4%	0%
SEVERITY	Fatal Injury (Killed) (K)	0	0
	Suspected Serious Injury (A)	0	0
	Visible Injury (B)	5	0
	Complaint of Injury (C)	31	8
	Property Damage Only (O)	125	21
	%Property Damage Only (O)	78%	72%
LIGHTING CONDITION	Daylight	89	19
	Dawn	1	0
	Dusk	2	3
	Dark-Lighted	42	4
	Dark-Not Lighted	9	1
	Left Blank	18	2
BIKE/ PED	%Daylight	55%	66%
	%Dark-Lighted	26%	14%
	%Dark-Not Lighted	6%	3%
	Pedestrian Involved	1	0
	Bicyclist Involved	0	1
	%Pedestrian Involved	1%	0%
CRASH TYPE	%Bicyclist Involved	0%	100%
	Left Blank	179	28
	Invalid Code	11	0
	Other Object - Unknown/Not Stated	1	0
	Other Vehicle - From Same Direction/One Left Turn	2	0
	Other Vehicle - From Same Direction/One Stopped	4	0
	Other Vehicle - From Same Direction/Rear End Collision	20	5
	Other Vehicle - From Same Direction/Sideswipe Collision	4	0
	Other Vehicle - From Same Direction/Both Going Straight	35	5
	Other Vehicle - From Same Direction/Both Turn Left	2	0
	Other Vehicle - One Left Turn/Entering At Angle	27	4
	Other Vehicle - Both Going Straight/Entering At Angle	20	8
	Other Vehicle - Both Turn Right/Entering At Angle	2	0
	Other Vehicle - From Opposite Direction/All Others	0	2
	Other Vehicle - From Opposite Direction/Both Going Straight	0	4
	Other Vehicle - From Opposite Direction/One Left Turn	6	2
	Other Vehicle - From Opposite Direction	16	2
	%Other Vehicle - From Same Direction/Both Going Straight	11%	8%
	%Other Vehicle - One Left Turn/Entering At Angle	8%	7%
	Other Vehicle - Both Going Straight/Entering At Angle	6%	13%

CONCLUSIONS AND RECOMMENDATIONS

The following presents a summary of the traffic analysis, mitigations, and recommendations included in this report.

CONCLUSIONS

Traffic operation conclusions for the intersection of Unser Boulevard and Los Volcanes Road are summarized as follows:

- NBL operates at LOS E during the AM and PM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, Horizon Full Build, Build Out Full Build Mitigated, and Horizon Build Out Mitigated scenarios.
 - This failure is attributed to signal delay as the movement volume is low and the V/C ratio for this movement is less than one for all scenarios. Therefore, no recommendations are made to mitigate this movement.
- SBL operates at LOS F during the AM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, and Horizon Full Build scenarios.
 - Queue storage for this movement is expected to be exceeded.
- SBL operates at LOS E during the PM peak hours for the Existing Year scenario.
- WBR operates at LOS E during the AM peak hour for the Horizon Background and Horizon Full Build scenarios.
- WBR operates at LOS E during the PM peak hour for the Existing Year and Horizon Background scenarios.
- All other movements operate at acceptable levels of service (LOS) and have adequate storage to accommodate the 95th percentile queue lengths under analyzed scenarios.

Traffic operation conclusions for the intersection of I-40 EB Off-Ramp and Unser Boulevard are summarized as follows:

- All movements with HCM results are expected to experience unacceptable delays during the AM and PM peak hours for the Existing Year, Build Out Background, Build Out Full Build, Horizon Background, and Horizon Full Build scenarios.
 - EBL is expected to not accommodate the 95th percentile queue lengths during the AM and PM peak hours.
- All other movements operate at acceptable levels of service (LOS) and have adequate storage to accommodate the 95th percentile queue lengths under Existing Year conditions.

SITE RECOMMENDATIONS

Recommendations for study intersections directly serving and primarily impacted by the proposed development are provided as follows:

- Proposed Access Points and Locations:
 - It is recommended that three access points be constructed to provide adequate site circulation for ingress and egress trips as well as truck flow. A full-access configuration for Site Driveway 1, shown on the north end of the site, will provide adequate access for tanker trucks and trash pick-up. The two additional site driveways, one to the east and one to the south, will provide adequate access for passenger vehicles without creating conflicts with articulated trucks on the north end of the site. Driveway 3 will also provide adequate access for trucks.
 - The north Site Driveway 1 is recommended to be full access.
 - The east Site Driveway 2 is recommended to be partial access.
 - The south Site Driveway 3 is recommended to be full access.
- Unser Boulevard and east Site Driveway 2
 - When the intersection is constructed, a southbound right-turn deceleration lane is recommended on the southbound approach. The lane should be constructed as long as possible without encroaching on the existing intersection to the north.
- Unser Boulevard and Saul Bell Road / Site Driveway 3
 - Upon opening of the development, a northbound left-turn deceleration lane is recommended on the northbound approach, making this a partial access intersection. The lane should be constructed to store 50FT of vehicles with lane transition of 600 to 300 FT reverse curve.
 - It is also recommended that a curb and gutter be constructed along the median of Unser Boulevard between Los Volcanes and Bluewater.
 - Note: The MRCOG RACC includes a provisions for a northbound left turn lane onto Saul Bell Road from Unser Boulevard. See Figure 13 for additional details.

OFF-SITE INTERSECTION RECOMMENDATIONS

Recommendations for intersections within the study area that do not directly serve the proposed development and are impacted by multiple developments in the area are provided as follows:

- Unser Boulevard and Los Volcanes Road
 - It is recommended that this signal be retimed by a Licensed Professional Traffic Operations Engineer (PTOE) to resolve capacity and queuing issues at this intersection. It is recommended that retiming be performed at or after opening day.
- I-40 EB Off-Ramp and Unser Boulevard
 - For all scenarios, the eastbound left and eastbound right are expected to experience unacceptable delays and queuing. While signalization of the intersection is shown to resolve these issues, it is recommended that an interchange study be conducted to determine an appropriate long-term future configuration for this. The interchange study should be conducted as part of a regional planning effort with multi-jurisdictional involvement, the scope of which is outside the purposes of this development traffic study.

Appendix A: Scoping Meeting Notes

Agenda for Quik Trip #7001 Scoping Meeting
Unser & Los Volcanes
March 26, 2024

Attendees:

~~Nancy Perea – NMDOT~~
 Margaret Haynes – NMDOT
 Matt Grush – CABQ
~~Keith Thompson – NMDOT~~

Daniel Chambers – Quik Trip
 Graham Cook – Matkin Hoover
 Josh Valencia – Matkin Hoover
 Chris Wood – Matkin Hoover
 Jonathon Kruse – Lee Engineering

1. Introductions
2. Review of Site Plan
 - a. Site Plan & Land Uses
 - b. Access Review
 - i. Note Unser controlled by MRCOG RACC. Study should include access justification for NBL at Saul Bell & Unser.

Unser Boulevard between Central Avenue and Los Volcanes Road		
II. Between Central Avenue and Los Volcanes Road	A). This section is mostly developed and shall have existing access and future modifications under full management and jurisdiction of the City of Albuquerque with no review requirements by the RAC comm. Refer to section VII of the RAC Policy document. Pre-2019 Access is noted.	1). Central Avenue - full intersection
		2). Sarracino Place - Access to the east at Sarracino Place until the adjacent properties redevelop or when the ultimate roadway is constructed. Permanent access will be reevaluated at that time through a traffic study. As of 2019 this is a full intersection.
		3). Bluewater Road - full intersection
		4). Property access right-in/right-out on east side just south of Saul Bell Road (approx. 700 feet north of Bluewater Rd)
		5). Saul Bell Road - Left-turn bay from Unser Blvd northbound to Saul Bell Road westbound. R-12-01 TCC (it is right-in/right-out only in 2019)

3. Discussion of Scope for TIS
 - a. Study Intersections
 - i. I-40 EB Off-Ramps
 - ii. Unser & Los Volcanes
 - iii. Saul Bell & Unser
 - iv. Site Driveways
 - v. Count Oliver Ross Dr & Bluewater for Saul Bell access justification.
 - b. Data Collection
 - i. Existing Study Intersections
 - c. Trip Generation, Pass By, & Internal Capture
 - i. Trip Generation Manual (11th Edition) Land Use
 1. ITE 944 – Gasoline/Service Station
 - ii. Pass-by/Diverted trips
 - iii. No Internal Capture
 - iv. Trips distributed based on existing traffic patterns

- d. Known Developments or Pending Improvements in Area
 - i. Site east of Unser across from Saul Bell
 - ii. Site at Bluewater and Unser
- e. Build-out Year and Growth Rate
 - i. Build-Out Year (2026)
 - 1. Will look at Historic Traffic Volumes and calculate growth rate, if less than 1%, will assume 1% growth per year.
 - ii. Phase with two additional truck fueling positions in future.
- f. Analysis scenarios
 - i. Existing Conditions
 - ii. Opening Year Background (No Build)
 - iii. Opening Year Buildout (Full Build)
 - iv. Opening Year Buildout Optimized (if required)
 - 1. All scenarios with existing signal timings except opening year buildout optimized.
 - v. Horizon year – 10 Years from opening
- g. Required Analysis & Methodology
 - i. LOS Capacity and Queueing analysis based on HCM 6th Edition (HCS for NMDOT intersections. VISTRO for CABQ Intersections)
 - 1. Capacity & Queueing for network peak rather than individual intersection peaks
 - ii. No Arterial Analysis.
 - iii. Auxiliary Lane Analysis
 - iv. Sight Distance Analysis at Proposed Driveways
 - v. Safety (Crash) Summary
 - 1. Summary for Los Volcanes & Unser (5 years) for CABQ. Note excessive crashes and investigate high rates.
 - 2. Summary for EB I-40 Off Ramp (5 years) for NMDOT.
 - vi. Access Justification
- 4. Agency Input (Comments & Issues)
- 5. Meeting Notes (distributed by Lee Engineering)

Appendix B: Turning Movement Counts



Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States 87113
5053380988 pbarricklow@lee-eng.com

Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
Site Code:
Start Date: 04/10/2024
Page No: 1

Turning Movement Data

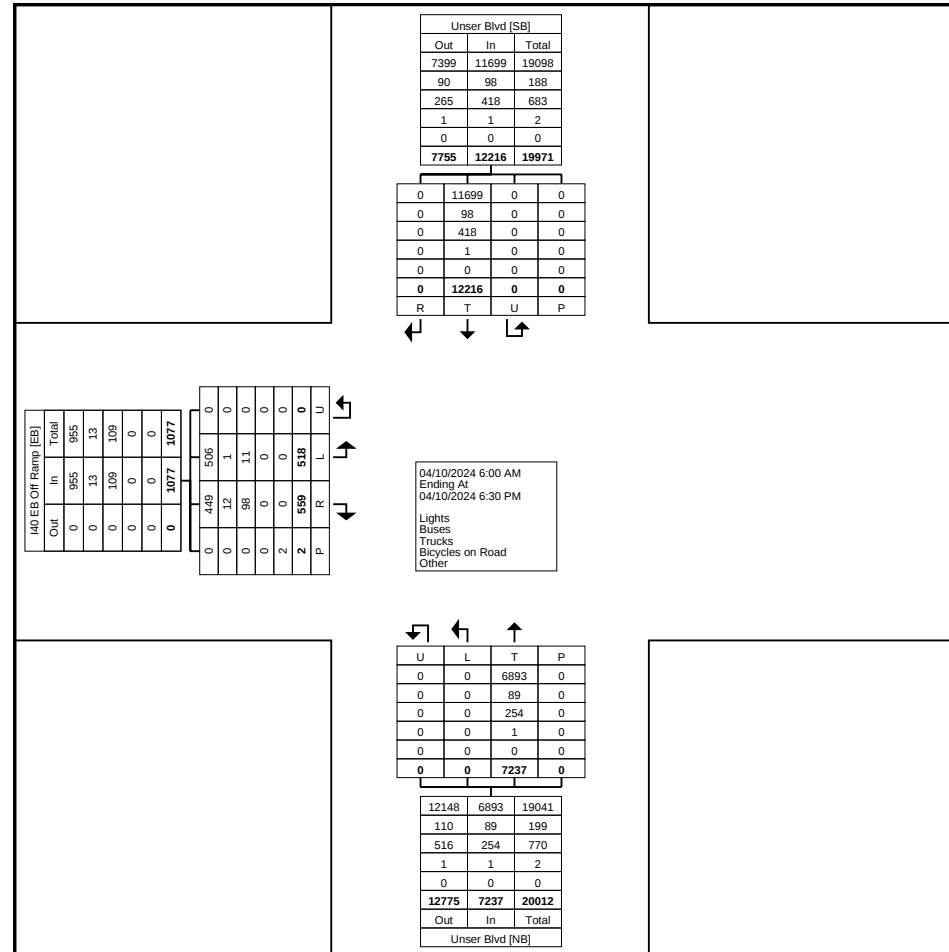
Start Time	Unser Blvd Northbound					Unser Blvd Southbound					I40 EB Off Ramp Eastbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
6:00 AM	0	0	78	0	78	0	118	0	0	118	0	10	9	0	19	215
6:15 AM	0	0	104	0	104	0	159	0	0	159	0	12	3	0	15	278
6:30 AM	0	0	118	0	118	0	164	0	0	164	0	3	10	0	13	295
6:45 AM	0	0	142	0	142	0	281	0	0	281	0	2	8	0	10	433
Hourly Total	0	0	442	0	442	0	722	0	0	722	0	27	30	0	57	1221
7:00 AM	0	0	167	0	167	0	238	0	0	238	0	18	11	0	29	434
7:15 AM	0	0	250	0	250	0	315	0	0	315	0	16	8	0	24	589
7:30 AM	0	0	241	0	241	0	412	0	0	412	0	18	21	1	39	692
7:45 AM	0	0	304	0	304	0	466	0	0	466	0	37	20	0	57	827
Hourly Total	0	0	962	0	962	0	1431	0	0	1431	0	89	60	1	149	2542
8:00 AM	0	0	251	0	251	0	418	0	0	418	0	28	39	1	67	736
8:15 AM	0	0	225	0	225	0	329	0	0	329	0	16	39	0	55	609
8:30 AM	0	0	176	0	176	0	271	0	0	271	0	16	16	0	32	479
8:45 AM	0	0	125	0	125	0	314	0	0	314	0	15	12	0	27	466
Hourly Total	0	0	777	0	777	0	1332	0	0	1332	0	75	106	1	181	2290
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	0	274	0	274	0	211	0	0	211	0	14	12	0	26	511
11:15 AM	0	0	242	0	242	0	215	0	0	215	0	11	16	0	27	484
11:30 AM	0	0	286	0	286	0	234	0	0	234	0	11	13	0	24	544
11:45 AM	0	0	281	0	281	0	222	0	0	222	0	17	11	0	28	531
Hourly Total	0	0	1083	0	1083	0	882	0	0	882	0	53	52	0	105	2070
12:00 PM	0	0	158	0	158	0	248	0	0	248	0	13	13	0	26	432
12:15 PM	0	0	132	0	132	0	244	0	0	244	0	13	16	0	29	405
12:30 PM	0	0	148	0	148	0	268	0	0	268	0	9	16	0	25	441
12:45 PM	0	0	133	0	133	0	301	0	0	301	0	16	10	0	26	460
Hourly Total	0	0	571	0	571	0	1061	0	0	1061	0	51	55	0	106	1738
1:00 PM	0	0	259	0	259	0	243	0	0	243	0	19	9	0	28	530
1:15 PM	0	0	252	0	252	0	276	0	0	276	0	11	9	0	20	548
1:30 PM	0	0	156	0	156	0	323	0	0	323	0	7	14	0	21	500
1:45 PM	0	0	109	0	109	0	291	0	0	291	0	15	10	0	25	425
Hourly Total	0	0	776	0	776	0	1133	0	0	1133	0	52	42	0	94	2003
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	0	0	223	0	223	0	477	0	0	477	0	19	14	0	33	733
3:45 PM	0	0	251	0	251	0	474	0	0	474	0	22	21	0	43	768
Hourly Total	0	0	474	0	474	0	951	0	0	951	0	41	35	0	76	1501
4:00 PM	0	0	248	0	248	0	492	0	0	492	0	13	21	0	34	774

4:15 PM	0	0	224	0	224	0	527	0	0	527	0	9	22	0	31	782
4:30 PM	0	0	289	0	289	0	492	0	0	492	0	16	17	0	33	814
4:45 PM	0	0	225	0	225	0	491	0	0	491	0	16	15	0	31	747
Hourly Total	0	0	986	0	986	0	2002	0	0	2002	0	54	75	0	129	3117
5:00 PM	0	0	251	0	251	0	478	0	0	478	0	16	19	0	35	764
5:15 PM	0	0	209	0	209	0	490	0	0	490	0	21	17	0	38	737
5:30 PM	0	0	169	0	169	0	422	0	0	422	0	12	15	0	27	618
5:45 PM	0	0	163	0	163	0	453	0	0	453	0	6	18	0	24	640
Hourly Total	0	0	792	0	792	0	1843	0	0	1843	0	55	69	0	124	2759
6:00 PM	0	0	183	0	183	0	460	0	0	460	0	5	19	0	24	667
6:15 PM	0	0	191	0	191	0	399	0	0	399	0	16	16	0	32	622
Grand Total	0	0	7237	0	7237	0	12216	0	0	12216	0	518	559	2	1077	20530
Approach %	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	0.0	48.1	51.9	-	-	-
Total %	0.0	0.0	35.3	-	35.3	0.0	59.5	0.0	-	59.5	0.0	2.5	2.7	-	5.2	-
Lights	0	0	6893	-	6893	0	11699	0	-	11699	0	506	449	-	955	19547
% Lights	-	-	95.2	-	95.2	-	95.8	-	-	95.8	-	97.7	80.3	-	88.7	95.2
Buses	0	0	89	-	89	0	98	0	-	98	0	1	12	-	13	200
% Buses	-	-	1.2	-	1.2	-	0.8	-	-	0.8	-	0.2	2.1	-	1.2	1.0
Trucks	0	0	254	-	254	0	418	0	-	418	0	11	98	-	109	781
% Trucks	-	-	3.5	-	3.5	-	3.4	-	-	3.4	-	2.1	17.5	-	10.1	3.8
Bicycles on Road	0	0	1	-	1	0	1	0	-	1	0	0	0	-	0	2
% Bicycles on Road	-	-	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: NM385.01 - QT #7001 Unser Los
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Turning Movement Data Plot



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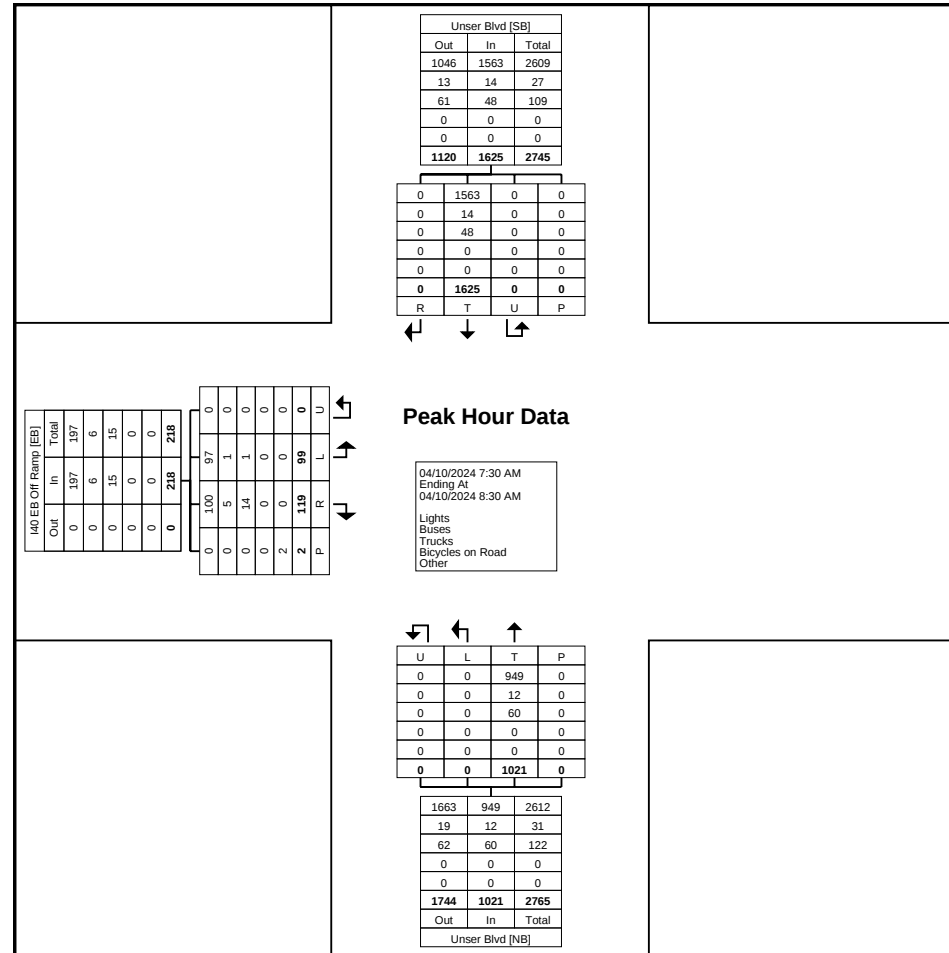
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Unser Blvd Northbound					Unser Blvd Southbound					I40 EB Off Ramp Eastbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:30 AM	0	0	241	0	241	0	412	0	0	412	0	18	21	1	39	692
7:45 AM	0	0	304	0	304	0	466	0	0	466	0	37	20	0	57	827
8:00 AM	0	0	251	0	251	0	418	0	0	418	0	28	39	1	67	736
8:15 AM	0	0	225	0	225	0	329	0	0	329	0	16	39	0	55	609
Total	0	0	1021	0	1021	0	1625	0	0	1625	0	99	119	2	218	2864
Approach %	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	0.0	45.4	54.6	-	-	-
Total %	0.0	0.0	35.6	-	35.6	0.0	56.7	0.0	-	56.7	0.0	3.5	4.2	-	7.6	-
PHF	0.000	0.000	0.840	-	0.840	0.000	0.872	0.000	-	0.872	0.000	0.669	0.763	-	0.813	0.866
Lights	0	0	949	-	949	0	1563	0	-	1563	0	97	100	-	197	2709
% Lights	-	-	92.9	-	92.9	-	96.2	-	-	96.2	-	98.0	84.0	-	90.4	94.6
Buses	0	0	12	-	12	0	14	0	-	14	0	1	5	-	6	32
% Buses	-	-	1.2	-	1.2	-	0.9	-	-	0.9	-	1.0	4.2	-	2.8	1.1
Trucks	0	0	60	-	60	0	48	0	-	48	0	1	14	-	15	123
% Trucks	-	-	5.9	-	5.9	-	3.0	-	-	3.0	-	1.0	11.8	-	6.9	4.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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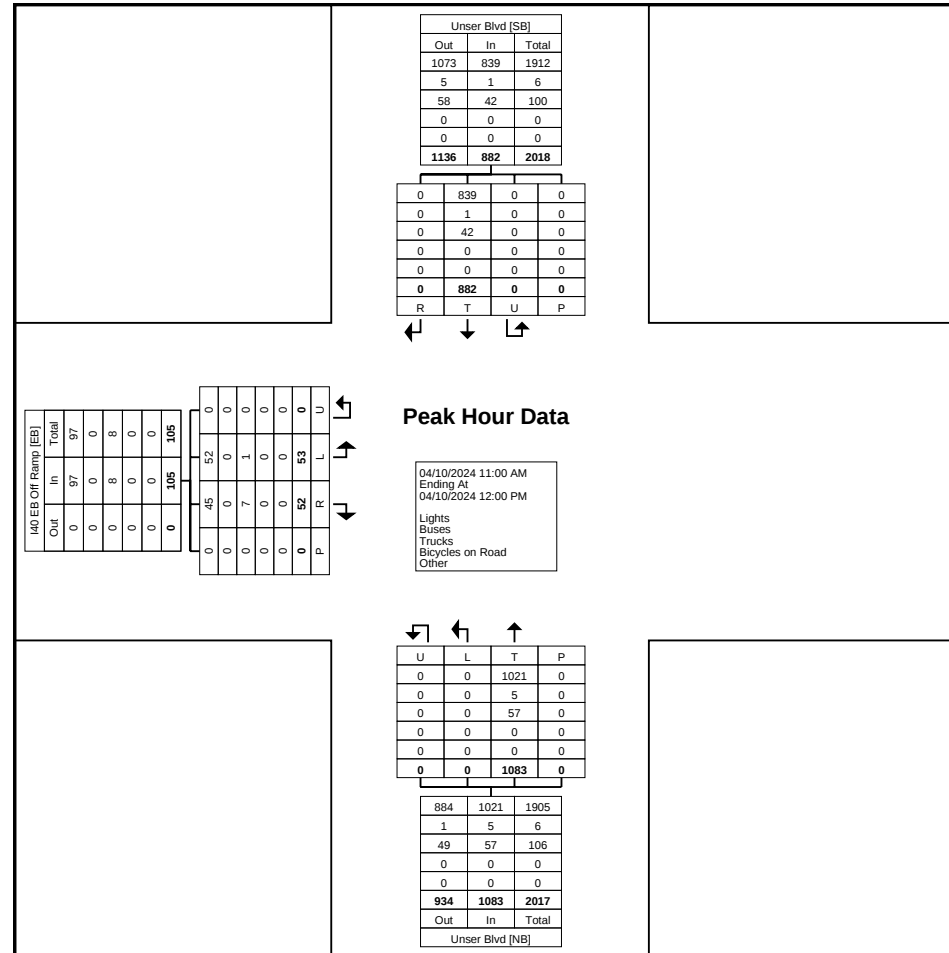


Turning Movement Peak Hour Data Plot (7:30 AM)



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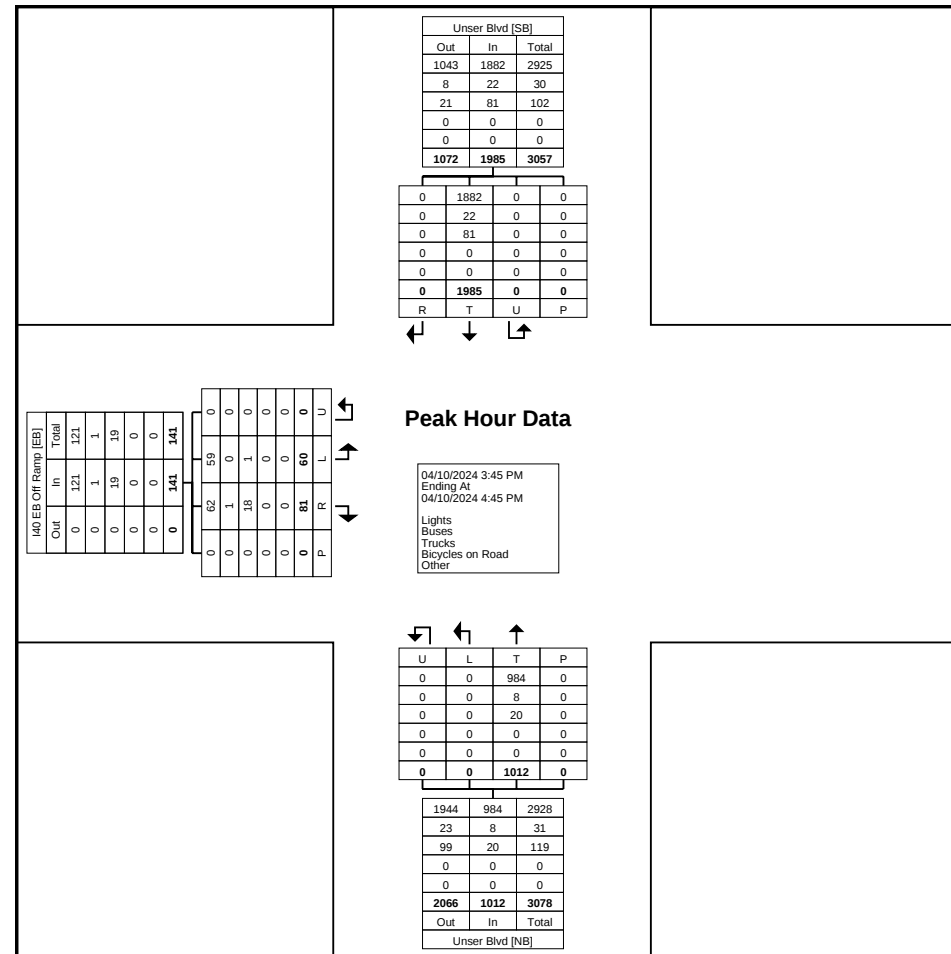


Turning Movement Peak Hour Data Plot (11:00 AM)



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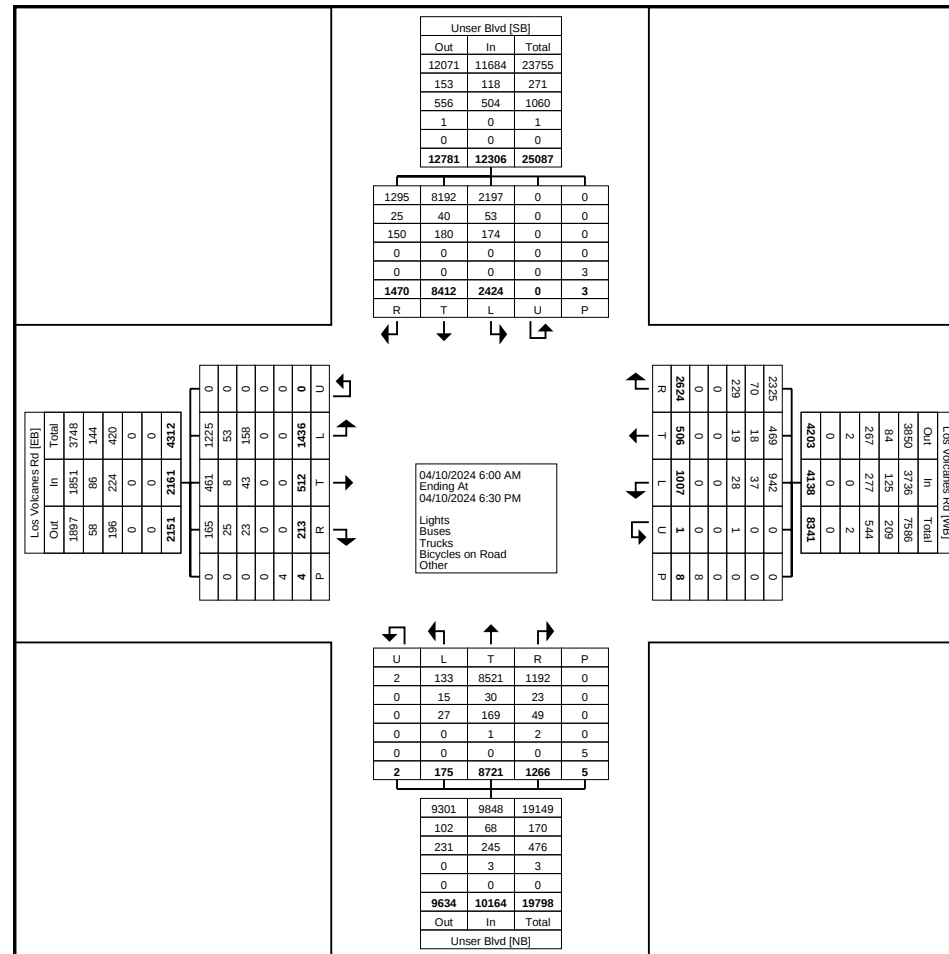
Turning Movement Peak Hour Data Plot (3:45 PM)

4:00 PM	0	7	293	26	0	326	0	74	335	41	16	0	466	0	38	15	5	0	0	58	0	52	15	63	40	0	170	1020
4:15 PM	0	5	275	35	0	315	0	74	337	44	14	0	469	0	59	15	7	1	0	82	0	34	17	52	25	1	128	994
4:30 PM	0	11	296	33	0	340	0	96	330	36	27	0	489	0	48	16	4	3	0	71	0	37	18	66	41	0	162	1062
4:45 PM	0	7	241	31	0	279	0	81	401	56	9	0	547	0	39	16	8	1	0	64	0	37	16	39	43	0	135	1025
Hourly Total	0	30	1105	125	0	1260	0	325	1403	177	66	0	1971	0	184	62	24	5	0	275	0	160	66	220	149	1	595	4101
5:00 PM	0	6	271	36	0	313	0	74	391	37	21	0	523	0	48	17	8	0	0	73	0	47	16	26	65	0	154	1063
5:15 PM	0	4	215	32	0	251	0	62	397	49	14	0	522	0	23	12	7	1	0	43	0	40	19	31	53	0	143	959
5:30 PM	0	3	270	37	0	310	0	61	317	36	20	1	434	0	32	7	5	3	0	47	0	26	19	45	32	1	122	913
5:45 PM	0	8	200	35	0	243	0	77	370	38	18	0	503	0	23	10	4	0	0	37	0	48	20	35	38	0	141	924
Hourly Total	0	21	956	140	0	1117	0	274	1475	160	73	1	1982	0	126	46	24	4	0	200	0	161	74	137	188	1	560	3859
6:00 PM	0	2	203	29	0	234	0	58	414	53	26	0	551	0	33	5	5	0	0	43	0	38	15	34	41	0	128	956
6:15 PM	0	9	232	33	0	274	0	61	377	26	8	0	472	0	18	10	1	0	0	29	0	26	12	10	42	1	90	865
Grand Total	2	175	8721	1266	5	10164	0	2424	8412	981	489	3	12306	0	1436	512	182	31	4	2161	1	1007	506	1540	1084	8	4138	28769
Approach %	0.0	1.7	85.8	12.5	-	-	0.0	19.7	68.4	8.0	4.0	-	-	0.0	66.5	23.7	8.4	1.4	-	-	0.0	24.3	12.2	37.2	26.2	-	-	-
Total %	0.0	0.6	30.3	4.4	-	35.3	0.0	8.4	29.2	3.4	1.7	-	42.8	0.0	5.0	1.8	0.6	0.1	-	7.5	0.0	3.5	1.8	5.4	3.8	-	14.4	-
Lights	2	133	8521	1192	-	9848	0	2197	8192	854	441	-	11684	0	1225	461	138	27	-	1851	0	942	469	1328	997	-	3736	27119
% Lights	100.0	76.0	97.7	94.2	-	96.9	-	90.6	97.4	87.1	90.2	-	94.9	-	85.3	90.0	75.8	87.1	-	85.7	0.0	93.5	92.7	86.2	92.0	-	90.3	94.3
Buses	0	15	30	23	-	68	0	53	40	22	3	-	118	0	53	8	24	1	-	86	0	37	18	53	17	-	125	397
% Buses	0.0	8.6	0.3	1.8	-	0.7	-	2.2	0.5	2.2	0.6	-	1.0	-	3.7	1.6	13.2	3.2	-	4.0	0.0	3.7	3.6	3.4	1.6	-	3.0	1.4
Trucks	0	27	169	49	-	245	0																					

