AUGUST 25, 2021

MONTAGE UNITS TRAFFIC IMPACT ANALYSIS

ALBUQUERQUE, NEW MEXICO

HUITT-ZOLLARS

333 Rio Rancho Dr, Suite 101
Rio Rancho, NM 87124-1457
Phone: (505) 892-5141
Fax: (505) 892-3259

HT#R16D099
received 8/27/2021

EXECUTIVE SUMMARY

The purpose of this study is to investigate the potential impact of traffic generated on the surrounding roadway network by the proposed Montage Unit developments in Albuquerque, NM. The proposed developments will lie south of Bobby Foster Rd. and west of University Blvd. The proposed developments, which are expected to be built out in 2023, will consist of five single-family residential housing subdivisions (Montage Unit 1, 3-6), a multi-family residential housing subdivision, a commercial development, and a K-12 charter school. The developments will include approximately 200, 150, 200, 175 and 85 single family detached units, 288 multi-family units, 200 student charter school, and 14,000 sf of commercial development. Montage Unit 1 was complete at the time of this study. Due to the close proximity of the developments, the generated trips were reduced since according to the *ITE Trip Generation Manual's* guidelines for internal capture. Internal capture occurs at a site when two or more land uses have a possibility of interacting with each other, particullarly where the trip can be made by walking. Assuming a 0.25 mile radius of the charter school, the commercial development, and the Albuquerque studios, trips to these locations were reduced due to walking. The adjusted generated traffic data presented in **Table E1**.

Table E1 – Adjusted Proposed Developments Generated Trips

Development	AM Peak Hour (Vehicle Trips)	PM Peak Hour (Vehicle Trips)
Montage Unit 1*	-	-
Montage Unit 3	89	120
Montage Unit 4	140	188
Montage Unit 5	129	174
Montage Unit 6	57	76
Multi-Family Housing	72	91
Charter School	109	24
Commercial Development	111	88

*No traffic generated since it is built out.

Due to the COVID-19 pandemic, traffic patterns were affected due to the public health emergency orders announced on March 11, 2020 in New Mexico. As a result, traffic counts collected during this time period would need to be adjusted using factors provided by the City of Albuquerque. In order to conduct this TIA, existing turning movement counts and field observations for all existing study intersections were obtained on April 21, 2021. The turning movement data for University Blvd and Fritts Crossing was collected between the hours of 7:00 AM to 10:00 AM and 3:00 PM to 6:00 PM. Twelve (12) hour turning movement data for University Blvd and Eastman Crossing and University Blvd and Strand loop was collected between the hours of 7:00 AM to 7:00 PM.

The scope of this study includes an engineering analysis of the traffic impacts at major intersections within a 1-mile radius of the proposed development in the 2023 and 2028 Built-Out years for the AM and PM peak hours and a highway capacity analysis along University Blvd from Crick Ave to Rio Bravo Blvd.

Recommendations for any required mitigations will be proposed. The intersections evaluated in this study are included in **Table E2**.

Table E2 – Study Intersections

Intersection Number	Intersection Street Names
1	Bobby Foster Rd and Driveway to Commercial Development (Driveway 1)
2	Bobby Foster Rd and Diebenkorn Dr
3	Bobby Foster Rd and Newhall Dr
4	Bobby Foster Rd and Sagan Loop
5	Bobby Foster Rd Driveway to Multi Family Housing (Driveway 2)
6	Frits Crossing and University Blvd
7	Bobby Foster Rd and University Blvd
8	University Blvd and Strand Loop
9	Stieglitz Ave and Sagan Loop

The distribution of the generated traffic through the study area intersections was determined by considering factors such as the existing traffic distribution, connectivity, capacity, and congestion of the surrounding roadway network. To evaluate the impact of the proposed development on the study area, the traffic conditions without the development (2023 No-Build and 2028 No-Build) and with the development (2023 Build-Out and 2028 Build-Out) were compared. The 2023 and 2028 No-Build traffic counts consists of the 2021 collected traffic counts projected to 2023 and 2028, with the inclusion of the proposed expansion to the Albuquerque Studios east of the proposed developments in 2028. The Bernalillo County Regional Outdoor Sports Complex trips were also included in the 2028 No-Build traffic. The 2021 Existing, 2023 No-Build, 2028 No-Build, 2023 Build, and 2028 Build conditions, were modeled using Synchro 11, and evaluated using intersection delay and level of service (LOS), which are measures of the driving conditions and congestion at an intersection.

From the Synchro traffic analyses performed at the intersections, it was concluded that the proposed developments impacts are mainly at Intersections 6-8. When comparing the No-Build to the Build scenarios, these intersections had a deteriorated to a LOS D or worse in 2023 or 2028. The following three mitigation alternatives for Intersections 6-8 were modeled in Synchro:

1. Signalizing Intersections 6-8
2. Placing roundabouts at Intersections 6-8
3. Placing All Way Stop Controlled (AWSC) at Intersections 6-8

Although a signal warrant studies will need to be conducted, the Synchro results were modeled to show the best alternatives for all three intersections. The modeling shows that signalizing or placing a

roundabout at Intersections 6 and 7 results in a LOS of B or better in both the 2023 and 2028 Build conditions. For Intersection 8, signalization is expected to result in a LOS of C or better in both the 2023 and 2028 Build condition. An AWSC for Intersection 6-8 was not recommended, since the LOS F remains in the 2028 PM peak hour when compared to the Build Conditions.

For the highway capacity along University Blvd from Crick Ave to Rio Bravo Blvd, it was noted that the northbound demand volume is lower than the southbound demand volume as expected since University Blvd has one lane northbound and two lanes southbound. Assuming a similar truck percentage and PHF as the data collected in April 28, 2021, the demand volumes for the AM peak northbound, AM peak southbound, PM peak northbound, and PM peak southbound are included in **Table E3.** If the volumes during the peak hour exceeds the demand volume listed below, a LOS F will be experienced along University Blvd. In 2023 and 2028 Build conditions, the roadway is expected to experience a LOS B for 2023 AM and PM peak hours and a LOS D or better for 2028 AM and PM peak hours. In 2035, the LOS F is expected on University Blvd with the full Build-Out traffic of the Albuquerque Studios.

Table E3 – Demand Volumes for University Blvd

University Blvd	Demand Volume (veh/hr)
AM Peak Northbound	1097
AM Peak Southbound	2194
PM Peak Northbound	1180
PM Peak Southbound	2360

SECTION 1 - INTRODUCTION

1.1 Purpose

This report analyzes the traffic impacts of the proposed Montage Unit subdivisions in Albuquerque, NM. The subdivisions will consist of five single-family residential housing subdivisions (Montage Unit 1, 3-6), a multi-family residential housing subdivision, a commercial development, and a K-12 charter school. This analysis seeks to determine the traffic impacts of the subdivisions and develop mitigations for intersections that are impacted. Within the study area, one subdivision (Montage Unit 1) is complete, while all other developments were under construction during to the data collection period.

1.2 LOS Methodology

To determine the traffic impact, the Level of Service (LOS), delay, and volume to capacity (V/C) ratios were determined.

Intersection LOS is a measure of driving conditions and vehicle delay. The LOS describes the quality of traffic operation on roadway facilities. The traffic capacity of intersections were evaluated to determine the LOS for the AM and PM peak-hours. The Highway Capacity Manual (HCM) defines the LOS and is widely used for traffic engineering studies. LOS range from A (best) to F (poorest). **Table 1** outlines the LOS definitions for signalized and unsignalized intersections.

