

# Traffic Impact Study Sedona West Apartments

Draft Report

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## EXECUTIVE SUMMARY

The following contains a Traffic Impact Study (TIS) for an apartments development to be located on the east side of Eagle Ranch Rd north of Paradise Blvd within the city of Albuquerque (CABQ), NM. This report has been completed by Lee Engineering for Sedona West LLC. All analyses and items contained herein conform to scoping requirements set forth in the CABQ Traffic Scoping Form dated on August 30, 2021. Scoping forms are located in Appendix A.

## BACKGROUND

The proposed apartments development will consist of a 218 units total, 20 units of low-rise multi-family housing and 198 units of mid-rise multi-family housing to be located at 9620 Eagle Ranch Rd near the intersection of Eagle Ranch Rd and Paradise Blvd within the CABQ, NM to be completed by 2022. A detailed site plan is included in Figure 2 of this report. Access to the site is to be taken from Eagle Ranch Rd via two existing full access driveways. Study Intersections, as shown in Figure 1, include:

- Eagle Ranch Rd & Irving Blvd
- Eagle Ranch Rd & Site Access/Agate Hills Rd
- Eagle Ranch Rd & Site Access/Paradise Blvd
- Eagle Ranch Rd & Miramar Dr
- Eagle Ranch Rd & Paradise Blvd

9-hour turning movement counts were collected on August 18, 2021, for all study intersections. These volumes were used in the existing conditions analysis. Traffic volumes for opening year scenarios (2022) were projected from 2021 turning movement counts using MRCOG growth rates. Construction is anticipated to begin in 2021 with full completion of the development in 2022. The development is to be constructed in one single phase.

Analysis scenarios for this study include:

1. Existing Conditions (2021)
2. Background - No Build (2022)
3. Full Build – Complete Construction (2022)
4. Horizon Year (2032)

## SUMMARY OF RECOMMENDATIONS

As included at the end of this report, recommendations are summarized as follows. Recommendations are separated into recommendations relevant to the proposed development and those outside the development's influence or are not related to the proposed development.

### DEVELOPMENT SPECIFIC RECOMMENDATIONS

- It is recommended that access to the site be maintained via the existing driveways analyzed in this report.
- It is recommended that intersection sight distance, as detailed in the sight distance section of this report, be provided/maintained.
- Eagle Ranch Rd & Irving Blvd
  - It is recommended that the traffic signal be re-timed upon opening of the development. Signal timings should be performed by a registered Profession Traffic Operations Engineer (PTOE) at least one month after the opening of the development.
- Eagle Ranch Rd & Paradise Blvd

- It is recommended that the traffic signal be re-timed upon opening of the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE) at least one month after the opening of the development.

#### **ANCILLARY RECOMMENDATIONS**

- Eagle Ranch Rd & Irving Blvd
  - For the southbound left turn (Eagle Ranch Rd) It is recommended that the auxiliary lane be lengthened to where the turn lane and abutting turn lane from the driveway to the north share back-to-back curb and gutter. The proposed development does not contribute traffic to this movement.
  - For the southbound right turn, it is recommended that the turn lane be lengthened to meet requirements set forth in the CABQ DPM. The proposed development does not contribute traffic to this movement.

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## INTRODUCTION

This report details the procedures and findings of a Traffic Impact Study (TIS) performed by Lee Engineering for Sedona West LLC. This report and the analyses contained herein were performed for proposed apartments development to be located on the east side of Eagle Ranch Rd north of Paradise Blvd in Albuquerque, NM.

All analyses and items contained herein conform to scoping requirements set forth in the CABQ Traffic Scoping Form dated on August 18, 2021. Scoping forms are located in Appendix A. Analysis procedures, conclusions, and recommendations for this study were developed according to the *ITE Trip Generation Manual 10<sup>th</sup> Edition*, and *Highway Capacity Manual 6<sup>th</sup> Edition*.

Construction is anticipated to begin in 2021 with full completion of the development in 2022. The development is to be constructed in one single phase.

Analysis procedures included in this report were performed for the following scenarios:

1. Existing Conditions (2021)
2. Background - No Build (2022)
3. Full Build – Complete Construction (2022)
4. Horizon Year (2032)

## PROJECT LOCATION & SITE PLAN

The proposed apartments development will consist of a 218 units total, 20 units of low-rise multi-family housing and 198 units of mid-rise multi-family housing. The development will to be located on the east side of Eagle Ranch Rd north of Paradise Blvd of Albuquerque, NM at 9620 Eagle Ranch Rd. Surrounding major intersections include Eagle Ranch Rd at Irving Blvd and Eagle Ranch Rd at Paradise Blvd. The project area is bounded by existing development. Adjacent to the proposed development, to the north, is Chuze Fitness. South and west of the proposed development, along Eagle Ranch Rd, consists of residential developments, both single-family and multi-family. East of the site are several commercial and retail developments, including Target. Figure 2 shows the proposed site plan.

## SITE ACCESS

Access to the site is to be taken from Eagle Ranch Rd via two existing full access driveways. The northern driveway will connect to the existing intersection of Eagle Ranch Rd and Agate Hills Dr, making the east leg of the intersection. The southern driveway will use the eastern leg of Eastern Ranch Rd and Paradise Blvd. Details of the driveway's location and access are included in subsequent sections of this report.





Figure 1. Vicinity Map







## STUDY AREA, AREA LAND USE, AND STREETS

### STUDY AREA

The study area is defined as the area bounded by Irving Blvd, Eagle Ranch Rd, and Paradise Blvd immediately surrounding the site. The following intersections were identified and agreed upon in the scoping form, and will serve as the study intersections for this report:

- Eagle Ranch Rd & Irving Blvd
- Eagle Ranch Rd & Site Access/Agate Hills Rd
- Eagle Ranch Rd & Site Access/Paradise Blvd
- Eagle Ranch Rd & Miramar Dr
- Eagle Ranch Rd & Paradise Blvd

### AREA LAND USE

As described, the proposed apartments development is to be located on the west side of CABQ at 9620 Eagle Ranch Rd within the city of Albuquerque. Surrounding major intersections include Irving Blvd, Eagle Ranch Rd and Paradise Blvd. Adjacent to and surrounding the project site are land uses consisting of the following:

- Commercial: A majority of the surrounding land use is commercial in nature, with commercial developments located east of the proposed developments.
- Residential: Just west and south of the proposed development, there are several multi-family housing developments as well as an area of single-family housing.

### STREETS

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

**Irving Blvd** is a four-lane median divided roadway classified by MRCOG as a Community Principal Arterial, running east and west north of the proposed development. Travel lanes range from 10-12 feet wide with medians of various widths. The roadway incorporates auxiliary left and right turn lanes throughout the corridor at intersections. Irving Blvd incorporates curb and gutter, and sidewalk is present on both sides of the road except east of Eagle Ranch Rd. The roadway has a posted speed limit of 40 MPH.


**Eagle Ranch Rd** is a four-lane median divided roadway classified by MRCOG as a Minor Arterial, running north and south along the frontage proposed development. Travel lanes range from 10-15 feet wide with medians of various widths. The roadway incorporates auxiliary left and right turn lanes throughout the corridor at intersections. Eagle Ranch Rd incorporates curb and gutter, and sidewalk is present on both sides of the road. The roadway has a posted speed limit of 35 MPH.

**Paradise Blvd** is currently classified by MRCOG as a Minor Arterial and runs east and west. West of Eagle Ranch Rd, Paradise Blvd is a four-lane median divided roadway with travel lanes approximately 11 feet wide with medians of various widths and has a posted speed limit of 45 MPH. The roadway incorporates auxiliary left and right turn lanes throughout the corridor at intersections. Pedestrian facilities are present on both sides of the road with sidewalk on the north side and a multi-use path on the south side. East of Eagle Ranch Rd, Paradise Blvd is a two-lane undivided roadway with a posted speed limit of 25 MPH.

### INTERSECTIONS

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

**Eagle Ranch Rd & Irving Blvd** is a 4-legged signalized intersection maintained by the City of Albuquerque. The signal operates with time-of-day coordination. Pedestrian crosswalks exist at all approaches of the intersection.

 **Eagle Ranch Rd & Paradise Blvd** is a 4-legged signalized intersection maintained by the City of Albuquerque. The signal operates with time-of-day coordination. Pedestrian crosswalks exist at all approaches of the intersection.

## TRANSIT

Currently, a one bus routes serves the study area, on Eagle Ranch Rd. Route 94 operates every weekday with one stop in the morning in the southbound direction and one stop in the evening in the southbound direction. There are two bus stops near to the proposed development on Eagle Ranch Rd south of Irving Blvd.