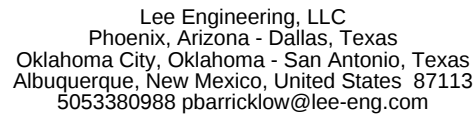


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Count Name: NM385.01 - QT #7001 Unser Los
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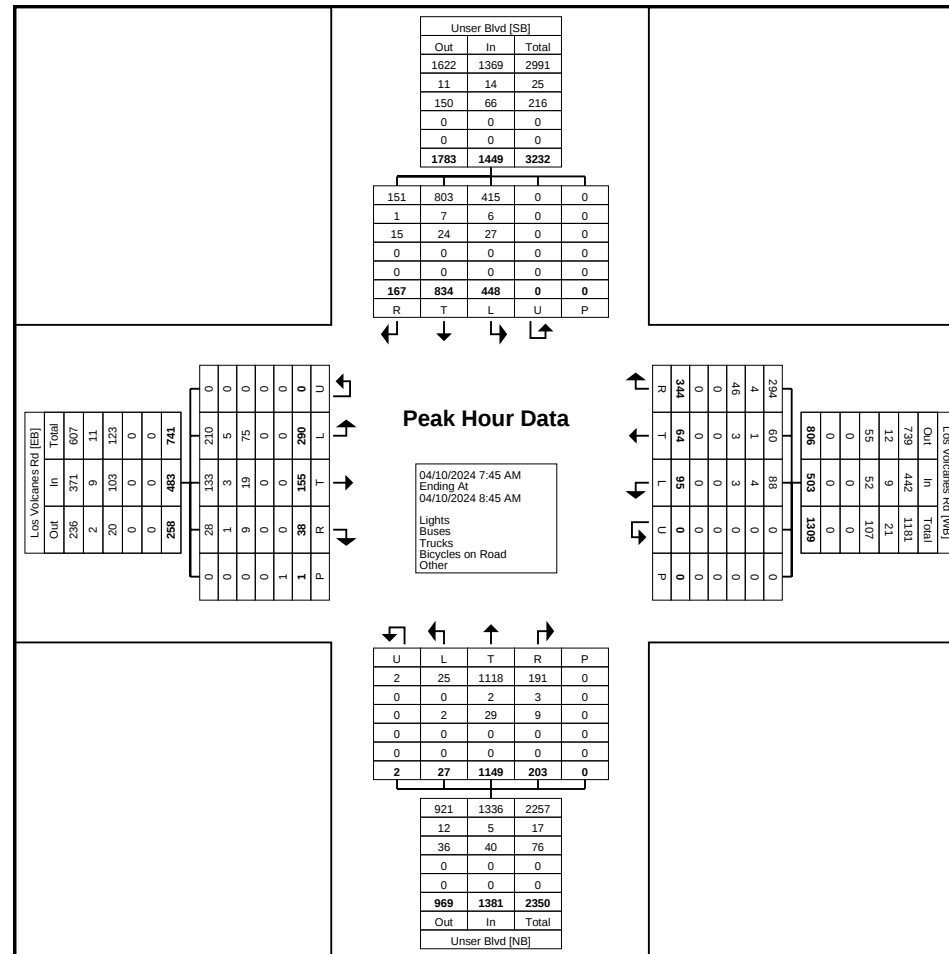
Turning Movement Data Plot





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Turning Movement Peak Hour Data Plot (7:45 AM)



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Count Name: NM385.01 - QT #7001 Unser Los
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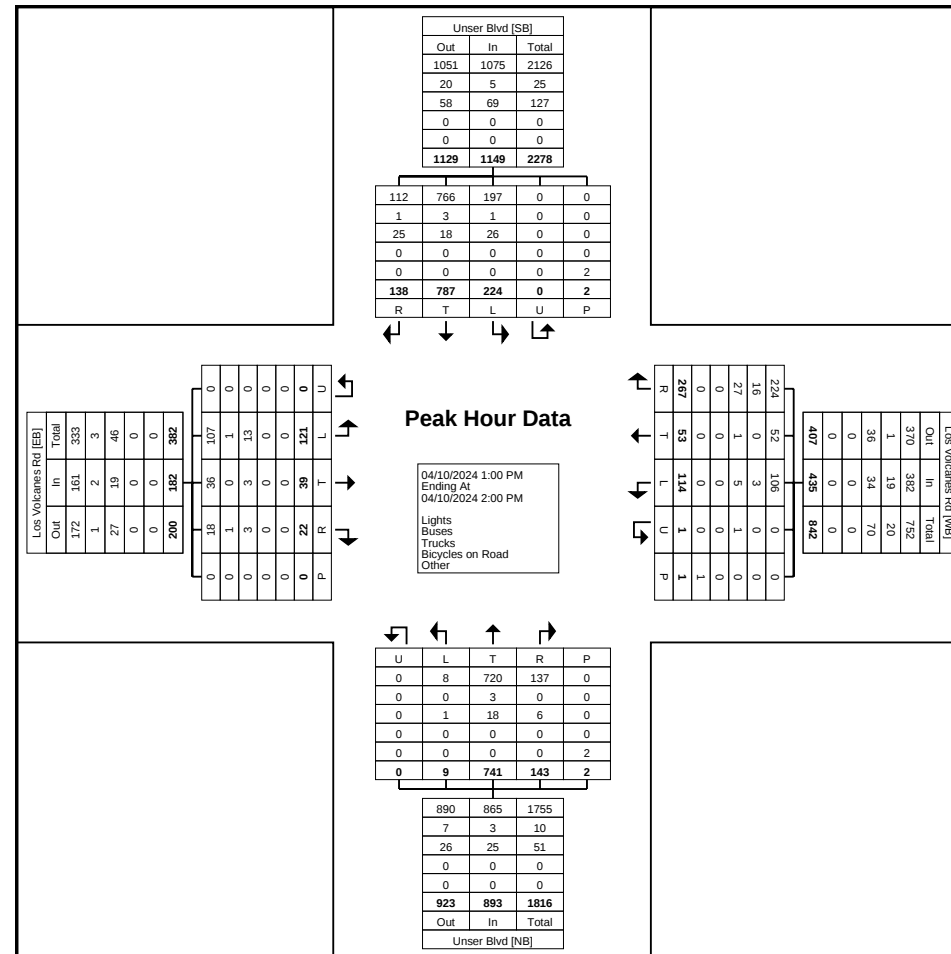
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Los Volcanes Rd Eastbound						Los Volcanes Rd Westbound						Int. Total			
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	
1:00 PM	0	5	192	36	0	233	0	52	190	23	5	2	270	0	24	11	7	1	0	43	0	26	8	34	21	0	89	635
1:15 PM	0	2	170	36	2	208	0	50	187	27	13	0	277	0	23	15	2	3	0	43	1	27	18	33	34	0	113	641
1:30 PM	0	2	195	37	0	234	0	61	206	29	13	0	309	0	34	9	5	0	0	48	0	22	3	44	30	1	99	690
1:45 PM	0	0	184	34	0	218	0	61	204	22	6	0	293	0	40	4	2	2	0	48	0	39	24	58	13	0	134	693
Total	0	9	741	143	2	893	0	224	787	101	37	2	1149	0	121	39	16	6	0	182	1	114	53	169	98	1	435	2659
Approach %	0.0	1.0	83.0	16.0	-	-	0.0	19.5	68.5	8.8	3.2	-	-	0.0	66.5	21.4	8.8	3.3	-	-	0.2	26.2	12.2	38.9	22.5	-	-	-
Total %	0.0	0.3	27.9	5.4	-	33.6	0.0	8.4	29.6	3.8	1.4	-	43.2	0.0	4.6	1.5	0.6	0.2	-	6.8	0.0	4.3	2.0	6.4	3.7	-	16.4	-
PHF	0.000	0.450	0.950	0.966	-	0.954	0.000	0.918	0.955	0.871	0.712	-	0.930	0.000	0.756	0.650	0.571	0.500	-	0.948	0.250	0.731	0.552	0.728	0.721	-	0.812	0.959
Lights	0	8	720	137	-	865	0	197	766	86	26	-	1075	0	107	36	12	6	-	161	0	106	52	141	83	-	382	2483
% Lights	-	88.9	97.2	95.8	-	96.9	-	87.9	97.3	85.1	70.3	-	93.6	-	88.4	92.3	75.0	100.0	-	88.5	0.0	93.0	98.1	83.4	84.7	-	87.8	93.4
Buses	0	0	3	0	-	3	0	1	3	1	0	-	5	0	1	0	1	0	-	2	0	3	0	14	2	-	19	29
% Buses	-	0.0	0.4	0.0	-	0.3	-	0.4	0.4	1.0	0.0	-	0.4	-	0.8	0.0	6.3	0.0	-	1.1	0.0	2.6	0.0	8.3	2.0	-	4.4	1.1
Trucks	0	1	18	6	-	25	0	26	18	14	11	-	69	0	13	3	3	0	-	19	1	5	1	14	13	-	34	147
% Trucks	-	11.1	2.4	4.2	-	2.8	-	11.6	2.3	13.9	29.7	-	6.0	-	10.7	7.7	18.8	0.0	-	10.4	100.0	4.4	1.9	8.3	13.3	-	7.8	5.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

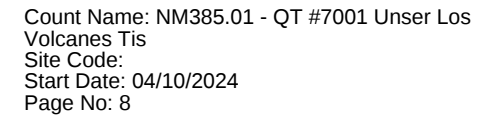


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Count Name: NM385.01 - QT #7001 Unser Los
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Turning Movement Peak Hour Data Plot (1:00 PM)

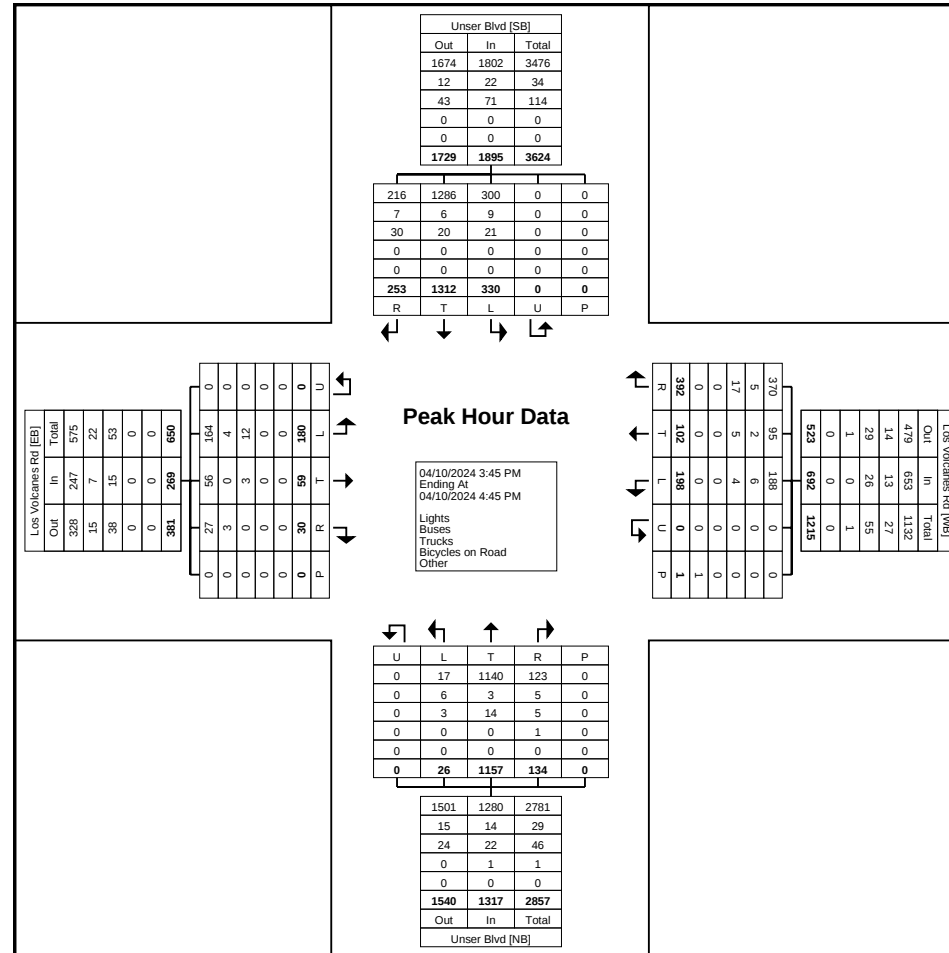


Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Los Volcanes Rd Eastbound						Los Volcanes Rd Westbound						Int. Total			
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right	Right on Red	Peds	App. Total	U-Turn	Left	Thru	Right		Right on Red	Peds	App. Total
3:45 PM	0	3	293	40	0	336	0	86	310	42	33	0	471	0	35	13	10	0	0	58	0	75	52	70	35	0	232	1097
4:00 PM	0	7	293	26	0	326	0	74	335	41	16	0	466	0	38	15	5	0	0	58	0	52	15	63	40	0	170	1020
4:15 PM	0	5	275	35	0	315	0	74	337	44	14	0	469	0	59	15	7	1	0	82	0	34	17	52	25	1	128	994
4:30 PM	0	11	296	33	0	340	0	96	330	36	27	0	489	0	48	16	4	3	0	71	0	37	18	66	41	0	162	1062
Total	0	26	1157	134	0	1317	0	330	1312	163	90	0	1895	0	180	59	26	4	0	269	0	198	102	251	141	1	692	4173
Approach %	0.0	2.0	87.9	10.2	-	-	0.0	17.4	69.2	8.6	4.7	-	-	0.0	66.9	21.9	9.7	1.5	-	-	0.0	28.6	14.7	36.3	20.4	-	-	-
Total %	0.0	0.6	27.7	3.2	-	31.6	0.0	7.9	31.4	3.9	2.2	-	45.4	0.0	4.3	1.4	0.6	0.1	-	6.4	0.0	4.7	2.4	6.0	3.4	-	16.6	-
PHF	0.000	0.591	0.977	0.838	-	0.968	0.000	0.859	0.973	0.926	0.682	-	0.969	0.000	0.763	0.922	0.650	0.333	-	0.820	0.000	0.660	0.490	0.896	0.860	-	0.746	0.951
Lights	0	17	1140	123	-	1280	0	300	1286	132	84	-	1802	0	164	56	23	4	-	247	0	188	95	238	132	-	653	3982
% Lights	-	65.4	98.5	91.8	-	97.2	-	90.9	98.0	81.0	93.3	-	95.1	-	91.1	94.9	88.5	100.0	-	91.8	-	94.9	93.1	94.8	93.6	-	94.4	95.4
Buses	0	6	3	5	-	14	0	9	6	5	2	-	22	0	4	0	3	0	-	7	0	6	2	4	1	-	13	56
% Buses	-	23.1	0.3	3.7	-	1.1	-	2.7	0.5	3.1	2.2	-	1.2	-	2.2	0.0	11.5	0.0	-	2.6	-	3.0	2.0	1.6	0.7	-	1.9	1.3
Trucks	0	3	14	5	-	22	0	21	20	26	4	-	71	0	12	3	0	0	-	15	0	4	5	9	8	-	26	134
% Trucks	-	11.5	1.2	3.7	-	1.7	-	6.4	1.5	16.0	4.4	-	3.7	-	6.7	5.1	0.0	0.0	-	5.6	-	2.0	4.9	3.6	5.7	-	3.8	3.2
Bicycles on Road	0	0	0	1	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	0.7	-	0.1	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-



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Count Name: NM385.01 - QT #7001 Unser Los
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Turning Movement Peak Hour Data Plot (3:45 PM)



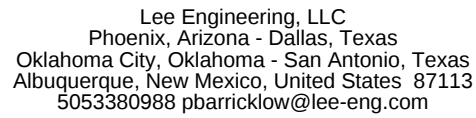
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Count Name: NM385.01 - QT #7001 Unser Los
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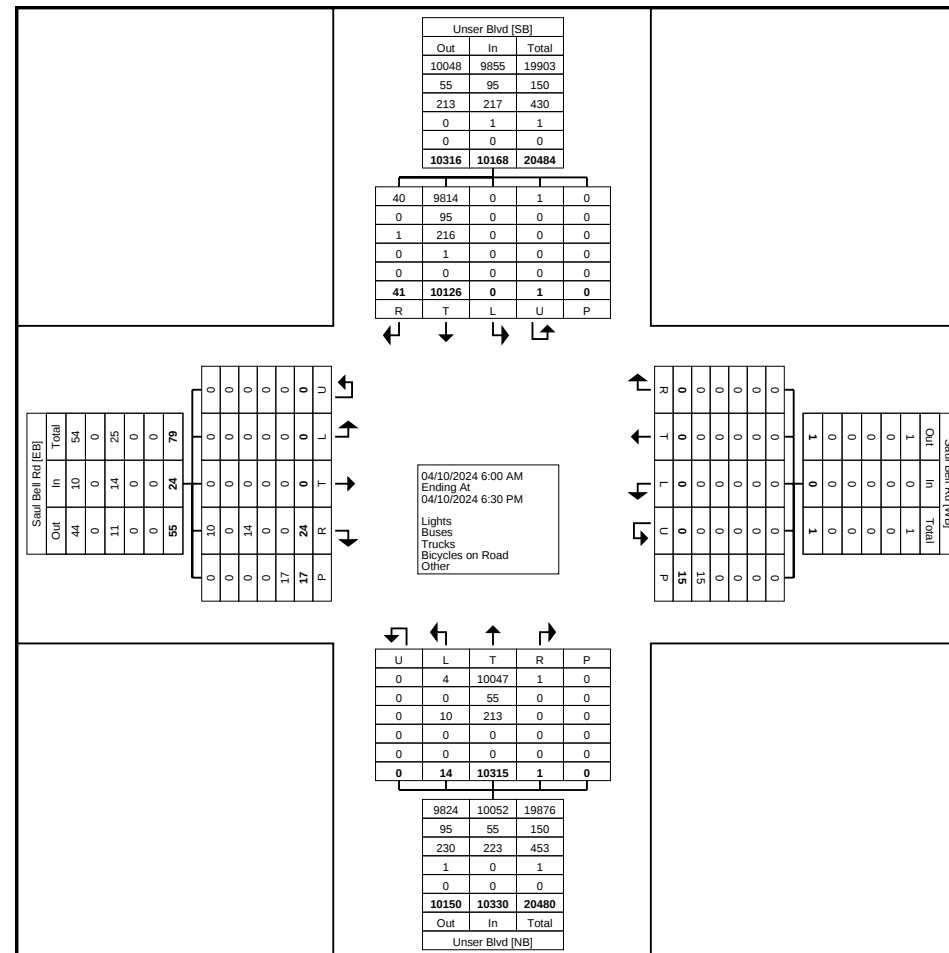
Turning Movement Data

Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Saul Bell Rd Eastbound						Saul Bell Rd Westbound						Int. Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
6:00 AM	0	0	209	1	0	210	0	0	85	0	0	85	0	0	0	0	0	0	0	0	0	0	0	0	295	
6:15 AM	0	0	267	0	0	267	0	0	114	0	0	114	0	0	0	0	0	0	0	0	0	0	0	0	381	
6:30 AM	0	0	308	0	0	308	0	0	142	0	0	142	0	0	0	0	0	0	0	0	0	0	0	0	450	
6:45 AM	0	0	312	0	0	312	0	0	223	3	0	226	0	0	0	0	0	0	0	0	0	0	1	0	538	
Hourly Total	0	0	1096	1	0	1097	0	0	564	3	0	567	0	0	0	0	0	0	0	0	0	0	1	0	1664	
7:00 AM	0	0	389	0	0	389	0	0	201	2	0	203	0	0	0	0	1	0	0	0	0	0	0	0	592	
7:15 AM	0	0	444	0	0	444	0	0	217	3	0	220	0	0	0	0	1	0	0	0	0	0	0	0	664	
7:30 AM	0	0	429	0	0	429	0	0	268	3	0	271	0	0	0	0	2	0	0	0	0	0	0	0	700	
7:45 AM	0	0	392	0	0	392	0	0	344	2	0	346	0	0	0	0	0	0	0	0	0	0	0	0	738	
Hourly Total	0	0	1654	0	0	1654	0	0	1030	10	0	1040	0	0	0	0	4	0	0	0	0	0	0	0	2694	
8:00 AM	0	1	366	0	0	367	0	0	302	1	0	303	0	0	0	2	2	2	0	0	0	0	0	1	0	672
8:15 AM	0	0	388	0	0	388	0	0	273	1	0	274	0	0	0	0	1	0	0	0	0	0	1	0	662	
8:30 AM	0	1	332	0	0	333	0	0	219	2	0	221	0	0	0	0	2	0	0	0	0	0	0	0	554	
8:45 AM	0	0	294	0	0	294	0	0	213	0	0	213	0	0	0	1	0	1	0	0	0	0	1	0	508	
Hourly Total	0	2	1380	0	0	1382	0	0	1007	4	0	1011	0	0	0	3	5	3	0	0	0	0	0	3	0	2396
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11:00 AM	0	0	186	0	0	186	0	0	157	0	0	157	0	0	0	0	1	0	0	0	0	0	1	0	343	
11:15 AM	0	0	196	0	0	196	0	0	170	1	0	171	0	0	0	0	2	0	0	0	0	0	0	1	0	367
11:30 AM	0	1	209	0	0	210	0	0	176	0	0	176	0	0	0	2	0	2	0	0	0	0	0	0	0	388
11:45 AM	0	0	204	0	0	204	0	0	173	1	0	174	0	0	0	1	0	1	0	0	0	0	1	0	379	
Hourly Total	0	1	795	0	0	796	0	0	676	2	0	678	0	0	0	3	3	3	0	0	0	0	0	3	0	1477
12:00 PM	0	0	198	0	0	198	0	0	198	1	0	199	0	0	0	2	2	2	0	0	0	0	1	0	399	
12:15 PM	0	2	213	0	0	215	0	0	222	2	0	224	0	0	0	1	0	1	0	0	0	0	1	0	440	
12:30 PM	0	1	186	0	0	187	0	0	196	1	0	197	0	0	0	2	0	2	0	0	0	0	0	0	0	386
12:45 PM	0	0	203	0	0	203	0	0	229	0	0	229	0	0	0	0	0	0	0	0	0	0	1	0	432	
Hourly Total	0	3	800	0	0	803	0	0	845	4	0	849	0	0	0	5	2	5	0	0	0	0	3	0	1657	
1:00 PM	0	0	208	0	0	208	0	0	221	1	0	222	0	0	0	0	0	0	0	0	0	0	1	0	430	
1:15 PM	0	2	193	0	0	195	0	0	219	0	0	219	0	0	0	0	0	0	0	0	0	0	1	0	414	
1:30 PM	0	1	217	0	0	218	0	0	240	0	0	240	0	0	0	1	1	1	0	0	0	0	0	0	459	
1:45 PM	0	0	202	0	0	202	0	0	243	0	0	243	0	0	0	1	0	1	0	0	0	0	1	0	446	
Hourly Total	0	3	820	0	0	823	0	0	923	1	0	924	0	0	0	2	1	2	0	0	0	0	3	0	1749	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3:30 PM	0	1	337	0	0	338	0	0	401	1	0	402	0	0	0	1	1	1	0	0	0	0	0	0	741	
3:45 PM	0	1	300	0	0	301	0	0	428	2	0	430	0	0	0	2	0	2	0	0	0	0	0	0	733	
Hourly Total	0	2	637	0	0	639	0	0	829	3	0	832	0	0	0	3	1	3	0	0	0	0	0	0	1474	

4:00 PM	0	0	321	0	0	321	0	0	451	2	0	453	0	0	0	0	0	0	0	0	0	0	0	774	
4:15 PM	0	0	305	0	0	305	0	0	435	3	0	438	0	0	0	0	0	0	0	0	0	0	0	743	
4:30 PM	0	1	353	0	0	354	0	0	392	1	0	393	0	0	0	0	0	0	0	0	0	0	0	747	
4:45 PM	0	1	288	0	0	289	0	0	452	1	0	453	0	0	0	2	0	2	0	0	0	0	0	744	
Hourly Total	0	2	1267	0	0	1269	0	0	1730	7	0	1737	0	0	0	2	0	2	0	0	0	0	0	3008	
5:00 PM	0	0	346	0	0	346	0	0	446	2	0	448	0	0	0	2	0	2	0	0	0	0	0	796	
5:15 PM	0	1	283	0	0	284	0	0	441	3	0	444	0	0	0	0	1	0	0	0	0	0	0	728	
5:30 PM	0	0	340	0	0	340	0	0	356	0	0	356	0	0	0	1	0	1	0	0	0	0	0	697	
5:45 PM	0	0	294	0	0	294	0	0	415	1	0	416	0	0	0	2	0	2	0	0	0	0	0	712	
Hourly Total	0	1	1263	0	0	1264	0	0	1658	6	0	1664	0	0	0	5	1	5	0	0	0	0	0	2933	
6:00 PM	0	0	285	0	0	285	1	0	458	0	0	459	0	0	0	1	0	1	0	0	0	0	0	745	
6:15 PM	0	0	318	0	0	318	0	0	406	1	0	407	0	0	0	0	0	0	0	0	0	2	0	725	
Grand Total	0	14	10315	1	0	10330	1	0	10126	41	0	10168	0	0	0	24	17	24	0	0	0	0	15	0	20522
Approach %	0.0	0.1	99.9	0.0	-	-	0.0	0.0	99.6	0.4	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	0.0	0.1	50.3	0.0	-	50.3	0.0	0.0	49.3	0.2	-	49.5	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	0.0	-	0.0	-
Lights	0	4	10047	1	-	10052	1	0	9814	40	-	9855	0	0	0	10	-	10	0	0	0	0	-	0	19917
% Lights	-	28.6	97.4	100.0	-	97.3	100.0	-	96.9	97.6	-	96.9	-	-	-	41.7	-	41.7	-	-	-	-	-	-	97.1
Buses	0	0	55	0	-	55	0	0	95	0	-	95	0	0	0	0	-	0	0	0	0	0	-	0	150
% Buses	-	0.0	0.5	0.0	-	0.5	0.0	-	0.9	0.0	-	0.9	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.7
Trucks	0	10	213	0	-	223	0	0	216	1	-	217	0	0	0	14	-	14	0	0	0	0	-	0	454
% Trucks	-	71.4	2.1	0.0	-	2.2	0.0	-	2.1	2.4	-	2.1	-	-	-	58.3	-	58.3	-	-	-	-	-	-	2.2
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	-	-	-	-	-	13.3	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	15	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.2	-	-	-	-	-	86.7	-	-



Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
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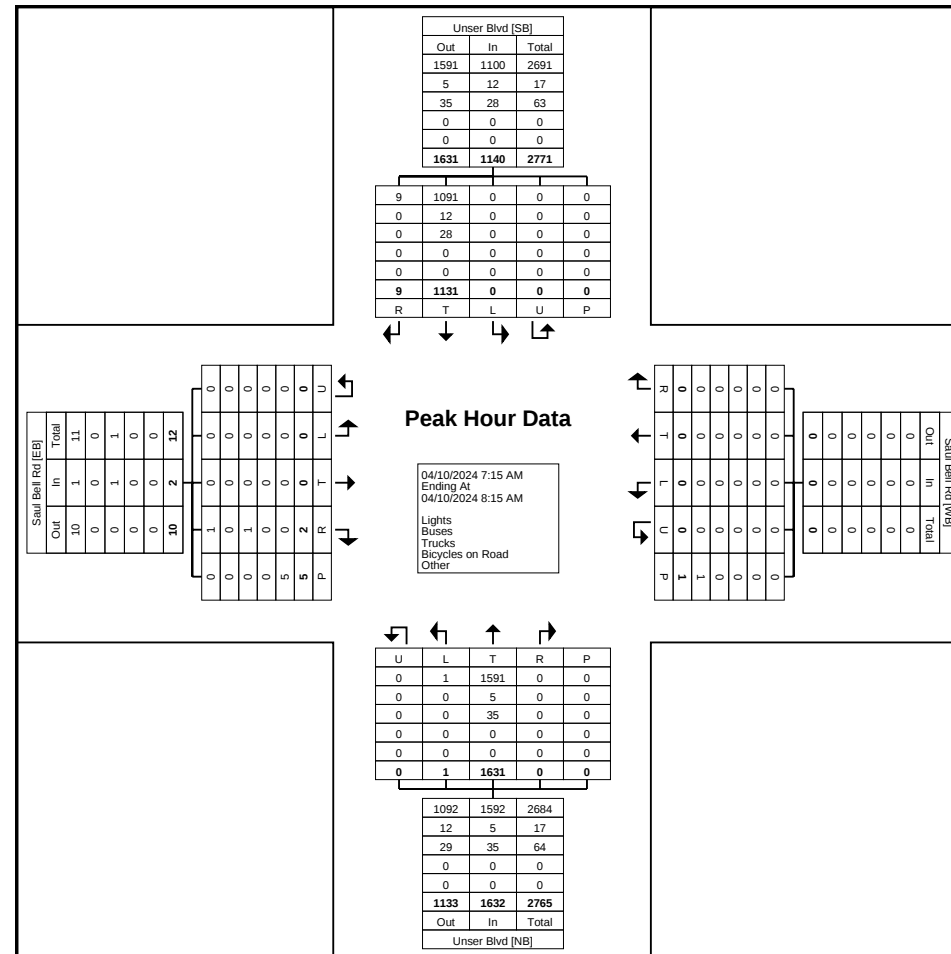
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Saul Bell Rd Eastbound						Saul Bell Rd Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	0	444	0	0	444	0	0	217	3	0	220	0	0	0	0	1	0	0	0	0	0	0	0	664
7:30 AM	0	0	429	0	0	429	0	0	268	3	0	271	0	0	0	0	2	0	0	0	0	0	0	0	700
7:45 AM	0	0	392	0	0	392	0	0	344	2	0	346	0	0	0	0	0	0	0	0	0	0	0	0	738
8:00 AM	0	1	366	0	0	367	0	0	302	1	0	303	0	0	0	2	2	2	0	0	0	0	1	0	672
Total	0	1	1631	0	0	1632	0	0	1131	9	0	1140	0	0	0	2	5	2	0	0	0	0	1	0	2774
Approach %	0.0	0.1	99.9	0.0	-	-	0.0	0.0	99.2	0.8	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	0.0	0.0	58.8	0.0	-	58.8	0.0	0.0	40.8	0.3	-	41.1	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.250	0.918	0.000	-	0.919	0.000	0.000	0.822	0.750	-	0.824	0.000	0.000	0.000	0.250	-	0.250	0.000	0.000	0.000	0.000	-	0.000	0.940
Lights	0	1	1591	0	-	1592	0	0	1091	9	-	1100	0	0	0	1	-	1	0	0	0	0	-	0	2693
% Lights	-	100.0	97.5	-	-	97.5	-	-	96.5	100.0	-	96.5	-	-	-	50.0	-	50.0	-	-	-	-	-	-	97.1
Buses	0	0	5	0	-	5	0	0	12	0	-	12	0	0	0	0	-	0	0	0	0	0	-	0	17
% Buses	-	0.0	0.3	-	-	0.3	-	-	1.1	0.0	-	1.1	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.6
Trucks	0	0	35	0	-	35	0	0	28	0	-	28	0	0	0	1	-	1	0	0	0	0	-	0	64
% Trucks	-	0.0	2.1	-	-	2.1	-	-	2.5	0.0	-	2.5	-	-	-	50.0	-	50.0	-	-	-	-	-	-	2.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (7:15 AM)



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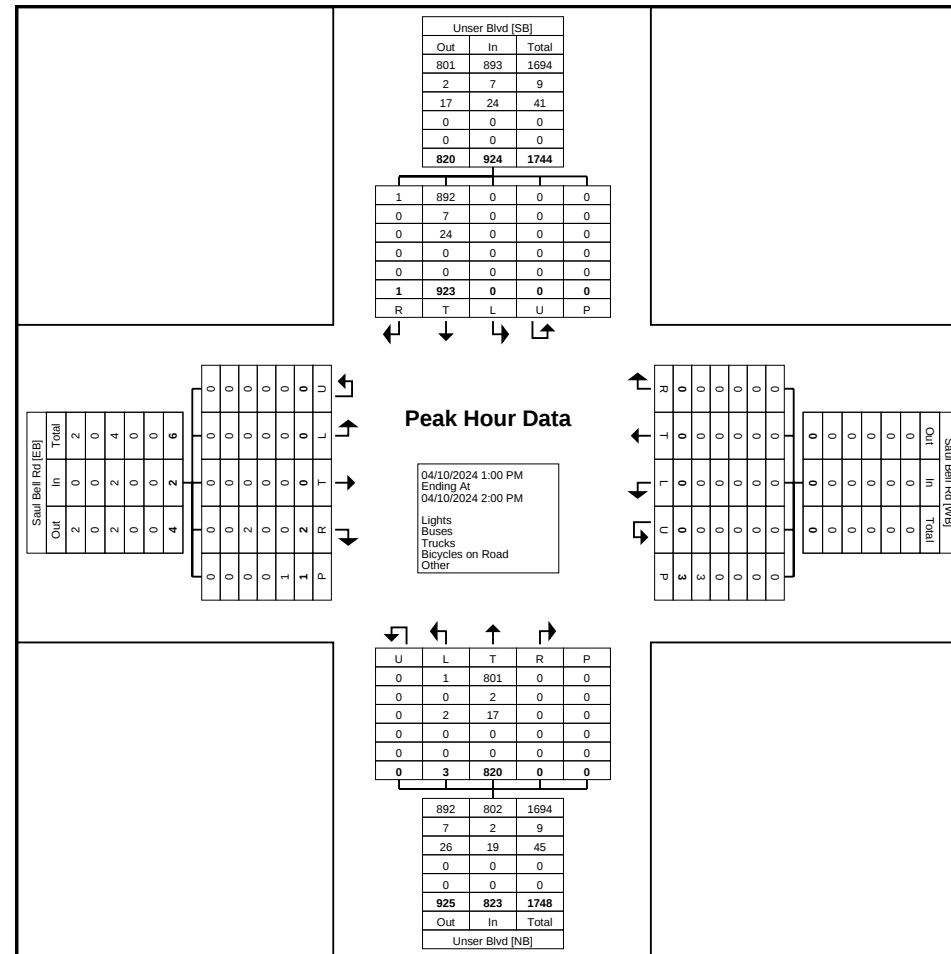
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Saul Bell Rd Eastbound						Saul Bell Rd Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
1:00 PM	0	0	208	0	0	208	0	0	221	1	0	222	0	0	0	0	0	0	0	0	0	0	1	0	430
1:15 PM	0	2	193	0	0	195	0	0	219	0	0	219	0	0	0	0	0	0	0	0	0	0	1	0	414
1:30 PM	0	1	217	0	0	218	0	0	240	0	0	240	0	0	0	1	1	1	0	0	0	0	0	0	459
1:45 PM	0	0	202	0	0	202	0	0	243	0	0	243	0	0	0	1	0	1	0	0	0	0	1	0	446
Total	0	3	820	0	0	823	0	0	923	1	0	924	0	0	0	2	1	2	0	0	0	0	3	0	1749
Approach %	0.0	0.4	99.6	0.0	-	-	0.0	0.0	99.9	0.1	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	0.0	0.2	46.9	0.0	-	47.1	0.0	0.0	52.8	0.1	-	52.8	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.375	0.945	0.000	-	0.944	0.000	0.000	0.950	0.250	-	0.951	0.000	0.000	0.000	0.500	-	0.500	0.000	0.000	0.000	0.000	-	0.000	0.953
Lights	0	1	801	0	-	802	0	0	892	1	-	893	0	0	0	0	-	0	0	0	0	0	-	0	1695
% Lights	-	33.3	97.7	-	-	97.4	-	-	96.6	100.0	-	96.6	-	-	-	0.0	-	0.0	-	-	-	-	-	-	96.9
Buses	0	0	2	0	-	2	0	0	7	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	9
% Buses	-	0.0	0.2	-	-	0.2	-	-	0.8	0.0	-	0.8	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.5
Trucks	0	2	17	0	-	19	0	0	24	0	-	24	0	0	0	2	-	2	0	0	0	0	-	0	45
% Trucks	-	66.7	2.1	-	-	2.3	-	-	2.6	0.0	-	2.6	-	-	-	100.0	-	100.0	-	-	-	-	-	-	2.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	66.7	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	33.3	-	-