Table 1 – Level of Service Intersection Standards (Adapted from the HCM 6th Edition)

LOS	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)	Traffic Flow Characteristics
A	<10	0-10	Virtually free flow, completely unimpeded
B	>10-20	>10-15	Stable Flow with slight delays, less freedom to maneuver
C	>20-35	>15-25	Stable flow with delays, less freedom to maneuver
D	>35-55	>25-35	High density, but stable flow
E	>55-80	>35-50	Operating conditions at or near capacity, unstable flow
F	>80	>50	Forced flow, breakdown conditions

< = less than > = greater than

Intersection delay is calculated by taking a weighted average of the total delays for each intersection lane group. Total delay includes queue delay and delay from stopping for signalized intersections. Intersection delay for unsignalized intersections does not include queue delay. According to the HCM, since the major-street at an unsignalized intersection is assumed to experience zero delay, a weighted average will skew

the delay. For unsignalized intersections, the highest delay on the minor movements is used to establish LOS for the intersection. Using the delay criteria in **Table 1**, a LOS value may be assigned to the study intersections.

The v/c ratio indicates the amount of congestion for each lane group. Any v/c ratio greater than or equal to one indicates that the approach is operating at or above capacity. The intersection v/c ratio is the maximum ratio from all the lane groups.

For this study, Synchro 11 software was used to analyze the traffic conditions for the following scenarios:

- Existing Conditions
- 2023 No-Build (Year 2023 without the project)
- 2023 Build Out (Year 2023 with project)
- 2028 No-Build (Year 2028 without the project)
- 2028 Build Out (Year 2028 with the project)

1.3 Traffic Count Methodology

Due to the COVID-19 pandemic, traffic patterns were affected due to the public health emergency orders announced on March 11, 2020 in New Mexico. As a result, traffic counts collected during this time period would need to be adjusted using factors provided by the City of Albuquerque. In order to conduct this TIA, existing turning movement counts and field observations for all existing study intersections were obtained on April 21, 2021. The turning movement data for University Blvd and Fritts Crossing was collected between the hours of 7:00 AM to 10:00 AM and 3:00 PM to 6:00 PM. Twelve (12) hour turning movement data for University Blvd and Eastman Crossing and University Blvd and Strand loop was collected between the hours of 7:00 AM to 7:00 PM.

SECTION 2 - EXISTING AND PROPOSED LAND USE

2.1 Site Location / Study Area

The proposed subdivisions will be located on the south side of Bobby Foster Rd. and west of University Blvd. Currently, most of the sites of the proposed developments are vacant. **Figure 1**, shown in **Appendix A**, identifies the project areas in relation to the surrounding roadway network. The proposed developments will tie into two existing roads including University Blvd and Bobby Foster Rd. The proposed subdivisions will connect to Stryker Rd and Frit Crossing. Surrounding streets and subdivisions are also identified **Figure 1**. The proposed development is about 1.8 miles east of Interstate Highway 25 (IH 25) and 8 miles south of Interstate Highway 40 (IH 40). **Appendix B** shows the proposed site plan for the Montage Units Site development.

Major intersections within a 1-mile radius from the development were investigated for this study. **Table 2** lists the intersections investigated, the numbering convention used in this report, and the intersection control type. The study intersections are also identified with corresponding intersection numbers in **Figure 1 (Appendix A)**. It is important to note that Bobby Foster Rd is proposed to be a four-lane divided roadway; however, the time frame for the realignment of Bobby Foster Rd had not been determined at the time of this study. This roadway was analyzed as a two-lane undivided roadway in 2023 and a four-lane divided roadway in 2028 in this study.

Table 2 – Intersections Identified for Impact Analysis Numbering and Control Type

Intersection Numbering	Location	Control Type
1	Bobby Foster Rd and Driveway to Commercial Development (Driveway 1)	Unsignalized
2	Bobby Foster Rd and Diebenkorn Dr	Unsignalized
3	Bobby Foster Rd and Newhall Dr	Unsignalized
4	Bobby Foster Rd and Sagan Loop	Unsignalized
5	Bobby Foster Rd Driveway to Multi Family Housing (Driveway 2)	Unsignalized
6	Frits Crossing and University Blvd	Unsignalized
7	Bobby Foster Rd and University Blvd	Unsignalized
8	University Blvd and Strand Loop	Unsignalized
9	Stieglitz Ave and Sagan Loop	Unsignalized

Figures 2 (Appendix A) shows the existing configurations for the study intersections listed in **Table 2.** If the intersections do not currently exist, the proposed configurations in 2028 were shown.

Intersection 1 is an unsignalized three-leg intersection at Bobby Foster Rd and Driveway 1 for the proposed commercial development. It was assumed that eastbound Bobby Foster Rd will include one through lane, and one shared through-right turn lane. It was assumed that westbound Bobby Foster Rd will include one through lane, and one shared through-left turn lane.

Intersection 2 will be an unsignalized three-leg intersection at Bobby Foster Rd and Diebenkorn Dr. Northbound Diebenkorn Dr will include one stop controlled shared left-right turn lane. It was assumed that eastbound Bobby Foster Rd will include one through lane, and one shared through-right turn lane. It was assumed that westbound Bobby Foster Rd will include one through lane, and one shared through-left turn lane.

Intersection 3 will be an unsignalized four-leg intersection at Bobby Foster Rd and Newhall Dr. Northbound Newhall Dr will include one stop controlled shared left-through-right turn lane. It was assumed that the southbound leg will include one stop controlled shared left-through-right turn lane from the proposed Bernalillo County Regional Outdoor Sports Complex. It was also assumed that eastbound and westbound Bobby Foster Rd will include one shared through-left turn lane, and one shared through-right turn lane each.

Intersection 4 is an unsignalized four-leg intersection at Bobby Foster Rd and Sagan Loop. It was assumed that the southbound leg will include one stop controlled shared left-through-right turn lane from the proposed Bernalillo County Regional Outdoor Sports Complex. It was also assumed that eastbound and westbound Bobby Foster Rd will include one shared through-left turn lane, and one shared through-right turn lane each. Sagan Loop consists of one stop controlled northbound shared left-through-right lane.

Intersection 5 is an unsignalized three-leg intersection at Bobby Foster Rd and Driveway 2. It was assumed that eastbound Bobby Foster Rd will include one through lane, and one shared through-right turn lane. It was assumed that westbound Bobby Foster Rd will include one through lane, and one shared through-left turn lane. It was assumed that the driveway will consist of an entrance and exiting lane.

Intersection 6 is an unsignalized three-leg intersection at University Blvd and Fritts Crossing. Northbound University Blvd consists of a shared through-right turn lane. Southbound University Blvd consists of one through lane and one left turn lane. Fritts Crossing includes one stop controlled westbound shared left-right turn lane.

Intersection 7 is an unsignalized four-leg intersection at Bobby Foster Rd, University Blvd, and Eastman Crossing. Northbound University Blvd includes two through lanes and one left-turn lane, and southbound University Blvd includes one left-turn lane and two through lanes. Eastbound Bobby Foster Rd was assumed to consist one through lane, one shared through-right turn lane, and a left turn lane. Westbound Eastman Crossing includes one through lane, one shared through-right turn lane, and a left turn lane.

Intersection 8 is an unsignalized four-leg intersection at University Blvd and Strand Loop. University Blvd includes two through lanes and one left-turn lane, and southbound University Blvd includes one left-turn

lane and two through lanes. Eastbound Strand Loop includes one stop controlled shared left-through-right lane and westbound Strand Loop includes one stop controlled shared left-through-right lane.