## MULTIMODAL CONNECTIVITY

Currently, bicycle facilities are not present immediately near the development. Sidewalks exists on both sides of all streets in compliance with CABQ DPM within the study area.

## CURRENT ADJACENT PROJECTS

As discussed in the scoping meeting, no known adjacent developments are present in the area.

## ANALYSIS OF EXISTING CONDITIONS

### DATA COLLECTION

Turning movement counts were collected for 9 hours in 3-periods: 6:00 AM-9:00 AM (morning), 11:00 AM-2:00 PM (mid-day), and 3:00 PM-6:00 PM (evening) on August 18, 2021 at the following study intersections:

- Eagle Ranch Rd & Irving Blvd
- Eagle Ranch Rd & Site Access/Agate Hills Rd
- Eagle Ranch Rd & Site Access/Paradise Blvd
- Eagle Ranch Rd & Miramar Dr
- Eagle Ranch Rd & Paradise Blvd

Growth rates were also obtained from the nearby traffic study for opening year and horizon year (10 years after projected build-out) analyses. Table 1 shows the peak hours for each intersection used in the analysis. Current year turning movement counts, lane geometry, and traffic control for the study intersections are presented in Figure 3. Full turning movement count sheets can be found in Appendix B.

Table 1: Intersection Peak Hours

Intersection	Data Collection Date	AM Peak Hour	PM Peak Hour
Eagle Ranch Rd & Irving Blvd	8/18/2021	7:30-8:30	4:45-5:45
Eagle Ranch Rd & Site Access/Agate Hills Rd	8/18/2021	7:30-8:30	4:45-5:45
Eagle Ranch Rd & Site Access/Paradise Blvd	8/18/2021	7:30-8:30	4:45-5:45
Eagle Ranch Rd & Miramar Dr	8/18/2021	7:30-8:30	4:45-5:45
Paradise Blvd & Eagle Ranch Rd	8/18/2021	7:30-8:30	4:45-5:45

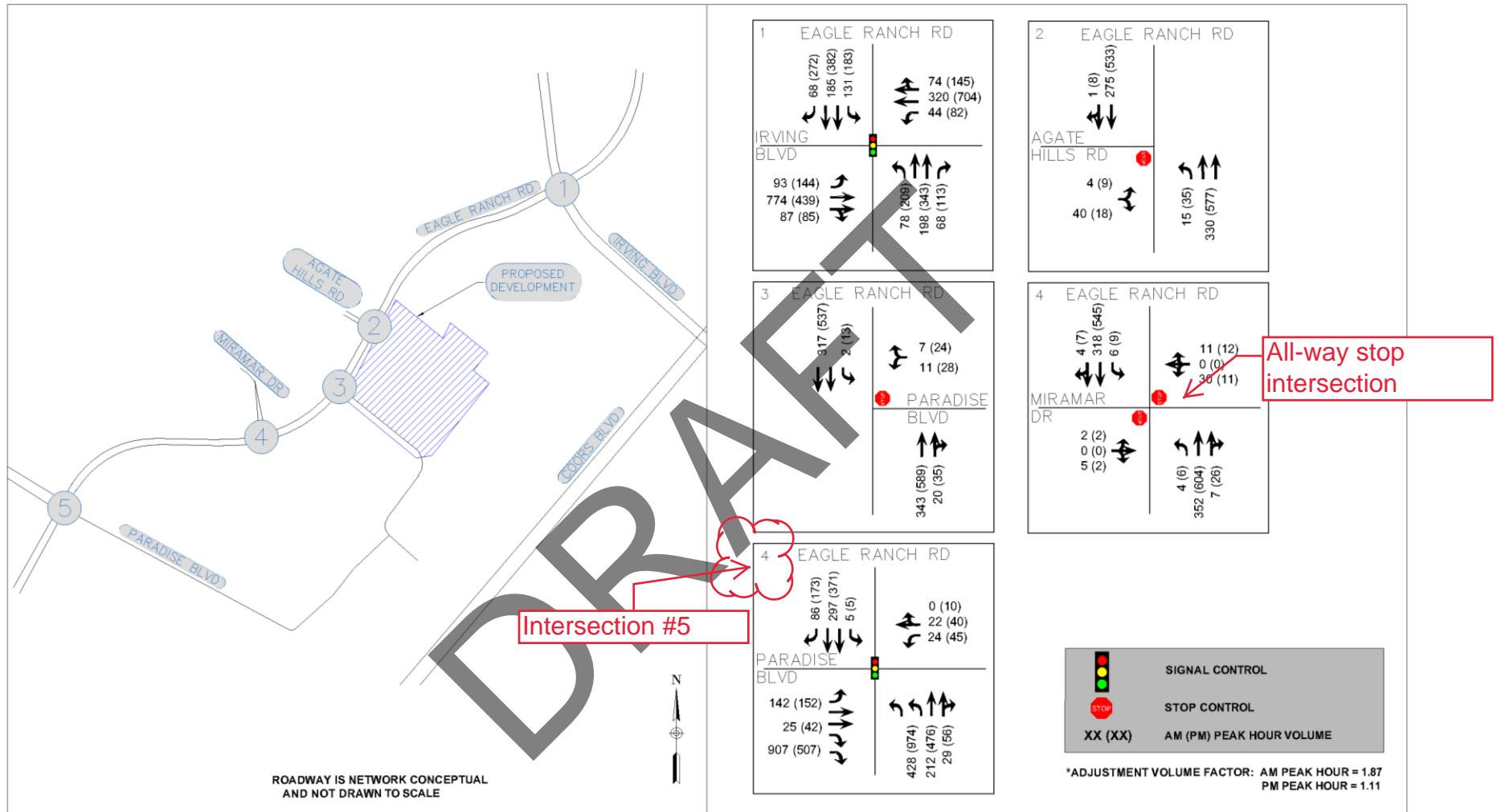


Figure 3. Existing 2021 Turning Movement Counts

## LEVEL OF SERVICE AND CAPACITY ANALYSIS

### INTERSECTION ANALYSIS

Intersection Capacity and Level of Service (LOS) analysis were performed according to the methods and procedures provided in the *Highway Capacity Manual, 6<sup>th</sup> Edition (HCM6)*. Highway Capacity software was used to facilitate the analysis. Per the Highway Capacity Manual, 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 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 2 below, reproduced from the Highway Capacity Manual, shows delay thresholds and the associated Level of Service assigned to delay ranges. Generally, a LOS of D or better is considered an acceptable level of service.

*Table 2: 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)

Unsignalized intersection LOS is divided into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way stop-controlled intersection LOS is expressed in terms of average vehicle delay of all the movements. Two-way stop-controlled intersection LOS is defined in terms of average vehicle delay of an individual movement. Table 3 shows LOS criteria for unsignalized intersections.

*Table 3: LOS Criteria for Unsignalized Intersections*

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

Based on procedures outlined in the Highway Capacity Manual, intersection delay and LOS for study intersections are reported as the delay and level of service for the worst-case movement. Per HCM6 procedures, peak hour factors obtained from collected traffic counts for the intersections were used in the existing conditions analysis and all other scenarios. Queues are reported for queue measurements falling within the 95<sup>th</sup> percentile. It should be noted that 95<sup>th</sup> percentile queues are statistically expected to occur during only 5% of the peak hour's sign cycles. It is also noted that un-reported average queueing at an intersection would statistically be much shorter than 95<sup>th</sup> percentile queueing.

## ANALYSIS OF SIGNALIZED INTERSECTIONS

Table 4 below summarizes intersection capacity and LOS analysis performed for existing conditions for the signalized intersections at Eagle Ranch Rd & Irving Blvd and Eagle Ranch Rd & Paradise Blvd. Per HCM6 procedures, peak hour factors obtained from collected traffic counts for the intersections were used in the existing conditions analysis and all other scenarios. Existing signal timings for Eagle Ranch Rd & Irving Blvd and Eagle Ranch Rd & Paradise Blvd, provided by CABQ, were used in each analysis scenario unless otherwise stated. Queueing is reported as a ratio Queue Storage Ratio (QSR) for signalized intersections and indicates the ratio of demand to capacity based on possible lengths of waiting vehicles during “red” times for specific movements. Table 5 below summarizes queueing results. Detailed capacity output sheets can be found in Appendix D.

Table 4: 2021 Existing Signalized Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Irving Blvd	Existing 2021	NBT	26.9	0.36	C	NBT	28.2	0.44	C	17.3	B	24.4	C
		SBT	24.7	0.28	C	SBR	38.1	0.82	D				
Eagle Ranch Rd & Paradise Blvd	Existing 2021	EBL	25.1	0.26	C	EBL	37.0	0.79	D	28.7	C	18.5	B
		EBR	43.3	0.91	D	EBR	34.8	0.43	C				

<sup>1</sup> Average delay in seconds per vehicle.