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Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
Site Code:
Start Date: 04/10/2024
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Turning Movement Peak Hour Data Plot (1:00 PM)

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Count Name: NM385.01 - QT #7001 Unser Los
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Site Code:
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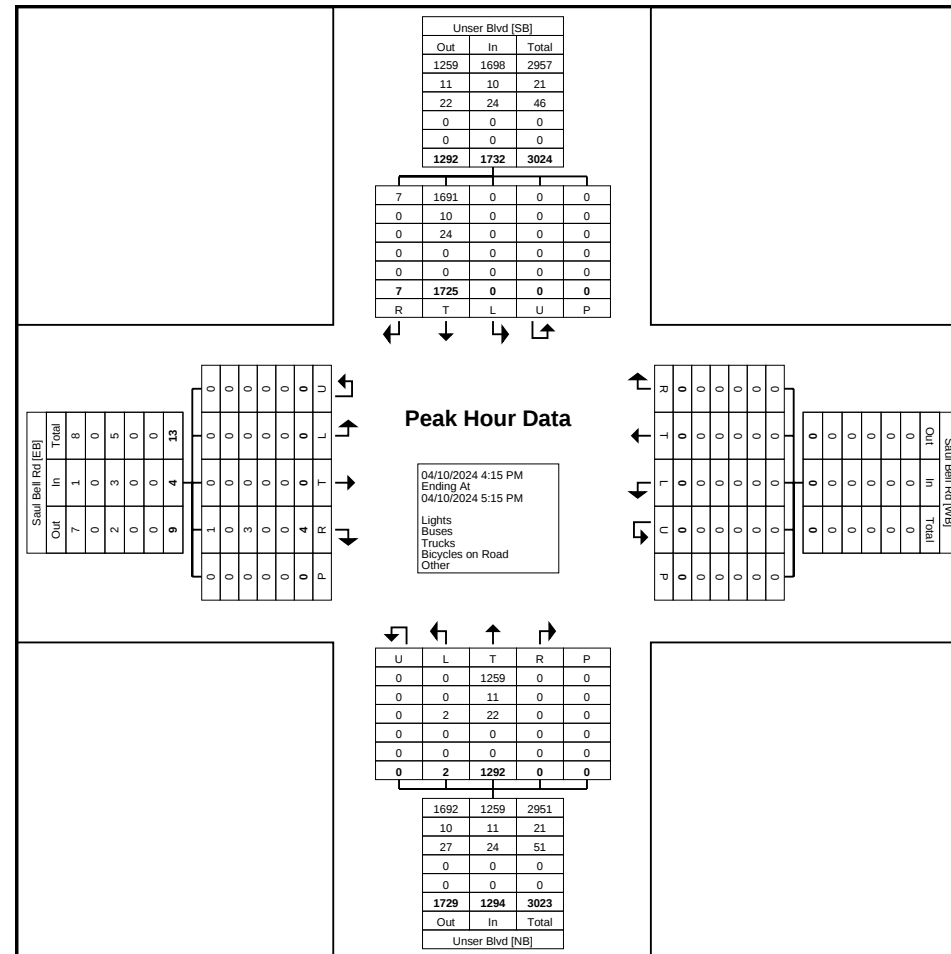
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Unser Blvd Northbound						Unser Blvd Southbound						Saul Bell Rd Eastbound						Saul Bell Rd Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:15 PM	0	0	305	0	0	305	0	0	435	3	0	438	0	0	0	0	0	0	0	0	0	0	0	0	743
4:30 PM	0	1	353	0	0	354	0	0	392	1	0	393	0	0	0	0	0	0	0	0	0	0	0	0	747
4:45 PM	0	1	288	0	0	289	0	0	452	1	0	453	0	0	0	2	0	2	0	0	0	0	0	0	744
5:00 PM	0	0	346	0	0	346	0	0	446	2	0	448	0	0	0	2	0	2	0	0	0	0	0	0	796
Total	0	2	1292	0	0	1294	0	0	1725	7	0	1732	0	0	0	4	0	4	0	0	0	0	0	0	3030
Approach %	0.0	0.2	99.8	0.0	-	-	0.0	0.0	99.6	0.4	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	0.0	0.1	42.6	0.0	-	42.7	0.0	0.0	56.9	0.2	-	57.2	0.0	0.0	0.0	0.1	-	0.1	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.500	0.915	0.000	-	0.914	0.000	0.000	0.954	0.583	-	0.956	0.000	0.000	0.000	0.500	-	0.500	0.000	0.000	0.000	0.000	-	0.000	0.952
Lights	0	0	1259	0	-	1259	0	0	1691	7	-	1698	0	0	0	1	-	1	0	0	0	0	-	0	2958
% Lights	-	0.0	97.4	-	-	97.3	-	-	98.0	100.0	-	98.0	-	-	-	25.0	-	25.0	-	-	-	-	-	-	97.6
Buses	0	0	11	0	-	11	0	0	10	0	-	10	0	0	0	0	-	0	0	0	0	0	-	0	21
% Buses	-	0.0	0.9	-	-	0.9	-	-	0.6	0.0	-	0.6	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.7
Trucks	0	2	22	0	-	24	0	0	24	0	-	24	0	0	0	3	-	3	0	0	0	0	-	0	51
% Trucks	-	100.0	1.7	-	-	1.9	-	-	1.4	0.0	-	1.4	-	-	-	75.0	-	75.0	-	-	-	-	-	-	1.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
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Turning Movement Peak Hour Data Plot (4:15 PM)



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Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
Site Code:
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Turning Movement Data

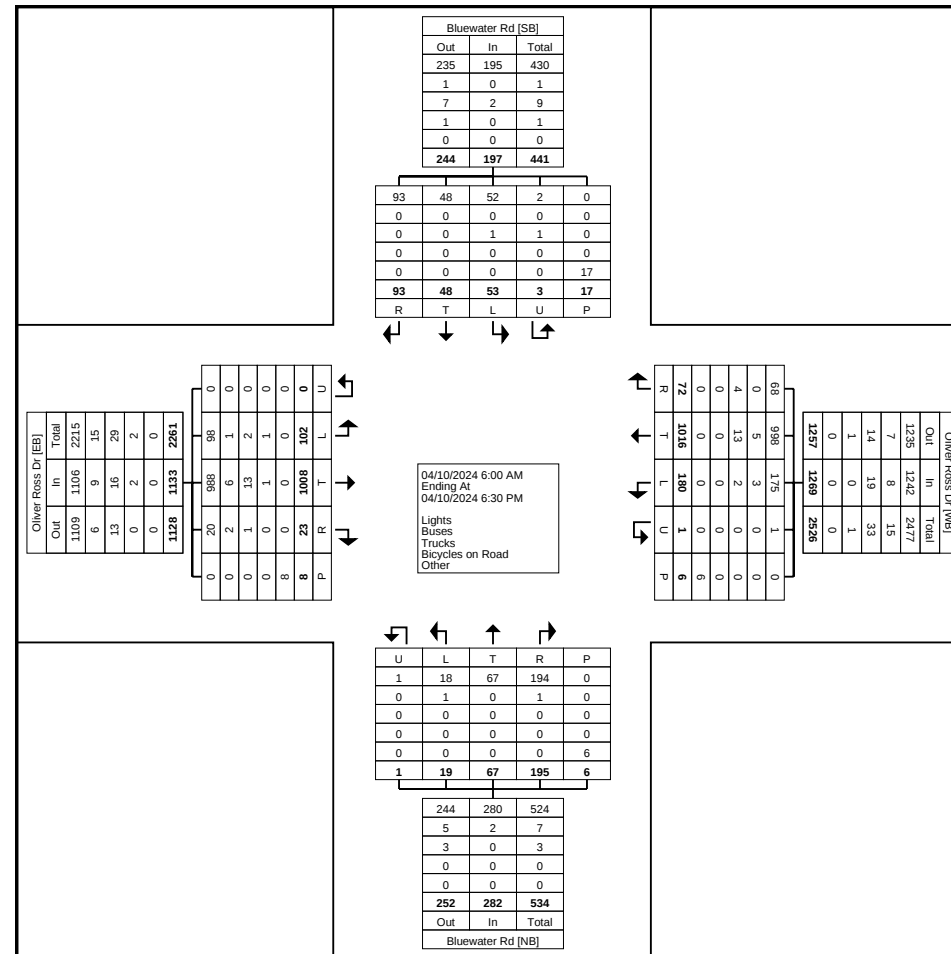
Start Time	Bluewater Rd Northbound						Bluewater Rd Southbound						Oliver Ross Dr Eastbound						Oliver Ross Dr Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
6:00 AM	0	0	0	7	0	7	0	0	0	1	0	1	0	1	26	1	0	28	0	0	4	0	0	4	40
6:15 AM	0	1	3	5	0	9	0	0	0	1	0	1	0	1	13	0	0	14	0	1	3	2	0	6	30
6:30 AM	0	0	3	9	0	12	0	0	0	0	0	0	0	9	25	0	0	34	0	0	6	1	0	7	53
6:45 AM	0	0	4	10	0	14	0	0	1	0	0	1	0	4	45	0	0	49	0	0	13	5	0	18	82
Hourly Total	0	1	10	31	0	42	0	0	1	2	0	3	0	15	109	1	0	125	0	1	26	8	0	35	205
7:00 AM	0	2	2	18	1	22	0	1	0	1	0	2	0	2	34	1	0	37	0	2	14	7	0	23	84
7:15 AM	0	4	8	8	0	20	0	0	0	0	0	0	0	13	34	0	0	47	0	3	13	2	0	18	85
7:30 AM	1	0	8	9	0	18	0	0	1	1	0	2	0	11	30	0	0	41	0	2	16	6	0	24	85
7:45 AM	0	1	4	7	1	12	0	0	0	2	0	2	0	5	35	1	1	41	0	4	33	5	0	42	97
Hourly Total	1	7	22	42	2	72	0	1	1	4	0	6	0	31	133	2	1	166	0	11	76	20	0	107	351
8:00 AM	0	0	3	3	0	6	0	4	3	4	1	11	0	6	42	0	0	48	0	1	26	8	0	35	100
8:15 AM	0	0	2	2	0	4	0	0	0	1	0	1	0	12	27	1	0	40	0	6	20	5	0	31	76
8:30 AM	0	0	2	6	0	8	0	1	0	2	2	3	0	4	42	0	1	46	0	2	29	1	0	32	89
8:45 AM	0	0	2	5	0	7	0	0	0	3	0	3	0	1	53	2	0	56	0	4	35	2	1	41	107
Hourly Total	0	0	9	16	0	25	0	5	3	10	3	18	0	23	164	3	1	190	0	13	110	16	1	139	372
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	0	0	5	0	5	0	2	0	2	0	4	0	1	15	0	0	16	0	5	26	1	0	32	57
11:15 AM	0	1	0	6	0	7	0	1	0	1	0	2	0	2	20	0	0	22	0	1	13	3	0	17	48
11:30 AM	0	0	1	0	0	1	0	0	2	1	0	3	0	2	11	0	0	13	0	6	10	0	0	16	33
11:45 AM	0	0	0	5	0	5	0	3	0	2	0	5	0	3	20	1	0	24	0	3	19	1	0	23	57
Hourly Total	0	1	1	16	0	18	0	6	2	6	0	14	0	8	66	1	0	75	0	15	68	5	0	88	195
12:00 PM	0	1	1	4	0	6	0	2	0	2	0	4	0	1	24	1	0	26	0	1	34	0	0	35	71
12:15 PM	0	0	3	2	1	5	0	1	1	2	1	4	0	2	24	0	0	26	0	7	20	0	0	27	62
12:30 PM	0	0	0	2	0	2	0	2	0	1	0	3	0	2	23	2	0	27	0	2	25	1	0	28	60
12:45 PM	0	1	3	4	0	8	0	1	2	1	0	4	0	1	22	0	0	23	0	8	25	0	0	33	68
Hourly Total	0	2	7	12	1	21	0	6	3	6	1	15	0	6	93	3	0	102	0	18	104	1	0	123	261
1:00 PM	0	1	0	2	0	3	0	0	0	3	0	3	0	2	18	0	0	20	0	6	25	1	0	32	58
1:15 PM	0	0	0	2	0	2	0	1	1	3	0	5	0	2	25	1	0	28	0	4	28	0	0	32	67
1:30 PM	0	0	2	8	0	10	0	3	1	1	0	5	0	1	25	0	1	26	0	5	35	3	0	43	84
1:45 PM	0	0	0	3	0	3	1	0	0	2	0	3	0	2	17	1	0	20	0	4	21	1	0	26	52
Hourly Total	0	1	2	15	0	18	1	4	2	9	0	16	0	7	85	2	1	94	0	19	109	5	0	133	261
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	0	0	0	7	0	7	0	4	1	2	0	7	0	1	27	1	0	29	0	7	42	1	0	50	93
3:45 PM	0	0	1	7	0	8	0	0	4	7	1	11	0	0	25	0	0	25	0	9	53	3	2	65	109
Hourly Total	0	0	1	14	0	15	0	4	5	9	1	18	0	1	52	1	0	54	0	16	95	4	2	115	202

4:00 PM	0	3	0	3	0	6	0	1	2	8	0	11	0	3	25	2	0	30	0	8	49	6	0	63	110
4:15 PM	0	1	1	7	2	9	0	6	2	7	11	15	0	6	56	1	5	63	1	9	46	1	1	57	144
4:30 PM	0	0	3	3	0	6	1	3	3	4	0	11	0	1	37	1	0	39	0	11	47	0	2	58	114
4:45 PM	0	0	1	2	0	3	0	1	4	6	0	11	0	0	26	1	0	27	0	7	38	1	0	46	87
Hourly Total	0	4	5	15	2	24	1	11	11	25	11	48	0	10	144	5	5	159	1	35	180	8	3	224	455
5:00 PM	0	1	1	3	0	5	1	3	1	6	0	11	0	0	21	1	0	22	0	10	45	1	0	56	94
5:15 PM	0	0	2	6	0	8	0	2	3	6	0	11	0	0	28	0	0	28	0	10	42	1	0	53	100
5:30 PM	0	1	3	6	1	10	0	2	3	2	1	7	0	0	35	4	0	39	0	9	41	0	0	50	106
5:45 PM	0	0	1	8	0	9	0	1	2	4	0	7	0	0	23	0	0	23	0	8	39	0	0	47	86
Hourly Total	0	2	7	23	1	32	1	8	9	18	1	36	0	0	107	5	0	112	0	37	167	2	0	206	386
6:00 PM	0	1	3	10	0	14	0	4	7	3	0	14	0	1	28	0	0	29	0	9	43	2	0	54	111
6:15 PM	0	0	0	1	0	1	0	4	4	1	0	9	0	0	27	0	0	27	0	6	38	1	0	45	82
Grand Total	1	19	67	195	6	282	3	53	48	93	17	197	0	102	1008	23	8	1133	1	180	1016	72	6	1269	2881
Approach %	0.4	6.7	23.8	69.1	-	-	1.5	26.9	24.4	47.2	-	-	0.0	9.0	89.0	2.0	-	-	0.1	14.2	80.1	5.7	-	-	-
Total %	0.0	0.7	2.3	6.8	-	9.8	0.1	1.8	1.7	3.2	-	6.8	0.0	3.5	35.0	0.8	-	39.3	0.0	6.2	35.3	2.5	-	44.0	-
Lights	1	18	67	194	-	280	2	52	48	93	-	195	0	98	988	20	-	1106	1	175	998	68	-	1242	2823
% Lights	100.0	94.7	100.0	99.5	-	99.3	66.7	98.1	100.0	100.0	-	99.0	-	96.1	98.0	87.0	-	97.6	100.0	97.2	98.2	94.4	-	97.9	98.0
Buses	0	1	0	1	-	2	0	0	0	0	-	0	0	1	6	2	-	9	0	3	5	0	-	8	19
% Buses	0.0	5.3	0.0	0.5	-	0.7	0.0	0.0	0.0	0.0	-	0.0	-	1.0	0.6	8.7	-	0.8	0.0	1.7	0.5	0.0	-	0.6	0.7
Trucks	0	0	0	0	-	0	1	1	0	0	-	2	0	2	13	1	-	16	0	2	13	4	-	19	37
% Trucks	0.0	0.0	0.0	0.0	-	0.0	33.3	1.9	0.0	0.0	-	1.0	-	2.0	1.3	4.3	-	1.4	0.0	1.1	1.3	5.6	-	1.5	1.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	1.0	0.1	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	11.8	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	15	-	-	-	-	-	8	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	88.2	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: NM385.01 - QT #7001 Unser Los
Volcanes Tis
Site Code:
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Turning Movement Data Plot



Lee Engineering, LLC
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Count Name: NM385.01 - QT #7001 Unser Los
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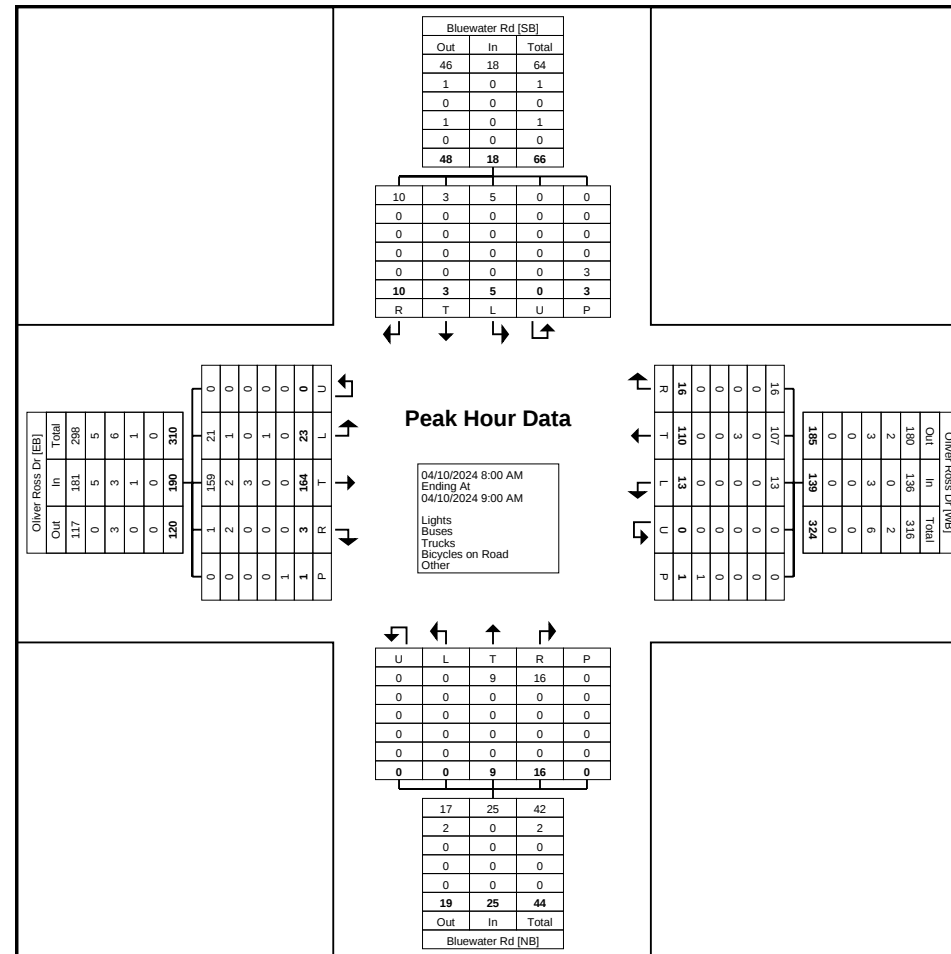
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Bluewater Rd Northbound						Bluewater Rd Southbound						Oliver Ross Dr Eastbound						Oliver Ross Dr Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
8:00 AM	0	0	3	3	0	6	0	4	3	4	1	11	0	6	42	0	0	48	0	1	26	8	0	35	100
8:15 AM	0	0	2	2	0	4	0	0	0	1	0	1	0	12	27	1	0	40	0	6	20	5	0	31	76
8:30 AM	0	0	2	6	0	8	0	1	0	2	2	3	0	4	42	0	1	46	0	2	29	1	0	32	89
8:45 AM	0	0	2	5	0	7	0	0	0	3	0	3	0	1	53	2	0	56	0	4	35	2	1	41	107
Total	0	0	9	16	0	25	0	5	3	10	3	18	0	23	164	3	1	190	0	13	110	16	1	139	372
Approach %	0.0	0.0	36.0	64.0	-	-	0.0	27.8	16.7	55.6	-	-	0.0	12.1	86.3	1.6	-	-	0.0	9.4	79.1	11.5	-	-	-
Total %	0.0	0.0	2.4	4.3	-	6.7	0.0	1.3	0.8	2.7	-	4.8	0.0	6.2	44.1	0.8	-	51.1	0.0	3.5	29.6	4.3	-	37.4	-
PHF	0.000	0.000	0.750	0.667	-	0.781	0.000	0.313	0.250	0.625	-	0.409	0.000	0.479	0.774	0.375	-	0.848	0.000	0.542	0.786	0.500	-	0.848	0.869
Lights	0	0	9	16	-	25	0	5	3	10	-	18	0	21	159	1	-	181	0	13	107	16	-	136	360
% Lights	-	-	100.0	100.0	-	100.0	-	100.0	100.0	100.0	-	100.0	-	91.3	97.0	33.3	-	95.3	-	100.0	97.3	100.0	-	97.8	96.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	1	2	2	-	5	0	0	0	0	-	0	5
% Buses	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	4.3	1.2	66.7	-	2.6	-	0.0	0.0	0.0	-	0.0	1.3
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	3	0	0	3	0	-	3	6
% Trucks	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	1.8	0.0	-	1.6	-	0.0	2.7	0.0	-	2.2	1.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	4.3	0.0	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (8:00 AM)



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Turning Movement Peak Hour Data (12:45 PM)

Start Time	Bluewater Rd Northbound						Bluewater Rd Southbound						Oliver Ross Dr Eastbound						Oliver Ross Dr Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
12:45 PM	0	1	3	4	0	8	0	1	2	1	0	4	0	1	22	0	0	23	0	8	25	0	0	33	68
1:00 PM	0	1	0	2	0	3	0	0	0	3	0	3	0	2	18	0	0	20	0	6	25	1	0	32	58
1:15 PM	0	0	0	2	0	2	0	1	1	3	0	5	0	2	25	1	0	28	0	4	28	0	0	32	67
1:30 PM	0	0	2	8	0	10	0	3	1	1	0	5	0	1	25	0	1	26	0	5	35	3	0	43	84
Total	0	2	5	16	0	23	0	5	4	8	0	17	0	6	90	1	1	97	0	23	113	4	0	140	277
Approach %	0.0	8.7	21.7	69.6	-	-	0.0	29.4	23.5	47.1	-	-	0.0	6.2	92.8	1.0	-	-	0.0	16.4	80.7	2.9	-	-	-
Total %	0.0	0.7	1.8	5.8	-	8.3	0.0	1.8	1.4	2.9	-	6.1	0.0	2.2	32.5	0.4	-	35.0	0.0	8.3	40.8	1.4	-	50.5	-
PHF	0.000	0.500	0.417	0.500	-	0.575	0.000	0.417	0.500	0.667	-	0.850	0.000	0.750	0.900	0.250	-	0.866	0.000	0.719	0.807	0.333	-	0.814	0.824
Lights	0	2	5	16	-	23	0	4	4	8	-	16	0	6	90	1	-	97	0	23	111	3	-	137	273
% Lights	-	100.0	100.0	100.0	-	100.0	-	80.0	100.0	100.0	-	94.1	-	100.0	100.0	100.0	-	100.0	-	100.0	98.2	75.0	-	97.9	98.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	2	1	-	3	4
% Trucks	-	0.0	0.0	0.0	-	0.0	-	20.0	0.0	0.0	-	5.9	-	0.0	0.0	0.0	-	0.0	-	0.0	1.8	25.0	-	2.1	1.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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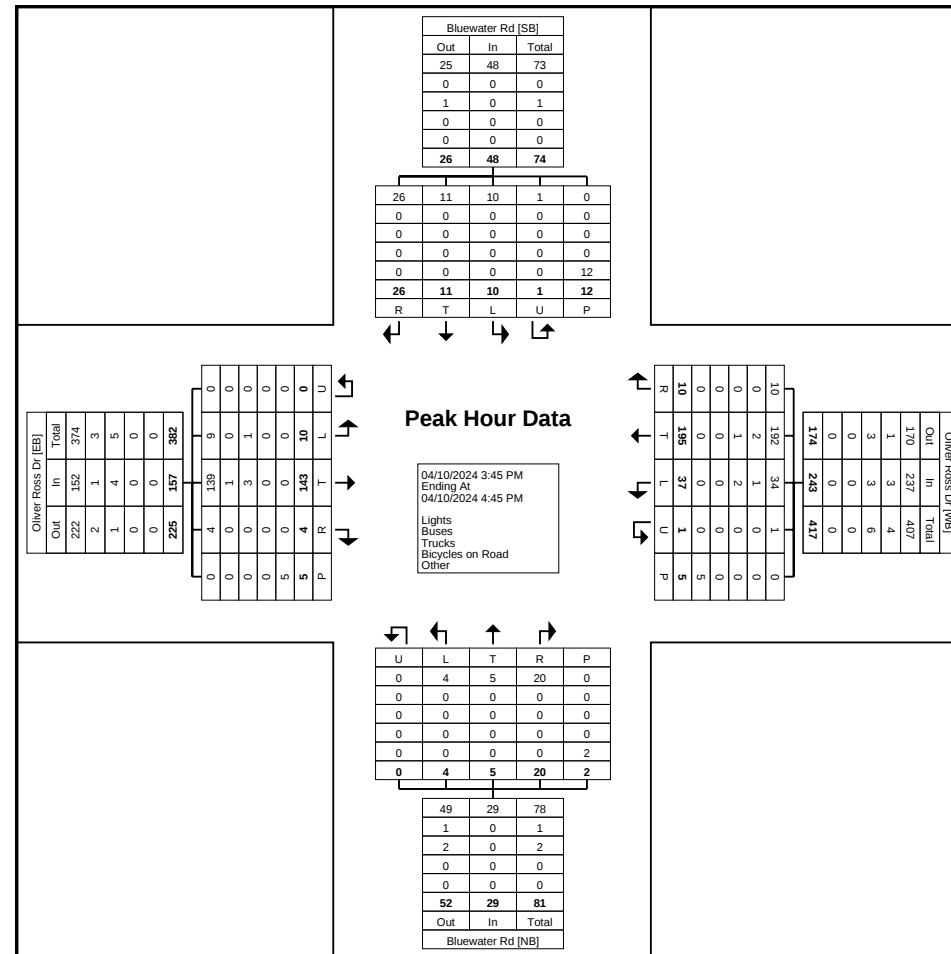
Turning Movement Peak Hour Data (3:45 PM)

Start Time	Bluewater Rd Northbound						Bluewater Rd Southbound						Oliver Ross Dr Eastbound						Oliver Ross Dr Westbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:45 PM	0	0	1	7	0	8	0	0	4	7	1	11	0	0	25	0	0	25	0	9	53	3	2	65	109
4:00 PM	0	3	0	3	0	6	0	1	2	8	0	11	0	3	25	2	0	30	0	8	49	6	0	63	110
4:15 PM	0	1	1	7	2	9	0	6	2	7	11	15	0	6	56	1	5	63	1	9	46	1	1	57	144
4:30 PM	0	0	3	3	0	6	1	3	3	4	0	11	0	1	37	1	0	39	0	11	47	0	2	58	114
Total	0	4	5	20	2	29	1	10	11	26	12	48	0	10	143	4	5	157	1	37	195	10	5	243	477
Approach %	0.0	13.8	17.2	69.0	-	-	2.1	20.8	22.9	54.2	-	-	0.0	6.4	91.1	2.5	-	-	0.4	15.2	80.2	4.1	-	-	-
Total %	0.0	0.8	1.0	4.2	-	6.1	0.2	2.1	2.3	5.5	-	10.1	0.0	2.1	30.0	0.8	-	32.9	0.2	7.8	40.9	2.1	-	50.9	-
PHF	0.000	0.333	0.417	0.714	-	0.806	0.250	0.417	0.688	0.813	-	0.800	0.000	0.417	0.638	0.500	-	0.623	0.250	0.841	0.920	0.417	-	0.935	0.828
Lights	0	4	5	20	-	29	1	10	11	26	-	48	0	9	139	4	-	152	1	34	192	10	-	237	466
% Lights	-	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	-	100.0	-	90.0	97.2	100.0	-	96.8	100.0	91.9	98.5	100.0	-	97.5	97.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	1	2	0	-	3	4
% Buses	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.7	0.0	-	0.6	0.0	2.7	1.0	0.0	-	1.2	0.8
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	3	0	-	4	0	2	1	0	-	3	7
% Trucks	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	10.0	2.1	0.0	-	2.5	0.0	5.4	0.5	0.0	-	1.2	1.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	5	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (3:45 PM)

Appendix C: ITE Trip Generation

Land Use: 944

Gasoline/Service Station

Description

This land use includes gasoline/service stations where the primary business is the fueling of motor vehicles. The sites included generally have a small building (less than 2,000 gross square feet) that houses a cashier and limited space for motor vehicle maintenance supplies and general convenience products. A gasoline/service station may also have facilities for servicing and repairing motor vehicles. The gasoline/service station may also have a car wash. Convenience store/gas station (Land Use 945) and truck stop (Land Use 950) are related uses.

Additional Data

The independent variable—vehicle fueling positions—is defined as the maximum number of vehicles that can be fueled simultaneously. The sites in this land use include both self-pump and attendant-pumped fueling positions and both pre-pay and post-pay operations.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Kentucky, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario (CAN), Oregon, South Dakota, Texas, and Washington.

Specialized Land Use Data

A 2006 study provided data on four private fuel facilities in Florida (source 721). These facilities provide self-fuel service for any motorist with a pre-established membership account. The site is not open to the general public. The trip generation characteristics of these sites differ from sites included in this land use; therefore, trip generation information for these sites is excluded from the data plots. The four sites have an average of nine vehicle fueling positions, with an average of 12 vehicle trips during the weekday, AM peak hour of adjacent traffic and 7 vehicle trips during the weekday, PM peak hour of adjacent street traffic.