Intersection 9 is an unsignalized four-leg intersection at Stieglitz Ave and Sagan Loop. It includes one stop controlled westbound shared left-through-right-turn lane on Stieglitz Ave. Northbound Sagan Loop includes one shared through-left-turn lane. Southbound Sagan Loop includes one shared through-right-turn lane.

2.2 Existing Zoning

The proposed developments are classified as PC according to the City of Albuquerque Zoning Map, which is provided in **Appendix C**. Zoning PC represents a Planned Community zone. The proposed developments are approximately 234 acres. The developments include Montage Unit 1, 3, 4, 5 and 6 and consists of 200, 150, 200, 175 and 85 single family detached units, respectively. It also includes a K-12 Charter School with 200 students, a Multi-Family housing development with 288 multi-family units, and a Commercial Development with 14,000 SF. To the south, east, and west of the proposed development are also classified as PC zones. To the north of the proposed development is a park and open space zone.

2.3 Existing Development

Surrounding the proposed developments are mainly undeveloped lots and vacant land. However, to the east of the proposed developments is the Albuquerque Studio and to the north is a recreational park and an Amphitheatre. Since only Montage Unit 1 was completed at the time of the study, the generated trips from the Montage Units 3-6, K-12 Charter School, Multi-Family Homes, and Commercial Development will need to be added in order to conduct the traffic analysis.

2.4 Planned Developments

As of August 2021, there are two planned developments in close proximity to the Montage Units that need to be considered in the analyses. These developments include the expansion to the Albuquerque Studios east of the proposed developments and the construction of the Bernalillo County Regional Outdoor Sports Complex to the north of the proposed developments. Since both developments are within the project area, the developments will need to be considered under the No-Build conditions. According to the Albuquerque Studios Master Plan Development TIS provided in **Appendix D**, part of the studio is expected to be completed in 2026 and a future expansion is expected by 2035. As for the Bernalillo County Regional Outdoor Sports Complex, the traffic study had not been conducted at the time of this study. A site plan of the proposed Sports Complex is provided in **Appendix E**. Since the expected completion date was not provided for the sports complex, the full build-out of the traffic for the complex was included in the 2028 analyses for this study.

SECTION 3 - EXISTING AND PROPOSED TRANSPORTATION SYSTEMS

3.1 Thoroughfare Systems

For the proposed developments, access to and from IH-25 will be provided via University Blvd, which is the main roadway to all of the developments and is classified as a Major Collector according to the NMDOT Roadway Functional Class Map provided in **Appendix F**.

The streets that are included in the intersection analysis of this project can be classified as Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Residential according to the NMDOT Roadway Functional Class Map. These streets range in size from 2 to 5 lanes, and with a speed limit from 30 to 35 MPH. These streets are identified in **Figure 1 (Appendix A).** The characteristics of the roadways analyzed in this study are shown in **Table 3**.

Table 3 – Analyzed Roadway Characteristics

Roadway	Number of Lanes	Classification	Speed Limit
University Blvd	2-5	Major Collector	35
Bobby Foster Rd	2	Minor Collector	30
Diebenkorn Dr	2	Residential	30
Newhall Dr	2	Residential	30
Sagan Loop	2	Residential	30
Stieglitz Ave	1	Residential	30
Driveway 1	2	Residential	30
Driveway 2	2	Residential	30
Fritts Crossing	2	Residential	30
Eastman Crossing	2	Residential	30
Strand Loop	2	Residential	30

3.2 Other Transportation Facilities

At the time of this study, only Montage Unit 1 was complete. All other developments in the project area were planned or under construction. To analyze the pedestrian facilities, the completed development and the site plan of the developments was used to describe the facilities. Sidewalks and crosswalks are proposed for all roadways within the project area. Bike lanes are proposed along Bobby Foster Rd, Strand Loop, and Sagan Loop. Along University Blvd, there are bike lanes south of Arbus Dr. Sidewalks are proposed on the south side of Bobby Foster Rd and between Frits Crossing and Arbus Dr along University Blvd.

3.3 Existing Traffic Volumes

Traffic volumes were analyzed to determine the AM and PM peak hour volumes (PHV) and peak hour factors (PHF). The data was analyzed between the hours of 7:00 AM to 10:00 AM and 3:00 PM to 6:00 PM. Turning movement count data for the existing intersections is included in the **Appendix G**. PHVs were calculated by taking the highest four-consecutive 15-minute volumes for each turning movement at each approach over the two hour data collection period. The PHVs were adjusted using factors provided by the City of Albuquerque for COVID-19. Using this calculated peak hour, corresponding peak hour factors were calculated for each turning movement.

Peak hour factor is a traffic parameter used to describe the relationship between the peak 15-minute flow rate within the peak hour and the total peak hour volume. A high PHF (closer to 1) indicates that traffic is spread out relatively evenly throughout the peak hour. A low PHF (closer to 0) indicates that traffic is concentrated within the peak 15 minutes. **Table 4** shows the peak hour turning movement counts and peak hour factors for the AM and PM periods. **Figure 3 (Appendix A)** shows the existing adjusted AM and PM turning movements for the study intersections.

By using this method, the PHVs and PHFs show the "worst case scenario" for each turning movement. High traffic generators, such schools near the development, can have effects on left-turn and right-turn intersection movements that do not necessarily align with the highest through movement volumes. Calculating PHVs and PHFs by this method account for these differences and better show the impacts of high turning volumes.

Table 4 – Existing Peak Hour Movements

2021 Existing Peak Hour Movements															
No.	Intersection	Intersection Peak Hours	Peak Hour	Southbound			Westbound			Northbound			Eastbound		
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1*	Bobby Foster Rd & Driveway 1	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-
2*	Bobby Foster Rd & Dikenborn Dr	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-
3*	Bobby Foster Rd & Newhall Dr	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-
4*	Bobby Foster Rd & Sagan Loop	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-

* Data not available at these locations due to the intersections not yet constructed.

** PHVs adjusted due to COVID-19

Table 4 – Existing Peak Hour Movements (Continued)

2021 Existing Peak Hour Movements														
No.	Intersection	Intersection Peak Hours	Peak Hour	Southbound			Westbound			Northbound			Eastbound		
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
5*	Bobby Foster Rd & Driveway 2	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-
6**	University Blvd & Fritts Crossing	7:30 AM	AM PH Start	8:30 AM	7:30 AM		7:00 AM		7:45 AM		7:45 AM	7:30 AM			
			AM PHV	24	281		0		25		173	0			
			AM PHF	0.75	0.84		0.25		0.42		0.78	0.50			
		3:00 PM	PM PH Start	5:00 PM	3:00 PM		3:00 PM		3:00 PM		3:00 PM	3:00 PM			
			PM PHV	8	183		2		25		213	2			
			PM PHF	0.50	0.83		0.50		0.55		0.82	0.50			
7**	University Blvd & Eastman Crossing	7:15 AM	AM PH Start	7:30 AM	7:30 AM		7:30 AM		8:00 AM		7:45 AM	7:30 AM			
			AM PHV	99	171		0		41		68	8			
			AM PHF	0.43	0.88		0.63		0.62		0.70	0.35			
		3:00 PM	PM PH Start	3:00 PM	4:00 PM		3:30 PM		3:30 PM		4:15 PM	3:00 PM			
			PM PHV	36	102		5		49		114	2			
			PM PHF	0.56	0.90		0.30		0.57		0.81	0.35			
8**	University Blvd & Strand Loop	7:30 AM	AM PH Start	7:30 AM	7:30 AM	7:30 AM	8:15 AM		8:15 AM		8:00 AM	8:45 AM	7:45 AM		
			AM PHV	84	34	21	0		24		16	1	21		
			AM PHF	0.89	0.78	0.63	0.31		0.66		0.72	0.63	0.69		
		3:30 PM	PM PH Start	3:00 PM	4:00 PM	4:45 PM	3:15 PM	5:00 PM	4:15 PM	3:00 PM	3:00 PM	5:00 PM	3:00 PM		4:00 PM
			PM PHV	34	42	33	1	1	75	2	53	1	43		5
			PM PHF	0.66	0.53	0.85	0.35	0.25	0.74	0.50	0.81	0.31	0.69		0.75

* Data not available at these locations due to the intersections not yet constructed.