<sup>2</sup> LOS stands for Level of Service.

Table 5: 2021 Existing Signalized Queue Storage Summary

Study Intersection	Movement	Existing 2021	
		AM	PM
		95th Percentile (QSR)	95th Percentile (QSR)
Eagle Ranch Rd & Irving Blvd	EBL	0.28	0.60
	WBL	0.12	0.29
	NBL	0.53	1.49
	SBL	0.77	1.19
	SBR	0.43	2.36
Eagle Ranch Rd & Paradise Blvd	EBL	0.54	0.65
	WBL	0.22	0.45
	NBL	0.81	1.33
	SBL	0.03	0.02
	SBR	0.64	1.10

\*95th Percentile (QSR)= Queue Storage Ratio



From the tables above, the following is summarized:

#### Eagle Ranch Rd & Irving Blvd

- Capacity Analysis:
  - Under existing conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under existing conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound and southbound lefts and the southbound right are expected to generate a QSR greater than 1.

#### Eagle Ranch Rd & Paradise Blvd

- Capacity Analysis:
  - Under existing conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under existing conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound and southbound right are expected to generate a QSR greater than 1.

## ANALYSIS OF STOP CONTROLLED INTERSECTIONS

Table 6 below summarizes stop-controlled intersection capacity and LOS analysis performed for existing conditions for the unsignalized intersections. Queueing is reported as number of vehicles in the queue for stop-controlled intersections. Table 7 below summarizes queueing results. Detailed capacity output sheets can be found in Appendix D.

Table 6: 2021 Existing Stop Control Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Site Access/Agate Hills Rd	Existing 2021	EBL/T/R	9.5	0.06	A	EBL/T/R	11.4	0.05	B	9.5	A	11.4	B
Eagle Ranch Rd & Site Access/Paradise Blvd	Existing 2021	WBL/T/R	10.5	0.03	B	WBL/T/R	12.9	0.11	B	10.5	B	12.9	B
Eagle Ranch Rd & Miramar Dr	Existing 2021	EBL/T/R	8.6	-	A	EBL/T/R	9.8	-	A	9.5	A	13.5	B
		WBL/T/R	9.5	-	A	WBL/T/R	10.0	-	B				
		NBL	8.2	-	A	NBL	8.5	-	A				
		NBT	9.4	-	A	NBT	12.9	-	B				
		NBR	9.5	-	A	NBR	13.5	-	B				
		SBL	8.3	-	A	SBL	8.6	-	A				
		SBT	9.3	-	A	SBT	12.3	-	B				
		SBR	9.3	-	A	SBR	12.4	-	B				

<sup>1</sup>Average delay in seconds per vehicle.

<sup>2</sup>LOS stands for Level of Service.

Table 7: 2021 Existing Stop Control Queue Storage Summary

Study Intersection	Movement	Existing 2021	
		AM	PM
		95th Percentile (veh)	95th Percentile (veh)
Eagle Ranch Rd & Site Access/Agate Hills Rd	EBT	0.2	0.2
	NBL	0.0	0.1
	SBL	0.0	0.0
Eagle Ranch Rd & Site Access/Paradise Blvd	WBL/T/R	0.1	0.4
	NBL	0.0	0.0
	SBL	0.0	0.0
Eagle Ranch Rd & Miramar Dr	EBL	0.0	0.0
	WBL	0.2	0.2
	NBL	0.0	0.0
	NBT	1.0	2.8
	NBR	1.1	3.2
	SBL	0.0	0.0
	SBT	0.9	2.4
	SBR	0.9	2.5

\*95th Percentile Queues are calculated in vehicles

From the tables above, the following is summarized:

#### Eagle Ranch Rd & Site Access Driveway/Agate Hills Rd

- Capacity Analysis:
  - Under existing conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under existing conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

#### Eagle Ranch Rd & Site Access Driveway/Paradise Blvd

- Capacity Analysis:
  - Under existing conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under existing conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

## Eagle Ranch Rd & Miramar

- Capacity Analysis:
  - Under existing conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours.
- Queueing Analysis
  - Under existing conditions, queueing is observed to be accommodated by existing storage lengths and driveway site storage.

## ANALYSIS OF FUTURE CONDITIONS

The following sections detail the methods and calculations used to obtain traffic volumes for each analysis scenario. This process used the following tools as described below: Traffic Projections, and Site Trip Distributions & Assignment. Figures at the end of this section show the resulting traffic volumes determined for each analysis scenario.

### TRAFFIC PROJECTIONS

Construction is anticipated to begin in 2021 with full completion of the development in 2022. To forecast existing traffic volumes to future analysis background conditions, loading values from the 2016 and 2040 (updated) travel demand models were 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. To facilitate a conservative analysis, roadways calculated to have a yearly growth rate less than 1% were analyzed with a 1% per year growth rate. Growth rates were then converted to growth factors for specific analysis scenarios. Values provided by MRCOG are reproduced verbatim in Table 8, in addition to the calculated growth rates used in the analysis. Growth rates were then applied to the 2021 turning movement volumes to forecast future volumes.

Table 8: Growth Rate Method

Roadway				MRCOG 2016 Model "Peak Hour Load"	MRCOG 2040 Model "Peak Hour Load"	Yearly Growth Rate	Average Yearly Growth	Growth Rate Used
Coors Blvd	North of Irving Blvd	AM	PH	2294	2341	0.08%	0.18%	1.00%
		PM	PH	2278	2417	0.25%		
Coors Blvd	South of Irving Blvd	AM	PH	3179	3338	0.20%		
		PM	PH	2842	2960	0.17%		
Irving Blvd	East of Eagle Ranch Rd	AM	PH	1122	1380	0.87%	0.50%	
		PM	PH	824	877	0.26%		
Irving Blvd	West of Eagle Ranch Rd	AM	PH	767	816	0.26%		
		PM	PH	1335	1617	0.80%		
Irving Blvd	West of Coors Blvd	AM	PH	999	1187	0.72%		
		PM	PH	719	736	0.10%		
Eagle Ranch Rd	North of Irving Blvd	AM	PH	523	867	2.13%	1.45%	
		PM	PH	766	921	0.77%		
Paradise Blvd	West of Eagle Ranch Rd	AM	PH	1775	1982	0.46%	0.98%	
		PM	PH	944	1350	1.50%		

## TRIP GENERATION

Trip generation for the development was performed using the procedures and methodologies provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10<sup>th</sup> Edition*. The land use categories Multi-family Housing (low-rise) (ITE 220) and Multi-family Housing (mid-rise) (ITE 221) were used to generate trips for the development. Trips were calculated using rates for daily, AM peak hour, and PM peak hour generators. As previously stated, the development is to consist of one single phase. Total development trips and trips generated are shown below in the tables. Site trips for the development site were generated using data and procedures according to the Institute of Transportation Engineer's Trip Generation Manual. The site generated trips were added to background traffic volumes to create the build-out traffic volumes.

Table 9 provided below, shows expected trips generated by the development.

Table 9: Trip Generation

Use	Units		TRIP GENERATION										PEAK HOUR TRIPS			
			Saturday		Weekday		AM Peak			PM Peak			AM Peak		PM Peak	
			Rate	Trips	Rate	Trips	Rate	Enter	Exit	Rate	Enter	Exit	In	Out	In	Out
ITE 220 - Multifamily Housing (Low-Rise)	20	Units	8.14	163	7.32	146	0.56	28%	72%	0.67	59%	41%	3	8	8	5
ITE 221 - Multifamily Housing (Mid-Rise)	198	Units	4.91	972	5.44	1077	0.32	27%	73%	0.41	60%	40%	17	46	49	32
Total	218	Units	1135		1223		Total						20	54	57	37

## TRIP DISTRIBUTION AND ASSIGNMENT

Trip Distribution was determined based on the analysis of existing intersection demand characteristics within the study area. Overall, trips were distributed within the roadway network to and from the development based on the proportions of existing turning movement counts/demands. Trip routing was based on logical trip attractions and destinations for residential based trips. The figures below show the trip distribution and assignment for the development of each analysis scenario. Trips were then assigned to the background roadway networks to create build-out volumes and are shown in figures below.