Source Numbers

221, 274, 278, 288, 340, 350, 351, 355, 359, 366, 440, 583, 617, 618, 631, 721, 867, 882, 883, 888, 954, 977

Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 18

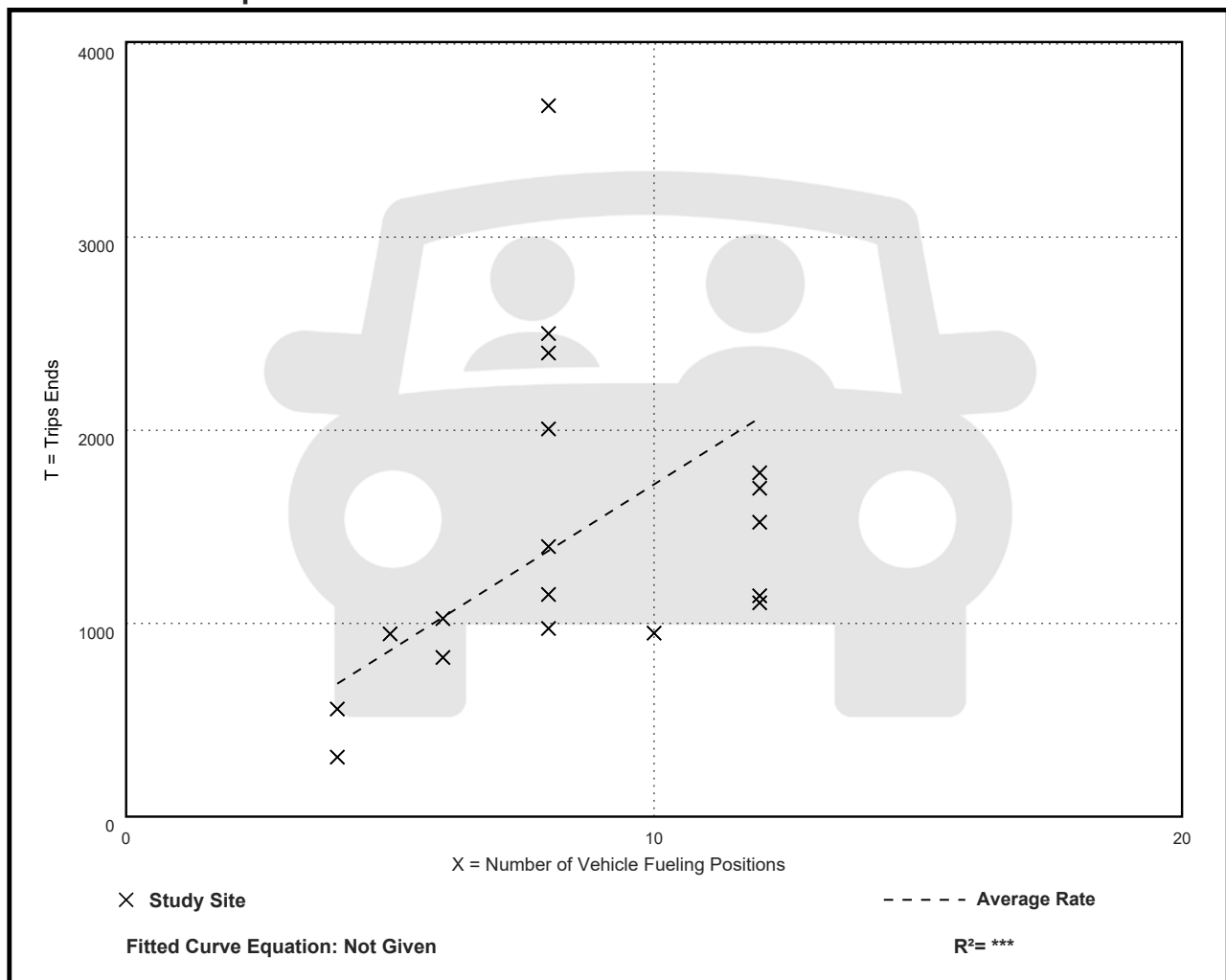
Avg. Num. of Vehicle Fueling Positions: 8

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
172.01	77.00 - 460.00	96.45

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 53

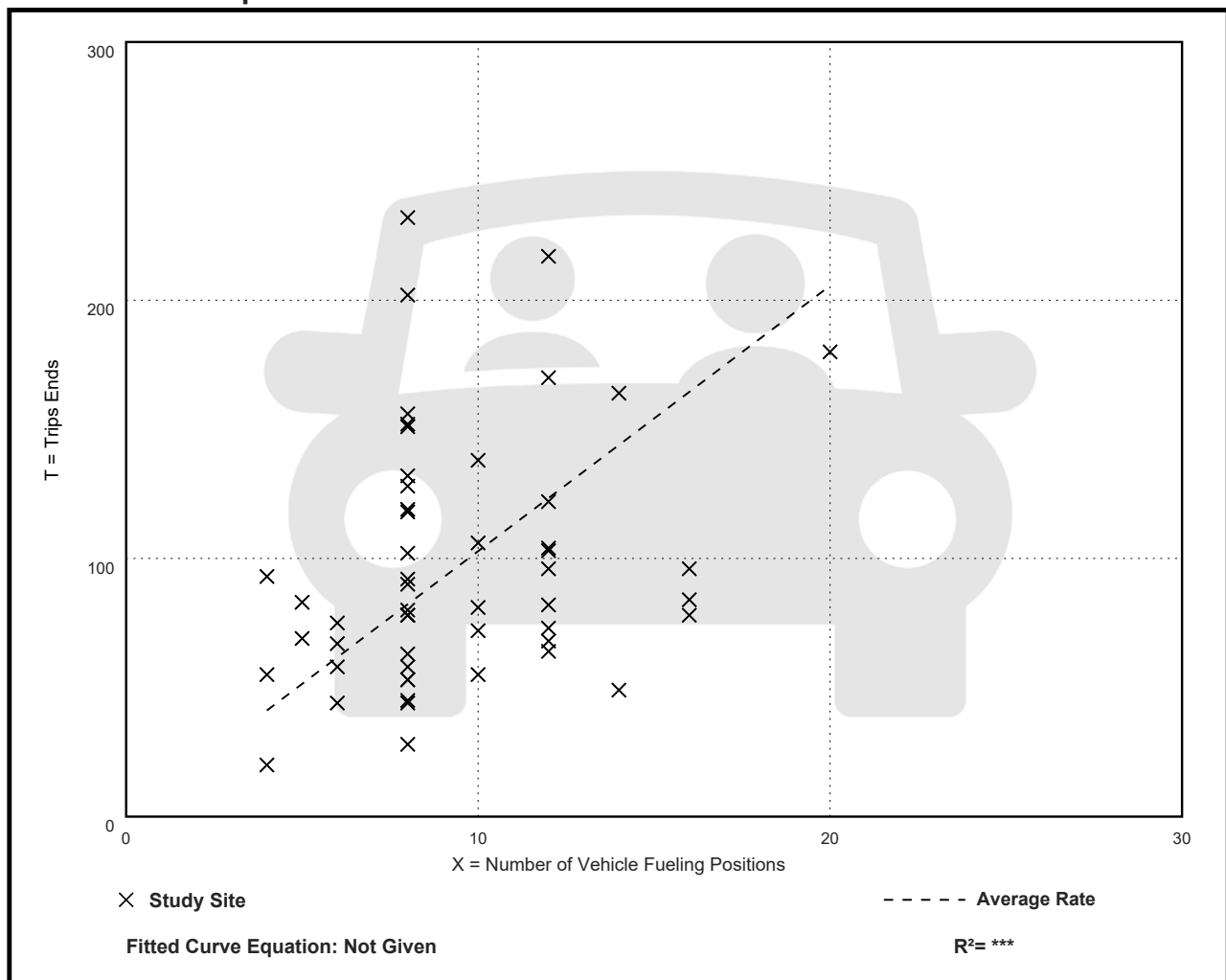
Avg. Num. of Vehicle Fueling Positions: 9

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
10.28	3.50 - 29.00	5.36

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 65

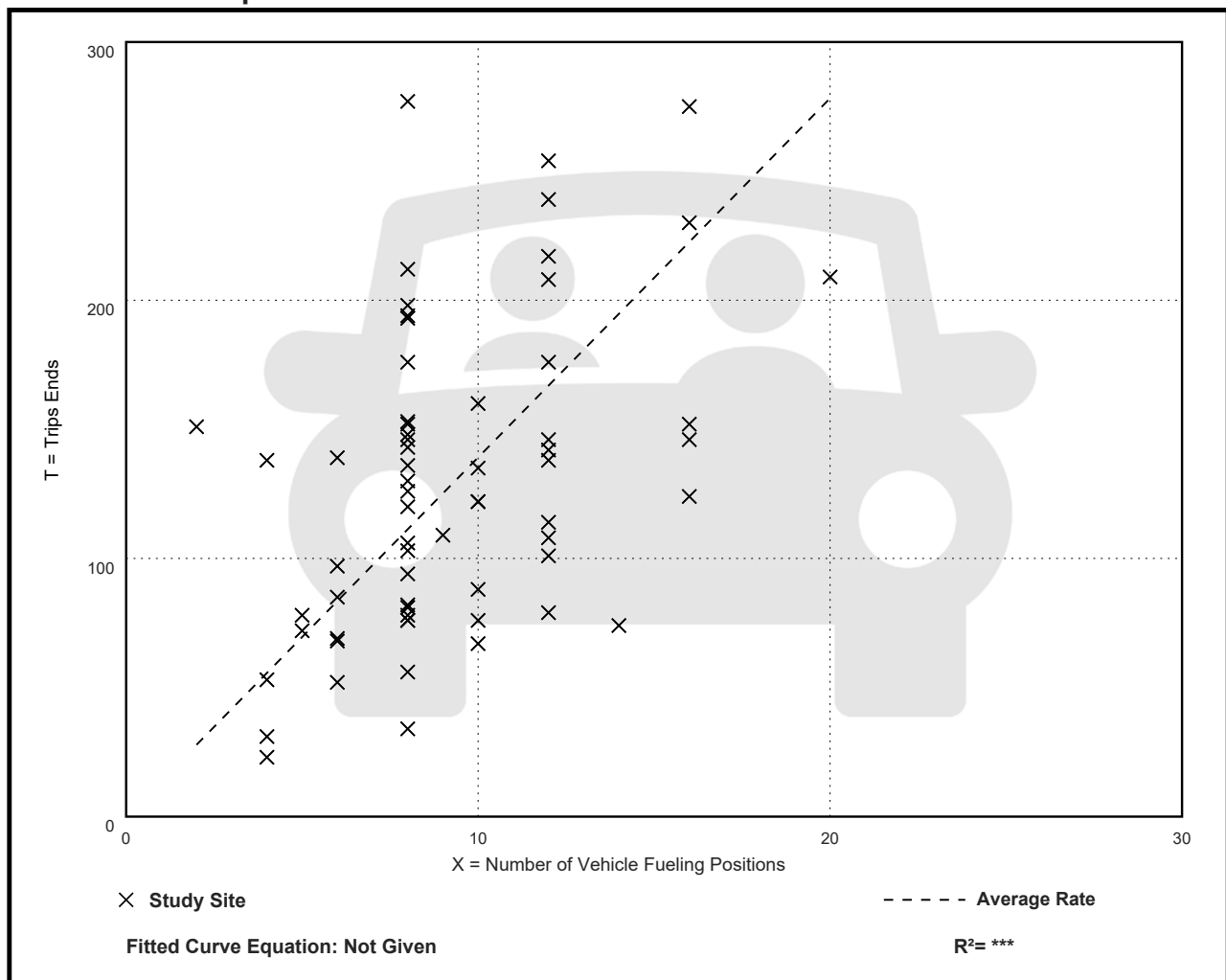
Avg. Num. of Vehicle Fueling Positions: 9

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
13.91	4.25 - 75.50	6.93

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 49

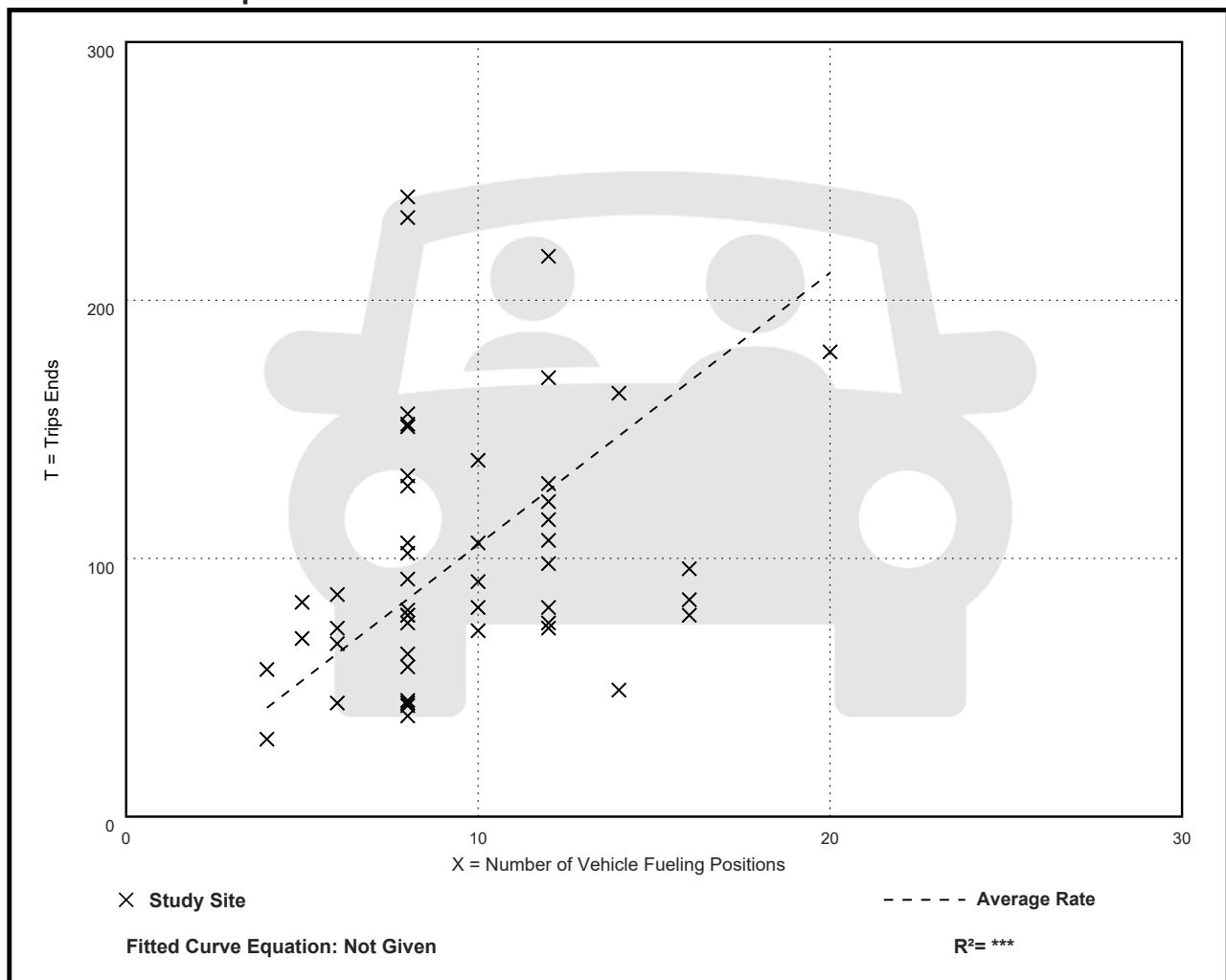
Avg. Num. of Vehicle Fueling Positions: 10

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
10.53	3.50 - 30.00	5.45

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 58

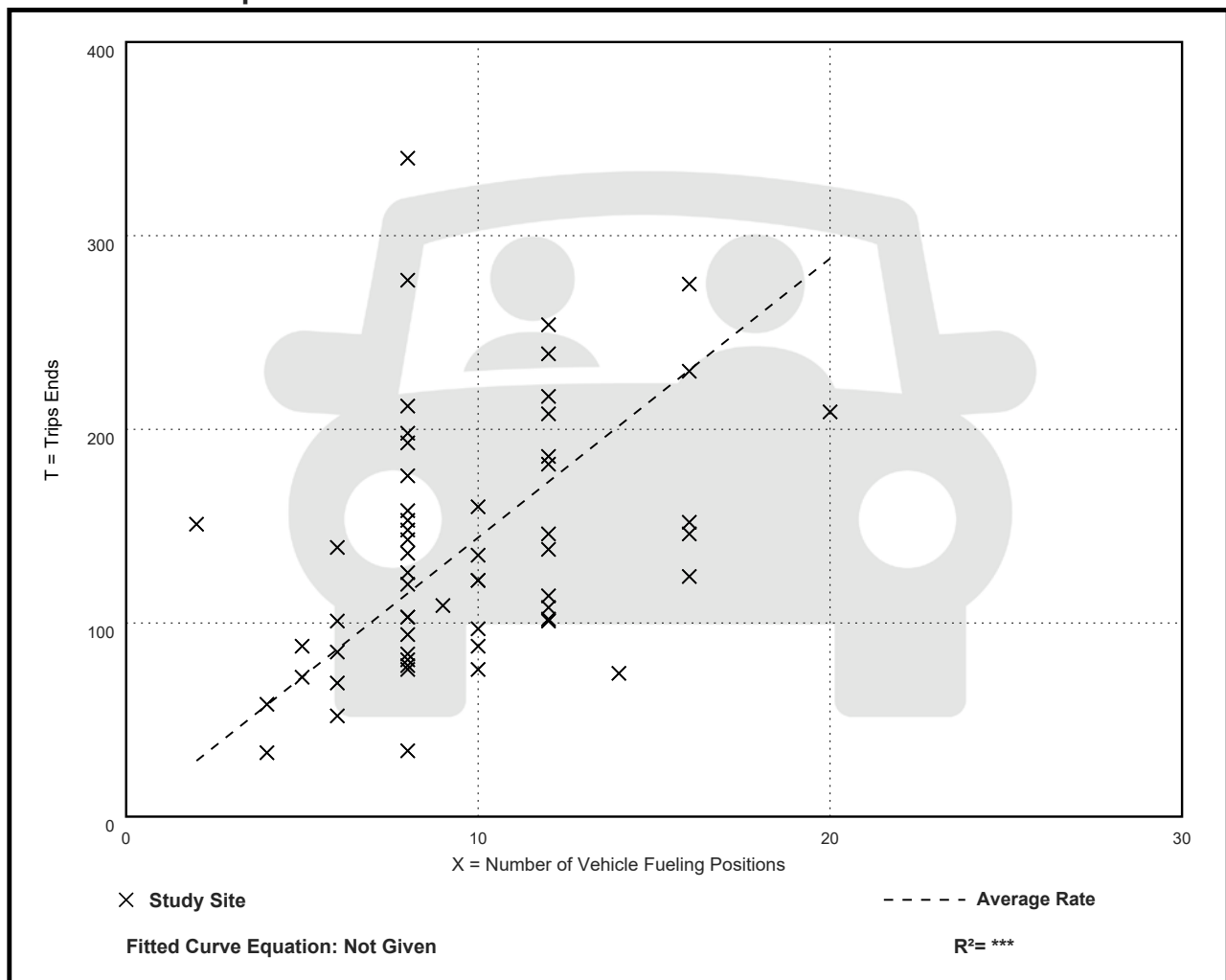
Avg. Num. of Vehicle Fueling Positions: 10

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
14.41	4.25 - 75.50	7.50

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 4

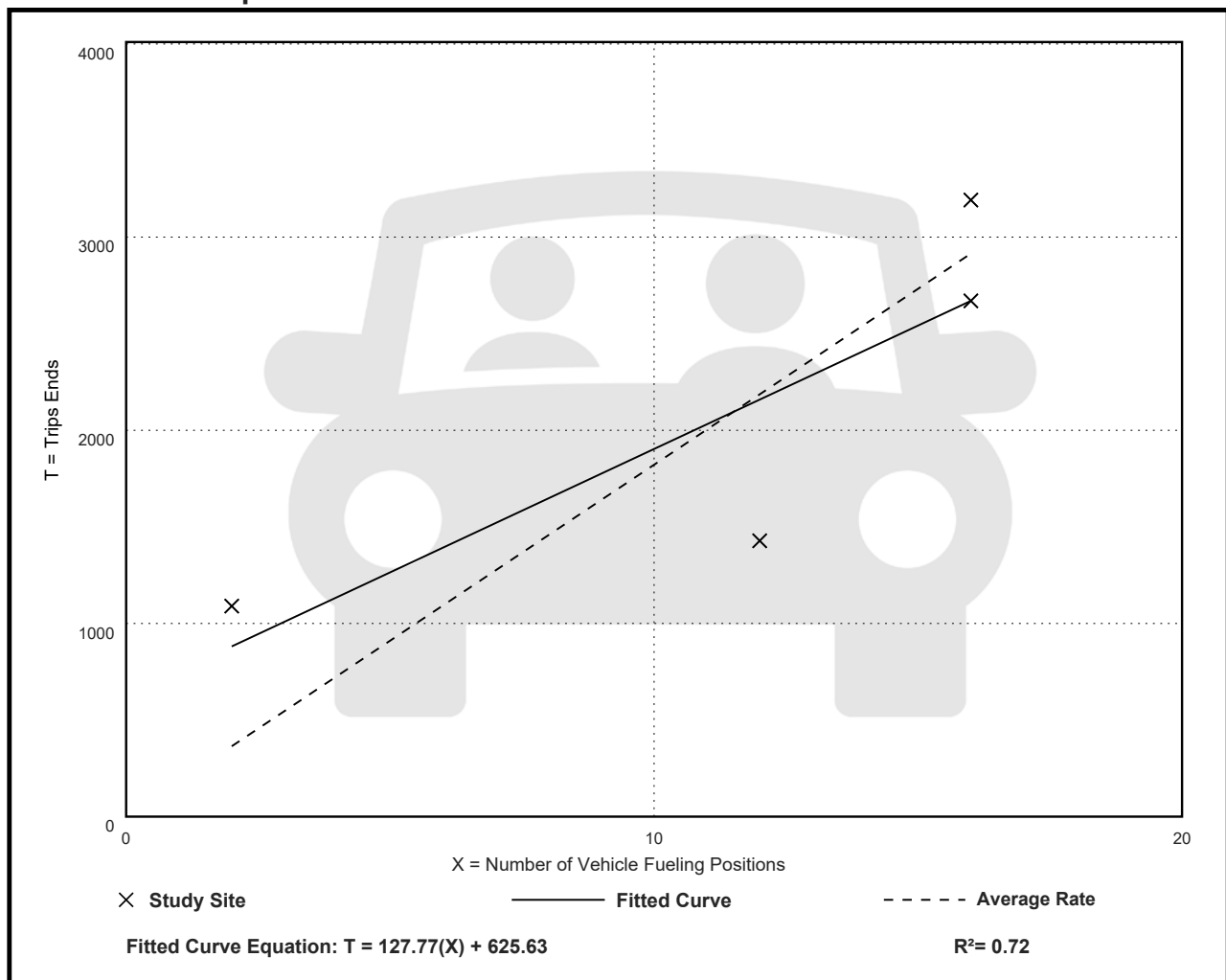
Avg. Num. of Vehicle Fueling Positions: 12

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
182.17	119.00 - 545.00	96.27

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 4

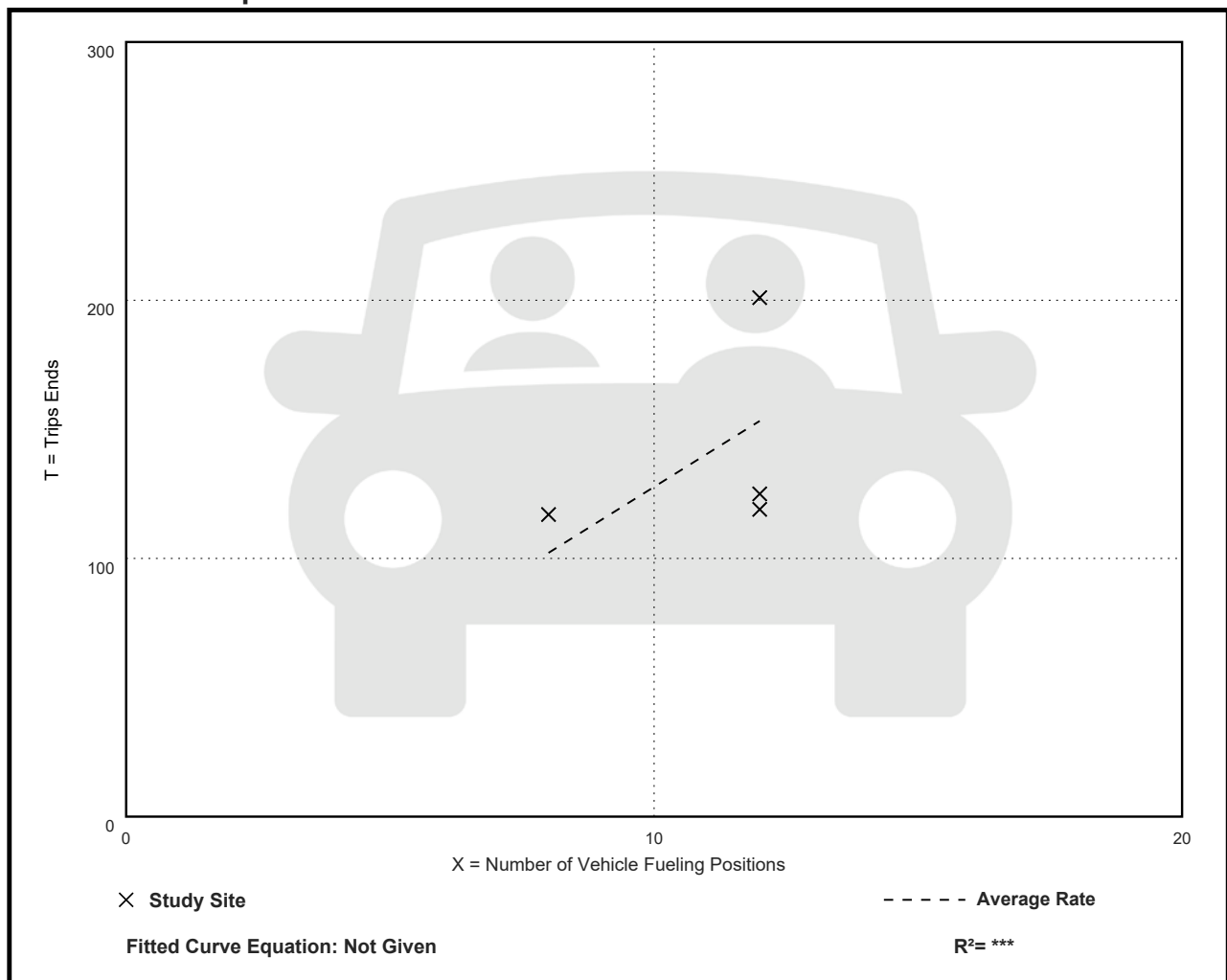
Avg. Num. of Vehicle Fueling Positions: 11

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
12.77	9.92 - 16.75	3.40

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 3

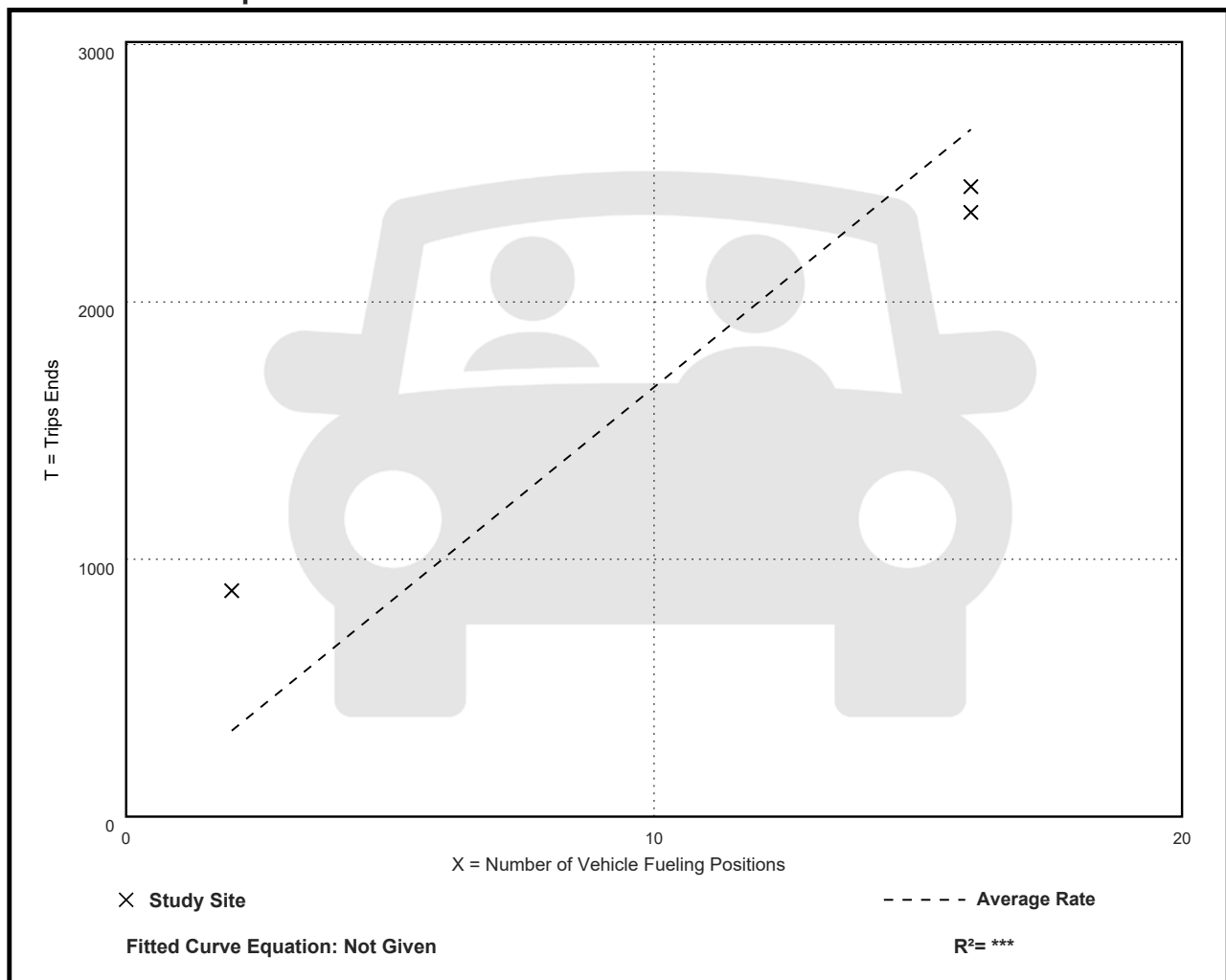
Avg. Num. of Vehicle Fueling Positions: 11

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
166.88	146.75 - 439.00	83.40

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: AM Peak Hour Traffic on Adj. St.

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 12

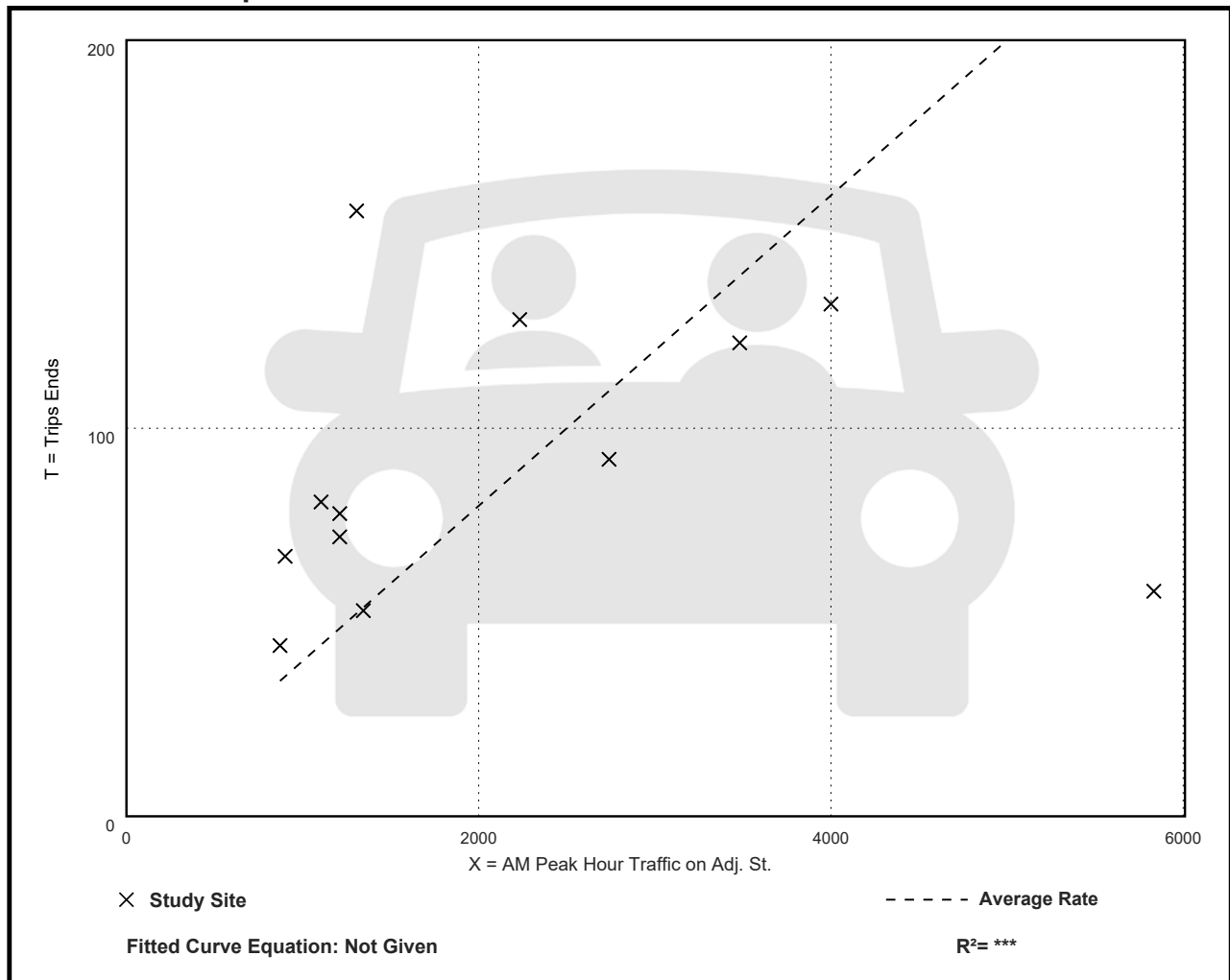
Avg. AM Peak Hour Traffic on Adj. St.: 2187

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per AM Peak Hour Traffic on Adj. St.

Average Rate	Range of Rates	Standard Deviation
0.04	0.01 - 0.12	0.03

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: PM Peak Hour Traffic on Adj. St.

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 13

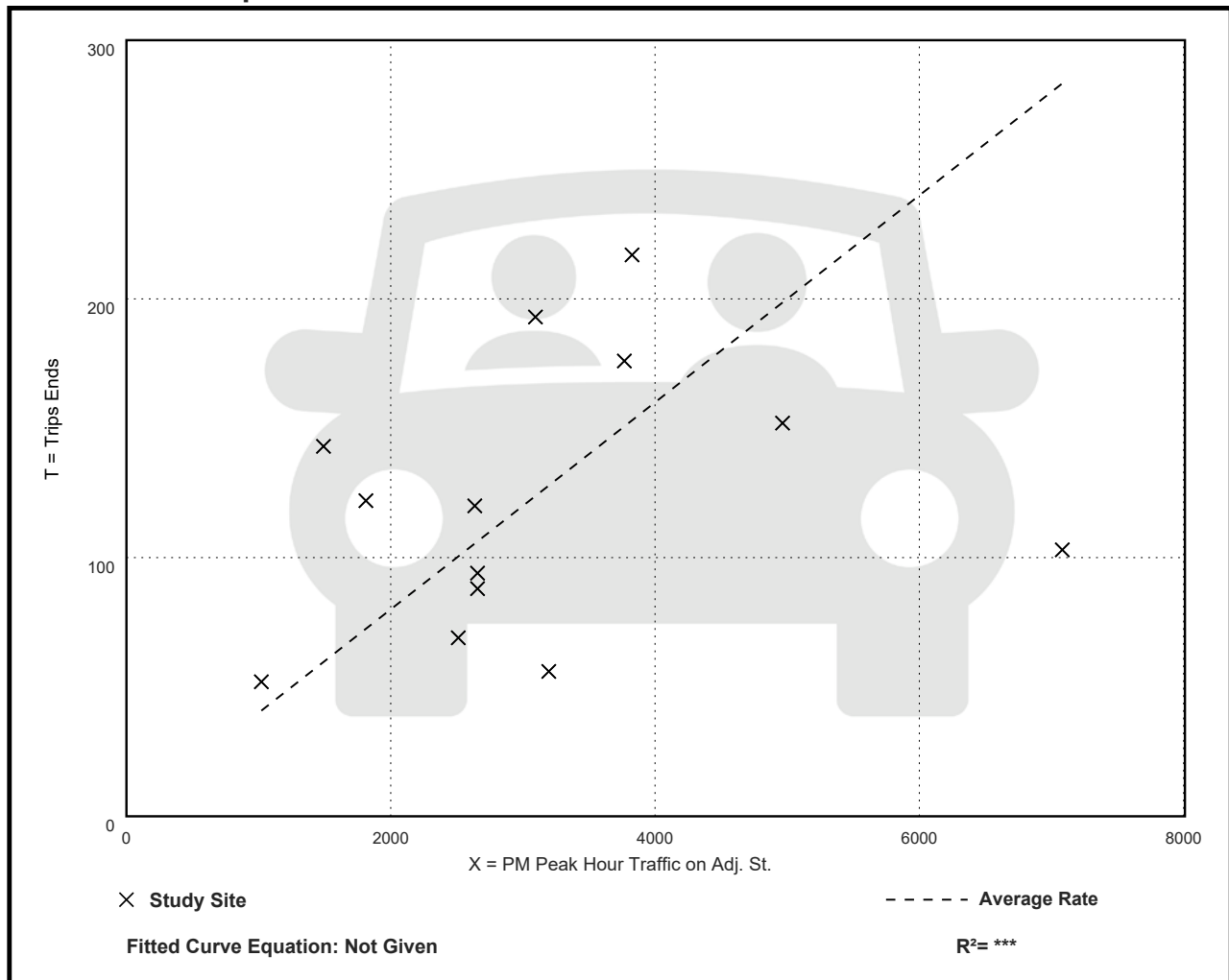
Avg. PM Peak Hour Traffic on Adj. St.: 3132

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per PM Peak Hour Traffic on Adj. St.