** PHVs adjusted due to COVID-19

Table 4 – Existing Peak Hour Movements (Continued)

2021 Existing Peak Hour Movements															
No.	Intersection	Intersection Peak Hours	Peak Hour	Southbound			Westbound			Northbound			Eastbound		
				Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
9*	Stieglitz Ave & Sagan Loop	-	AM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			AM PHF	-	-	-	-	-	-	-	-	-	-	-	-
		-	PM PH Start	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHV	-	-	-	-	-	-	-	-	-	-	-	-
			PM PHF	-	-	-	-	-	-	-	-	-	-	-	-

* Data not available at these locations due to the intersections not yet constructed.

** PHVs adjusted due to COVID-19

From **Table 4**, it is observed that AM peak hours occurred during 7:15 AM to 7:30 AM, with the most common peak hour at 7:30 AM. PHFs during the AM period range from 0.25 to 0.89. During the PM period, the movement peak hours varied between 3:00 PM to 3:30 PM, with the most common peak hour at 3:00 PM. PHFs during the PM period range from 0.25 to 0.85.

3.4 Background Growth

The study area population and corresponding traffic volume will continue to grow in future years. To account for future traffic growth, existing traffic counts were projected using a growth rate (GR) and a growth factor (GF). The growth rate is expressed as a percentage of growth over a year. For this study, a four percent (4.0%) growth rate was used to forecast future background traffic to the Build-Out year 2023 and 2028. This growth rate was developed from historical, existing, and projected traffic volumes collected from the Mid-Region Council of Governments' (MRCOG) Traffic Flows.

In the Synchro traffic modeling software, future traffic forecasts are determined using a growth factor, which is dependent on the growth rate. This growth factor is calculated using the equation GF=(1+GR)^n, where n is time in years. The calculated growth factor for 2023 and 2028 is 1.08 and 1.26 respectively. The existing 2021 AM and PM turning movements in the study area were multiplied by the growth factor to determine the forecasted turning movements for the No-Build 2023 and No-Build 2028.

In addition to considering traffic growth expected to occur by population growth, the generated traffic for the planned developments in the project area were included in the 2028 analyses. Consequently, the Albuquerque Studios Master Plan Development and the Bernalillo County Regional Outdoor Sports Complex's generated traffic was added to the No-Build 2028 traffic. To be conservative, it was assumed that the full build-out traffic for the sports complex expansion would occur in 2028. The Albuquerque Studios Master Plan Development TIS estimated that the studio build-out would generate 1,384 trips (1,071 entering, 313 exiting) in the AM peak hour, and 2,020 trips (750 entering, 1,270 exiting) in the PM peak hour. For the Bernalillo County Regional Outdoor Sports Complex, the trips were calculated using the *ITE Trip Generation Manual*, 10th *Edition* fitted curve equations for Land Use Code 488 and 490 based on the proposed site plan provided by Bernalillo County. The generated trips for the AM and PM peak hour are shown in **Table 5**. The trip calculations were presented to the City of Albuquerque and Bernalillo County for review and concurrence with the trips and the assumptions made for the distributions.

Table 5 – Bernalillo County Regional Outdoor Sports Complex Peak Hour Generated Trips, Land Use Codes 488 and 490

Development		Fields/Courts	Total Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Public Parks/Fields (Code 488)	AM Peak	24	24	61%	15	39%	9
	PM Peak		369	66%	243	34%	126
Indoor Practice Facility (Code 488)	AM Peak	1	1	61%	1	39%	0
	PM Peak		49	66%	32	34%	17
Sports Lifestyle Center (Code 490)	AM Peak	6*	0	61%**	0	39%**	0
	PM Peak		26	66%**	17	34%**	9
TOTAL		AM Peak	25	61%	16	39%	9
		PM Peak	444	66%	292	34%	152

*Converted SF of Sports Lifestyle Center to # of Courts.
** Assumed directional distribution similar to Land Use Code 488.

To estimate the 2023 No-Build traffic, the 2021 existing traffic counts were projected to 2023. To estimate the 2028 No-Build Traffic, the 2021 existing traffic counts were first projected to 2028 and then the generated traffic from both the Albuquerque Studios Master Plan Development TIA and the Bernalillo County Regional Outdoor Sports Complex was added to the projected 2028 traffic volumes.

For the Albuquerque Studios, the trip distributions presented in the TIS shown in **Appendix D** were followed. For the Bernalillo County Regional Outdoor Sports Complex, the following factors affected the trip distribution:

1. Assumed all roadway connections have been completed. This includes all driveways shown in the site plan (**Appendix E**) and the realignment of Bobby Foster Rd.
2. It was assumed that traffic entering and exiting to the sports complex were routed through the shortest path moved.
3. It was assumed that 90% of traffic entering the sports complex originated from north of the sports complex through University Blvd and 10% from the Montage Unit developments.
4. It was assumed that 60% of the traffic would enter through the two driveways on University Blvd and the remaining would enter through the driveways on Bobby Foster Rd.
5. It was assumed that the exiting traffic would return to the place of origin.
6. In the PM peak hour, it was assumed that the trips would follow the AM peak trip distribution percentage.

Considering the factors stated in above, the generated trips for the sports complex were distributed through the study intersections, and the turning movement volumes were calculated. **Figures 4** and **5**, shown in **Appendix A**, summarize the trip distribution for the sports complex and number of generated trips for the study intersections for the AM and PM peak hours, respectively. **Figure 6** and **7 (Appendix A)** show the AM and PM peak hour 2023 and 2028 No-Build turning movements for the study intersections**,** respectively.

3.5 Vehicle Trip Generation

The number of trips generated for the proposed developments were calculated using the *ITE Trip Generation Manual*, 10th *Edition*. The average trip rates for the peak hour of the adjacent street traffic were used for this study. These trips represent the highest peak hour vehicle trip generated by the development for the peak hour between 7 to 9 AM and the peak hour between 4 to 6 PM. A peak hour factor (PHF) of 0.59 was used in this study for all turning movements near the proposed charter school (Intersections 1-4, & 9) and a PHF of 0.92 was used for all remaining intersections. The PHF of 0.59 was used as determined in the NIA conducted for the proposed charter school in **Appendix H.**

3.5.1 Charter School

The proposed charter school development is expected to be a K-12 charter school. The applicable Land Use Code 536 was used to generate trips for this development. The number of students used to determine the number of generated trips, was 200 students. Trip generation for the developments were calculated using the fitted curve equations for Land Use Code 536. The generated trips for the AM and PM peak hour are shown in **Table 6**. Directional distribution for the generated trips were also determined using the *ITE Trip Generation Manual*. The number of vehicles entering and exiting the facilty are also presented in **Table 6**.