## TRAFFIC VOLUME CALCULATIONS

Traffic volumes used in the analysis were calculated based on the following:

1. Existing Conditions: direct turning movement counts from 2021
2. Background 2022: 2022 growth rate applied to existing conditions
3. Full Build-out 2022: Background 2022 traffic volumes plus site trips
4. Horizon Year 2032: 2032 growth rate

As stated above, build-out traffic volumes were calculated using the growth rates and factors detailed in previous sections. Site trips were added to study intersections with direct access to the proposed development. Figure 4 through Figure 7 show the traffic volumes used for each individual analysis scenario.

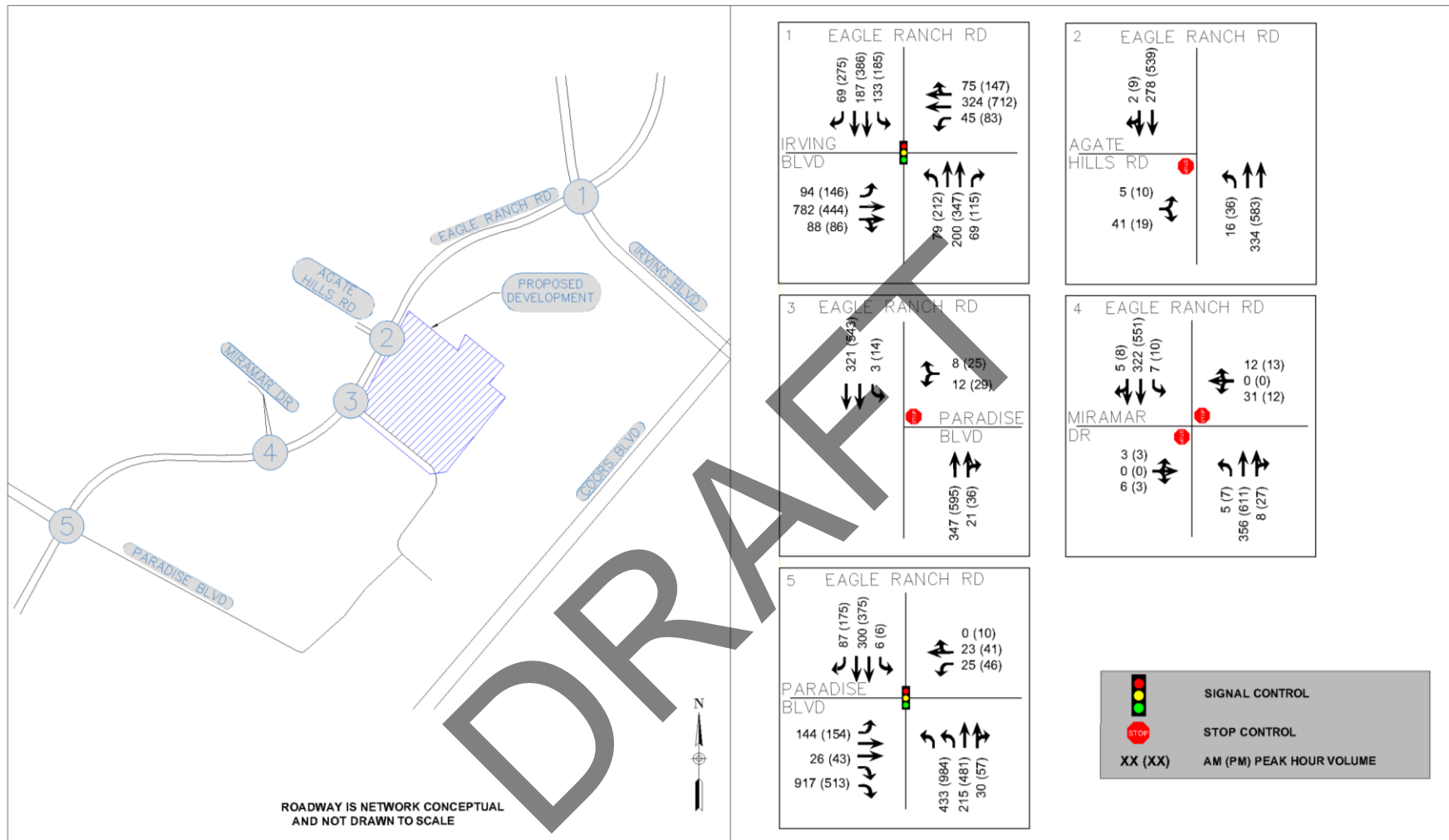


Figure 4. Background 2022 Turning Movement Traffic Volumes



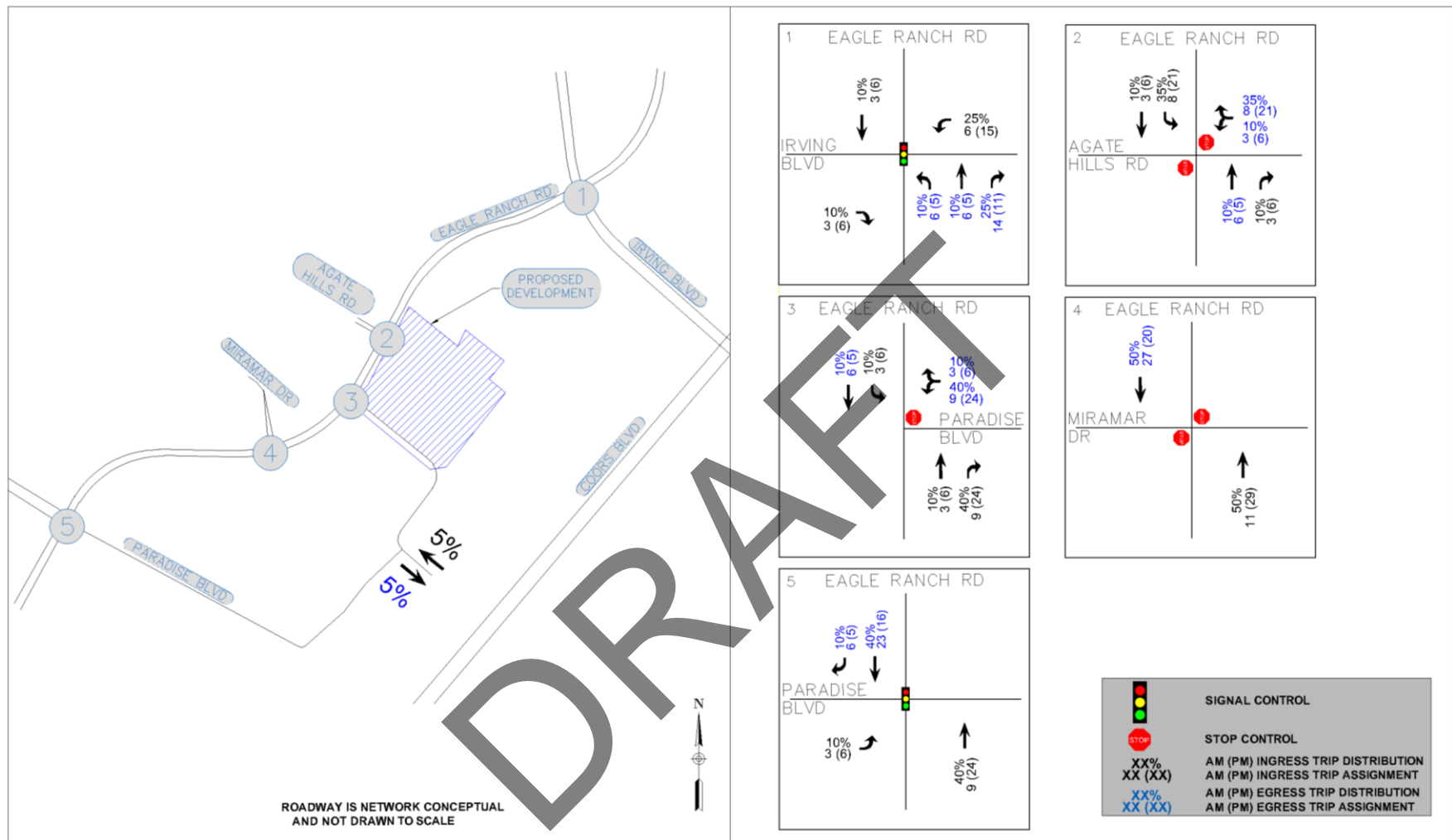


Figure 5. Trip Distribution and Assignment

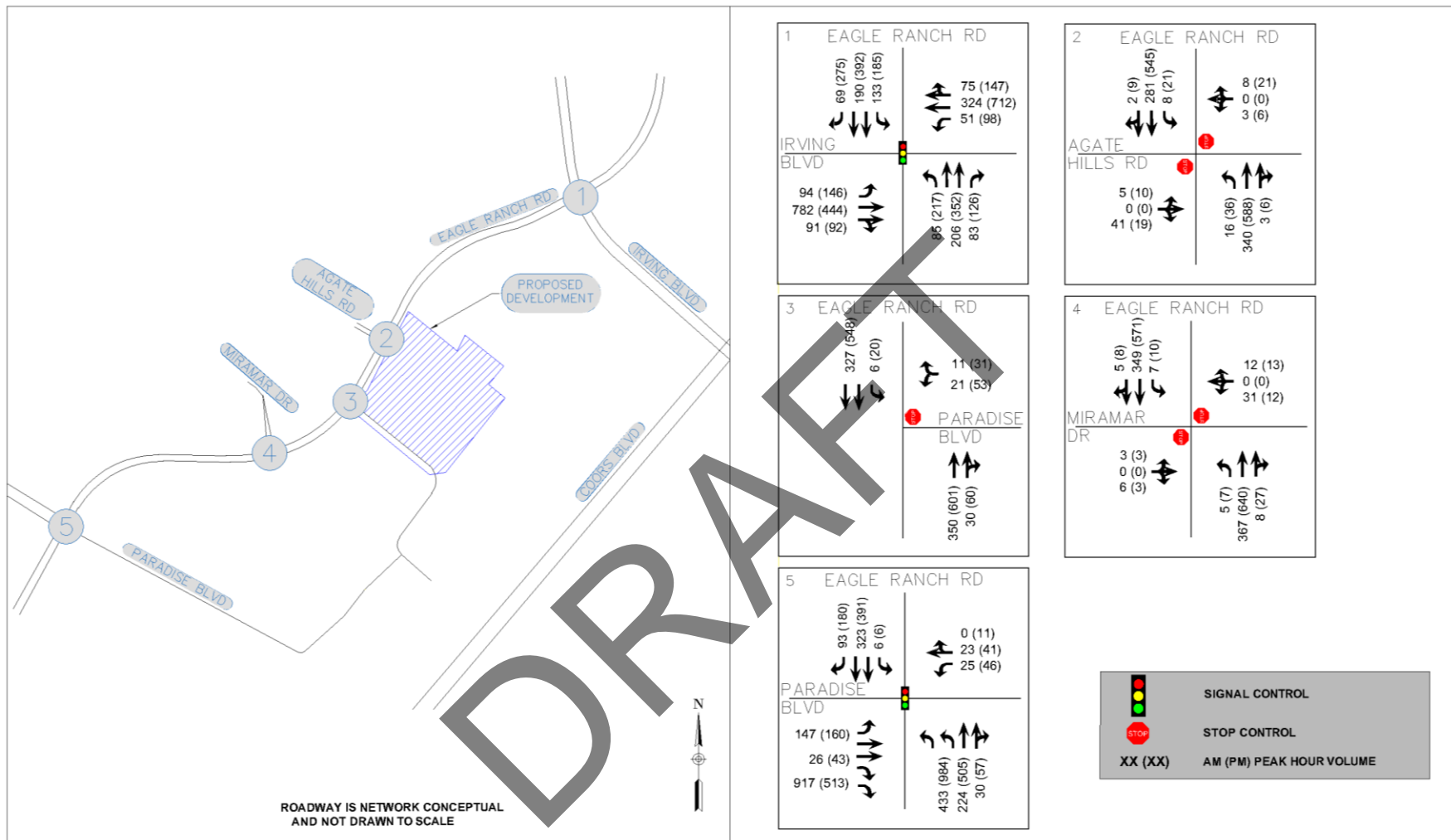