Average Rate	Range of Rates	Standard Deviation
0.04	0.01 - 0.10	0.02

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Employees
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 12

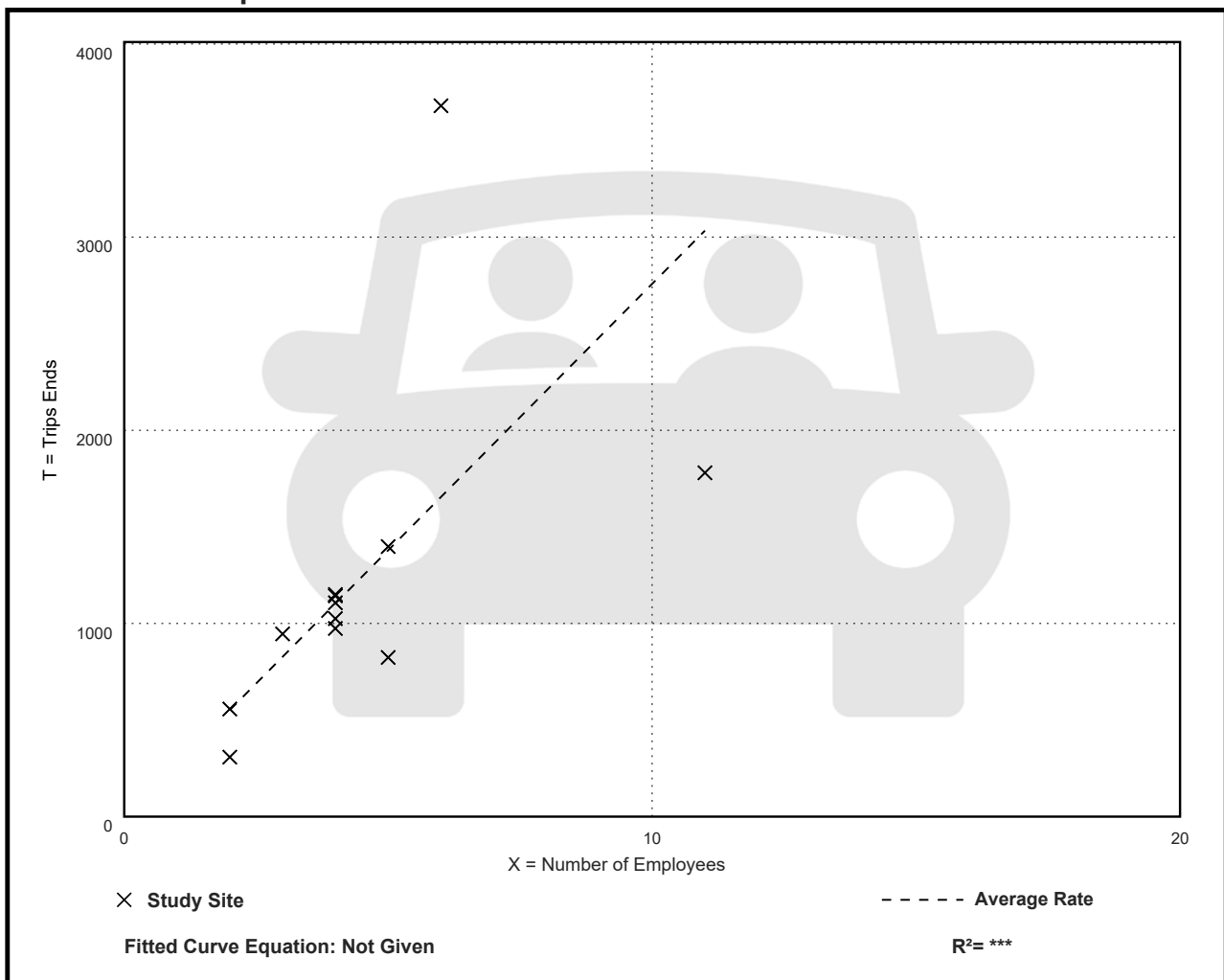
Avg. Num. of Employees: 5

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
275.78	154.00 - 613.33	137.01

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 12

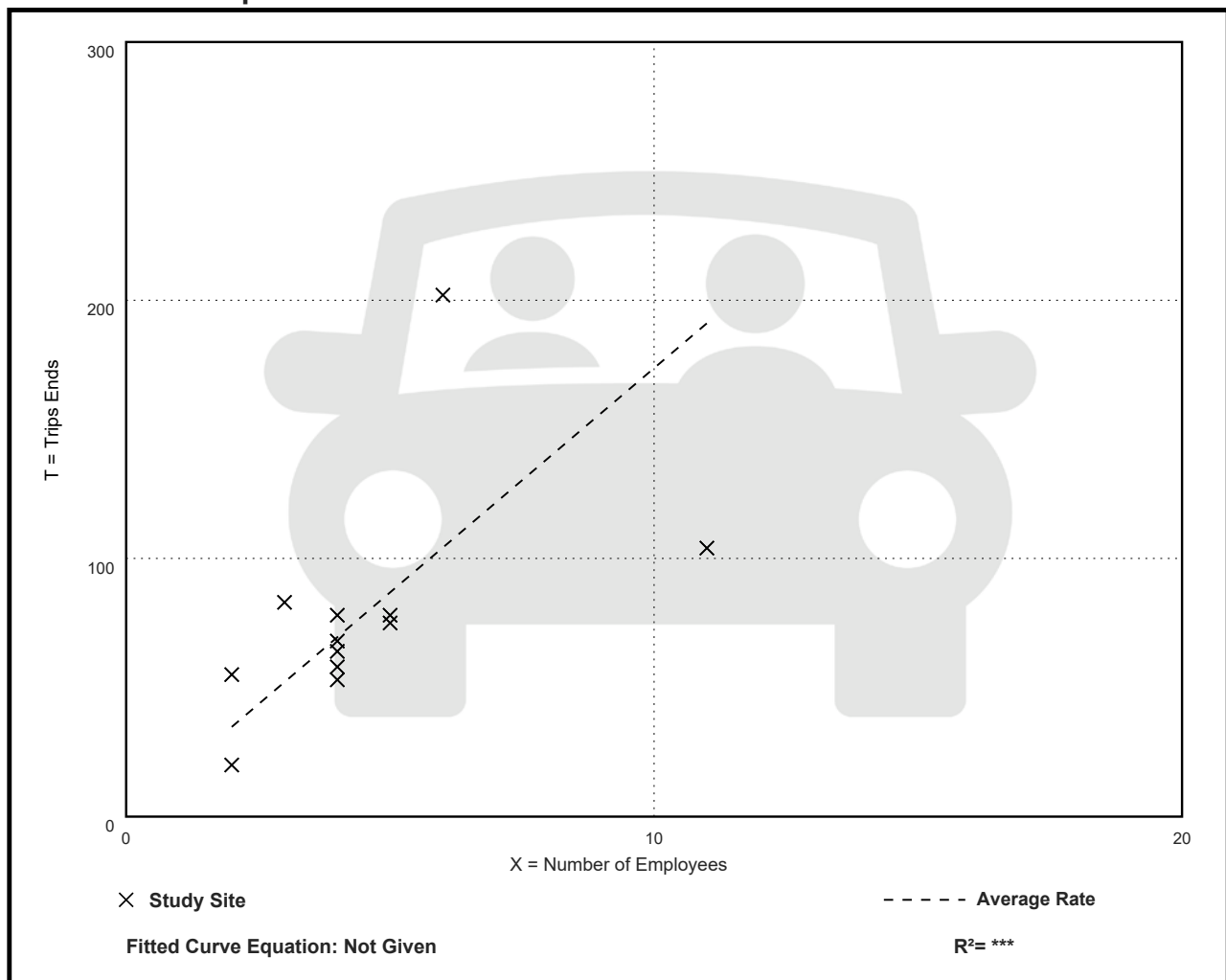
Avg. Num. of Employees: 5

Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
17.37	9.45 - 33.67	7.90

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 12

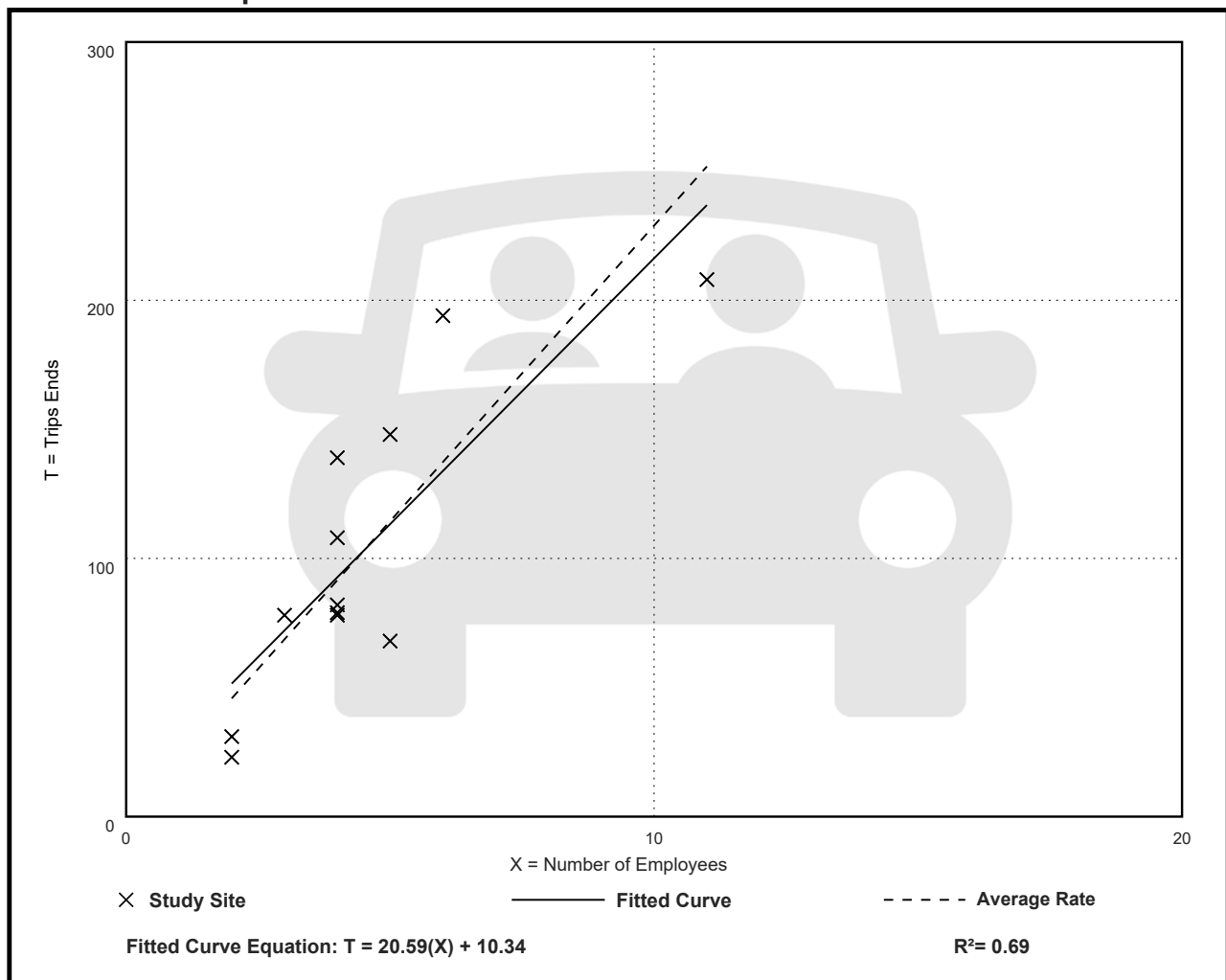
Avg. Num. of Employees: 5

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
22.89	11.50 - 34.75	7.11

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Employees

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 13

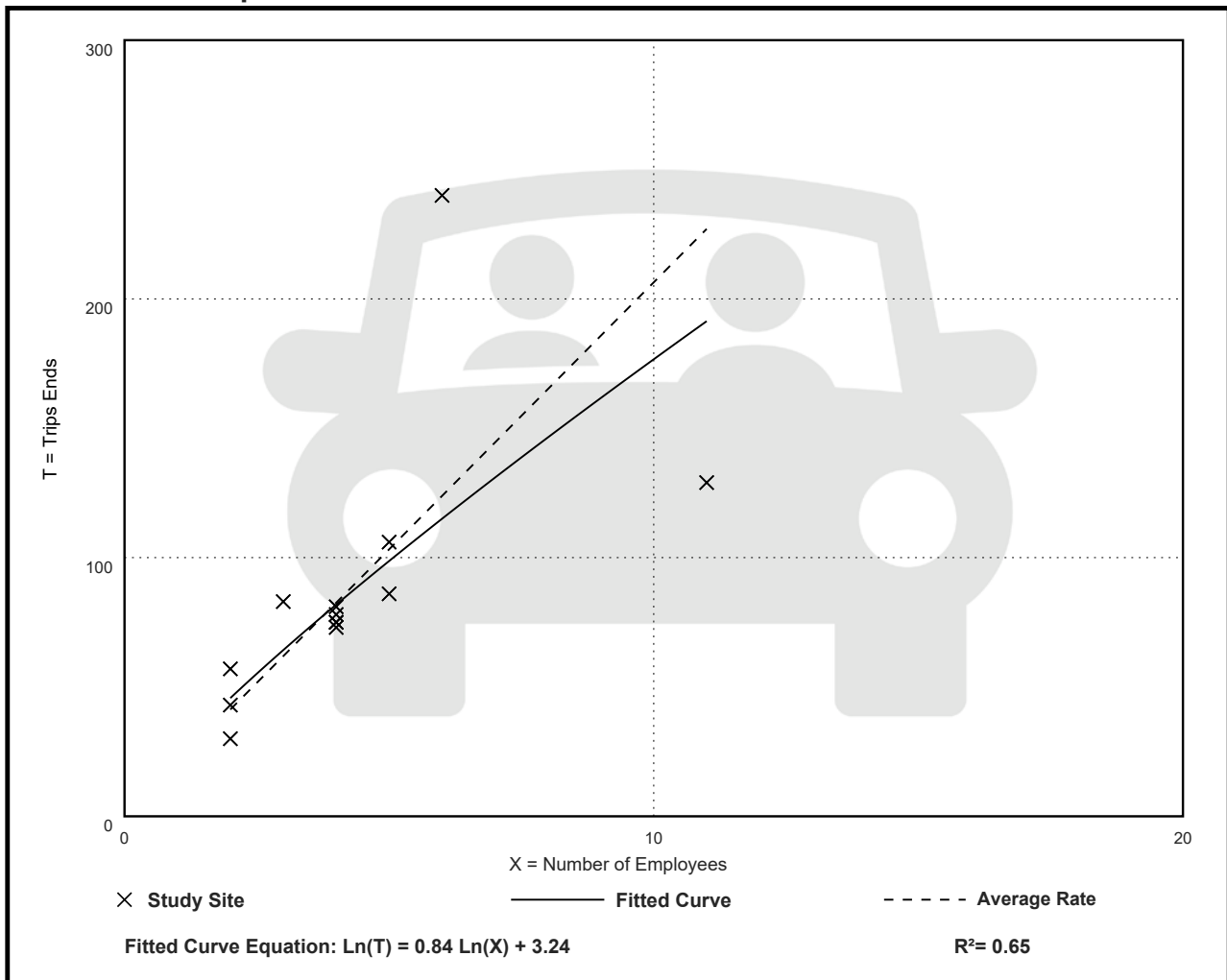
Avg. Num. of Employees: 4

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
20.64	11.73 - 40.00	8.32

Data Plot and Equation



Gasoline/Service Station (944)

Vehicle Trip Ends vs: Employees

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 13

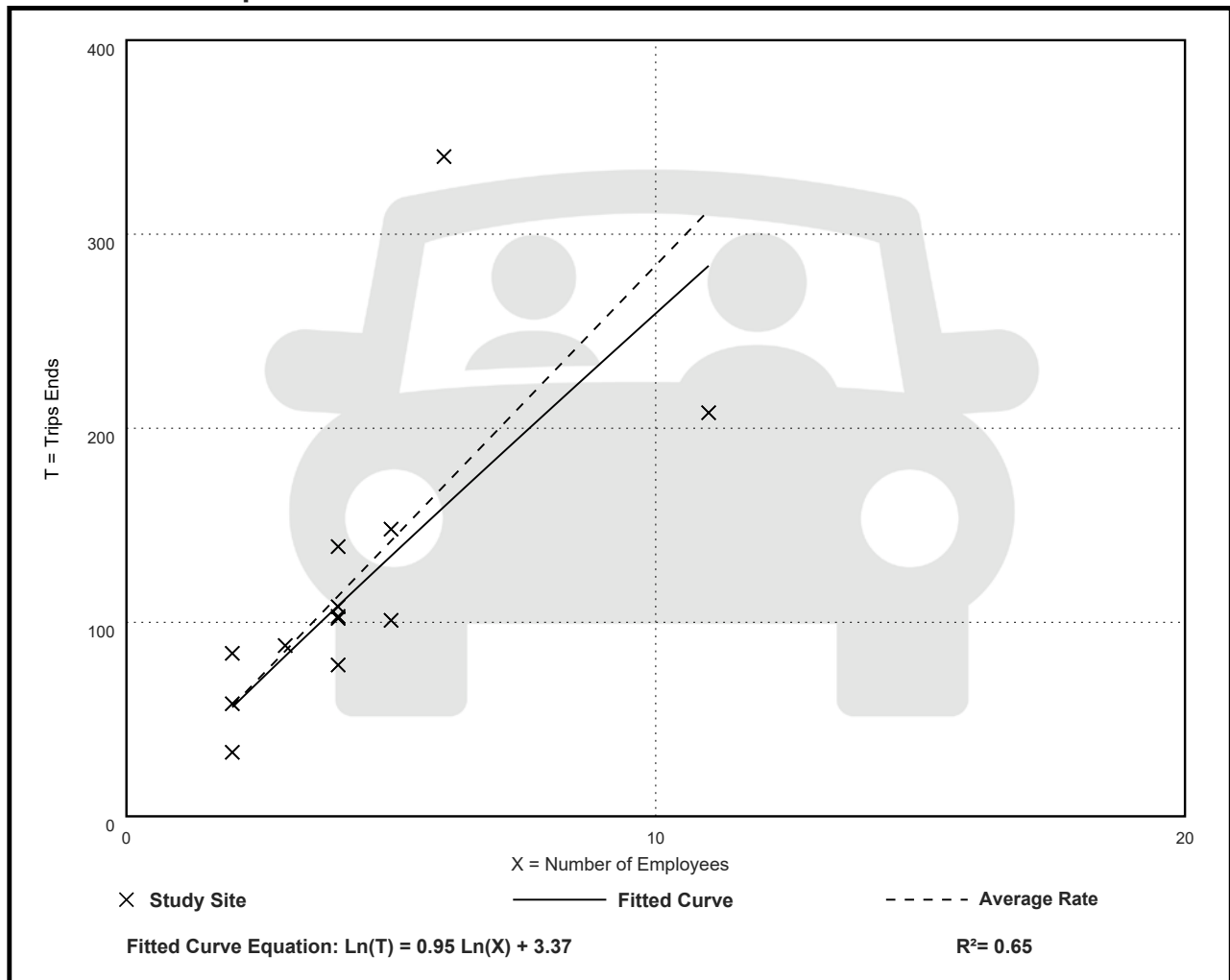
Avg. Num. of Employees: 4

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
28.39	16.50 - 56.67	11.91

Data Plot and Equation



Land Use: 950

Truck Stop

Description

A truck stop is a facility located adjacent to an interstate highway interchange that provides commercial vehicle fueling, space and supplies for self-service vehicle maintenance, and other services specific to the needs of truckers (e.g., showers, on-site truck parking area). The facility typically contains a convenience store, restroom facilities, and one or more restaurants (either fast-food or high-turnover sit-down). Gasoline/service station (Land Use 944) and convenience store/gas station (Land Use 945) are related uses.

Additional Data

The trip generation data presented for this land use constitute commercial truck trips only.

The independent variable used in the data plots (vehicle fueling positions) refers to only the commercial fueling lanes at the truck stop.

The convenience store, restrooms, and restaurant(s) associated with a truck stop typically are also open to the general motoring public. The site often also includes vehicle fueling positions for the general motoring public. Additional information is needed in order to estimate non-truck vehicle trips generated by truck stops.

The truck trip generation rates per vehicle fueling position appear unreasonably high considering the length of time a trucker needs to fuel a vehicle. However, the detailed information provided in the data sources support the validity of the truck counts. It is apparent that not all trucks entering or exiting the truck stop are refueled. In those circumstances, the trucker could be using other services provided by the truck stop.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 2000s and the 2010s in Colorado, Florida, Tennessee, Vermont, and Virginia.

To assist in the future analysis of this land use, it is important that the number of gasoline and diesel pumps at the study site be reported. It is also important to collect additional information on the number of non-truck trips generated at these sites.

Source Numbers

721, 913, 920, 927

Truck Stop (950)

Truck Trip Ends vs: Vehicle Fueling Positions On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Vehicle Fueling Positions: 9

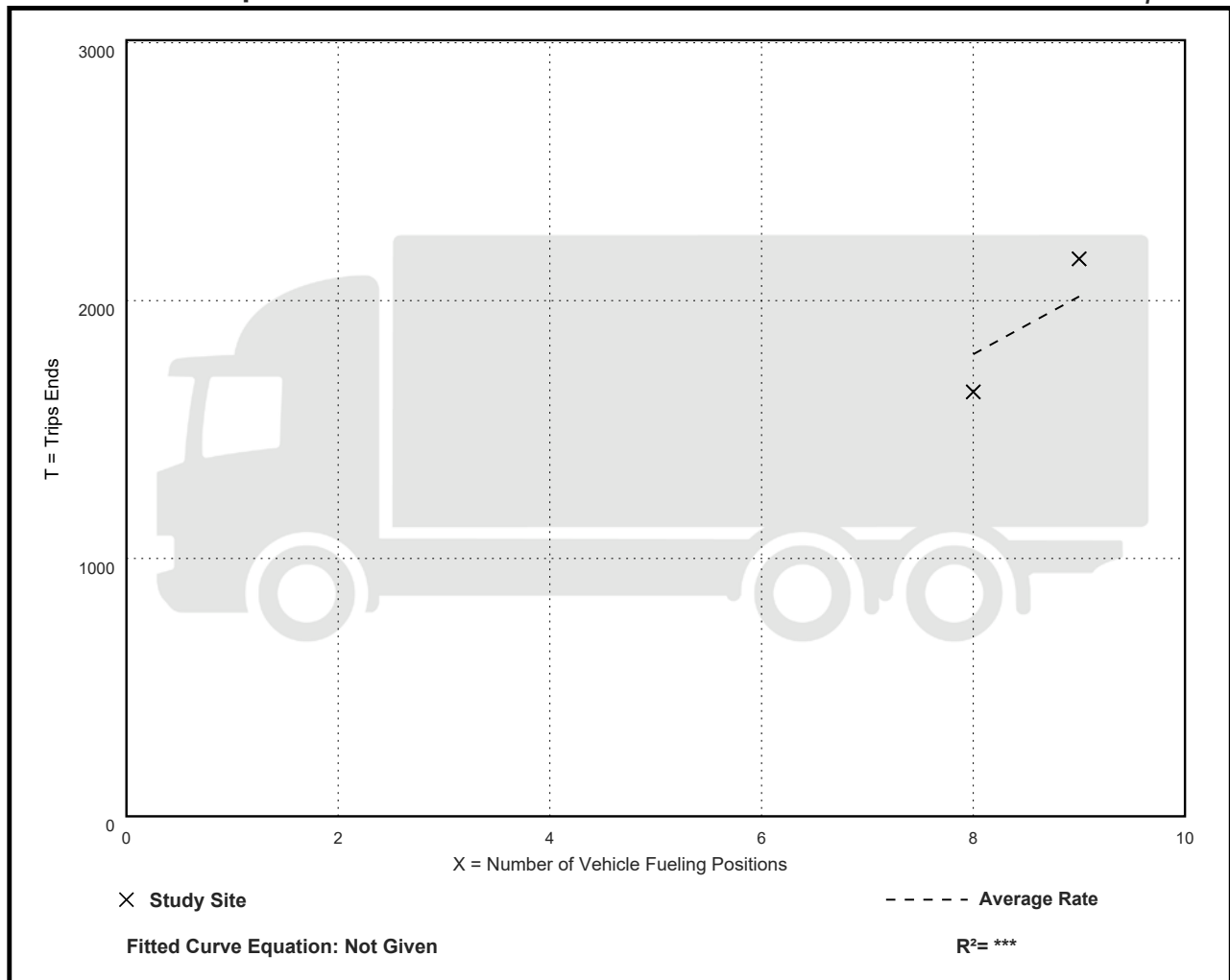
Directional Distribution: 50% entering, 50% exiting

Truck Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
224.00	205.75 - 240.22	***

Data Plot and Equation

Caution – Small Sample Size



Truck Stop (950)

Truck Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 4

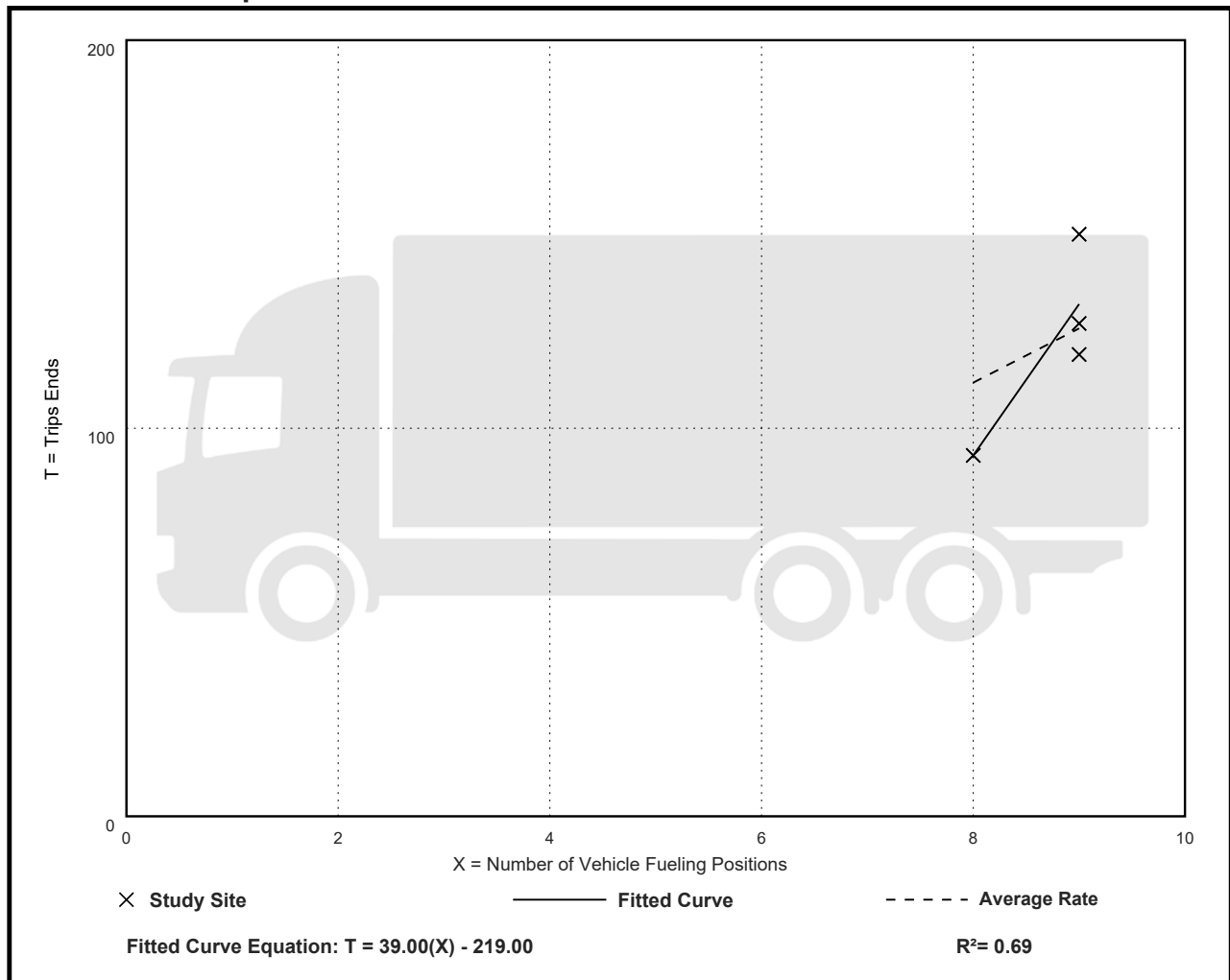
Avg. Num. of Vehicle Fueling Positions: 9

Directional Distribution: 49% entering, 51% exiting

Truck Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
13.97	11.63 - 16.67	2.09

Data Plot and Equation



Truck Stop (950)

Truck Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 7

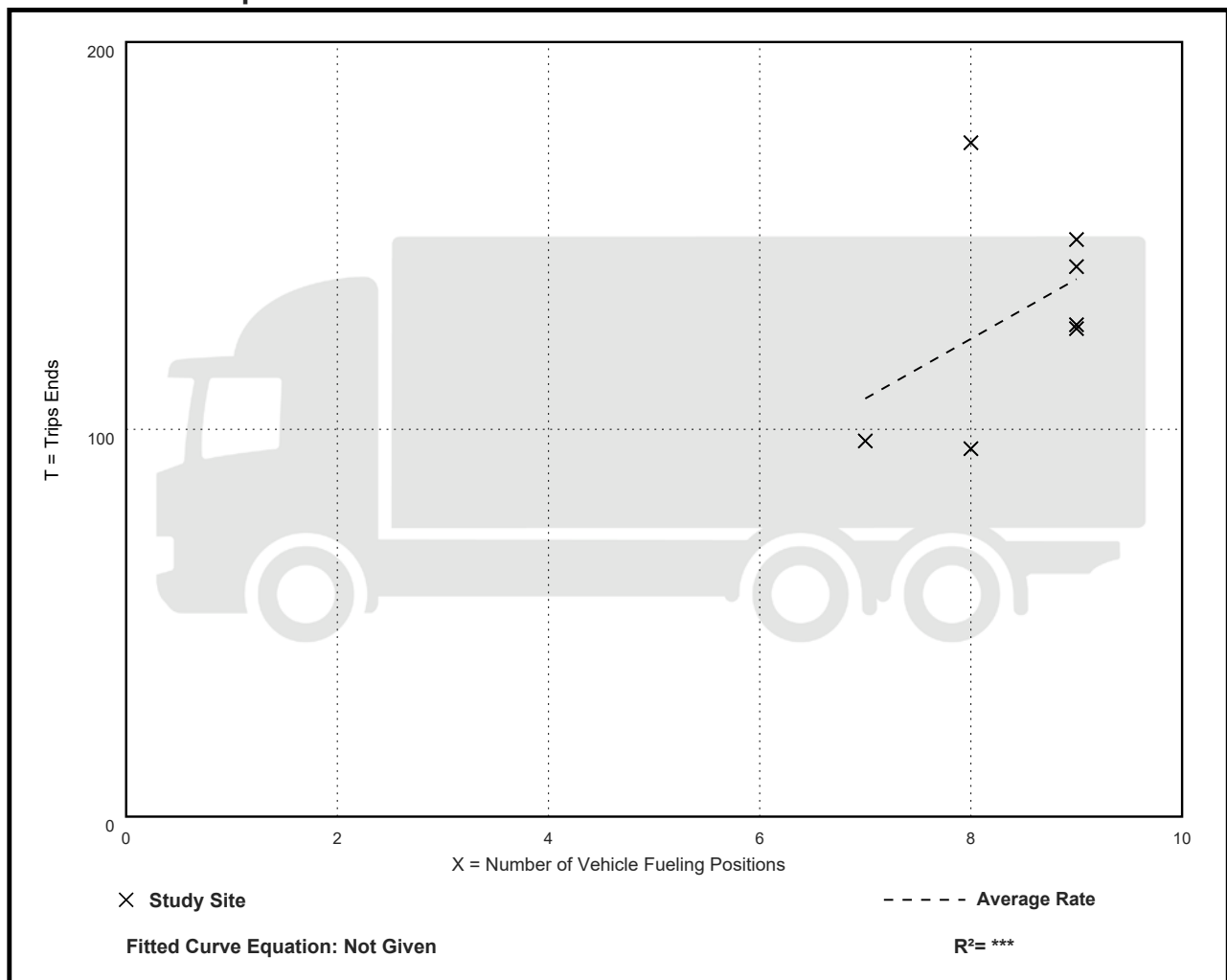
Avg. Num. of Vehicle Fueling Positions: 8

Directional Distribution: 53% entering, 47% exiting

Truck Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
15.42	11.88 - 21.75	3.10

Data Plot and Equation



Truck Stop (950)

Truck Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 4

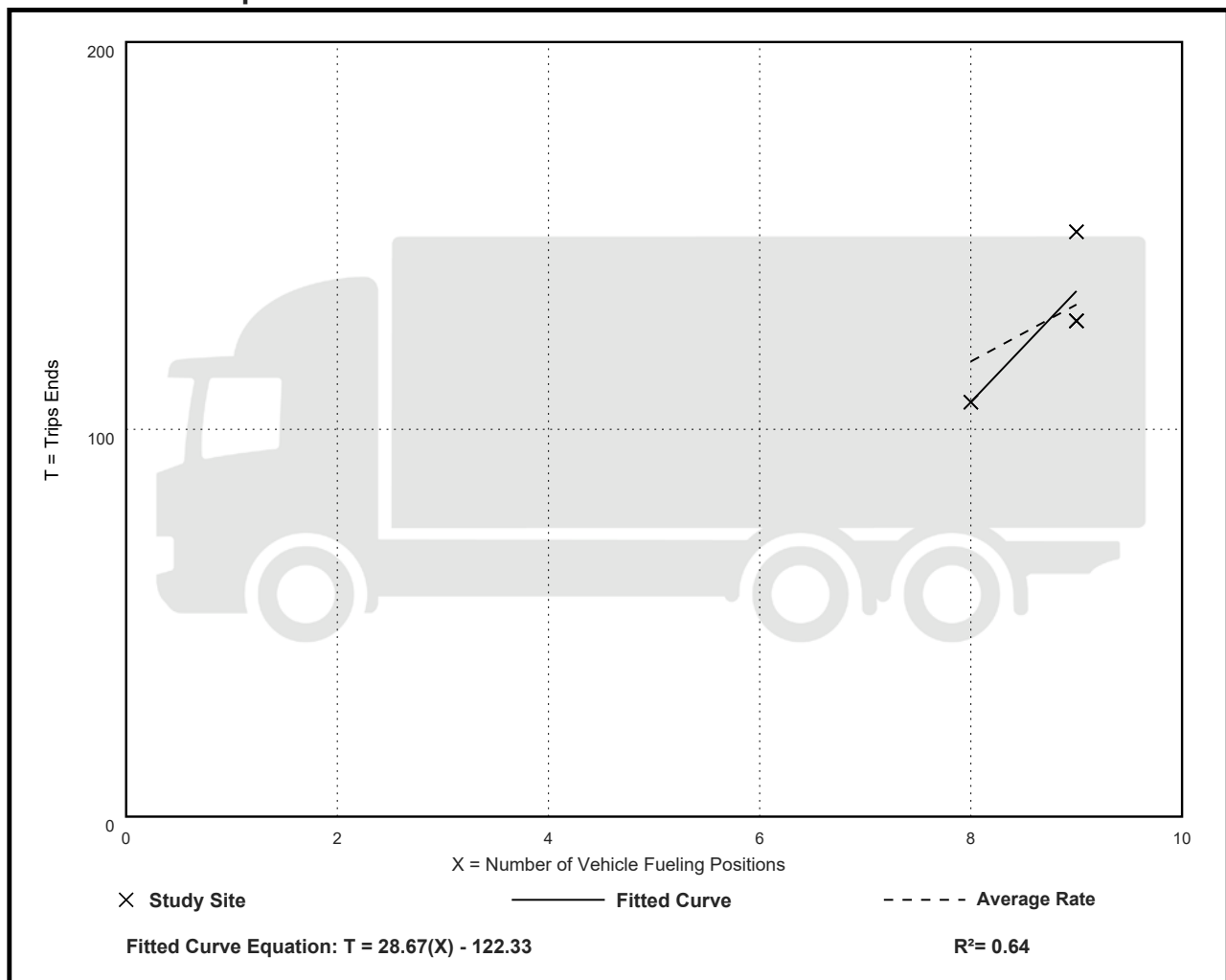
Avg. Num. of Vehicle Fueling Positions: 9

Directional Distribution: 51% entering, 49% exiting

Truck Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
14.69	13.38 - 16.78	1.47

Data Plot and Equation



Truck Stop (950)