Table 6 – Proposed Development Peak Hour Generated Trips, Land Use Code 536

Development		Total Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Charter School	AM Peak	156	61%	95	39%	61
	PM Peak	34	43%	15	57%	19

3.5.2 Montage Units 3, 4, 5, and 6

The proposed Montage Units 3, 4, 5, and 6 residential development are categorized as single family (Land Use Code 210). The number of dwelling units used to determine the number of generated trips, was 200, 150, 200, 175, and 85 units, respectively. Trip generation for the developments were calculated using the fitted curve equations for Land Use Code 210. The generated trips for the AM and PM peak hour are shown in **Table 7**. Directional distribution for the generated trips were also determined using the *ITE Trip*

Generation Manual. The number of vehicles entering and exiting the facilty are also presented in **Table 7**.

Table 7 – Proposed Development Peak Hour Generated Trips, Land Use Code 210

Development		Total Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Montage Unit 3	AM Peak	111	25%	28	75%	83
	PM Peak	150	63%	95	37%	55
Montage Unit 4	AM Peak	147	25%	37	75%	110
	PM Peak	198	63%	125	37%	73
Montage Unit 5	AM Peak	129	25%	32	75%	97
	PM Peak	174	63%	110	37%	64
Montage Unit 6	AM Peak	85	25%	16	75%	49
	PM Peak	87	63%	55	37%	32

3.5.3 Multi-Family Homes

For the Multi-Family housing development, the applicable Land Use Code 221 was used. The number of units used to determine the number of generated trips was 288 units. Trip generation for the developments were calculated using the fitted curve equations for Land Use Code 221. The generated trips for the AM and PM peak hour are shown in **Table 8**. Directional distribution for the generated trips were also determined using the *ITE Trip Generation Manual*. The number of vehicles entering and exiting the facilty are also presented in **Table 8**.

Table 8 – Proposed Development Peak Hour Generated Trips, Land Use Code 221

Development		Total Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Multi-Family Housing	AM Peak	96	26%	25	74%	71
	PM Peak	122	61%	74	39%	48

3.5.4 Commercial Development

For the commercial development, the applicable Land Use Code 820 was used. The area used to determine the number of generated trips was 14,000 sf. Trip generation for the developments were calculated using the fitted curve equations for Land Use Code 820. The generated trips for the AM and PM peak hour are shown in **Table 9**. Directional distribution for the generated trips were also determined

using the *ITE Trip Generation Manual*. The number of vehicles entering and exiting the facilty are also presented in **Table 9**.

Table 9 – Proposed Development Peak Hour Generated Trips, Land Use Code 820

Development		Total Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Commercial Development	AM Peak	159	62%	99	38%	60
	PM Peak	127	48%	61	52%	66

3.6 Trip Adjustments

According to the *ITE Trip Generation Manual, i*nternal capture occurs at a site when two or more land uses have a possibility of interacting with each other, particullarly where the trip can be made by walking. This can result in the total generation of trips being reduced. Assuming that within a 0.25 mile radius of the charter school, the commercial development, and the Albuquerque studios trips to these locations can be reduced due to walking, the generated trips in Section 4.2 were reduced. **Figure 8** shows a the 0.25 mile radius in the project area from the charter school, the commercial development, and the Albuquerque studios.

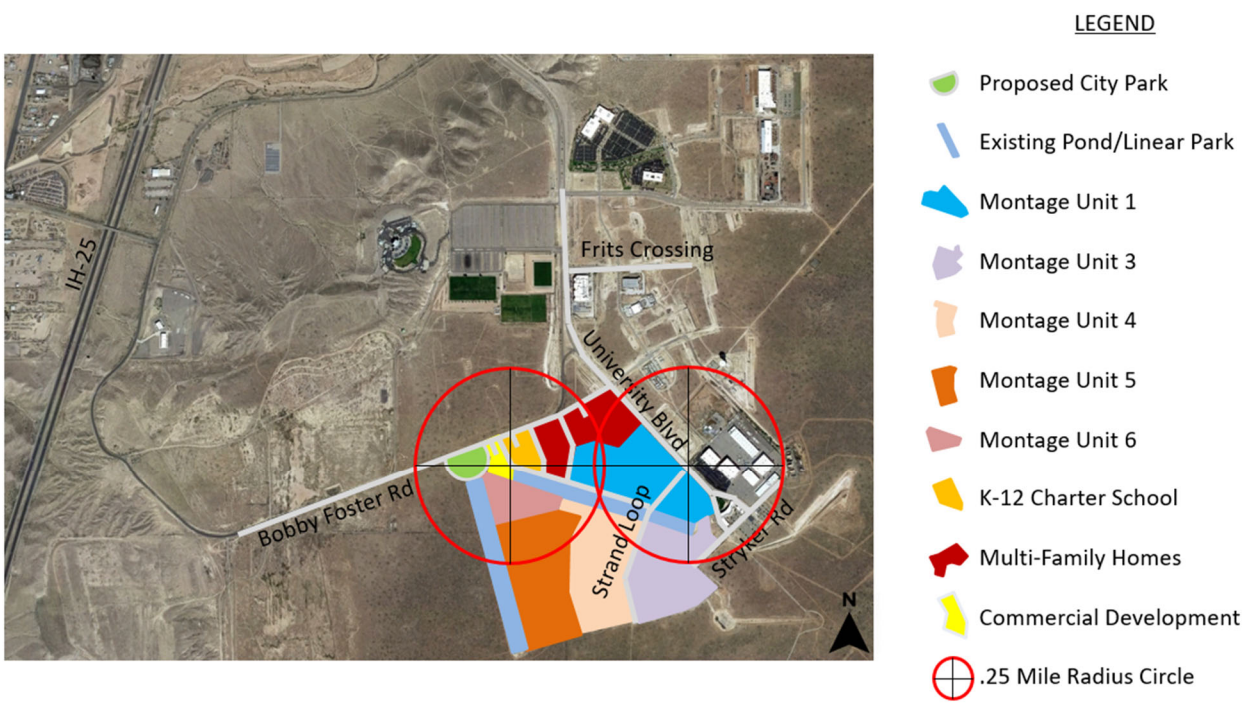

Figure 8 – 0.25 Mile Radius Site Map

The following assumptions were used to adjust the generated trips for internal capture near the charter school and commercial development:

1. 20% of Montage Unit 1 is within the 0.25 mile radius.
2. 10% of Montage Unit 4 is within the 0.25 mile radius.
3. 25% of Montage Unit 5 is within the 0.25 mile radius.
4. 100% of Montage Unit 6 is within the 0.25 mile radius.
5. 50% of the Multi-Family Housing are within the 0.25 mile radius.

The following assumptions were used to adjust the generated trips for internal capture near the Albuquerque studios:

6. 90% of Montage Unit 1 is within the 0.25 mile radius.
7. 40% of Montage Unit 3 is within the 0.25 mile radius.
8. 10% of Montage Unit 4 is within the 0.25 mile radius.
9. 25% of the Multi-Family Housing are within the 0.25 mile radius.
10. Assume 50% of people working at Albuquerque Studios live in the project area.

Following the assumptions, a 30% trip reduction was applied to the proposed charter school and commercial development. For the Montage Unit 1, 3, 4, 5, 6, and Multi-Family housing, a reduction of 45%, 20%, 5%, 0%, 13%, and 25% were used, respectively. **Table 10** shows the adjusted trip generation for the Montage Units, the multi-family housing, the charter school, and the commercial development.