Figure 6. Full Build-Out 2022 Traffic Volumes

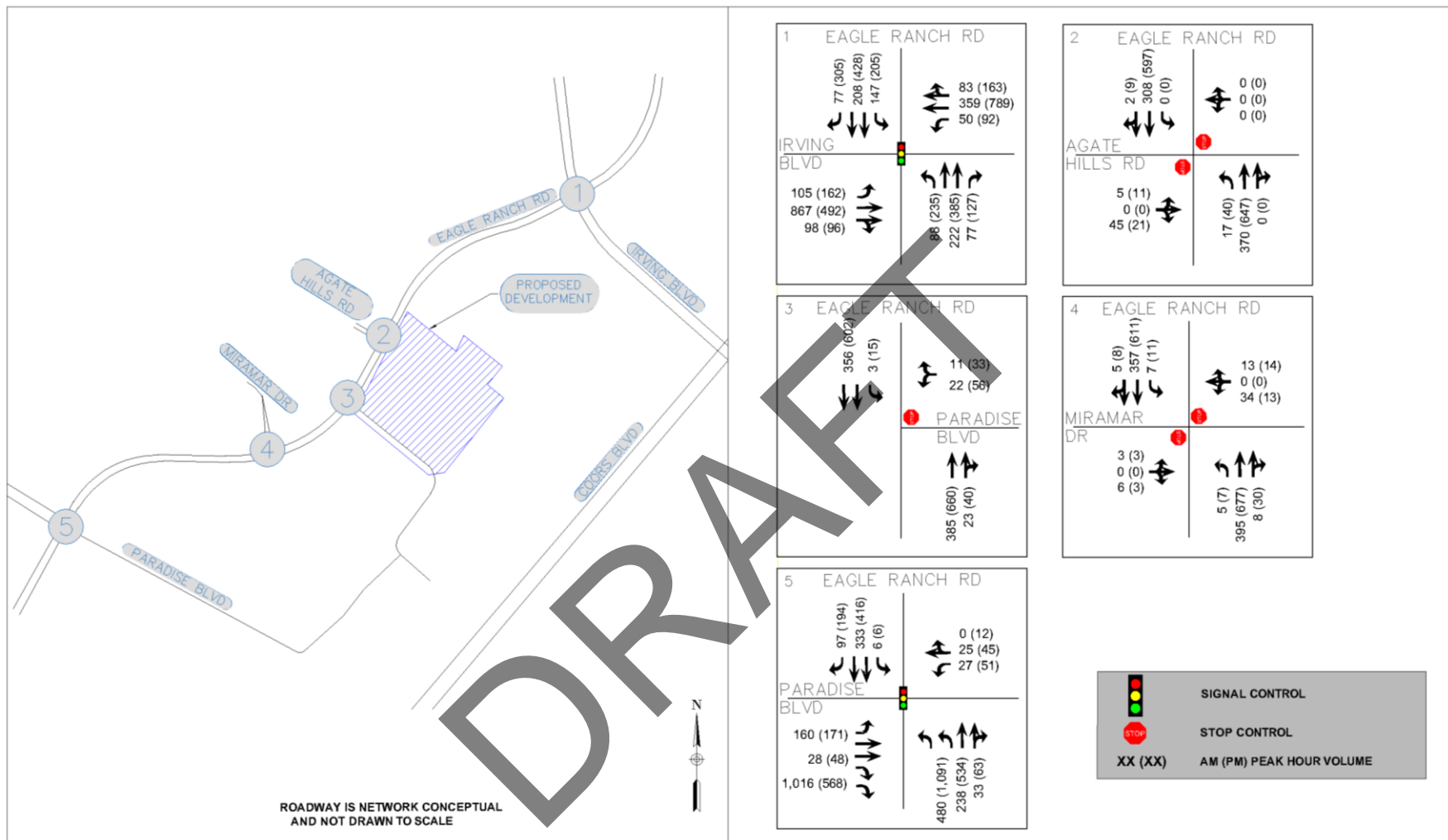


Figure 7. 2032 Horizon Year Traffic Volume

## TRAFFIC ANALYSIS OF BUILD-OUT AND HORIZON YEAR

As performed for existing conditions, a LOS, capacity, and queuing analysis was performed for all future analysis scenarios using the same procedures and assumptions. Signal timings used in the existing conditions analysis were retained and used for background conditions, build-out condition analysis, and horizon year.

### 2022 CONDITIONS

#### ANALYSIS OF SIGNALIZED INTERSECTIONS

Table 10 below summarizes intersection capacity and LOS analysis performed for 2022 conditions for the signalized intersections at Eagle Ranch Rd & Irving Blvd and Eagle Ranch Rd & Paradise Blvd.

Table 11 below summarizes queuing results. Detailed capacity output sheets can be found in Appendix D.