Truck Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 4

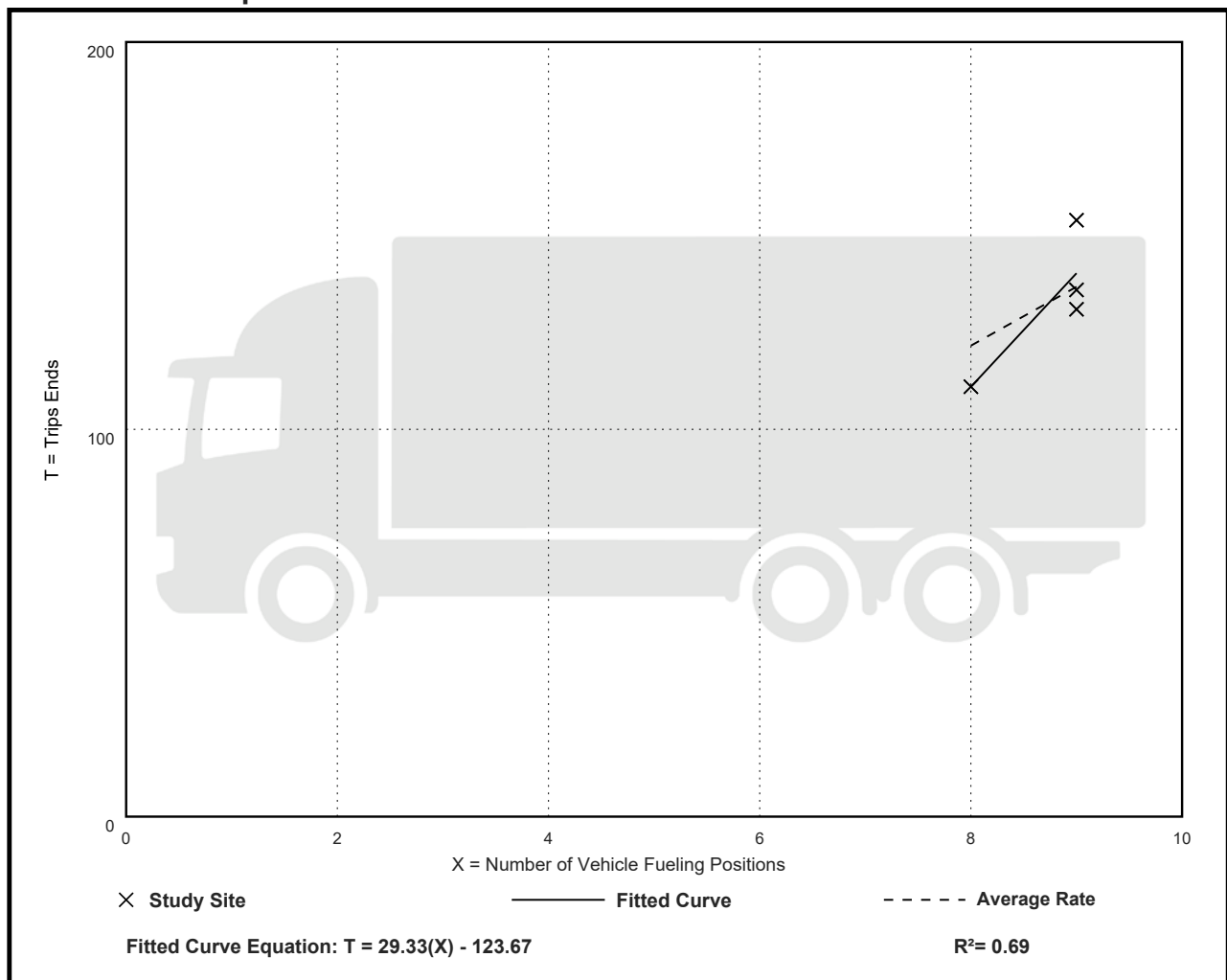
Avg. Num. of Vehicle Fueling Positions: 9

Directional Distribution: 50% entering, 50% exiting

Truck Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
15.20	13.88 - 17.11	1.39

Data Plot and Equation



‰ ‰ ∇ ∇ ∇ Capacity Analysis Output Sheets

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...\W DW Unser and Los Volcanes

Scenario 1 Existing AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...\AM Existing Analysis.pdf

5/17/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	SB Left	0.690	35.3	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.006	15.4	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Thru	0.030	11.7	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.690

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	33	1203	163	466	794	119	317	128	31	78	41	232
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	301	41	117	199	30	79	32	8	20	10	58
Total Analysis Volume [veh/h]	33	1203	163	466	794	119	317	128	31	78	41	232
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	50	50	16	63	63	40	31	40	21	21
g / C, Green / Cycle	0.02	0.41	0.41	0.14	0.52	0.52	0.33	0.26	0.33	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.10	0.14	0.22	0.08	0.26	0.09	0.06	0.02	0.16
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1204	1692	1302	1795	1475
c, Capacity [veh/h]	42	2108	647	464	1844	803	467	436	427	312	256
d1, Uniform Delay [s]	58.17	26.99	23.02	51.74	17.67	14.85	34.37	36.47	28.41	41.92	48.61
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.14	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.34	1.13	0.94	27.64	0.74	0.39	2.25	0.19	0.08	0.07	5.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.57	0.25	1.00	0.43	0.15	0.68	0.36	0.18	0.13	0.91
d, Delay for Lane Group [s/veh]	70.51	28.12	23.95	79.38	18.41	15.23	36.62	36.66	28.48	41.99	53.89
Lane Group LOS	E	C	C	F	B	B	D	D	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.12	8.61	3.07	8.56	6.51	1.68	7.94	3.82	1.57	1.03	7.10
50th-Percentile Queue Length [ft/ln]	27.95	215.18	76.87	213.92	162.82	41.99	198.47	95.41	39.31	25.78	177.53
95th-Percentile Queue Length [veh/ln]	2.01	13.42	5.53	13.38	10.70	3.02	12.56	6.87	2.83	1.86	11.47
95th-Percentile Queue Length [ft/ln]	50.31	335.47	138.37	334.46	267.45	75.58	313.99	171.73	70.76	46.40	286.79

Movement, Approach, & Intersection Results

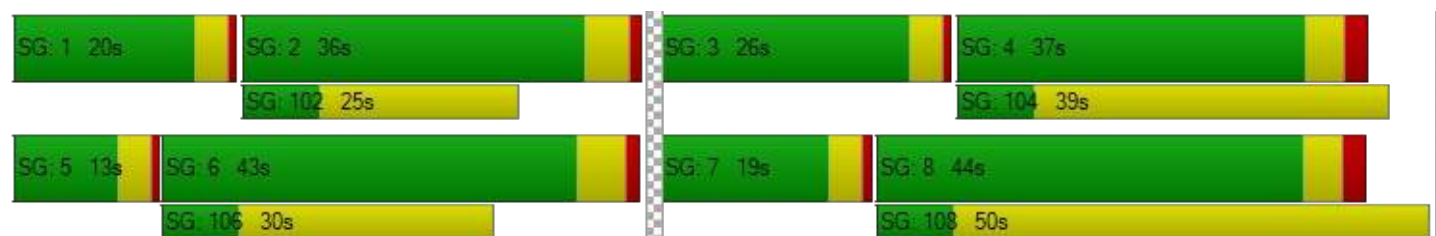
d_M, Delay for Movement [s/veh]	70.51	28.12	23.95	79.38	18.41	15.23	36.62	36.66	36.66	28.48	41.99	53.89
Movement LOS	E	C	C	F	B	B	D	D	D	C	D	D
d_A, Approach Delay [s/veh]	28.64			38.74			36.63			46.85		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	35.33											
Intersection LOS	D											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.092			3.551			2.240			2.754		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.329			2.756			2.350			2.327		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 15.4
Level Of Service: C
Volume to Capacity (v/c): 0.006

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1575	1187	7	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	419	316	2	0	1
Total Analysis Volume [veh/h]	0	1676	1263	7	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.45
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.44
d_A, Approach Delay [s/veh]	0.00		0.00		15.45	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	2	9	37	1	4	26	7
Total Analysis Volume [veh/h]	1	19	23	4	4	9	38	149	2	14	106	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...\W DW Unser and Los Volcanes

Scenario 4 Background 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...\PM Existing Analysis.pdf

5/17/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.665	30.3	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.009	21.9	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.009	13.0	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.665

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	27	1180	137	337	1338	168	184	60	27	202	104	259
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	295	34	84	335	42	46	15	7	51	26	65
Total Analysis Volume [veh/h]	27	1180	137	337	1338	168	184	60	27	202	104	259
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	52	52	14	63	63	40	24	40	23	23
g / C, Green / Cycle	0.02	0.44	0.44	0.12	0.53	0.53	0.33	0.20	0.33	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.09	0.10	0.38	0.11	0.16	0.05	0.14	0.06	0.18
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1123	1659	1452	1795	1475
c, Capacity [veh/h]	34	2220	682	390	1861	811	415	329	514	346	284
d1, Uniform Delay [s]	58.52	24.85	20.93	52.12	21.60	15.06	30.60	40.67	30.40	41.51	47.44
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.22	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.71	0.92	0.66	2.32	2.46	0.58	0.28	0.16	0.99	0.18	5.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.53	0.20	0.86	0.72	0.21	0.44	0.26	0.39	0.30	0.91
d, Delay for Lane Group [s/veh]	74.24	25.77	21.59	54.44	24.06	15.64	30.88	40.83	31.40	41.69	52.54
Lane Group LOS	E	C	C	D	C	B	C	D	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	7.99	2.41	4.98	13.76	2.43	4.04	2.18	4.52	2.64	7.88
50th-Percentile Queue Length [ft/ln]	23.67	199.76	60.35	124.40	344.01	60.72	100.89	54.54	112.89	66.11	196.98
95th-Percentile Queue Length [veh/ln]	1.70	12.63	4.35	8.63	19.84	4.37	7.26	3.93	8.00	4.76	12.48
95th-Percentile Queue Length [ft/ln]	42.61	315.66	108.63	215.86	496.10	109.30	181.60	98.16	200.02	119.00	312.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.24	25.77	21.59	54.44	24.06	15.64	30.88	40.83	40.83	31.40	41.69	52.54
Movement LOS	E	C	C	D	C	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	26.32			28.85			34.07			42.98		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	30.34											
Intersection LOS	C											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.192			3.598			2.211			2.796		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.299			3.154			2.013			2.725		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Northbound		Unser Blvd		Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Northbound		Unser Blvd		Eastbound	
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1305	1740	8	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	347	463	2	0	1
Total Analysis Volume [veh/h]	0	1388	1851	9	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.93
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.71
d_A, Approach Delay [s/veh]	0.00		0.00		21.93	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	5	20	10	11	27	10	146	4	38	199	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	6	3	3	8	3	41	1	11	55	3
Total Analysis Volume [veh/h]	4	6	22	11	12	30	11	162	4	42	221	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...\W DW Unser and Los Volcanes

Scenario 3 Background 2026 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...\AM Background Analysis.pdf

5/17/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	SB Left	0.702	39.0	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.006	15.7	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Thru	0.031	11.8	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	34	1227	166	475	810	123	323	131	32	80	42	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	307	42	119	203	31	81	33	8	20	11	60
Total Analysis Volume [veh/h]	34	1227	166	475	810	123	323	131	32	80	42	239
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	49	49	16	62	62	40	31	40	21	21
g / C, Green / Cycle	0.03	0.41	0.41	0.14	0.52	0.52	0.34	0.26	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.11	0.14	0.23	0.08	0.27	0.10	0.06	0.02	0.16
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1196	1691	1298	1795	1475
c, Capacity [veh/h]	43	2084	640	464	1825	795	470	443	430	320	263
d1, Uniform Delay [s]	58.12	27.60	23.44	51.74	18.18	15.23	34.15	36.18	28.07	41.47	48.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.15	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.91	1.24	0.99	53.04	0.79	0.41	2.58	0.19	0.08	0.07	5.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.59	0.26	1.02	0.44	0.15	0.69	0.37	0.19	0.13	0.91
d, Delay for Lane Group [s/veh]	70.03	28.83	24.42	104.77	18.97	15.65	36.73	36.37	28.14	41.54	53.63
Lane Group LOS	E	C	C	F	B	B	D	D	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.15	8.93	3.17	10.19	6.79	1.77	8.10	3.90	1.60	1.05	7.31
50th-Percentile Queue Length [ft/ln]	28.66	223.24	79.27	254.84	169.63	44.17	202.57	97.47	40.03	26.25	182.76
95th-Percentile Queue Length [veh/ln]	2.06	13.83	5.71	15.59	11.06	3.18	12.77	7.02	2.88	1.89	11.74
95th-Percentile Queue Length [ft/ln]	51.60	345.76	142.69	389.85	276.42	79.51	319.28	175.45	72.06	47.25	293.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.03	28.83	24.42	104.77	18.97	15.65	36.73	36.37	36.37	28.14	41.54	53.63
Movement LOS	E	C	C	F	B	B	D	D	D	C	D	D
d_A, Approach Delay [s/veh]	29.30			47.63			36.61			46.57		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	38.97											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.099			3.571			2.246			2.759		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.344			2.780			2.366			2.343		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.006

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1607	1211	7	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	427	322	2	0	1
Total Analysis Volume [veh/h]	0	1710	1288	7	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.67
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.44
d_A, Approach Delay [s/veh]	0.00		0.00		15.67	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	17	21	4	4	8	35	137	2	13	97	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	2	10	38	1	4	27	7
Total Analysis Volume [veh/h]	1	19	23	4	4	9	39	152	2	14	108	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...W DW Unser and Los Volcanes

Scenario 4 Background 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...D.4 PM Background Analysis.pdf

6/4/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.665	30.3	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.009	21.9	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.009	13.0	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.665

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	27	1180	137	337	1338	168	184	60	27	202	104	259
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	295	34	84	335	42	46	15	7	51	26	65
Total Analysis Volume [veh/h]	27	1180	137	337	1338	168	184	60	27	202	104	259
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	52	52	14	63	63	40	24	40	23	23
g / C, Green / Cycle	0.02	0.44	0.44	0.12	0.53	0.53	0.33	0.20	0.33	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.09	0.10	0.38	0.11	0.16	0.05	0.14	0.06	0.18
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1123	1659	1452	1795	1475
c, Capacity [veh/h]	34	2220	682	390	1861	811	415	329	514	346	284
d1, Uniform Delay [s]	58.52	24.85	20.93	52.12	21.60	15.06	30.60	40.67	30.40	41.51	47.44
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.22	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.71	0.92	0.66	2.32	2.46	0.58	0.28	0.16	0.99	0.18	5.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.53	0.20	0.86	0.72	0.21	0.44	0.26	0.39	0.30	0.91
d, Delay for Lane Group [s/veh]	74.24	25.77	21.59	54.44	24.06	15.64	30.88	40.83	31.40	41.69	52.54
Lane Group LOS	E	C	C	D	C	B	C	D	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	7.99	2.41	4.98	13.76	2.43	4.04	2.18	4.52	2.64	7.88
50th-Percentile Queue Length [ft/ln]	23.67	199.76	60.35	124.40	344.01	60.72	100.89	54.54	112.89	66.11	196.98
95th-Percentile Queue Length [veh/ln]	1.70	12.63	4.35	8.63	19.84	4.37	7.26	3.93	8.00	4.76	12.48
95th-Percentile Queue Length [ft/ln]	42.61	315.66	108.63	215.86	496.10	109.30	181.60	98.16	200.02	119.00	312.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.24	25.77	21.59	54.44	24.06	15.64	30.88	40.83	40.83	31.40	41.69	52.54
Movement LOS	E	C	C	D	C	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	26.32			28.85			34.07			42.98		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	30.34											
Intersection LOS	C											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.192			3.598			2.211			2.796		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.299			3.154			2.013			2.725		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1305	1740	8	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	347	463	2	0	1
Total Analysis Volume [veh/h]	0	1388	1851	9	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.93
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.71
d_A, Approach Delay [s/veh]	0.00		0.00		21.93	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	5	20	10	11	27	10	146	4	38	199	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	6	3	3	8	3	41	1	11	55	3
Total Analysis Volume [veh/h]	4	6	22	11	12	30	11	162	4	42	221	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...IW DW Unser and Los Volcanes

Scenario 7 Build Out 2026 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...IAM Full Build Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	SB Left	0.702	39.5	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.058	16.7	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Thru	0.032	12.0	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.011	16.0	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.077	14.1	B
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.018	8.9	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	1	19	7	4	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	11	32	0	5	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	34	1227	166	475	828	135	374	138	41	88	42	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	307	42	119	207	34	94	35	10	22	11	60
Total Analysis Volume [veh/h]	34	1227	166	475	828	135	374	138	41	88	42	239
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	49	49	16	62	62	40	31	40	21	21
g / C, Green / Cycle	0.03	0.41	0.41	0.14	0.52	0.52	0.34	0.26	0.34	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.11	0.14	0.23	0.09	0.31	0.11	0.07	0.02	0.16
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1196	1682	1290	1795	1475
c, Capacity [veh/h]	43	2083	640	464	1825	795	470	434	417	320	263
d1, Uniform Delay [s]	58.12	27.60	23.44	51.74	18.31	15.36	36.73	36.98	28.30	41.47	48.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.25	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.91	1.24	0.99	53.04	0.82	0.46	7.32	0.23	0.09	0.07	5.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.59	0.26	1.02	0.45	0.17	0.80	0.41	0.21	0.13	0.91
d, Delay for Lane Group [s/veh]	70.03	28.83	24.42	104.77	19.13	15.83	44.06	37.21	28.40	41.53	53.62
Lane Group LOS	E	C	C	F	B	B	D	D	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.15	8.93	3.17	10.19	6.98	1.96	10.34	4.36	1.77	1.05	7.31
50th-Percentile Queue Length [ft/ln]	28.66	223.25	79.28	254.84	174.62	48.92	258.56	108.95	44.26	26.25	182.74
95th-Percentile Queue Length [veh/ln]	2.06	13.83	5.71	15.59	11.32	3.52	15.62	7.78	3.19	1.89	11.74
95th-Percentile Queue Length [ft/ln]	51.60	345.77	142.70	389.85	282.98	88.06	390.41	194.55	79.67	47.25	293.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.03	28.83	24.42	104.77	19.13	15.83	44.06	37.21	37.21	28.40	41.53	53.62
Movement LOS	E	C	C	F	B	B	D	D	D	C	D	D
d_A, Approach Delay [s/veh]	29.30			47.11			41.84			46.23		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	39.54											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.105			3.659			2.276			2.763		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.344			2.805			2.477			2.357		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.058

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	0	22	4	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	-11	19	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	1596	1252	11	0	19
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	424	333	3	0	5
Total Analysis Volume [veh/h]	49	1698	1332	12	0	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.02	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	12.24	0.00	0.00	0.00	0.00	16.66
Movement LOS	B	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.30	0.00	0.00	0.00	0.00	0.18
95th-Percentile Queue Length [ft/ln]	7.38	0.00	0.00	0.00	0.00	4.61
d_A, Approach Delay [s/veh]	0.36		0.00		16.66	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 12.0
Level Of Service: B
Volume to Capacity (v/c): 0.032

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	17	21	4	4	15	43	137	2	13	97	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	4	12	38	1	4	27	7
Total Analysis Volume [veh/h]	1	19	23	4	4	17	48	152	2	14	108	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	479	0	0	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	30	0	4	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	37	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	489	4	12	269
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	122	1	3	67
Total Analysis Volume [veh/h]	4	67	489	4	12	269
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	16.02	12.17	0.00	0.00	8.38	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.44	0.44	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	10.91	10.91	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	12.39		0.00		0.36	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1401	1194	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	22	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-27	32	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1429	1199	54	0	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	357	300	14	0	8
Total Analysis Volume [veh/h]	0	1429	1199	54	0	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.14
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.28
d_A, Approach Delay [s/veh]	0.00		0.00		14.14	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	7	8	0	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	0	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	7	8	2	7	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	1	2	13
Total Analysis Volume [veh/h]	17	7	8	2	7	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.87	8.55	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	8.78		5.87		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.87					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...IW DW Unser and Los Volcanes

Scenario 8 Build Out 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...PM Full Build Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.711	31.7	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.111	24.5	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.009	13.5	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.013	15.0	B
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.092	19.0	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.022	9.0	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	23	1	24	10	5	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	20	53	0	7	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	27	1180	137	337	1361	189	261	70	39	212	104	259
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	295	34	84	340	47	65	18	10	53	26	65
Total Analysis Volume [veh/h]	27	1180	137	337	1361	189	261	70	39	212	104	259
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	14	35	0	31	52	0	20	43	0	21	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	42	42	13	52	52	41	26	41	21	21
g / C, Green / Cycle	0.02	0.38	0.38	0.12	0.47	0.47	0.37	0.24	0.37	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.09	0.10	0.39	0.12	0.22	0.07	0.15	0.06	0.18
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1164	1646	1418	1795	1475
c, Capacity [veh/h]	34	1931	593	400	1670	727	488	392	562	349	287
d1, Uniform Delay [s]	53.68	27.61	23.25	47.50	24.88	17.43	26.05	34.19	24.63	37.88	43.29
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.06	0.04	0.38	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.64	1.46	0.91	1.91	4.68	0.87	0.54	0.14	1.46	0.18	4.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.61	0.23	0.84	0.81	0.26	0.53	0.28	0.38	0.30	0.90
d, Delay for Lane Group [s/veh]	69.33	29.07	24.16	49.41	29.56	18.30	26.60	34.33	26.09	38.06	47.82
Lane Group LOS	E	C	C	D	C	B	C	C	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.87	8.15	2.46	4.48	14.95	2.87	5.10	2.37	4.08	2.39	7.12
50th-Percentile Queue Length [ft/ln]	21.80	203.65	61.57	112.07	373.85	71.86	127.51	59.24	102.12	59.78	177.95
95th-Percentile Queue Length [veh/ln]	1.57	12.83	4.43	7.95	21.30	5.17	8.80	4.27	7.35	4.30	11.49
95th-Percentile Queue Length [ft/ln]	39.24	320.67	110.83	198.87	532.40	129.35	220.10	106.63	183.81	107.61	287.34

Movement, Approach, & Intersection Results

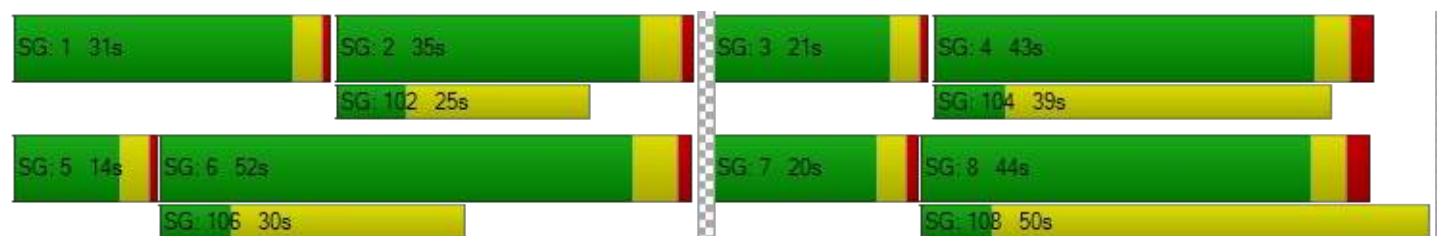
d_M, Delay for Movement [s/veh]	69.33	29.07	24.16	49.41	29.56	18.30	26.60	34.33	34.33	26.09	38.06	47.82
Movement LOS	E	C	C	D	C	B	C	C	C	C	D	D
d_A, Approach Delay [s/veh]	29.38			31.97			28.87			38.04		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	31.70											
Intersection LOS	C											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			44.56			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	3.208			3.640			2.253			2.797		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	545			845			682			700		
d_b, Bicycle Delay [s]	29.10			18.34			23.90			23.25		
I_b,int, Bicycle LOS Score for Intersection	2.299			3.191			2.177			2.741		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 24.5
Level Of Service: C
Volume to Capacity (v/c): 0.111

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	48	0	28	5	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	-14	10	0	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1291	1778	13	0	23
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	343	473	3	0	6
Total Analysis Volume [veh/h]	62	1373	1891	14	0	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.01	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	17.88	0.00	0.00	0.00	0.00	24.50
Movement LOS	C	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.66	0.00	0.00	0.00	0.00	0.37
95th-Percentile Queue Length [ft/ln]	16.56	0.00	0.00	0.00	0.00	9.31
d_A, Approach Delay [s/veh]	0.82		0.00		24.50	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	10	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	5	20	10	11	37	20	146	4	38	199	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	6	3	3	10	6	41	1	11	55	3
Total Analysis Volume [veh/h]	4	6	22	11	12	41	22	162	4	42	221	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	269	0	0	381
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	39	0	5	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	20	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	99	274	5	21	389
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	25	69	1	5	97
Total Analysis Volume [veh/h]	5	99	274	5	21	389
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	14.98	10.54	0.00	0.00	7.83	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	12.45	12.45	0.00	0.00	0.89	0.89
d_A, Approach Delay [s/veh]	10.76		0.00		0.40	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.092

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1317	1714	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	28	0	23
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-26	33	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1343	1732	61	0	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	336	433	15	0	7
Total Analysis Volume [veh/h]	0	1343	1732	61	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	19.01
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	7.57
d_A, Approach Delay [s/veh]	0.00		0.00		19.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3Control Type:
Analysis Method:
Analysis Period:Two-way stop
HCM 7th Edition
1 hourDelay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):9.0
A
0.022**Intersection Setup**

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	8	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	10	10	0	0	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	3	0	0	0	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	10	10	2	8	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	3	1	2	17
Total Analysis Volume [veh/h]	21	10	10	2	8	67
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.97	8.62	7.37	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.49	2.49	0.42	0.42	0.00	0.00
d_A, Approach Delay [s/veh]	8.86		6.14		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.95					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...W DW Unser and Los Volcanes

Scenario 5 Horizon Background 2036 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...AM Horizon Background Analysis.pdf

5/17/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	SB Left	0.764	64.3	E
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.007	16.8	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Thru	0.036	12.2	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes RdControl Type:
Analysis Method:
Analysis Period:Signalized
HCM 7th Edition
1 hourDelay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):64.3
E
0.764**Intersection Setup**

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	37	1350	183	523	891	142	355	144	36	88	46	274
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	338	46	131	223	36	89	36	9	22	12	69
Total Analysis Volume [veh/h]	37	1350	183	523	891	142	355	144	36	88	46	274
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	46	46	16	59	59	43	34	43	24	24
g / C, Green / Cycle	0.03	0.39	0.39	0.14	0.49	0.49	0.36	0.28	0.36	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.12	0.15	0.25	0.09	0.31	0.11	0.07	0.03	0.19
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1160	1690	1282	1795	1475
c, Capacity [veh/h]	48	1964	603	464	1731	754	484	476	445	362	297
d1, Uniform Delay [s]	57.84	30.81	25.64	51.73	20.86	17.18	33.21	34.62	26.36	39.22	46.94
k, delay calibration	0.04	0.50	0.50	0.05	0.50	0.50	0.24	0.04	0.04	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.40	2.01	1.30	232.14	1.10	0.55	4.78	0.18	0.08	0.06	9.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.69	0.30	1.13	0.51	0.19	0.73	0.38	0.20	0.13	0.92
d, Delay for Lane Group [s/veh]	67.23	32.81	26.94	283.87	21.96	17.73	37.99	34.81	26.44	39.28	56.05
Lane Group LOS	E	C	C	F	C	B	D	C	C	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.22	10.72	3.72	21.74	8.25	2.21	9.05	4.21	1.70	1.11	8.66
50th-Percentile Queue Length [ft/ln]	30.42	268.01	93.07	543.44	206.29	55.33	226.17	105.37	42.42	27.87	216.43
95th-Percentile Queue Length [veh/ln]	2.19	16.09	6.70	31.09	12.96	3.98	13.98	7.58	3.05	2.01	13.48
95th-Percentile Queue Length [ft/ln]	54.76	402.25	167.53	777.36	324.06	99.59	349.49	189.55	76.36	50.16	337.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.23	32.81	26.94	283.87	21.96	17.73	37.99	34.81	34.81	26.44	39.28	56.05
Movement LOS	E	C	C	F	C	B	D	C	C	C	D	E
d_A, Approach Delay [s/veh]	32.94			109.60			36.92			47.78		
Approach LOS	C			F			D			D		
d_I, Intersection Delay [s/veh]	64.27											
Intersection LOS	E											
Intersection V/C	0.764											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.49			49.49			49.49			49.49		
I_p,int, Pedestrian LOS Score for Intersection	3.131			3.678			2.274			2.788		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	32.99			28.35			32.62			27.66		
I_b,int, Bicycle LOS Score for Intersection	2.423			2.902			2.447			2.421		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 1 hour

Delay (sec / veh): 16.8
 Level Of Service: C
 Volume to Capacity (v/c): 0.007

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1768	1332	8	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	470	354	2	0	1
Total Analysis Volume [veh/h]	0	1881	1417	9	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	16.85
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.49
d_A, Approach Delay [s/veh]	0.00		0.00		16.85	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0100	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	19	23	4	4	9	39	151	2	14	107	26
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	3	11	42	1	4	30	7
Total Analysis Volume [veh/h]	1	21	26	4	4	10	43	168	2	16	119	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.03	0.01	0.01	0.01	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	11.96	12.20	9.36	12.19	11.87	8.98	7.50	0.00	0.00	7.52	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/l/n]	0.20	0.20	0.20	0.08	0.08	0.08	0.07	0.07	0.07	0.02	0.02	0.02
95th-Percentile Queue Length [ft/l/n]	5.08	5.08	5.08	1.92	1.92	1.92	1.67	1.67	1.67	0.61	0.61	0.61
d_A, Approach Delay [s/veh]	10.68			10.41			1.52			0.72		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.59											
Intersection LOS	B											

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...\W DW Unser and Los Volcanes

Scenario 6 Horizon Background 2036 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...\PM Horizon Background Analysis.pdf

5/17/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.738	34.8	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.011	24.7	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	SB Left	0.025	13.7	B

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	30	1298	151	371	1472	194	202	66	30	222	114	299
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	325	38	93	368	49	51	17	8	56	29	75
Total Analysis Volume [veh/h]	30	1298	151	371	1472	194	202	66	30	222	114	299
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	47	47	15	59	59	44	27	44	26	26
g / C, Green / Cycle	0.02	0.39	0.39	0.13	0.49	0.49	0.36	0.23	0.36	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.10	0.11	0.42	0.13	0.19	0.06	0.15	0.06	0.20
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1085	1658	1437	1795	1475
c, Capacity [veh/h]	38	2006	616	423	1739	757	437	374	551	394	324
d1, Uniform Delay [s]	58.35	29.58	24.40	51.57	26.51	17.69	28.13	38.20	27.93	39.02	45.83
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.29	0.04	0.09
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.83	1.64	0.95	2.42	5.60	0.82	0.31	0.13	1.28	0.15	11.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.65	0.25	0.88	0.85	0.26	0.46	0.26	0.40	0.29	0.92
d, Delay for Lane Group [s/veh]	72.18	31.22	25.34	53.99	32.10	18.51	28.44	38.33	29.21	39.17	57.38
Lane Group LOS	E	C	C	D	C	B	C	D	C	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.03	9.97	2.94	5.47	18.19	3.13	4.24	2.33	4.79	2.80	9.63
50th-Percentile Queue Length [ft/ln]	25.81	249.16	73.59	136.87	454.76	78.35	106.03	58.18	119.77	70.10	240.65
95th-Percentile Queue Length [veh/ln]	1.86	15.14	5.30	9.31	25.18	5.64	7.62	4.19	8.38	5.05	14.71
95th-Percentile Queue Length [ft/ln]	46.45	378.59	132.46	232.81	629.62	141.04	190.46	104.72	209.51	126.17	367.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.18	31.22	25.34	53.99	32.10	18.51	28.44	38.33	38.33	29.21	39.17	57.38
Movement LOS	E	C	C	D	C	B	C	D	D	C	D	E
d_A, Approach Delay [s/veh]	31.45			34.80			31.63			44.26		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	34.82											
Intersection LOS	C											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.240			3.679			2.236			2.825		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	33.00			28.35			32.63			27.67		
I_b,int, Bicycle LOS Score for Intersection	2.373			3.314			2.058			2.840		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 1 hour

Delay (sec / veh): 24.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.011

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑↱		↱	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1436	1914	9	0	2
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	382	509	2	0	1
Total Analysis Volume [veh/h]	0	1528	2036	10	0	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	24.75
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.82
d_A, Approach Delay [s/veh]	0.00		0.00		24.75	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr			Oliver Ross Dr			Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	6	22	11	12	30	11	161	4	42	219	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	6	3	3	8	3	45	1	12	61	3
Total Analysis Volume [veh/h]	4	7	24	12	13	33	12	179	4	47	243	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...IW DW Unser and Los Volcanes

Scenario 9 Horizon Total 2026 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...AM Horizon Full Build Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	SB Left	0.764	64.6	E
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.064	18.0	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	SB Left	0.008	12.4	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.012	17.3	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.085	15.1	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.018	8.9	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes RdControl Type:
Analysis Method:
Analysis Period:Signalized
HCM 7th Edition
1 hourDelay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):64.6
E
0.764**Intersection Setup**

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	1	19	7	4	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	11	32	0	5	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	37	1350	183	523	909	154	406	151	45	96	46	274
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	338	46	131	227	39	102	38	11	24	12	69
Total Analysis Volume [veh/h]	37	1350	183	523	909	154	406	151	45	96	46	274
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	13	36	0	20	43	0	19	37	0	26	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	46	46	16	59	59	43	33	43	24	24
g / C, Green / Cycle	0.03	0.39	0.39	0.14	0.49	0.49	0.36	0.28	0.36	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.12	0.15	0.26	0.10	0.35	0.12	0.08	0.03	0.19
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1160	1682	1274	1795	1475
c, Capacity [veh/h]	48	1964	603	464	1731	754	484	468	433	362	297
d1, Uniform Delay [s]	57.84	30.81	25.64	51.73	21.00	17.33	36.07	35.38	26.61	39.22	46.94
k, delay calibration	0.04	0.50	0.50	0.05	0.50	0.50	0.34	0.04	0.04	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.40	2.01	1.30	232.14	1.15	0.61	12.47	0.22	0.09	0.06	9.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.69	0.30	1.13	0.53	0.20	0.84	0.42	0.22	0.13	0.92
d, Delay for Lane Group [s/veh]	67.23	32.82	26.94	283.87	22.15	17.94	48.54	35.60	26.70	39.28	56.04
Lane Group LOS	E	C	C	F	C	B	D	D	C	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.22	10.72	3.72	21.74	8.48	2.42	11.72	4.67	1.86	1.11	8.66
50th-Percentile Queue Length [ft/ln]	30.42	268.02	93.08	543.44	212.02	60.56	293.02	116.78	46.51	27.87	216.40
95th-Percentile Queue Length [veh/ln]	2.19	16.09	6.70	31.09	13.26	4.36	17.34	8.22	3.35	2.01	13.48
95th-Percentile Queue Length [ft/ln]	54.76	402.27	167.54	777.36	331.41	109.01	433.39	205.40	83.73	50.16	337.02