Table 10 – Proposed Development Peak Hour Generated Trips, Land Use Code 210

Development		Adjusted Generated Trips	% Entering	Trips Entering	% Exiting	Exiting Trips
Montage Unit 3	AM Peak	89	25%	22	75%	67
	PM Peak	120	63%	76	37%	44
Montage Unit 4	AM Peak	140	25%	35	75%	105
	PM Peak	188	63%	119	37%	69
Montage Unit 5	AM Peak	129	25%	32	75%	97
	PM Peak	174	63%	110	37%	64
Montage Unit 6	AM Peak	57	25%	14	75%	43
	PM Peak	76	63%	48	37%	28
Multi-Family Housing	AM Peak	72	26%	19	74%	54
	PM Peak	91	61%	56	39%	35
Charter School	AM Peak	109	61%	67	39%	43
	PM Peak	24	43%	10	57%	14
Commercial Development	AM Peak	111	62%	69	38%	42
	PM Peak	88	48%	42	52%	46

3.7 Proposed Developments Trip Distribution

Traffic generated by the proposed developments were distributed and assigned to the study area intersections so that the Build scenarios could be established. The distribution of the generated traffic through the study area intersections was determined by considering factors such as the existing traffic distribution, connectivity, capacity, and congestion of the surrounding roadway network. Engineering judgment was also applied to these factors when developing assumptions for the analysis.

3.7.1 Charter School

The following factors affected the trip distribution:

7. Assumed all roadway connections have been completed. This includes Sagan Loop, Diebenkorn Dr, and the unnamed roadway around the proposed city park west of the proposed commercial development.
8. It was assumed that traffic entering and exiting to the charter school were routed through the shortest path moved.
9. For the charter school development trips, it was assumed that the remaining adjusted trips will be proportionate to the number of residential units outside of the 0.25 mile radius.
    a. 21% will originate from Montage Unit 1
    b. 20% will originate from Montage Unit 3
    c. 23% will originate from Montage Unit 4
    d. 17% will originate from Montage Unit 5
    e. 0% will originate from Montage Unit 6
    f. 19% will originate from the Multi-Family Housing
10. In the PM peak hour, it was assumed that the trips would follow the AM peak trip distribution percentage.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 9** and **10**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.2 Commercial Development

The following factors affected the trip distribution:

1. Assumed all roadway connections have been completed. This includes Sagan Loop, Diebenkorn Dr, and the unnamed roadway around the proposed city park west of the proposed commercial development.
2. It was assumed that the entrance to the commercial development was located on Intersection 1.
3. It was assumed that traffic entering and exiting to the commercial development were routed through the shortest path.

4. For the commercial development trips, it was assume that the remaining adjusted trips will be proportionate to the residential units outside of the 0.25 mile radius.
    a. 21% will originate from Montage Unit 1
    b. 20% will originate from Montage Unit 3
    c. 23% will originate from Montage Unit 4
    d. 17% will originate from Montage Unit 5
    e. 0% will originate from Montage Unit 6
    f. 19% will originate from the Multi-Family Housing
5. In the PM peak hour, it was assumed that the trips would follow the AM peak trip distribution percentage.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 11** and **12**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.3 Montage Unit 3

The following factors affected the trip distribution:

1. In the AM peak it was assumed remaining adjusted traffic will exit through University Blvd through the shortest path.
2. It was assumed that 30% of trips to Albuquerque studios remain.
3. It was assumed that 20% of trips would turn right on Fritts Crossing and 50% will continue north on Fritts Crossing.
4. It was assumed that 85% of trips to exit through Intersection 8 and 15% through Stryker Road.
5. It was assumed that 50% of trips entering would enter through Intersection 8 and 50% through Stryker Road.
6. In PM peak, it is assumed that outbound traffic would return to its place of origin.
7. It was assumed that 50% will exit through Intersection 8 and 50% will exit through Stryker Road in the PM Peak.
8. It is assumed that 100% of traffic exiting in the PM Peak would exit North through University.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 13** and **14**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.4 Montage Unit 4

The following factors affected the trip distribution:

1. In the AM peak it was assumed remaining adjusted traffic will exit through University Blvd through the shortest path.
2. It was assumed that 45% of trips to Albuquerque studios remain.
3. It was assumed that 10% of trips would turn right on Fritts Crossing and 45% will continue north on Fritts Crossing .
4. It was assumed that 77% of trips to exit through Intersection 8 and 23% through Stryker Road.
5. It was assumed that 90% of trips entering would enter through Intersection 8 and 10% through Stryker Road.
6. In PM peak, it is assumed that outbound traffic would return to its place of origin.
7. It was assumed that 90% will exit through Intersection 8 and 10% will exit through Stryker Road in the PM Peak.
8. It is assumed that 100% of traffic exiting in the PM Peak would exit North through University.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 15** and **16**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.5 Montage Unit 5

The following factors affected the trip distribution:

1. In the AM peak it was assumed remaining adjusted traffic will exit through University Blvd through the shortest path.
2. It was assumed that 50% of trips to Albuquerque studios remain.
3. It was assumed that 5% of trips would turn right on Fritts Crossing and 45% will continue north on Fritts Crossing .
4. It was assumed that 25% of trips to exit through Intersection 8, 25% through Stryker Road, and 50% west of Intersection 1.
5. It was assumed that 50% of trips entering would enter through Intersection 8, 25% through Intersection 2, and 25% west of Intersection 1.
6. In PM peak, it is assumed that outbound traffic would return to its place of origin.
7. It was assumed that 25% will exit through Intersection 8, 25% will exit through Stryker Road, 25% will exit through Intersection 2, and 25% will exit west of Intersection 1 in the PM Peak.
8. It is assumed that 100% of traffic exiting in the PM Peak would exit North through University.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 17** and **18**, shown in **Appendix A**, summarize the

trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.6 Montage Unit 6

The following factors affected the trip distribution:

1. In the AM peak it was assumed remaining adjusted traffic will exit through University Blvd through the shortest path.
2. It was assumed that 40% of trips to Albuquerque studios remain.
3. It was assumed that 10% of trips would turn right on Fritts Crossing and 50% will continue north on Fritts Crossing .
4. It was assumed that 40% of trips to exit through Intersection 8, and 60% west of Intersection 1.
5. It was assumed that 100% of trips entering would enter west of Intersection 1.
6. In PM peak, it is assumed that outbound traffic would return to its place of origin.
7. It was assumed that 50% will exit through Intersection 2, and 50% west of Intersection 1.
8. It was assumed that 30% would enter through Intersection 2 and 30% would enter west of Intersection 1 in the PM Peak.
9. It is assumed that 100% of traffic exiting in the PM Peak would exit North through University.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 19** and **20**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively.

3.7.7 Multi-Family Housing

The following factors affected the trip distribution:

1. In the AM peak it was assumed remaining adjusted traffic will exit through University Blvd through the shortest path.
2. It was assumed that 25% of trips to Albuquerque studios remain.
3. It was assumed that 15% of trips would turn right on Fritts Crossing and 60% will continue north on Fritts Crossing.
4. It was assumed that 13% of trips to exit through Intersection 8, 12% would exit on Arbus Dr, 38% through Intersection 4, and 37% through Intersection 5.
5. It was assumed that 50% of trips entering would enter through Intersection 4, 25% through Intersection 5, and 25% enter through Arbus Dr.
6. In PM peak, it is assumed that outbound traffic would return to its place of origin.
7. It was assumed that 50% will exit through Intersection 4, and 50% exit through Intersection 5.
8. It was assumed that 13% of trips to enter through Intersection 8, 25% would enter on Arbus Dr, 31% through Intersection 4, and 31% through Intersection 5.
9. It is assumed that 100% of traffic exiting in the PM Peak would exit North through University.