Table 10: 2022 Background and Full Build-Out Signalized Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Irving Blvd	Background 2022	NBT	27.0	0.36	C	NBT	28.0	0.43	C	17.5	B	23.7	C
		SBT	24.8	0.28	C	SBR	36.7	0.81	D				
	Full Build 2022	NBT	27.0	0.37	C	NBT	28.2	0.44	C	17.5	B	24.8	C
		SBT	25.0	0.29	C	SBR	38.9	0.82	D				
Eagle Ranch Rd & Paradise Blvd	Background 2022	EBL	44.2	0.92	D	EBL	37.0	0.79	D	29.2	C	18.7	B
		EBR	25.1	0.26	C	EBR	34.8	0.44	C				
	Full Build 2022	EBL	44.2	0.92	D	EBL	37.0	0.79	D	29.1	C	18.7	B
		EBR	25.2	0.26	C	EBR	35.1	0.45	D				

<sup>1</sup>Average delay in seconds per vehicle.

<sup>2</sup>LOS stands for Level of Service.

Table 11: 2022 Background and Full Build-Out Signalized Queue Storage Summary

Study Intersection	Movement	Background 2022		Full Build 2022		Storage Length Present (ft)
		AM	PM	AM	PM	
		95th Percentile (QSR)	95th Percentile (QSR)	95th Percentile (QSR)	95th Percentile (QSR)	
Eagle Ranch Rd & Irving Blvd	EBL	0.28	0.57	0.29	0.63	120
	WBL	0.12	0.28	0.13	0.35	145
	NBL	0.54	1.44	0.57	1.56	95
	SBL	0.79	1.14	0.79	1.21	105
Eagle Ranch Rd & Paradise Blvd	SBR	0.44	2.24	0.44	2.41	105
	EBL	0.55	0.67	0.56	0.70	225
	WBL	0.23	0.47	0.23	0.47	85
	NBL	0.83	1.37	0.83	1.37	165
	SBL	0.04	0.03	0.04	0.03	125
	SBR	0.66	1.12	0.71	1.16	105

\*95th Percentile (QSR)= Queue Storage Ratio

From the tables above, the following is summarized:

#### Eagle Ranch Rd & Irving Blvd

- Capacity Analysis:
  - Under 2022 background conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
  - Under 2022 full build conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2022 background conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound and southbound lefts and the southbound right are expected to continue generating a QSR greater than 1.
  - Under 2022 full-build conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound and southbound lefts and the southbound right are expected to continue generating a QSR greater than 1.

#### Eagle Ranch Rd & Paradise Blvd

- Capacity Analysis:
  - Under 2022 background conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
  - Under 2022 full build conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2022 background conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound left and the southbound right are expected to continue generating a QSR greater than 1.
  - Under 2022 full-build conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound left and the southbound right are expected to continue generating a QSR greater than 1.



## ANALYSIS OF STOP CONTROLLED INTERSECTIONS

Table 12 below summarizes stop-controlled intersection capacity and LOS analysis performed for 2022 conditions for the unsignalized intersections. Queueing is reported as number of vehicles in the queue for stop-controlled intersections.

Table 13 below summarizes queuing results. Detailed capacity output sheets can be found in Appendix D.

Table 12: 2022 Background and Full Build-Out Stop Control Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Site Access/Agate Hills Rd	Background 2022	EBL/T/R	9.7	0.06	A	EBL/T/R	11.5	0.05	B	9.7	A	11.5	B
	Full Build 2022	EBL/T/R	9.6	0.06	A	EBL/T/R	11.8	0.06	B	10.1	B	11.8	B
		WBL/T/R	10.1	0.02	B	WBL/T/R	11.6	0.05	B				
Eagle Ranch Rd & Site Access/Paradise Blvd	Background 2022	WBL/T/R	10.6	0.03	B	WBL/T/R	13.0	0.11	B	10.6	B	13.0	B
	Full Build 2022	WBL/T/R	10.8	0.05	B	WBL/T/R	14.2	0.19	B	10.8	B	14.2	B
Eagle Ranch Rd & Miramar Dr	Background 2022	EBL/T/R	8.7	-	A	EBL/T/R	9.9	-	A	9.6	A	13.8	B
		WBL/T/R	9.5	-	A	WBL/T/R	10.1	-	B				
		NBL	8.3	-	A	NBL	8.6	-	A				
		NBT	9.5	-	A	NBT	13.1	-	B				
		NBR	9.6	-	A	NBR	13.8	-	B				
		SBL	8.3	-	A	SBL	8.7	-	A				
		SBT	9.4	-	A	SBT	12.5	-	B				
		SBR	9.4	-	A	SBR	12.7	-	B				
	Full Build 2022	EBL/T/R	8.8	-	A	EBL/T/R	10.0	-	B	9.7	A	14.6	B
		WBL/T/R	9.6	-	A	WBL/T/R	10.2	-	B				
		NBL	8.3	-	A	NBL	8.6	-	A				
		NBT	9.7	-	A	NBT	13.8	-	B				
		NBR	9.7	-	A	NBR	14.6	-	B				
		SBL	9.4	-	A	SBL	8.7	-	A				
		SBT	9.6	-	A	SBT	13.0	-	B				
		SBR	9.6	-	A	SBR	13.1	-	B				

<sup>1</sup>Average delay in seconds per vehicle.

<sup>2</sup>LOS stands for Level of Service.

Table 13: 2022 Background and Full Build-Out Stop Control Queue Storage Summary

Study Intersection	Movement	Background 2022		Full Build 2022	
		AM	PM	AM	PM
		95th Percentile (veh)	95th Percentile (veh)	95th Percentile (veh)	95th Percentile (veh)
Eagle Ranch Rd & Site Access/Agate Hills Rd	EBL/T/R	0.2	0.2	0.2	0.2
	NBL	0.1	0.1	0.2	0.1
	SBL	0.0	0.0	0.0	0.1
Eagle Ranch Rd & Site Access/Paradise Blvd	WBL/T/R	0.1	0.4	0.2	0.7
	NBL	0.0	0.0	0.0	0.0
	SBL	0.0	0.0	0.0	0.1
Eagle Ranch Rd & Miramar Dr	EBL	0.0	0.0	0.0	0.0
	WBL	0.3	0.2	0.3	0.2
	NBL	0.0	0.0	0.0	0.0
	NBT	1.1	2.9	1.1	3.2
	NBR	1.1	3.3	1.2	3.7
	SBL	0.0	0.1	0.0	0.1
	SBT	0.9	2.4	1.0	2.6
	SBR	1.0	2.6	1.1	2.8

\*95th Percentile Queues are calculated in vehicles

From the tables above, the following is summarized:

#### Eagle Ranch Rd & Site Access Driveway/Agate Hills Rd

- Capacity Analysis:
  - Under 2022 background conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
  - Under 2022 full build conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2022 background conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.
  - Under 2022 full build conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

#### Eagle Ranch Rd & Site Access Driveway/Paradise Blvd

- Capacity Analysis:
  - Under 2022 background conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
  - Under 2022 full build conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.

- Queueing Analysis:
  - Under 2022 background conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.
  - Under 2022 full build conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

#### Eagle Ranch Rd & Miramar

- Capacity Analysis:
  - Under 2022 background conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours.
  - Under 2022 full build conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours.
- Queueing Analysis
  - Under 2022 background conditions, queueing is observed to be accommodated by existing storage lengths and driveway site storage.
  - Under 2022 full build conditions, queueing is observed to be accommodated by existing storage lengths and driveway site storage.

## 2032 HORIZON YEAR

### ANALYSIS OF SIGNALIZED INTERSECTIONS

Table 14 below summarizes intersection capacity and LOS analysis performed for 2032 Horizon Year for the signalized intersection at Juan Tabo Blvd and Lomas Blvd.

Table 15 below summarizes queueing results. Detailed capacity output sheets can be found in Appendix D.

Table 14: 2032 Horizon Year Signalized Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Irving Blvd	Horizon 2032	NBT	27.7	0.40	C	NBT	28.8	0.45	C	18.5	B	27.8	C
		SBT	25.4	0.31	C	SBR	45.0	0.85	D				
Eagle Ranch Rd & Paradise Blvd	Horizon 2032	EBL	59.2	0.99	E	EBL	36.9	0.81	D	36.2	D	21.1	C
		EBR	25.7	0.29	C	EBR	34.6	0.46	C				

<sup>1</sup>Average delay in seconds per vehicle.

<sup>2</sup>LOS stands for Level of Service.