Movement, Approach, & Intersection Results

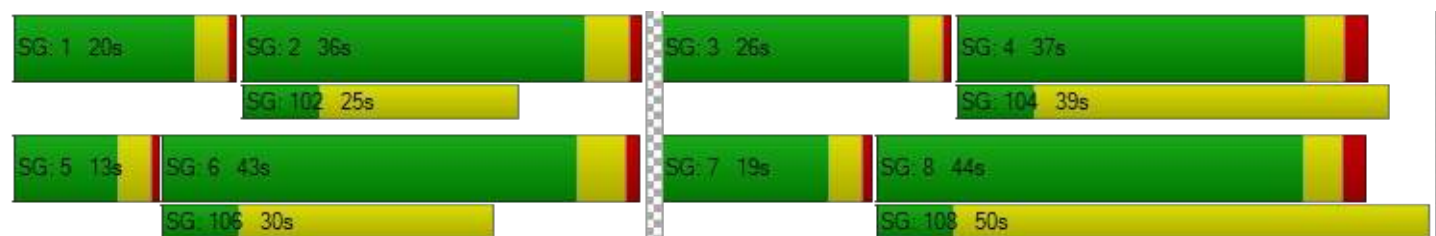
d_M, Delay for Movement [s/veh]	67.23	32.82	26.94	283.87	22.15	17.94	48.54	35.60	35.60	26.70	39.28	56.04
Movement LOS	E	C	C	F	C	B	D	D	D	C	D	E
d_A, Approach Delay [s/veh]	32.94			108.04			44.33			47.41		
Approach LOS	C			F			D			D		
d_I, Intersection Delay [s/veh]	64.56											
Intersection LOS	E											
Intersection V/C	0.764											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.49			49.49			49.49			49.49		
I_p,int, Pedestrian LOS Score for Intersection	3.138			3.766			2.304			2.791		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			625			525			642		
d_b, Bicycle Delay [s]	32.99			28.35			32.62			27.66		
I_b,int, Bicycle LOS Score for Intersection	2.423			2.927			2.558			2.434		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.064

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	0	22	4	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	-11	19	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	1757	1373	12	0	19
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	467	365	3	0	5
Total Analysis Volume [veh/h]	49	1869	1461	13	0	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.02	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	13.16	0.00	0.00	0.00	0.00	18.03
Movement LOS	B	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.33	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	8.31	0.00	0.00	0.00	0.00	5.15
d_A, Approach Delay [s/veh]	0.36		0.00		18.03	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	19	23	4	4	16	47	151	2	14	107	26
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	4	13	42	1	4	30	7
Total Analysis Volume [veh/h]	1	21	26	4	4	18	52	168	2	16	119	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	479	0	0	264
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	30	0	4	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	37	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	538	4	12	296
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	135	1	3	74
Total Analysis Volume [veh/h]	4	67	538	4	12	296
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.27	12.73	0.00	0.00	8.52	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.47	0.47	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	11.79	11.79	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	12.99		0.00		0.33	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.085

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1401	1194	0	0	0
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	22	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-27	32	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1572	1321	54	0	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	393	330	14	0	8
Total Analysis Volume [veh/h]	0	1572	1321	54	0	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.11
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.94
d_A, Approach Delay [s/veh]	0.00		0.00		15.11	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	7	0
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	7	8	0	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	0	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	7	8	2	8	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	1	2	13
Total Analysis Volume [veh/h]	17	7	8	2	8	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.88	8.56	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	8.79		5.87		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.84					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...W DW Unser and Los Volcanes

Scenario 10 Horizon Total 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...PM Horizon Full Build Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.782	40.1	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.129	28.2	D
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.010	14.2	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.014	15.9	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.105	21.3	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.022	9.0	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes RdControl Type:
Analysis Method:
Analysis Period:Signalized
HCM 7th Edition
1 hourDelay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):40.1
D
0.782**Intersection Setup**

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	23	1	24	10	5	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	20	53	0	7	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	30	1298	151	371	1495	215	279	76	42	232	114	299
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	325	38	93	374	54	70	19	11	58	29	75
Total Analysis Volume [veh/h]	30	1298	151	371	1495	215	279	76	42	232	114	299
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	14	35	0	31	52	0	20	43	0	21	44	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	38	38	14	49	49	44	29	44	24	24
g / C, Green / Cycle	0.02	0.34	0.34	0.13	0.44	0.44	0.40	0.26	0.40	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.10	0.11	0.42	0.14	0.25	0.07	0.16	0.06	0.20
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1123	1646	1407	1795	1475
c, Capacity [veh/h]	38	1736	533	434	1562	680	503	430	593	398	327
d1, Uniform Delay [s]	53.52	32.08	26.46	46.95	29.67	19.89	24.15	32.35	22.80	35.60	41.82
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.12	0.04	0.46	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.76	3.05	1.33	1.94	20.31	1.22	1.10	0.13	1.79	0.15	7.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.75	0.28	0.85	0.96	0.32	0.55	0.27	0.39	0.29	0.91
d, Delay for Lane Group [s/veh]	67.28	35.13	27.79	48.89	49.98	21.11	25.24	32.48	24.59	35.75	49.58
Lane Group LOS	E	D	C	D	D	C	C	C	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	10.11	2.97	4.93	21.85	3.60	5.31	2.49	4.34	2.53	8.46
50th-Percentile Queue Length [ft/ln]	23.73	252.81	74.18	123.14	546.36	89.88	132.73	62.23	108.49	63.35	211.55
95th-Percentile Queue Length [veh/ln]	1.71	15.33	5.34	8.57	29.52	6.47	9.09	4.48	7.76	4.56	13.23
95th-Percentile Queue Length [ft/ln]	42.71	383.19	133.53	214.13	738.03	161.78	227.20	112.01	193.91	114.03	330.82

Movement, Approach, & Intersection Results

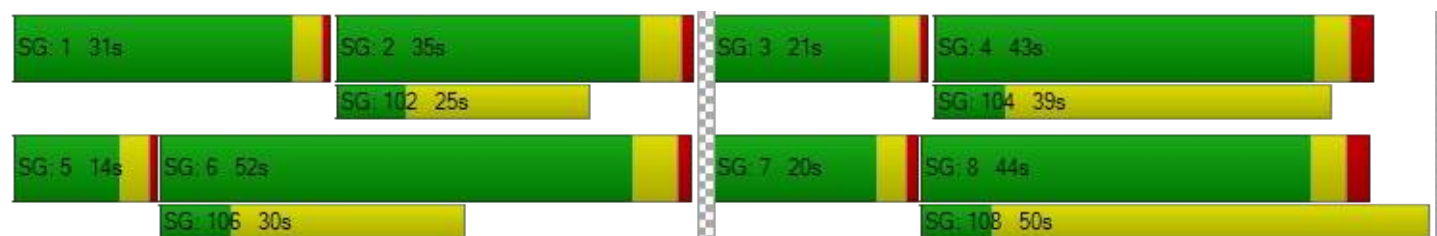
d_M, Delay for Movement [s/veh]	67.28	35.13	27.79	48.89	49.98	21.11	25.24	32.48	32.48	24.59	35.75	49.58
Movement LOS	E	D	C	D	D	C	C	C	C	C	D	D
d_A, Approach Delay [s/veh]	35.03			46.80			27.39			38.15		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.13											
Intersection LOS	D											
Intersection V/C	0.782											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			44.56			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	3.256			3.724			2.278			2.825		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	545			845			682			700		
d_b, Bicycle Delay [s]	29.10			18.34			23.90			23.25		
I_b,int, Bicycle LOS Score for Intersection	2.373			3.351			2.221			2.857		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 28.2
Level Of Service: D
Volume to Capacity (v/c): 0.129

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	48	0	28	5	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	-14	10	0	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1422	1952	14	0	23
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	378	519	4	0	6
Total Analysis Volume [veh/h]	62	1513	2077	15	0	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.01	0.02	0.00	0.00	0.13
d_M, Delay for Movement [s/veh]	20.66	0.00	0.00	0.00	0.00	28.18
Movement LOS	C	A	A	A		D
95th-Percentile Queue Length [veh/ln]	0.80	0.00	0.00	0.00	0.00	0.44
95th-Percentile Queue Length [ft/ln]	20.10	0.00	0.00	0.00	0.00	11.05
d_A, Approach Delay [s/veh]	0.86		0.00		28.18	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	10	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	6	22	11	12	40	21	161	4	42	219	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	6	3	3	11	6	45	1	12	61	3
Total Analysis Volume [veh/h]	4	7	24	12	13	44	23	179	4	47	243	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	269	0	0	381
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	39	0	5	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	20	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	99	301	5	21	428
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	25	75	1	5	107
Total Analysis Volume [veh/h]	5	99	301	5	21	428
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	15.92	10.78	0.00	0.00	7.89	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	13.05	13.05	0.00	0.00	0.89	0.89
d_A, Approach Delay [s/veh]	11.03		0.00		0.37	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.53					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1317	1714	0	0	0
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	28	0	23
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-26	33	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1477	1907	61	0	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	369	477	15	0	7
Total Analysis Volume [veh/h]	0	1477	1907	61	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.25
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.35
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	8.78
d_A, Approach Delay [s/veh]	0.00		0.00		21.25	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 9.0
Level Of Service: A
Volume to Capacity (v/c): 0.022

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	8	0
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	10	10	0	0	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	3	0	0	0	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	10	10	2	9	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	3	1	2	17
Total Analysis Volume [veh/h]	21	10	10	2	9	67
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.97	8.63	7.37	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.49	2.49	0.42	0.42	0.00	0.00
d_A, Approach Delay [s/veh]	8.86		6.15		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...IW DW Unser and Los Volcanes

Scenario 11 Build Out Optimized 2026 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...IAM Full Build Mitigated Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.602	36.4	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.058	16.7	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Thru	0.032	12.0	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.011	16.0	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.077	14.1	B
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.018	8.9	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	36.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	1	19	7	4	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	11	32	0	5	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	34	1227	166	475	828	135	374	138	41	88	42	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	307	42	119	207	34	94	35	10	22	11	60
Total Analysis Volume [veh/h]	34	1227	166	475	828	135	374	138	41	88	42	239
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	21	30	0	27	36	0	7	55	0	8	56	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	38	38	19	53	53	49	41	49	42	42
g / C, Green / Cycle	0.02	0.31	0.31	0.16	0.44	0.44	0.41	0.35	0.41	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.11	0.14	0.23	0.09	0.37	0.11	0.07	0.02	0.16
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1008	1682	1255	1795	1475
c, Capacity [veh/h]	42	1605	493	529	1564	681	485	580	511	634	521
d1, Uniform Delay [s]	58.22	37.07	31.49	49.65	24.34	20.42	33.16	28.83	22.29	25.71	29.97
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.35	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.00	3.61	1.85	2.35	1.29	0.65	8.68	0.11	0.06	0.02	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.76	0.34	0.90	0.53	0.20	0.77	0.31	0.17	0.07	0.46
d, Delay for Lane Group [s/veh]	72.21	40.68	33.34	52.00	25.63	21.08	41.84	28.94	22.35	25.73	30.20
Lane Group LOS	E	D	C	D	C	C	D	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.17	10.92	3.83	6.96	8.41	2.35	9.32	3.77	1.54	0.80	5.29
50th-Percentile Queue Length [ft/ln]	29.19	273.12	95.86	173.90	210.18	58.68	232.94	94.16	38.41	19.89	132.31
95th-Percentile Queue Length [veh/ln]	2.10	16.35	6.90	11.28	13.16	4.23	14.32	6.78	2.77	1.43	9.07
95th-Percentile Queue Length [ft/ln]	52.53	408.64	172.55	282.04	329.06	105.63	358.10	169.50	69.13	35.81	226.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.21	40.68	33.34	52.00	25.63	21.08	41.84	28.94	28.94	22.35	25.73	30.20
Movement LOS	E	D	C	D	C	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	40.58			33.91			37.66			27.82		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	36.38											
Intersection LOS	D											
Intersection V/C	0.602											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.116			3.878			2.276			2.763		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			508			825			842		
d_b, Bicycle Delay [s]	37.60			33.38			20.71			20.13		
I_b,int, Bicycle LOS Score for Intersection	2.344			2.805			2.477			2.357		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 1 hour

Delay (sec / veh): 16.7
Level Of Service: C
Volume to Capacity (v/c): 0.058

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	0	22	4	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	-11	19	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	1596	1252	11	0	19
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	424	333	3	0	5
Total Analysis Volume [veh/h]	49	1698	1332	12	0	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.02	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	12.24	0.00	0.00	0.00	0.00	16.66
Movement LOS	B	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.30	0.00	0.00	0.00	0.00	0.18
95th-Percentile Queue Length [ft/ln]	7.38	0.00	0.00	0.00	0.00	4.61
d_A, Approach Delay [s/veh]	0.36		0.00		16.66	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	17	21	4	4	15	43	137	2	13	97	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	4	12	38	1	4	27	7
Total Analysis Volume [veh/h]	1	19	23	4	4	17	48	152	2	14	108	27
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	479	0	0	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	30	0	4	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	37	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	489	4	12	269
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	122	1	3	67
Total Analysis Volume [veh/h]	4	67	489	4	12	269
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	16.02	12.17	0.00	0.00	8.38	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.44	0.44	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	10.91	10.91	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	12.39		0.00		0.36	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1401	1194	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	22	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-27	32	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1429	1199	54	0	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	357	300	14	0	8
Total Analysis Volume [veh/h]	0	1429	1199	54	0	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.14
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.28
d_A, Approach Delay [s/veh]	0.00		0.00		14.14	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	7	8	0	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	0	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	7	8	2	7	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	1	2	13
Total Analysis Volume [veh/h]	17	7	8	2	7	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.87	8.55	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	8.78		5.87		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.87					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...IW DW Unser and Los Volcanes

Scenario 12 Build Out Optimized 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...IPM Full Build Mitigated Analysis.pdf

5/21/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.641	30.7	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.111	24.5	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.009	13.5	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.013	15.0	B
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.092	19.0	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.022	9.0	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	23	1	24	10	5	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	20	53	0	7	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	27	1180	137	337	1361	189	261	70	39	212	104	259
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	295	34	84	340	47	65	18	10	53	26	65
Total Analysis Volume [veh/h]	27	1180	137	337	1361	189	261	70	39	212	104	259
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	7	30	0	17	40	0	7	48	0	15	56	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	42	42	13	52	52	41	26	41	34	34
g / C, Green / Cycle	0.02	0.38	0.38	0.12	0.47	0.47	0.37	0.24	0.37	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.02	0.23	0.09	0.10	0.39	0.12	0.27	0.07	0.15	0.06	0.18
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	960	1646	1417	1795	1475
c, Capacity [veh/h]	32	1950	599	393	1679	731	418	392	563	556	457
d1, Uniform Delay [s]	53.77	27.27	22.96	47.70	24.62	17.25	30.54	34.17	24.73	27.82	31.79
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.18	0.04	0.45	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.82	1.41	0.89	2.18	4.52	0.86	2.52	0.14	1.71	0.06	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.61	0.23	0.86	0.81	0.26	0.63	0.28	0.38	0.19	0.57
d, Delay for Lane Group [s/veh]	74.59	28.68	23.86	49.87	29.14	18.11	33.06	34.31	26.44	27.88	32.20
Lane Group LOS	E	C	C	D	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.91	8.09	2.45	4.51	14.87	2.86	5.33	2.37	4.13	1.99	5.70
50th-Percentile Queue Length [ft/ln]	22.80	202.32	61.18	112.63	371.75	71.57	133.17	59.22	103.28	49.81	142.40
95th-Percentile Queue Length [veh/ln]	1.64	12.76	4.40	7.99	21.19	5.15	9.11	4.26	7.44	3.59	9.61
95th-Percentile Queue Length [ft/ln]	41.03	318.95	110.12	199.65	529.86	128.83	227.80	106.60	185.91	89.65	240.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.59	28.68	23.86	49.87	29.14	18.11	33.06	34.31	34.31	26.44	27.88	32.20
Movement LOS	E	C	C	D	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	29.11			31.74			33.43			29.30		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.71											
Intersection LOS	C											
Intersection V/C	0.641											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	3.208			3.793			2.253			2.797		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	455			627			773			918		
d_b, Bicycle Delay [s]	32.84			25.91			20.71			16.09		
I_b,int, Bicycle LOS Score for Intersection	2.299			3.191			2.177			2.741		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	24.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.111

Intersection Setup

Name	Unser Blvd		Unser Blvd		Unser Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Unser Blvd	
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	48	0	28	5	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	-14	10	0	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1291	1778	13	0	23
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	343	473	3	0	6
Total Analysis Volume [veh/h]	62	1373	1891	14	0	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.01	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	17.88	0.00	0.00	0.00	0.00	24.50
Movement LOS	C	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.66	0.00	0.00	0.00	0.00	0.37
95th-Percentile Queue Length [ft/ln]	16.56	0.00	0.00	0.00	0.00	9.31
d_A, Approach Delay [s/veh]	0.82		0.00		24.50	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	10	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	5	20	10	11	37	20	146	4	38	199	10
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	6	3	3	10	6	41	1	11	55	3
Total Analysis Volume [veh/h]	4	6	22	11	12	41	22	162	4	42	221	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.02	0.02	0.02	0.04	0.01	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	13.45	12.88	9.21	13.34	13.16	9.82	7.64	0.00	0.00	7.54	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/l/n]	0.13	0.13	0.13	0.29	0.29	0.29	0.03	0.03	0.03	0.07	0.07	0.07
95th-Percentile Queue Length [ft/l/n]	3.28	3.28	3.28	7.31	7.31	7.31	0.85	0.85	0.85	1.63	1.63	1.63
d_A, Approach Delay [s/veh]	10.43			11.06			0.90			1.16		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.74											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	269	0	0	381
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	39	0	5	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	20	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	99	274	5	21	389
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	25	69	1	5	97
Total Analysis Volume [veh/h]	5	99	274	5	21	389
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.13	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	14.98	10.54	0.00	0.00	7.83	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	12.45	12.45	0.00	0.00	0.89	0.89
d_A, Approach Delay [s/veh]	10.76		0.00		0.40	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.092

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1317	1714	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	28	0	23
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-26	33	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1343	1732	61	0	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	336	433	15	0	7
Total Analysis Volume [veh/h]	0	1343	1732	61	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	19.01
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	7.57
d_A, Approach Delay [s/veh]	0.00		0.00		19.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.022

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	8	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	10	10	0	0	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	3	0	0	0	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	10	10	2	8	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	3	1	2	17
Total Analysis Volume [veh/h]	21	10	10	2	8	67
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.97	8.62	7.37	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.49	2.49	0.42	0.42	0.00	0.00
d_A, Approach Delay [s/veh]	8.86		6.14		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.95					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...W DW Unser and Los Volcanes

Scenario 13 Horizon Total Optimized 2026 AM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...AM Horizon Full Build Mitigated

5/21/2024

Analysis.pdf

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.689	40.9	D
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.064	18.0	C
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	SB Left	0.008	12.4	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.012	17.3	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.085	15.1	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.018	8.9	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	33	1203	163	466	794	190	317	128	34	78	41	346
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	18	1	19	7	4	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	11	32	0	5	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	71	0	0	3	0	0	114
Total Hourly Volume [veh/h]	37	1350	183	523	909	154	406	151	45	96	46	274
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	338	46	131	227	39	102	38	11	24	12	69
Total Analysis Volume [veh/h]	37	1350	183	523	909	154	406	151	45	96	46	274
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_ci, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	8	30	0	24	46	0	10	59	0	7	56	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	3	35	35	20	52	52	51	44	51	41	41
g / C, Green / Cycle	0.03	0.29	0.29	0.17	0.43	0.43	0.42	0.36	0.42	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.02	0.27	0.12	0.15	0.26	0.10	0.40	0.12	0.08	0.03	0.19
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	1013	1682	1225	1795	1475
c, Capacity [veh/h]	46	1489	457	571	1519	662	499	611	510	608	499
d1, Uniform Delay [s]	58.04	40.88	34.03	49.01	26.25	21.66	32.67	27.52	21.66	26.95	32.25
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.36	0.04	0.07	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.54	11.00	2.62	2.70	1.76	0.82	10.91	0.11	0.12	0.02	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.91	0.40	0.92	0.60	0.23	0.81	0.32	0.19	0.08	0.55
d, Delay for Lane Group [s/veh]	70.58	51.88	36.65	51.71	28.01	22.48	43.59	27.63	21.78	26.97	32.60
Lane Group LOS	E	D	D	D	C	C	D	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.25	13.76	4.48	7.68	9.80	2.79	10.44	4.04	1.66	0.90	6.43
50th-Percentile Queue Length [ft/ln]	31.29	344.09	111.96	192.02	245.11	69.73	260.96	101.02	41.52	22.46	160.74
95th-Percentile Queue Length [veh/ln]	2.25	19.85	7.95	12.23	14.94	5.02	15.74	7.27	2.99	1.62	10.59
95th-Percentile Queue Length [ft/ln]	56.33	496.20	198.72	305.65	373.50	125.51	393.43	181.83	74.74	40.43	264.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.58	51.88	36.65	51.71	28.01	22.48	43.59	27.63	27.63	21.78	26.97	32.60
Movement LOS	E	D	D	D	C	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	50.55			35.29			38.39			29.48		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.90											
Intersection LOS	D											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.149			3.930			2.304			2.791		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			675			892			842		
d_b, Bicycle Delay [s]	37.60			26.33			18.43			20.13		
I_b,int, Bicycle LOS Score for Intersection	2.423			2.927			2.558			2.434		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.064

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1575	1187	7	0	2
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	0	22	4	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	11	-11	19	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	1757	1373	12	0	19
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	467	365	3	0	5
Total Analysis Volume [veh/h]	49	1869	1461	13	0	20
Pedestrian Volume [ped/h]	0		0		0	

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

Movement, Approach, & Intersection Results						
V/C, Movement V/C Ratio	0.10	0.02	0.01	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	13.16	0.00	0.00	0.00	0.00	18.03
Movement LOS	B	A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.33	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	8.31	0.00	0.00	0.00	0.00	5.15
d_A, Approach Delay [s/veh]	0.36		0.00		18.03	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.31					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	1	17	21	4	4	8	34	134	2	13	95	24
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	7	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	19	23	4	4	16	47	151	2	14	107	26
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	6	1	1	4	13	42	1	4	30	7
Total Analysis Volume [veh/h]	1	21	26	4	4	18	52	168	2	16	119	29
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.03	0.01	0.01	0.02	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	12.27	12.40	9.38	12.44	12.09	9.01	7.51	0.00	0.00	7.52	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/l/n]	0.21	0.21	0.21	0.10	0.10	0.10	0.08	0.08	0.08	0.02	0.02	0.02
95th-Percentile Queue Length [ft/l/n]	5.17	5.17	5.17	2.55	2.55	2.55	2.02	2.02	2.02	0.61	0.61	0.61
d_A, Approach Delay [s/veh]	10.78			10.09			1.77			0.72		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.81											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	479	0	0	264
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	30	0	4	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	37	0	0	11	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	67	538	4	12	296
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	135	1	3	74
Total Analysis Volume [veh/h]	4	67	538	4	12	296
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.27	12.73	0.00	0.00	8.52	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.47	0.47	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	11.79	11.79	0.00	0.00	0.50	0.50
d_A, Approach Delay [s/veh]	12.99		0.00		0.33	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.085

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1401	1194	0	0	0
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	22	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-27	32	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1572	1321	54	0	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	393	330	14	0	8
Total Analysis Volume [veh/h]	0	1572	1321	54	0	33
Pedestrian Volume [ped/h]	0		0		0	

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

Movement, Approach, & Intersection Results						
V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.11
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.94
d_A, Approach Delay [s/veh]	0.00		0.00		15.11	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	7	0
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	7	8	0	0	42
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	0	0	11
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	7	8	2	8	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	1	2	13
Total Analysis Volume [veh/h]	17	7	8	2	8	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings						
Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	
Movement, Approach, & Intersection Results						
V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.88	8.56	7.34	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	8.79		5.87		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.84					
Intersection LOS	A					

QT #7001 Unser and Los Volcanes TIS

Vistro File: L:\...W DW Unser and Los Volcanes

Scenario 14 Horizon Total Optimized 2026 PM Scenario

Intersections Vistro Analysis.vistro

Report File: L:\...PM Horizon Full Build Mitigated

5/21/2024

Analysis.pdf

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Unser Blvd and Los Volcanes Rd	Signalized	HCM 7th Edition	NB Left	0.708	33.3	C
2	Unser Blvd & Saul Bell Rd	Two-way stop	HCM 7th Edition	EB Right	0.129	28.2	D
3	Bluewater Rd & Oliver Ross Dr	Two-way stop	HCM 7th Edition	NB Left	0.010	14.2	B
6	Los Volcanes Rd and Site Driveway 1	Two-way stop	HCM 7th Edition	NB Left	0.014	15.9	C
7	Unser Blvd and Site Driveway 2	Two-way stop	HCM 7th Edition	EB Right	0.105	21.3	C
8	Saul Bell Road and Site Driveway 3	Two-way stop	HCM 7th Edition	SB Left	0.022	9.0	A

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

Intersection Level Of Service Report
Intersection 1: Unser Blvd and Los Volcanes Rd

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	580.00	100.00	150.00	285.00	100.00	160.00	175.00	100.00	100.00	225.00	100.00	500.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Unser Blvd			Unser Blvd			Los Volcanes Rd					
Base Volume Input [veh/h]	26	1157	134	330	1312	253	180	59	30	198	102	392
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	9.00	2.00	4.00	5.00	3.00	6.00	19.00	10.00	0.00	4.00	7.00	11.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	23	1	24	10	5	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	20	53	0	7	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90	0	0	4	0	0	141
Total Hourly Volume [veh/h]	30	1298	151	371	1495	215	279	76	42	232	114	299
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	325	38	93	374	54	70	19	11	58	29	75
Total Analysis Volume [veh/h]	30	1298	151	371	1495	215	279	76	42	232	114	299
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crosswalk	0			0			0			0		
v_di, Inbound Pedestrian Volume crosswalk	0			0			0			0		
v_co, Outbound Pedestrian Volume corner	0			0			0			0		
v_ci, Inbound Pedestrian Volume corner	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	20	0	3	20	0	3	12	0	3	12	0
Maximum Green [s]	16	42	0	16	42	0	16	24	0	16	24	0
Amber [s]	3.0	4.0	0.0	3.0	4.5	0.0	3.0	3.5	0.0	3.0	3.5	0.0
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.8	2.0	0.0	0.5	2.0	0.0
Split [s]	7	30	0	17	40	0	7	54	0	9	56	0
Vehicle Extension [s]	1.5	4.0	0.0	1.5	4.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	23	0	0	32	0	0	43	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.5	3.0	0.0	1.5	3.5	0.0	1.8	3.5	0.0	1.5	3.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	Yes		No	Yes		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.00	5.00	3.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.00	3.00	1.50	3.50	3.50	0.00	3.50	0.00	3.50	3.50
g_i, Effective Green Time [s]	2	42	42	14	52	52	41	32	41	34	34
g / C, Green / Cycle	0.02	0.38	0.38	0.12	0.48	0.48	0.37	0.29	0.37	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.10	0.11	0.42	0.14	0.30	0.07	0.17	0.06	0.20
s, saturation flow rate [veh/h]	1681	5094	1564	3375	3532	1538	926	1646	1339	1795	1475
c, Capacity [veh/h]	36	1932	593	414	1681	732	400	476	529	551	453
d1, Uniform Delay [s]	53.61	28.43	23.45	47.56	26.20	17.56	32.56	29.96	26.95	28.20	33.13
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.17	0.04	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.78	1.90	1.04	2.94	8.27	1.02	3.45	0.10	2.65	0.07	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.67	0.25	0.90	0.89	0.29	0.70	0.25	0.44	0.21	0.66
d, Delay for Lane Group [s/veh]	71.39	30.33	24.49	50.49	34.47	18.58	36.01	30.07	29.61	28.27	33.75
Lane Group LOS	E	C	C	D	C	B	D	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.98	9.29	2.75	5.01	18.09	3.32	5.87	2.38	4.69	2.21	6.85
50th-Percentile Queue Length [ft/ln]	24.59	232.33	68.70	125.31	452.32	83.10	146.75	59.43	117.36	55.17	171.13
95th-Percentile Queue Length [veh/ln]	1.77	14.29	4.95	8.68	25.07	5.98	9.84	4.28	8.25	3.97	11.14
95th-Percentile Queue Length [ft/ln]	44.27	357.32	123.66	217.10	626.72	149.58	246.08	106.98	206.20	99.31	278.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.39	30.33	24.49	50.49	34.47	18.58	36.01	30.07	30.07	29.61	28.27	33.75
Movement LOS	E	C	C	D	C	B	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	30.57			35.68			34.25			31.29		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	33.30											
Intersection LOS	C											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	3.290			3.886			2.278			2.825		
Crosswalk LOS	C			D			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	455			627			882			918		
d_b, Bicycle Delay [s]	32.84			25.91			17.19			16.09		
I_b,int, Bicycle LOS Score for Intersection	2.373			3.351			2.221			2.857		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Unser Blvd & Saul Bell Rd

Control Type:	Two-way stop	Delay (sec / veh):	28.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.129

Intersection Setup

Name			Unser Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name			Unser Blvd			
Base Volume Input [veh/h]	0	1279	1706	8	0	2
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	50.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	48	0	28	5	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	14	-14	10	0	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	1422	1952	14	0	23
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	378	519	4	0	6
Total Analysis Volume [veh/h]	62	1513	2077	15	0	24
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.01	0.02	0.00	0.00	0.13
d_M, Delay for Movement [s/veh]	20.66	0.00	0.00	0.00	0.00	28.18
Movement LOS	C	A	A	A		D
95th-Percentile Queue Length [veh/ln]	0.80	0.00	0.00	0.00	0.00	0.44
95th-Percentile Queue Length [ft/ln]	20.10	0.00	0.00	0.00	0.00	11.05
d_A, Approach Delay [s/veh]	0.86		0.00		28.18	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Bluewater Rd & Oliver Ross Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oliver Ross Dr						Bluewater Rd			Bluewater Rd		
Base Volume Input [veh/h]	4	5	20	10	11	26	10	143	4	37	195	10
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	10	10	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	6	22	11	12	40	21	161	4	42	219	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	6	3	3	11	6	45	1	12	61	3
Total Analysis Volume [veh/h]	4	7	24	12	13	44	23	179	4	47	243	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

[illegible]

Intersection Level Of Service Report
Intersection 6: Los Volcanes Rd and Site Driveway 1

Control Type:	Two-way stop	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Driveway 1		Los Volcanes Rd		Los Volcanes Rd	
Base Volume Input [veh/h]	0	0	269	0	0	381
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	39	0	5	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	60	0	0	20	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	99	301	5	21	428
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	25	75	1	5	107
Total Analysis Volume [veh/h]	5	99	301	5	21	428
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings						
Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	
Movement, Approach, & Intersection Results						
V/C, Movement V/C Ratio	0.01	0.13	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	15.92	10.78	0.00	0.00	7.89	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	13.05	13.05	0.00	0.00	0.89	0.89
d_A, Approach Delay [s/veh]	11.03		0.00		0.37	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.53					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: Unser Blvd and Site Driveway 2

Control Type:	Two-way stop	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Unser Blvd		Unser Blvd		Driveway 2	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Unser Blvd		Unser Blvd		Driveway 2	
Base Volume Input [veh/h]	0	1317	1714	0	0	0
Base Volume Adjustment Factor	1.0000	1.0200	1.0200	1.0200	1.0000	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1000	1.1000	1.1000	1.0000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	28	0	23
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	-26	33	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1477	1907	61	0	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	369	477	15	0	7
Total Analysis Volume [veh/h]	0	1477	1907	61	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings						
Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	
Movement, Approach, & Intersection Results						
V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.25
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.35
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	8.78
d_A, Approach Delay [s/veh]	0.00		0.00		21.25	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Saul Bell Road and Site Driveway 3

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.022

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name						
Base Volume Input [veh/h]	0	0	0	2	8	0
Base Volume Adjustment Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1000	1.1000	1.1000	1.1000	1.1000	1.1000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	18	10	10	0	0	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	3	0	0	0	0	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	10	10	2	9	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	3	3	1	2	17
Total Analysis Volume [veh/h]	21	10	10	2	9	67
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

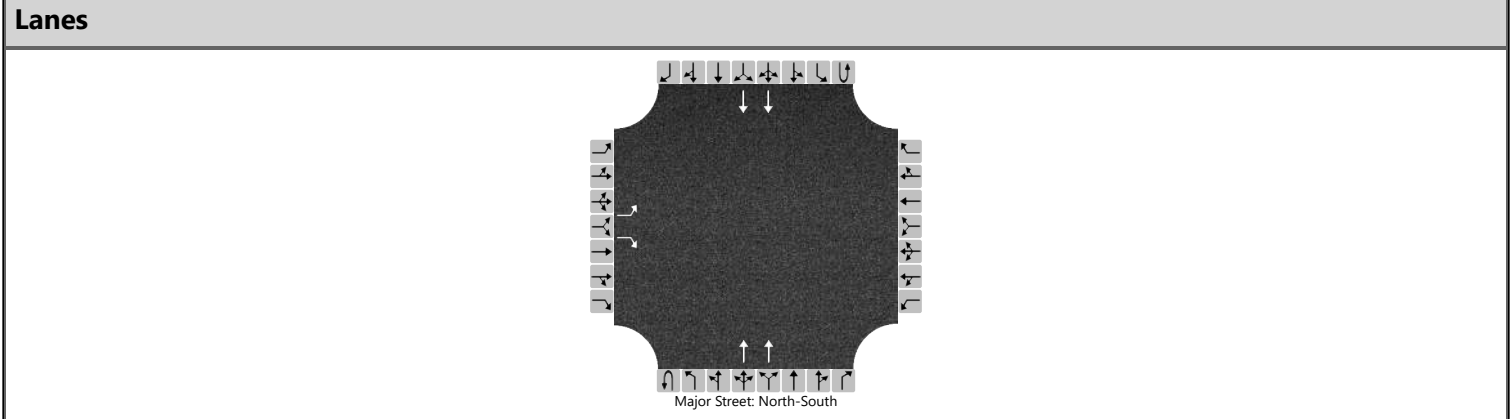
Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.97	8.63	7.37	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.49	2.49	0.42	0.42	0.00	0.00
d_A, Approach Delay [s/veh]	8.86		6.15		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	A					

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Existing AM	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		



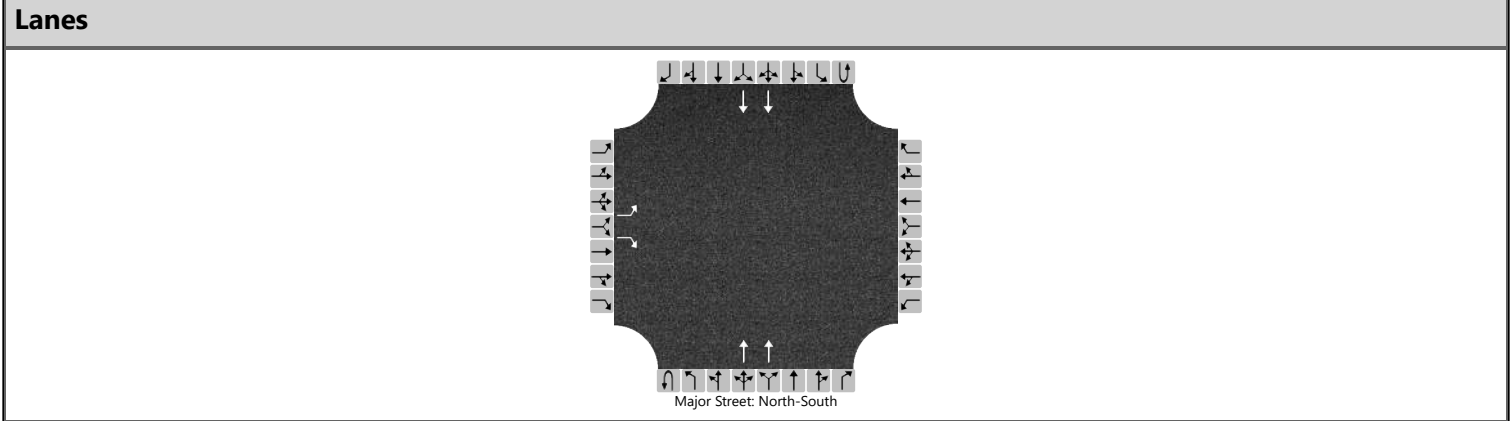
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		99		119							1021				1625	
Percent Heavy Vehicles (%)		1		12												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.82		7.14												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.51		3.42												

Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		114		137												
Capacity, c (veh/h)		88		249												
v/c Ratio		1.29		0.55												
95% Queue Length, Q ₉₅ (veh)		20.9		3.4												
Control Delay (s/veh)		704.6		36.7												
Level of Service (LOS)		F		E												
Approach Delay (s/veh)	340.0															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Existing PM	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		



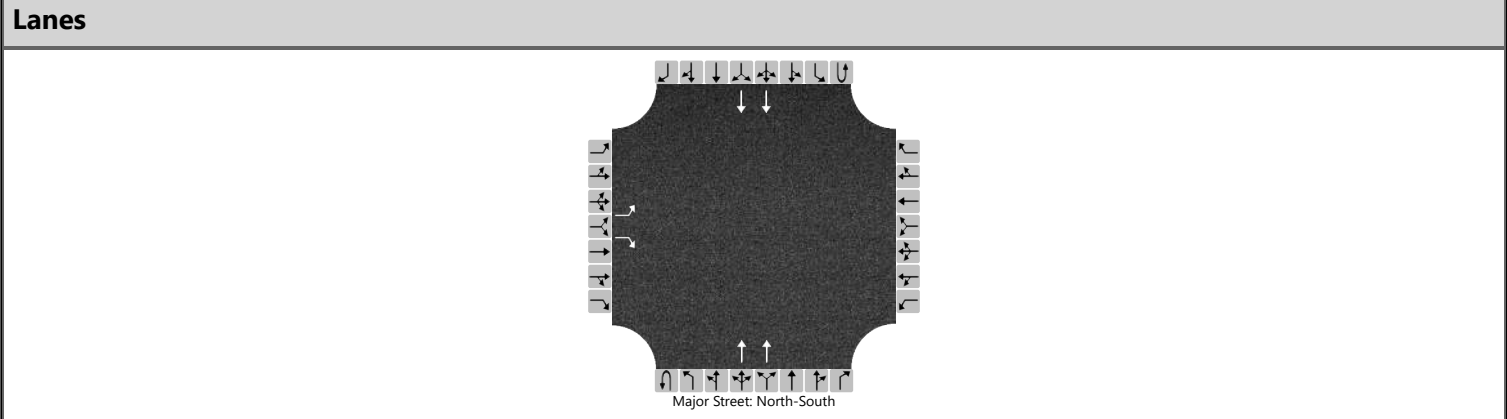
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		60		81							1012				1985	
Percent Heavy Vehicles (%)		2		22												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.84		7.34												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.52		3.52												

Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		69		93												
Capacity, c (veh/h)		54		166												
v/c Ratio		1.29		0.56												
95% Queue Length, Q ₉₅ (veh)		14.7		3.5												
Control Delay (s/veh)		803.6		53.6												
Level of Service (LOS)		F		F												
Approach Delay (s/veh)	372.8															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB Off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Build Out Background AM	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		



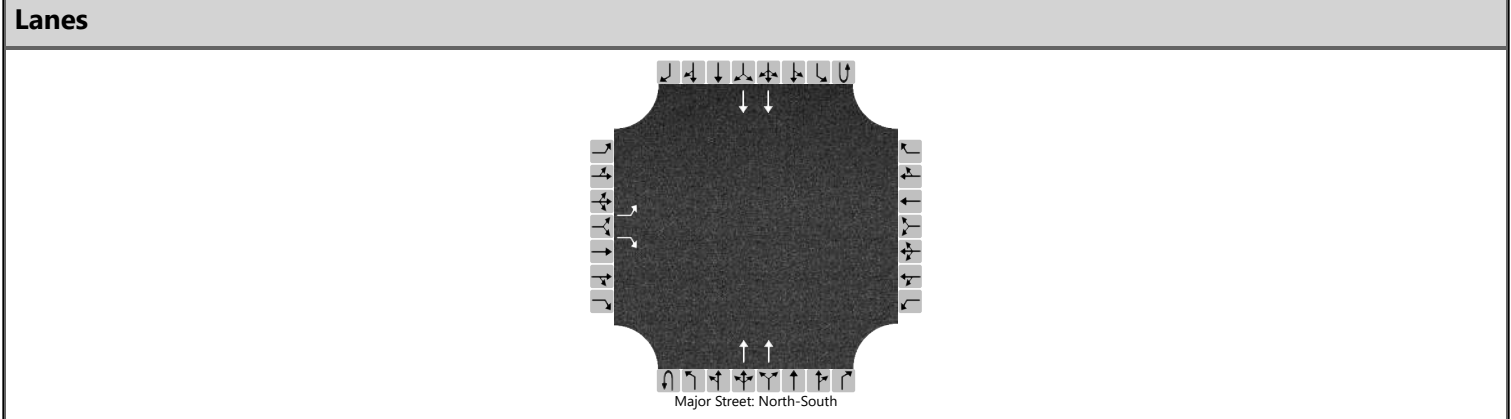
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		101		121							1042				1658	
Percent Heavy Vehicles (%)		1		12												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.82		7.14												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.51		3.42												

Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		116		139												
Capacity, c (veh/h)		84		242												
v/c Ratio		1.37		0.58												
95% Queue Length, Q ₉₅ (veh)		23.3		3.8												
Control Delay (s/veh)		853.5		39.6												
Level of Service (LOS)		F		E												
Approach Delay (s/veh)	409.9															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Build Out Background PM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		



Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		61		83							1032				2025	
Percent Heavy Vehicles (%)		2		22												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

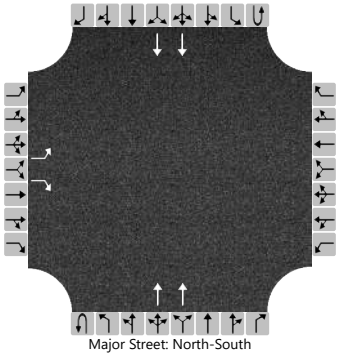
Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.84		7.34												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.52		3.52												

Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		64		86												
Capacity, c (veh/h)		66		191												
v/c Ratio		0.96		0.45												
95% Queue Length, Q ₉₅ (veh)		9.1		2.4												
Control Delay (s/veh)		328.0		39.2												
Level of Service (LOS)		F		E												
Approach Delay (s/veh)	161.5															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Build Out Total AM	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		101		146							1051				1673	
Percent Heavy Vehicles (%)		1		12												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

Critical and Follow-up Headways

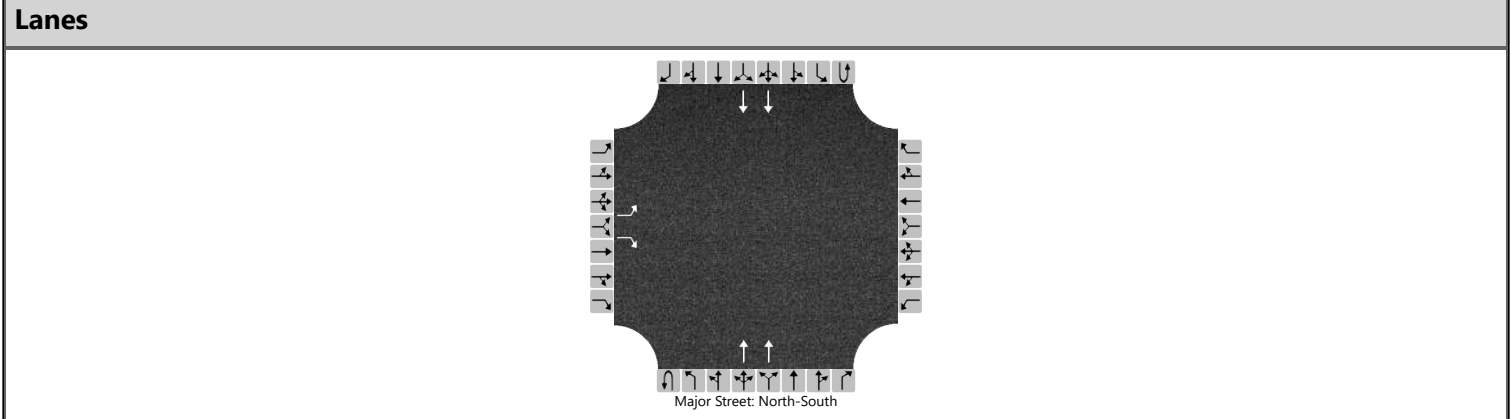
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.82		7.14												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.51		3.42												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		116		168												
Capacity, c (veh/h)		83		238												
v/c Ratio		1.40		0.70												
95% Queue Length, Q ₉₅ (veh)		24.0		6.1												
Control Delay (s/veh)		904.7		53.8												
Level of Service (LOS)		F		F												
Approach Delay (s/veh)	401.7															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Build Out Total PM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		



Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		61		127							1030				2044	
Percent Heavy Vehicles (%)		2		22												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

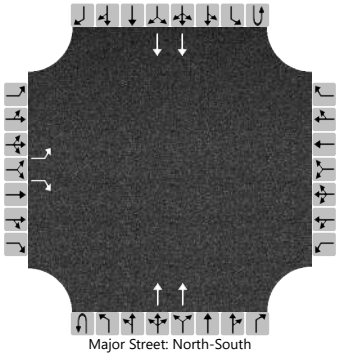
Critical and Follow-up Headways																
Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.84		7.34												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.52		3.52												

Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		64		132												
Capacity, c (veh/h)		65		188												
v/c Ratio		0.98		0.70												
95% Queue Length, Q ₉₅ (veh)		9.4		5.9												
Control Delay (s/veh)		355.3		66.5												
Level of Service (LOS)		F		F												
Approach Delay (s/veh)	160.2															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Horizon Background AM	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		112		134							1151				1831	
Percent Heavy Vehicles (%)		1		12												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.82		7.14												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.51		3.42												

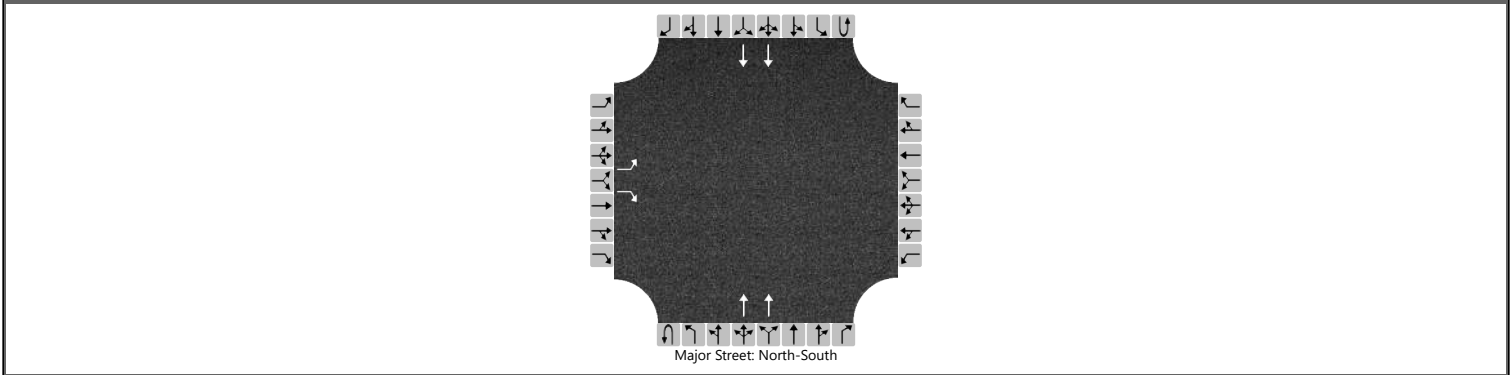
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		129		154												
Capacity, c (veh/h)		66		207												
v/c Ratio		1.95		0.75												
95% Queue Length, Q ₉₅ (veh)		36.6		7.0												
Control Delay (s/veh)		1868.7		68.8												
Level of Service (LOS)		F		F												
Approach Delay (s/veh)	888.3															
Approach LOS	F															

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	OR	Intersection	I40 EB off ramp & Unser Blvd
Agency/Co.	Lee Engineering	Jurisdiction	NMDOT
Date Performed	4/24/2024	East/West Street	I 40 EB off Ramp
Analysis Year	2026	North/South Street	Unser Blvd
Time Analyzed	Horizon background PM	Peak Hour Factor	0.96
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Unser Los Volcanes TIS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	2	0	0	0	2	0
Configuration		L		R							T				T	
Volume (veh/h)		67		92							1140				2237	
Percent Heavy Vehicles (%)		2		22												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	Yes															
Median Type Storage	Left + Thru								1							

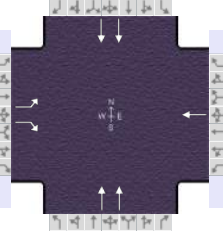
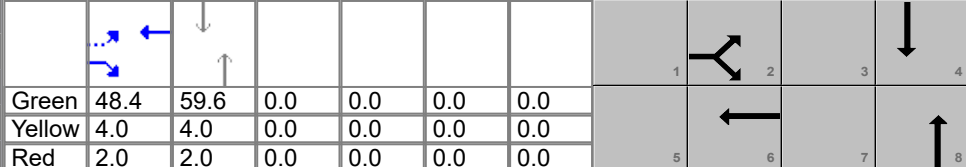
Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9												
Critical Headway (sec)		6.84		7.34												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.52		3.52												

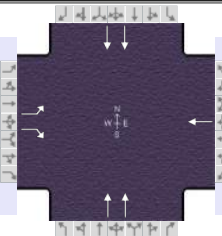
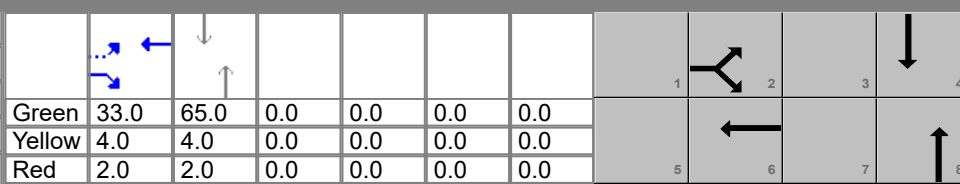
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		70		96												
Capacity, c (veh/h)		50		159												
v/c Ratio		1.39		0.60												
95% Queue Length, Q ₉₅ (veh)		16.2		4.0												
Control Delay (s/veh)		970.0		60.2												
Level of Service (LOS)		F		F												
Approach Delay (s/veh)	443.6															
Approach LOS	F															

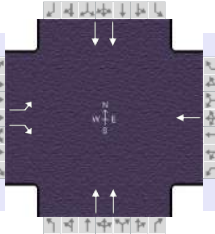
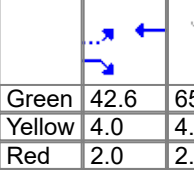
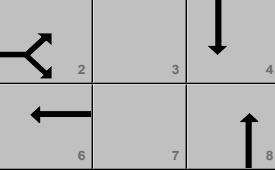
HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency		Lee Engineering				Duration, h		1.000											
Analyst		ES		Analysis Date		5/13/2024		Area Type		Other									
Jurisdiction		NMDOT		Time Period		AM		PHF		1.00									
Urban Street		Unser Blvd		Analysis Year		2026		Analysis Period		1> 7:45									
Intersection		I-40 EB Off Ramp		File Name		Build out AM Optimized.xus													
Project Description		AM Build Out Mitigated																	
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				101		146		0			1051			1673					
Signal Information																			
Cycle, s	120.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On																
Force Mode	Fixed	Simult. Gap N/S	On																
				Green	48.4	59.6	0.0	0.0	0.0	0.0									
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0									
				Red	2.0	2.0	0.0	0.0	0.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						2				6				8				4	
Case Number						5.0				8.0				8.0				8.0	
Phase Duration, s						54.4				54.4				65.6				65.6	
Change Period, ($Y+R_c$), s						6.0				6.0				6.0				6.0	
Max Allow Headway (MAH), s						0.0				0.0				2.4				2.4	
Queue Clearance Time (g_s), s														26.7				54.0	
Green Extension Time (g_e), s						0.0				0.0				5.9				5.6	
Phase Call Probability														1.00				1.00	
Max Out Probability														0.00				0.03	
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				5		12		6			8			4					
Adjusted Flow Rate (v), veh/h				101		146		0			1051			1673					
Adjusted Saturation Flow Rate (s), veh/h/ln				1795				1900			1809			1809					
Queue Service Time (g_s), s				4.3				0.0			24.7			52.0					
Cycle Queue Clearance Time (g_c), s				4.3				0.0			24.7			52.0					
Green Ratio (g/C)				0.40				0.40			0.50			0.50					
Capacity (c), veh/h				784				766			1797			1797					
Volume-to-Capacity Ratio (X)				0.129				0.000			0.585			0.931					
Back of Queue (Q), ft/ln (95 th percentile)				82.8				0			373.6			742.3					
Back of Queue (Q), veh/ln (95 th percentile)				3.3				0.0			14.9			29.7					
Queue Storage Ratio (RQ) (95 th percentile)				0.00				0.00			0.00			0.00					
Uniform Delay (d_1), s/veh				22.6				0.0			21.4			28.3					
Incremental Delay (d_2), s/veh				0.3				0.0			0.1			5.8					
Initial Queue Delay (d_3), s/veh				0.0				0.0			0.0			0.0					
Control Delay (d), s/veh				23.0		0.0		0.0			21.5			34.1					
Level of Service (LOS)				C		A					C			C					
Approach Delay, s/veh / LOS				9.4		A		0.0			21.5		C	34.1		C			
Intersection Delay, s/veh / LOS				27.6						C									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.11		B	2.11		B	1.39		A	1.91		B				
Bicycle LOS Score / LOS						F	0.49		A	1.35		A	1.87		B				

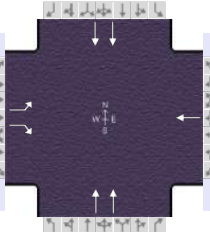
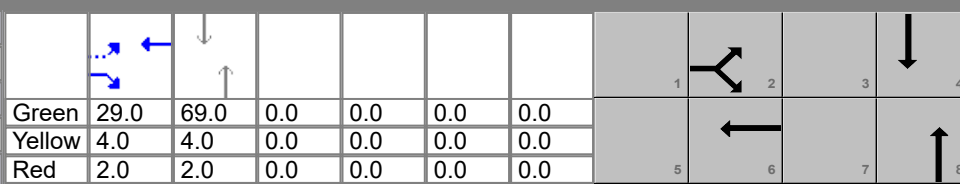
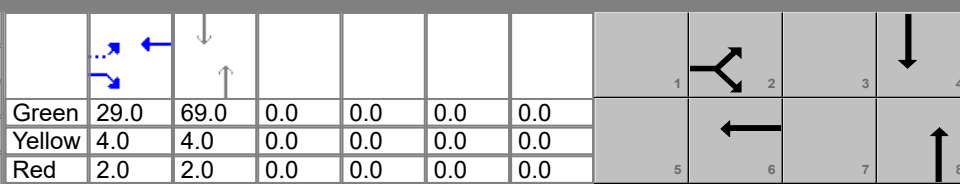
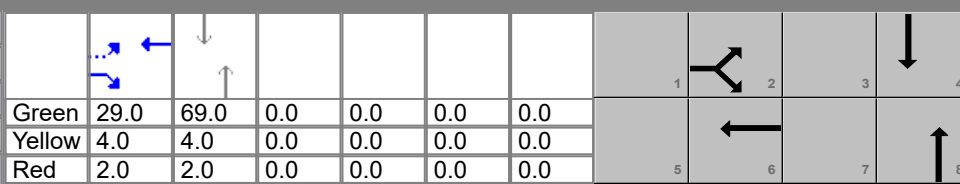
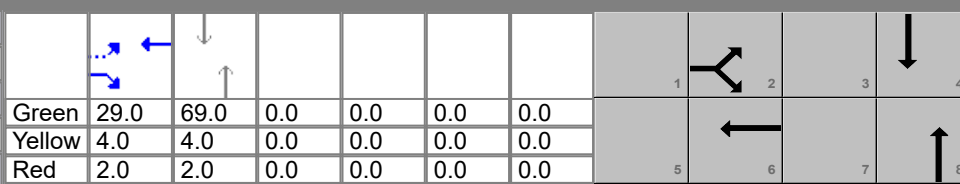
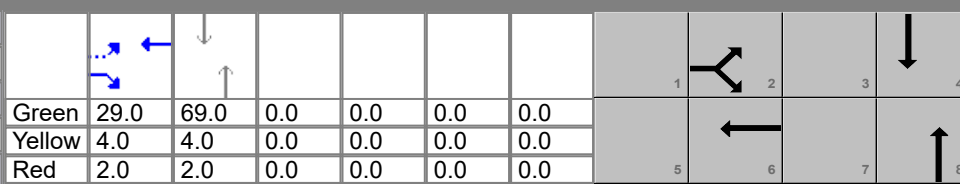
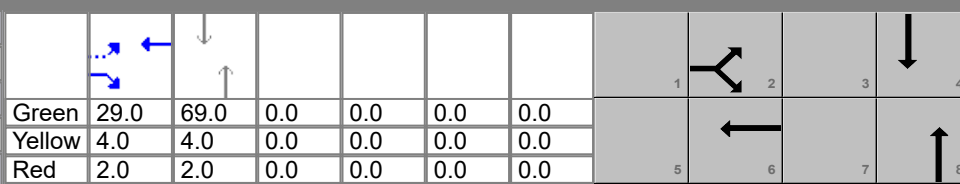
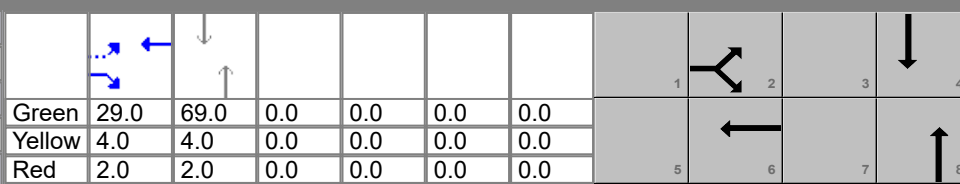
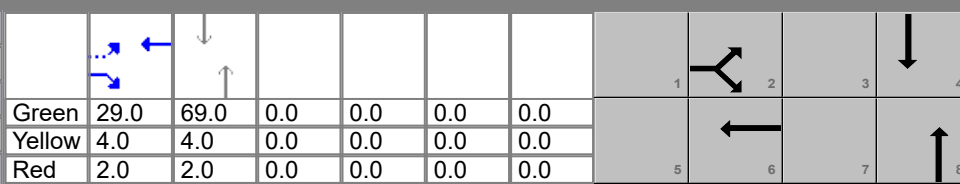
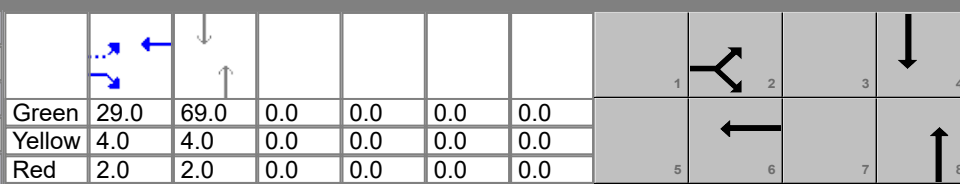
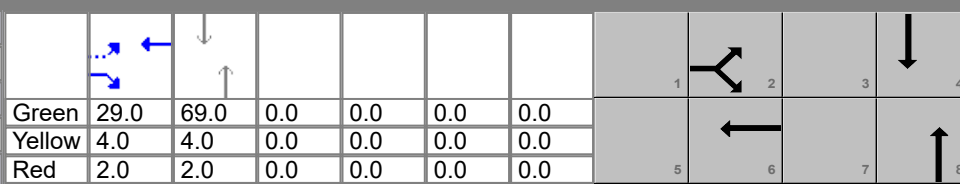
HCS Signalized Intersection Results Summary

General Information						Intersection Information												
Agency	Lee Engineering					Duration, h	1.000											
Analyst	ES		Analysis Date	5/13/2024		Area Type	Other											
Jurisdiction	NMDOT		Time Period	PM		PHF	1.00											
Urban Street	Unser Blvd		Analysis Year	2026		Analysis Period	1> 15:45											
Intersection	I-40 EB Off Ramp		File Name	Build out PM Optimized.xus														
Project Description	PM Build Out Mitigated																	
Demand Information						EB			WB			NB			SB			
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R	
Demand (ν), veh/h						61		127		0			1030			2044		
Signal Information																		
Cycle, s	110.0	Reference Phase	2		Green		33.0	65.0	0.0	0.0	0.0	0.0						
Offset, s	0	Reference Point	End		Yellow		4.0	4.0	0.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On		Red		2.0	2.0	0.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On															
Timer Results						EBL	EBT		WBL	WBT		NBL	NBT		SBL	SBT		
Assigned Phase							2			6			8			4		
Case Number							5.0			8.0			8.0			8.0		
Phase Duration, s							39.0			39.0			71.0			71.0		
Change Period, ($Y+R_c$), s							6.0			6.0			6.0			6.0		
Max Allow Headway (MAH), s							0.0			0.0			2.4			2.4		
Queue Clearance Time (g_s), s													19.9			60.4		
Green Extension Time (g_e), s							0.0			0.0			7.7			4.6		
Phase Call Probability													1.00			1.00		
Max Out Probability													0.00			0.47		
Movement Group Results						EB			WB			NB			SB			
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement						5		12		6			8			4		
Adjusted Flow Rate (ν), veh/h						61		127		0			1030			2044		
Adjusted Saturation Flow Rate (s), veh/h/ln						1781				1900			1809			1809		
Queue Service Time (g_s), s						2.7				0.0			17.9			58.4		
Cycle Queue Clearance Time (g_c), s						2.7				0.0			17.9			58.4		
Green Ratio (g/C)						0.30				0.30			0.59			0.59		
Capacity (c), veh/h						599				569			2139			2139		
Volume-to-Capacity Ratio (X)						0.102				0.000			0.482			0.956		
Back of Queue (Q), ft/ln (95 th percentile)						54				0			265.6			823.3		
Back of Queue (Q), veh/ln (95 th percentile)						2.1				0.0			10.6			32.9		
Queue Storage Ratio (RQ) (95 th percentile)						0.00				0.00			0.00			0.00		
Uniform Delay (d_1), s/veh						27.9				0.0			12.8			21.1		
Incremental Delay (d_2), s/veh						0.3				0.0			0.1			12.8		
Initial Queue Delay (d_3), s/veh						0.0				0.0			0.0			0.0		
Control Delay (d), s/veh						28.3		0.0		0.0			12.9			33.9		
Level of Service (LOS)						C		A					B			C		
Approach Delay, s/veh / LOS						9.2		A		0.0		12.9		B		33.9		C
Intersection Delay, s/veh / LOS						25.8						C						
Multimodal Results						EB			WB			NB			SB			
Pedestrian LOS Score / LOS						2.12		B		2.12		B	1.37		A	1.89		B
Bicycle LOS Score / LOS								F		0.49		A	1.34		A	2.17		B

HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency		Lee Engineering				Duration, h		1.000											
Analyst		ES		Analysis Date		5/13/2024		Area Type		Other									
Jurisdiction		NMDOT		Time Period		AM		PHF		1.00									
Urban Street		Unser Blvd		Analysis Year		2026		Analysis Period		1> 7:45									
Intersection		I-40 EB Off Ramp		File Name		Horizon Total AM.xus													
Project Description		AM Horizon Total																	
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				112		159		0			1160			1846					
Signal Information							Cycle, s		120.0	Reference Phase		2							
Offset, s		0	Reference Point				End												
Uncoordinated		No	Simult. Gap E/W				On												
Force Mode		Fixed	Simult. Gap N/S				On												
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						2				6				8				4	
Case Number						5.0				8.0				8.0				8.0	
Phase Duration, s						48.6				48.6				71.4				71.4	
Change Period, (Y+R c), s						6.0				6.0				6.0				6.0	
Max Allow Headway (MAH), s						0.0				0.0				2.4				2.4	
Queue Clearance Time (g s), s														27.8				58.9	
Green Extension Time (g e), s						0.0				0.0				7.1				6.4	
Phase Call Probability														1.00				1.00	
Max Out Probability														0.00				0.10	
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				5		12		6			8			4					
Adjusted Flow Rate (v), veh/h				112		159		0			1160			1846					
Adjusted Saturation Flow Rate (s), veh/h/ln				1795				1900			1809			1809					
Queue Service Time (g s), s				5.1				0.0			25.8			56.9					
Cycle Queue Clearance Time (g c), s				5.1				0.0			25.8			56.9					
Green Ratio (g/C)				0.36				0.36			0.54			0.54					
Capacity (c), veh/h				698				675			1970			1970					
Volume-to-Capacity Ratio (X)				0.160				0.000			0.589			0.937					
Back of Queue (Q), ft/ln (95 th percentile)				101.3				0			378.2			799.1					
Back of Queue (Q), veh/ln (95 th percentile)				4.0				0.0			15.1			32.0					
Queue Storage Ratio (RQ) (95 th percentile)				0.00				0.00			0.00			0.00					
Uniform Delay (d 1), s/veh				26.6				0.0			18.3			25.4					
Incremental Delay (d 2), s/veh				0.5				0.0			0.1			7.5					
Initial Queue Delay (d 3), s/veh				0.0				0.0			0.0			0.0					
Control Delay (d), s/veh				27.1		0.0		0.0			18.4			32.9					
Level of Service (LOS)				C		A					B			C					
Approach Delay, s/veh / LOS				11.2		B		0.0			18.4		B		32.9		C		
Intersection Delay, s/veh / LOS				26.0						C									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.12		B		2.12		B		1.38		A		1.90		B	
Bicycle LOS Score / LOS						F		0.49		A		1.44		A		2.01		B	

HCS Signalized Intersection Results Summary

General Information						Intersection Information										
Agency		Lee Engineering				Duration, h		1.000								
Analyst		ES		Analysis Date		5/13/2024		Area Type		Other						
Jurisdiction		NMDOT		Time Period		PM		PHF		1.00						
Urban Street		Unser Blvd		Analysis Year		2026		Analysis Period		1> 15:45						
Intersection		I-40 EB Off Ramp		File Name		Horizon Total PM.xus										
Project Description		PM Horizon Total														
Demand Information				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h				67		136		0			1138			2256		
Signal Information																
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
				Green	29.0	69.0	0.0	0.0	0.0	0.0						
				Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
				Red	2.0	2.0	0.0	0.0	0.0	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					2		6		8		4					
Case Number					5.0		8.0		8.0		8.0					
Phase Duration, s					35.0		35.0		75.0		75.0					
Change Period, (Y+R c), s					6.0		6.0		6.0		6.0					
Max Allow Headway (MAH), s					0.0		0.0		2.4		2.4					
Queue Clearance Time (g s), s									20.8		69.9					
Green Extension Time (g e), s					0.0		0.0		9.6		0.0					
Phase Call Probability									1.00		1.00					
Max Out Probability									0.01		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				5		12		6			8			4		
Adjusted Flow Rate (v), veh/h				67		136		0			1138			2256		
Adjusted Saturation Flow Rate (s), veh/h/ln				1781				1900			1809			1809		
Queue Service Time (g s), s				3.2				0.0			18.8			67.9		
Cycle Queue Clearance Time (g c), s				3.2				0.0			18.8			67.9		
Green Ratio (g/C)				0.26				0.26			0.63			0.63		
Capacity (c), veh/h				535				501			2269			2269		
Volume-to-Capacity Ratio (X)				0.125				0.000			0.501			0.994		
Back of Queue (Q), ft/ln (95 th percentile)				63.5				0			267.6			1080.8		
Back of Queue (Q), veh/ln (95 th percentile)				2.5				0.0			10.7			43.2		
Queue Storage Ratio (RQ) (95 th percentile)				0.00				0.00			0.00			0.00		
Uniform Delay (d 1), s/veh				31.0				0.0			11.1			20.3		
Incremental Delay (d 2), s/veh				0.5				0.0			0.1			32.6		
Initial Queue Delay (d 3), s/veh				0.0				0.0			0.0			0.0		
Control Delay (d), s/veh				31.5		0.0		0.0			11.2			52.9		
Level of Service (LOS)				C		A					B			D		
Approach Delay, s/veh / LOS				10.4		B		0.0		11.2		B		52.9		D
Intersection Delay, s/veh / LOS				37.3					D							
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS				2.12		B		2.12		B	1.36		A	1.88		B
Bicycle LOS Score / LOS						F		0.49		A	1.43		A	2.35		B

Appendix E: Intersection Sight Distance Calculations

INTERSECTION SIGHT DISTANCE CALCULATIONS

Reference: 2018 AASHTO "Green Book" chapter 9.5

Design Vehicle: Combination Truck

Major Road Lanes:

Unser Blvd	NB – 2 through lanes
	SB – 2 through lanes
	15-ft wide Median
Los Volcanes Rd	EB – 1 through lane
	WB – 1 through lane
Saul Bell Rd	EB – 1 through lane
	WB – 1 through lane

Major Road Speed:

Unser Blvd: 45 MPH

Los Volcanes Rd: 35 MPH

Saul Bell Rd: 25 MPH

Case B1: A stopped vehicle turning left from a minor street approach onto a major road

Case B2: A stopped vehicle turning right from a minor street approach onto a major road

FORMULA:

$$ISD = 1.47 * V_{major} * t_g$$

Units: ISD (ft), V_{major} (MPH), and t_g (seconds)

Time Gaps (t_g):

11.5 (for combination truck turning left, crossing one lane of traffic)

10.5 (for combination truck turning right)

0.7 (added for each additional lane or 12-ft. median crossed)

SITE ACCESS 1

CASE B1 (LEFT TURN):

Assumption: Design vehicle is turning into the first lane of the major roadway.

Time Gap (t_g) = 11.5

$$ISD = 1.47 * 35 * 11.5 = 591.68 \text{ ft} \sim \mathbf{595 \text{ ft}}$$

CASE B2 (RIGHT TURN):

Assumption: Design vehicle is turning into the first lane of the major roadway.

Time Gap (t_g) = 10.5

$$ISD = 1.47 * 35 * 10.5 = 540.23 \text{ ft} \sim \mathbf{545 \text{ ft}}$$

SITE ACCESS 2

CASE B2 (RIGHT TURN):

Assumption: Design vehicle is turning into the first lane of the major roadway.

Time Gap (t_g) = 10.5

$$ISD = 1.47 * 45 * 10.5 = 694.58 \text{ ft} \sim \mathbf{695 \text{ ft}}$$

SITE ACCESS 3

CASE B1 (LEFT TURN):

Assumption: Design vehicle is turning into the first lane of the major roadway.

Time Gap (t_g) = 11.5

$$ISD = 1.47 * 25 * 11.5 = 422.63 \text{ ft} \sim \mathbf{425 \text{ ft}}$$

CASE B2 (RIGHT TURN):

Assumption: Design vehicle is turning into the first lane of the major roadway.

Time Gap (t_g)= 10.5

ISD= $1.47 \cdot 25 \cdot 10.5 = 385.88 \text{ ft} \sim \mathbf{390 \text{ ft}}$