Considering the factors stated in above, the generated trips were distributed through the study area, and the turning movement volumes were calculated. **Figures 21** and **22**, shown in **Appendix A**, summarize the trip distribution and number of generated trips for the study intersections for the AM and PM peak hours, respectively. **Figure 23** and **24 (Appendix A)** show the AM and PM peak hour 2023 and 2028 Build turning movements for the study intersections.

SECTION 4 - TRAFFIC ANALYSIS

A traffic analysis was performed for the 2021 Existing conditions, and the 2023 Build-Out year and 2028 Future Year for the No-Build and Build conditions to determine the traffic impacts of the proposed improvements. The following sections describe the Synchro results for the Existing, No-Build, and Build scenarios.

4.1 Existing 2021

Table 11 summarizes the Synchro traffic analysis results for the nine study intersections for the 2021 Existing Conditions AM and PM peak hours. All intersections perform at a LOS B or better, in the AM Peak and PM Peak. **Appendix I** includes the Synchro results for the intersection analyses of the 2021 Existing Conditions.

Table 11 – Existing Condition (2021) Operational Measures

Intersection Number	Location	AM Peak Hour			PM Peak Hour		
		Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
1*	Bobby Foster Rd & Driveway 1	-	-	-	-	-	-
2*	Bobby Foster Rd & Diebenkorn Dr	-	-	-	-	-	-
3*	Bobby Foster Rd & Newhall Dr	-	-	-	-	-	-
4*	Bobby Foster Rd & Sagan Loop	-	-	-	-	-	-
5*	Bobby Foster Rd & Driveway 2	-	-	-	-	-	-
6	University Blvd & Fritts Crossing	9.8 (WB)	A	0.20	10.2 (WB)	B	0.16
7	University Blvd & Eastman Crossing/Bobby Foster	8.9 (WB)	A	0.16	13.4 (WB)	B	0.35
8	University Blvd & Strand Loop	11.3 (EB)	B	0.06	11.9 (EB)	B	0.12
9*	Stieglitz Ave & Sagan Loop	-	-	-	-	-	-

*-Intersections are not yet constructed.

4.2 No-Build

The No-Build conditions were evaluated for the nine intersections in the project area, for the 2023 Base Year and 2028 Future Year to determine whether the existing roadway network can support future traffic demand.

Table 12 summarizes the intersection Synchro results for the 2023 and 2028 AM and PM peak hour No-Build conditions. All intersections experience an increase in delay in 2023 and 2028 as expected with an increase in traffic. In 2023, all intersections perform at a LOS B or better in the AM peak hour and PM peak hour. In 2028 during the AM peak hour, all intersections perform at a LOS C or better except for Intersection 7 which experiences a LOS F. In the 2028 PM peak hour, all intersections perform at a LOS C or better except for Intersection 7 and 8 which experiences a LOS E or F. The Synchro results for the AM and PM peak hour analyses of the 2023 and 2028 No-Build Conditions are included in **Appendix J**.

Table 12 – Operational Measures for No-Build Scenarios

Intersection Number	Location	Alternative	AM Peak Hour			PM Peak Hour		
			Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
1	Bobby Foster Rd & Driveway 1	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		*2028 No-Build	-	-	-	-	-	-
2	Bobby Foster Rd & Diebenkorn Dr	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		*2028 No-Build	-	-	-	-	-	-
3	Bobby Foster Rd & Newhall Dr	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		2028 No-Build	12.3 (SB)	B	0.16	15.0 (SB)	B	0.11
4	Bobby Foster Rd & Sagan Loop	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		2028 No-Build	10.6 (SB)	B	0.04	12.4 (SB)	B	0.11
5	Bobby Foster Rd & Driveway 2	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		*2028 No-Build	-	-	-	-	-	-
6	University Blvd & Fritts Crossing	Existing 2021	9.8 (WB)	A	0.20	10.2 (WB)	B	0.16
		2023 No-Build	9.9 (WB)	A	0.21	10.3 (WB)	B	0.17
		2028 No-Build	11.1 (WB)	B	0.49	19.6 (WB)	C	0.41
7	University Blvd & Eastman Crossing/Bobby Foster	Existing 2021	8.9 (WB)	A	0.16	13.4 (WB)	B	0.35
		2023 No-Build	8.9 (WB)	A	0.44	14.4 (WB)	B	0.40
		2028 No-Build	** (WBL)	F	1.68	** (WBL)	F	1.35
8	University Blvd & Strand Loop	Existing 2021	11.3 (EB)	B	0.06	11.9 (EB)	B	0.12
		2023 No-Build	11.6 (EB)	B	0.06	12.3 (EB)	B	0.13
		2028 No-Build	21.4 (EB)	C	0.21	48.5 (EB)	E	0.61
9	Stieglitz Ave & Sagan Loop	*Existing 2021	-	-	-	-	-	-
		*2023 No-Build	-	-	-	-	-	-
		*2028 No-Build	-	-	-	-	-	-

*- Intersections are not yet constructed.
**-Intersection delay calculated in Synchro was too high. As a result, Synchro reports delay as “Err”.

4.3 Build

The Build conditions were also evaluated for the nine intersections in the project area for the 2023 Base Year and 2028 Future Year to determine whether the existing roadway network can support future traffic demand.

Table 13 summarizes the intersection results for the 2023 and 2028 AM and PM peak hour Build and No-Build conditions for comparison. All existing intersections experience an increase in delay from the No-Build to the Build scenarios as expected with an increase in traffic. In 2023 and 2028, all new intersections (Intersections 1-6, and 9) experience a LOS B or better for both the AM and PM peak hours.

Of the three existing intersections, Intersection 6 experiences a LOS B during the AM Peak for both 2023 and 2028. In the PM Peak, the LOS deteriorates to LOS D and LOS F in 2023 and 2028, respectively. For Intersection 7, the intersection experiences a LOS D during the 2023 PM Peak and a LOS F during the AM Peak. In the Build 2028 scenario, the LOS remains at a LOS F in both the AM and PM Peak similar to the 2028 No-Build conditions. Intersection 8 experiences a LOS C during the 2023 AM Peak and a LOS F during the PM Peak. In the Build 2028 scenario, the LOS deteriorates to a LOS F in the AM and remains at a LOS F in the PM Peak similar to the 2028 No-Build conditions. The Synchro results for the AM and PM peak hour analyses of the 2023 and 2028 Build Conditions are included in **Appendix K**. For an unsignalized intersections, the LOS used to determine the delay is based on the movement with the highest delay, not an overall LOS for the entire intersection. Therefore, for Intersections 6-8, the failing LOS is seen for the minor street's left turn movement onto University Blvd. The high volume of traffic from the Albuquerque Studios on University causes insufficient gaps for the left turns from the minor streets.