Table 15: 2032 Horizon Year Signalized Queue Storage Summary

Study Intersection	Movement	Horizon 2032		Storage Length Present (ft)
		AM	PM	
		95th Percentile (QSR)	95th Percentile (QSR)	
Eagle Ranch Rd & Irving Blvd	EBL	0.33	0.76	120
	WBL	0.14	0.37	145
	NBL	0.61	1.75	95
	SBL	0.88	1.39	105
	SBR	0.50	2.88	105
Eagle Ranch Rd & Paradise Blvd	EBL	0.63	0.75	225
	WBL	0.25	0.53	85
	NBL	0.99	1.74	165
	SBL	0.04	0.03	125
	SBR	0.79	1.34	105

\*95th Percentile (QSR)= Queue Storage Ratio

From the tables above, the following is summarized:

#### Eagle Ranch Rd & Irving Blvd

- Capacity Analysis:
  - Under 2032 horizon conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2032 horizon conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound and southbound lefts and the southbound right are expected to continue generating a QSR greater than 1.

#### Eagle Ranch Rd & Paradise Blvd

- Capacity Analysis:
  - Under 2032 horizon conditions, the intersection is observed to operate at an acceptable level of service in both the AM and PM peak hours. Individual movements are also observed to operate at an acceptable Level of Service (LOS) for the AM and PM peak. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2032 horizon conditions, 95<sup>th</sup> percentile Queue Storage Ratios (QSR) at the intersection are observed to be accommodated by existing storage lengths during the AM peak hour. During the PM peak hour, the northbound left and the southbound right are expected to continue generating a QSR greater than 1.

## ANALYSIS OF STOP CONTROLLED INTERSECTIONS

Table 16 below summarizes stop-controlled intersection capacity and LOS analysis performed for 2032 Horizon Year for the unsignalized intersections. Queueing is reported as number of vehicles in the queue for stop-controlled intersections. Table 17 below summarizes queueing results. Detailed capacity output sheets can be found in Appendix D.

Table 16: 2032 Horizon Year Stop Control Capacity Analysis Summary

Study Intersection	Scenario	Worst Case Movement LOS and Delay								Intersection LOS			
		AM				PM				AM		PM	
		Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Worst Case Movements	Delay <sup>1</sup>	V/C	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay <sup>1</sup>	LOS <sup>2</sup>
Eagle Ranch Rd & Site Eagle Ranch Rd & Site Access/Paradise Blvd	Horizon 2032	EBL/T/R	9.8	0.07	A	EBL/T/R	12.0	0.06	B	9.8	A	12.0	B
	Horizon 2032	WBL/T/R	10.9	0.04	B	WBL/T/R	13.9	0.14	B	10.9	B	13.9	B
Eagle Ranch Rd & Miramar Dr	Horizon 2032	EBL/T/R	8.9	-	A	EBL/T/R	10.2	-	B	10.0	A	16.0	C
		WBL/T/R	9.8	-	A	WBL/T/R	10.4	-	B				
		NBL	8.3	-	A	NBL	8.7	-	A				
		NBT	9.9	-	A	NBT	14.9	-	B				
		NBTR	10.0	-	A	NBTR	16.0	-	C				
		SBL	8.4	-	A	SBL	8.8	-	A				
		SBT	9.7	-	A	SBT	14.0	-	B				
		SBTR	9.7	-	A	SBTR	14.2	-	B				

<sup>1</sup> Average delay in seconds per vehicle.

<sup>2</sup> LOS stands for Level of Service.

Table 17: 2032 Horizon Year Stop Control Queue Storage Summary

Study Intersection	Movement	Horizon 2032	
		AM	PM
		95th Percentile (veh)	95th Percentile (veh)
Eagle Ranch Rd & Site Access/Agate Hills Rd	EBL/T/R	0.2	0.2
	NBL	0.1	0.1
	SBL	0.0	0.0
Eagle Ranch Rd & Site Access/Paradise Blvd	WBL/T/R	0.1	0.5
	NBL	0.0	0.0
	SBL	0.0	0.1
Eagle Ranch Rd & Miramar Dr	EBL	0.0	0.0
	WBL	0.3	0.2
	NBL	0.0	0.0
	NBT	1.2	3.7
	NBR	1.3	4.4
	SBL	0.0	0.1
	SBT	1.1	3.1
	SBR	1.1	3.2

\*95th Percentile Queues are calculated in vehicle

From the tables above, the following is summarized:

Eagle Ranch Rd & Site Access Driveway/Agate Hills Rd

- Capacity Analysis:
  - Under 2032 horizon conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.



- Queueing Analysis:
  - Under 2032 horizon conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

#### Eagle Ranch Rd & Site Access Driveway/Paradise Blvd

- Capacity Analysis:
  - Under 2032 horizon conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours. It is noted that the v/c ratios for these movements do not indicate that the movements exceed capacity.
- Queueing Analysis:
  - Under 2032 horizon conditions, 95<sup>th</sup> percentile lengths at the intersection are observed to be less than 1 vehicle during the AM and PM peak hours.

#### Eagle Ranch Rd & Miramar

- Capacity Analysis:
  - Under 2032 horizon conditions, individual movements are observed to operate at an acceptable Level of Service (LOS) for both AM and PM peak hours.
- Queueing Analysis:
  - Under 2032 horizon conditions, queuing is observed to be accommodated by existing storage lengths and driveway site storage.

## DEVELOPMENT SITE SPECIFIC OBSERVATIONS AND RECOMMENDATIONS

### SITE ACCESS AND SIGHT DISTANCE EVALUATION

The following presents a narrative detailing recommended intersection sight distance requirement for the development. Intersection sight distance requirements were calculated per the City of Albuquerque Design Process Manual using 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.

Intersection sight distances were calculated based on the following assumptions:

- Required intersection sight distance for Case B1 at all four access driveways were calculated based on the design vehicle crossing a single lane of traffic on an undivided roadway.
- Required intersection sight distance for Case B2 at all four access driveways were calculated based on the design vehicle crossing into the nearest lane of traffic.

Due to the nature of this development, a single passenger vehicle was used as the design vehicle. Values shown below in Table 18 were rounded up to the nearest 5-foot increment. Formulas, values, and calculations used in the sight distance analysis can be found in the appendix.

*Table 18: Sight Distance Requirements*

Case	Location	Speed	Sight Distance
Case B1 - Turning Left	Site Access/Agate Hills Rd on Eagle Ranch Rd	35 MPH	390 Feet
Case B2 - Turning Right	Site Access/Agate Hills Rd on Eagle Ranch Rd	35 MPH	335 Feet
Case B1 - Turning Left	Site Access/Paradise Blvd on Eagle Ranch Rd	35 MPH	390 Feet
Case B2 - Turning Right	Site Access/Paradise Blvd on Eagle Ranch Rd	35 MPH	335 Feet

Using the values shown in Table 18, it is recommended that all development driveways adhere to the sight distance provisions detailed in the AASHTO “Green Book.” An area bounded by the above sight distances with the decision point placed 14.5 feet back from the edge of the shoulder midway between the outbound driving lane should be maintained clear of any obstructions.

## TURN LANE ANALYSIS

The City of Albuquerque 2020 Development Process Manual (DPM) turn lane warrants were reviewed for the site access driveways. DPM Table 7.4.67 was used to determine if turn lanes are warranted, and Tables 7.4.68, 7.4.69, and 7.4.70 was used to determine deceleration length, transition length, and taper length, if applicable. The results of this analysis are shown in the table below. Full-Build turning movement volumes and full build-out trips were used in the analysis.

Table 19: Auxiliary Lane Analysis

Warrant Location	Design Speed (MPH)	Left Turning Volume AM(PM)	Right Turning Volume AM(PM)	Left Turn Warrant Result (per Table 7.4.67)	Right Turn Warrant Result (per Table 7.4.67)
NB Eagle Ranch Rd at Site Access/Agate Hills	35		3 (6)		Not Required
SB Eagle Ranch Rd at Site Access/Agate Hills	35	8 (21)		Not Required	
NB Eagle Ranch Rd at Site Access/Paradise Blvd	35		9 (24)		Not Required
SB Eagle Ranch Rd at Site Access/Paradise Blvd	35	3 (6)		Not Required	

Based on the analysis presented above, turn lanes are not warranted for the site driveways.

## CRASH SUMMARY

Aggregate crash data was obtained for the intersection of Lomas Blvd & Juan Tabo Blvd for the most recently available five years of data. This included 2015 to 2019. Crashes are summarized by year, type, lighting conditions, severity, and cause. The table below summarizes crashes occurring at the intersection.

Table 20: Crash Summary

Crash Summary		Eagle Ranch South of Paradise	Eagle Ranch & Paradise	Eagle Ranch Between Paradise and Miramar	Eagle Ranch & Miramar	Eagle Ranch & Site Access /Agate Hills	Eagle Ranch Between Site Access /Agate Hills	Eagle Ranch & Irving
Total Crashes		16	154	3	4	2	2	91
By Year	2015	2	32	0	2	0	1	20
	2016	2	46	0	1	0	0	15
	2017	5	31	0	0	1	0	19
	2018	2	31	2	0	1	1	22
	2019	5	14	1	1	0	0	15
By Type	Fixed Object	0	6	2	0	1	0	2
	Invalid Code/Left Blank	0	9	0	0	0	0	6
	Other (Object)	0	2	0	0	0	1	0
	Other Vehicle - All Other	2	26	0	0	0	0	23
	Other Vehicle - Both Going Straight/Entering At Angle	3	16	0	0	0	0	6
	Other Vehicle - Both Turning/Entering At Angle	0	3	0	0	0	0	2
	Other Vehicle - From Opposite Direction	1	6	0	0	0	0	5
	Other Vehicle - From Same Direction/All Others	10	81	1	4	1	1	46
	Parked Vehicle	0	3	0	0	0	0	1
	Pedalcyclist	0	1	0	0	0	0	0
	Pedestrian	0	1	0	0	0	0	0
	%Other Vehicle - From Same Direction/All Others	63%	53%	33%	100%	50%	50%	51%
By Lighting Conditions	%Other Vehicle - All Other	13%	17%	0%	0%	0%	0%	25%
	%Other Vehicle - Both Going Straight/Entering At Angle	19%	10%	0%	0%	0%	0%	7%
	Day	11	111	2	3	1	1	68
	Dawn/Dusk	4	10	0	0	0	0	2
	Dark	1	31	1	1	1	0	16
By Severity	Invalid Code/Not Specified	0	2	0	0	0	1	5
	%Day	69%	72%	67%	75%	50%	50%	75%
	%Dark	6%	20%	33%	25%	50%	0%	18%
	PDO	15	114	1	2	1	2	75
	Injury	1	40	2	2	1	0	16
By Contributing Factors	%PDO	94%	74%	33%	50%	50%	100%	82%
	%Injury	6%	26%	67%	50%	50%	0%	18%
	Alcohol/Drug Involved	0	2	1	0	0	0	1
	Disregarded Traffic Signal	0	16	0	0	0	0	8
	Driver Inattention	4	45	1	2	2	1	14
	Drove Left Of Center	0	0	1	0	0	0	1
	Excessive Speed	1	6	0	0	0	0	3
	Failed to Yield Right of Way	7	40	0	0	0	0	22
	Following Too Closely	2	19	0	0	0	0	5
	Improper Lane Change	0	2	0	0	0	0	2
	Made Improper Turn	1	3	0	0	0	0	3
	Other - No Driver Error	0	1	0	0	0	0	0
	Passed Stop Sign	0	1	0	0	0	0	2
	Pedestrian Error	0	1	0	0	0	0	0
	Speed Too Fast for Conditions	0	6	0	0	0	0	2
	%Driver Inattention	25%	29%	33%	50%	100%	50%	15%
	%Failed to Yield Right of Way	44%	26%	0%	0%	0%	0%	24%
	%Following Too Closely	13%	12%	0%	0%	0%	0%	5%
	%Excessive Speed	0%	10%	0%	0%	0%	0%	9%

Based on Table 20, the following is observed for the signalized intersection of Eagle Ranch Rd and Irving Blvd:

- For the 5 years of data summarized, 91 crashes occurred.
- The most common classification of crash (other than an invalid code) is observed to be Other Vehicle – From Same Direction/All Others.
- A majority of the crashes occurred during daylight hours totaling 75% of the crashes.
- For the data reviewed, no fatal crashes were reported but injury crashes accounted for 18% of the total crashes.
- The most common contributing factor was observed to be Failed to Yield Right of Way.

Based on the above table, the following is observed for the signalized intersection of Eagle Ranch Rd and Paradise Blvd:

- For the 5 years of data summarized, 16 crashes occurred.
- The most common classification of crash (other than an invalid code) is observed to be Other Vehicle – From Same Direction/All Others.
- A majority of the crashes occurred during daylight hours totaling 69% of the crashes.
- For the data reviewed, no fatal crashes were reported but injury crashes accounted for 6% of the total crashes.
- The most common contributing factor was observed to be Failed to Yield Right of Way.

Based on the above table, the following is observed for the remaining study intersections between Irving Blvd and Paradise Blvd:

- For the 5 years of data summarized, 165 crashes occurred.
- The most common classification of crash (other than an invalid code) is observed to be Other Vehicle – From Same Direction/All Others.
- A majority of the crashes occurred during daylight hours totaling 72% of the crashes.
- For the data reviewed, no fatal crashes were reported but injury crashes accounted for 27% of the total crashes.
- The most common contributing factor was observed to be Driver Inattention.

## CAPACITY MITIGATIONS AND STREET IMPROVEMENTS



As shown in the above section, several few queueing issues are observed to be present across all analysis scenarios within the study area. The following provides a summary of the queueing issues as well as recommended mitigations for the study intersections.

### ***Eagle Ranch Rd & Irving Blvd***

For Eagle Ranch Rd & Irving Blvd, queueing issues are summarized as follows:

- Northbound Left Turn (Eagle Ranch Rd) QSR in the PM peak hour.
- Southbound Left Turn (Eagle Ranch Rd) QSR in the PM peak hour.
- Southbound Right Turn (Eagle Ranch Rd) QSR in the PM peak hour.

It is noted that the intersection exhibits QSR issues during existing conditions and in future analysis scenarios the development is observed to have minimal to no effect on the intersection and does not extensively exacerbate QSR issues at the intersection.

For the northbound left turn, lengthening of the turn lane is not recommended as the existing back-to-back turn lanes and drainage structure abutting the existing turn lane prevent constructing additional storage length without significant changes to the roadway and operations at adjacent driveways.

For the southbound left turn, it is recommended that the auxiliary lane be lengthened to where the turn lane and abutting turn lane from the driveway to the north share back-to-back curb and gutter. The development does not contribute traffic to this movement.

For the southbound right turn, it is recommended that the turn lane be lengthened to meet requirements set forth in the CABQ DPM. The development does not contribute traffic to this movement.

It is recommended that Eagle Ranch Rd & Irving Blvd be re-timed upon opening of the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE) at least one month after the opening of the development.

### ***Eagle Ranch Rd & Paradise Blvd***

For Eagle Ranch Rd & Paradise Blvd, queueing issues are summarized as follows:

- Northbound Left Turn QSR in the PM peak hour.
- Southbound Right Turn QSR in the PM peak hour.

It is noted that the intersection exhibits QSR issues during existing conditions and in future analysis scenarios the development is observed to have minimal to no effect on the intersection and does not extensively exacerbate QSR issues at the intersection.

For the northbound left turn, lengthening of the turn lane is not recommended as the existing back-to-back turn lanes and drainage structure abutting the existing turn lane prevent constructing additional storage length without significant changes to the roadway and operations at adjacent driveways.

For the southbound right turn, lengthening of the turn lane is not recommended as existing grades and retaining wall structures present on the west side of Eagle Ranch Rd prevent constructing additional storage length.

It is recommended that Eagle Ranch Rd & Paradise Blvd be re-timed upon opening of the development. Signal timings should be performed by a registered Professional Traffic Operations Engineer (PTOE) at least one month after the opening of the development.

## SUMMARY OF RECOMMENDATIONS

Based on the findings of this report, recommendations are summarized as follows. Recommendations are separated into recommendations relevant to the proposed development and those outside the development's influence or are not related to the proposed development.

### DEVELOPMENT SPECIFIC RECOMMENDATIONS

- It is recommended that access to the site be maintained via the existing driveways analyzed in this report.
- It is recommended that intersection sight distance, as detailed in the sight distance section of this report, be provided/maintained.
- Eagle Ranch Rd & Irving Blvd
  - It is recommended that the traffic signal be re-timed upon opening of the development. Signal timings should be performed by a registered Profession Traffic Operations Engineer (PTOE) at least one month after the opening of the development.
- Eagle Ranch Rd & Paradise Blvd
  - It is recommended that the traffic signal be re-timed upon opening of the development. Signal timings should be performed by a registered Profession Traffic Operations Engineer (PTOE) at least one month after the opening of the development.

### ANCILLARY RECOMMENDATIONS

- Eagle Ranch Rd & Irving Blvd
  - For the southbound left turn (Eagle Ranch Rd) it is recommended that the auxiliary lane be lengthened to where the turn lane and abutting turn lane from the driveway to the north share back-to-back curb and gutter. The proposed development does not contribute traffic to this movement.
  - For the southbound right turn, it is recommended that the turn lane be lengthened to meet requirements set forth in the CABQ DPM. The proposed development does not contribute traffic to this movement.