Table 13 – Operational Measures for Build Scenarios

Intersection Number	Location	Alternative	AM Peak Hour			PM Peak Hour		
			Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
1	Bobby Foster Rd & Driveway 1	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	-	-	-	-	-	-
		2023 Build	8.9 (NB)	A	0.07	8.6 (NB)	A	0.03
		2028 Build	10.6 (NB)	B	0.26	9.7 (NB)	A	0.18
2	Bobby Foster Rd & Diebenkorn Dr	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	-	-	-	-	-	-
		2023 Build	9.0 (NB)	A	0.08	8.7 (NB)	A	0.05
		2028 Build	10.6 (NB)	B	0.27	9.9 (NB)	A	0.18
3	Bobby Foster Rd & Newhall Dr	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	12.3 (SB)	B	0.16	15.0 (SB)	B	0.11
		2023 Build	0.0	A	0.00	0.0	A	0.00
		2028 Build	14.3 (NB)	B	0.20	19.7 (SB)	C	0.18
4	Bobby Foster Rd & Sagan Loop	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	10.6 (SB)	B	0.04	12.4 (SB)	B	0.11
		2023 Build	8.9 (NB)	A	0.06	8.7 (NB)	A	0.05
		2028 Build	12.8 (SB)	B	0.13	15.7 (SB)	C	0.14
5	Bobby Foster Rd & Driveway 2	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	-	-	-	-	-	-
		2023 Build	9.4 (NB)	A	0.07	9.1 (NB)	A	0.05
		2028 Build	12.0 (NB)	B	0.18	11.0 (NB)	B	0.16
6	University Blvd & Fritts Crossing	2023 No-Build	9.9 (WB)	A	0.21	10.3 (WB)	B	0.17
		2028 No-Build	11.1 (WB)	B	0.49	19.6 (WB)	C	0.41
		2023 Build	12.2 (WB)	B	0.32	29.6 (WB)	D	0.50
		2028 Build	14.2 (WB)	B	0.57	562.6 (WB)	F	1.96
7	University Blvd & Eastman Crossing/Bobby Foster	2023 No-Build	8.9 (WB)	A	0.44	14.4 (WB)	B	0.40
		2028 No-Build	** (WBL)	F	1.68	** (WBL)	F	1.35
		2023 Build	93.9 (EBL)	F	0.83	25.6 (EBL)	D	0.58
		2028 Build	** (WBL)	F	3.83	** (WBL)	F	2.82
8	University Blvd & Strand Loop	2023 No-Build	11.6 (EB)	B	0.06	12.3 (EB)	B	0.13
		2028 No-Build	21.4 (EB)	C	0.21	48.5 (EB)	E	0.61
		2023 Build	21.0 (EB)	C	0.57	184.5 (EB)	F	1.21
		2028 Build	184.7 (EB)	F	1.25	** (WBL)	F	3.50
9	Stieglitz Ave & Sagan Loop	2023 No-Build	-	-	-	-	-	-
		2028 No-Build	-	-	-	-	-	-
		2023 Build	10.5 (WB)	B	0.07	9.3 (WB)	A	0.02
		2028 Build	10.5 (WB)	B	0.07	9.3 (WB)	A	0.02

**-Intersection delay calculated in Synchro was too high. As a result, Synchro reports delay as "Err".

SECTION 5 – Highway Capacity Analysis

Since the main access to and from the IH 25 from the proposed developments is through University Blvd, the highway capacity along this multilane highway segment was analyzed from Crick Ave to Rio Bravo Blvd using Highway Capacity Manual. University Blvd has one 12 ft lane northbound and two 12 ft lanes southbound. Since the posted speed limit along this section of University Blvd is 40 mph, the total lateral clearance is greater than 12 ft, a median is present, and there are zero access points along the segment, the free flow speed is calculated to be 45 mph. A heavy vehicle adjustment factor was also calculated for the AM and PM peak hours along University Ave using the percent trucks provided in the traffic data collected at the intersection of University Blvd and Rio Bravo Blvd on April 28, 2021 provided in **Appendix L**. The PHF was also provided in the turning movement data collected. **Table 14** summarizes the PHF and heavy vehicle adjustment factor for University Blvd.

Table 14 – Heavy Vehicle Adjustment Factor and PHF for University Blvd

Peak Hour	PHF	Heavy Vehicle Adjustment Factor
AM Peak	0.64	0.91
PM Peak	0.71	0.88

According to the Highway Capacity Manual, a LOS F occurs when the demand flow rate exceeds the capacity or the density exceeds 45 passenger cars per mile per lane. The capacity is calculated using the equation c=1900+20(FFS-45), where FFS is the free flow speed. The calculated capacity for University Blvd is 1900 passenger cars per hour per lane (pcphpl).

To determine the demand volume for the roadway segment to achieve a LOS F, the equation V=Vp*PHF*N*Fhv can be used where V is the demand volume in vehicles per hour, PHF is the peak hour factor, N is the number of lanes, Vp is the demand flow rate, and Fhv is the heavy vehicle adjustment factor. **Table 15** summarizes the demand volume in vehicles per lane to achieve a LOS F for both the AM and PM peak.

Table 15 – Demand Volume to achieve a LOS F at University Blvd

Peak Hour and Direction of Analysis	PHF	Heavy Vehicle Adjustment Factor	Demand Volume (veh/hr)
AM Peak Northbound	0.64	0.91	1097
AM Peak Southbound	0.64	0.91	2194
PM Peak Northbound	0.71	0.88	1180
PM Peak Southbound	0.71	0.88	2360

Since northbound University Blvd is more likely to fail than southbound University Blvd, a LOS analysis for the northbound was conducted on the roadway to determine the Existing 2021, No-Build 2023, No-Build 2028, Build 2023, Build 2028 scenarios. According to the Albuquerque Studios Master Plan Development TIS provided in **Appendix D**, the full Build-Out of the Albuquerque Studios traffic is expected in 2035 and both the No-Build 2035 and Build 2035 was considered. **Table 16** summarizes the volumes, demand flow rates, densities, and LOS.

Table 16 – LOS Analysis for Northbound University Blvd

Scenarios		Volumes	Density	LOS
Existing 2021	AM Peak	317	7	A
	PM Peak	356	8	A
No-Build 2023	AM Peak	342	8	A
	PM Peak	384	9	A
No-Build 2028	AM Peak	539	12	B
	PM Peak	1109	25	C
No-Build 2035	AM Peak	2483	55	F
	PM Peak	1191	26	C
Build 2023	AM Peak	652	14	B
	PM Peak	771	17	B
Build 2028	AM Peak	849	19	C
	PM Peak	1496	33	D
Build 2035	AM Peak	2793	62	F
	PM Peak	1578	35	D

In 2023 and 2028 Build conditions, the roadway is expected to experience a LOS B for 2023 AM and PM peak hours and a LOS D or better for 2028 AM and PM peak hours. In 2035, the LOS F is expected on University Blvd once the full Build-Out traffic of the Albuquerque Studios is present. This is evident since the 2035 No Build AM Peak experiences a LOS F.

SECTION 6 - CONCLUSIONS AND RECOMMENDATIONS

6.1 Intersections (Synchro)

From the evaluation of the No-Build and Build scenarios, it was concluded that Intersections 6, 7, and 8 are the main intersections impacted by the proposed developments. Intersection 6 experiences a failing LOS in the 2028 PM Peak. Intersection 7 experiences a failing LOS in the AM Peak for both 2023 and 2028. Intersection 8 experiences a failing LOS in the PM peak for both 2023 and 2028 and in the 2028 AM Peak. Intersections 6-8 fail primarily on the left turning traffic from the minor streets due to the high traffic from the Albuquerque Studios that free flows on University Blvd, which causes insufficient gaps for vehicles turning left. Intersections 1, 2, 3, 4, 5, and 9 are expected to perform at a LOS B or better in both the 2023 and 2028 AM and PM Peak.

6.2 Mitigations Results

To mitigate the impacts of the generated traffic by the proposed development the following mitigations were modeled:

1. Signalizing Intersections 6-8
2. Placing roundabouts at Intersections 6-8
3. Placing All Way Stop Controlled (AWSC) at Intersections 6-8

Table 17 summarizes the intersection results for the 2023 and 2028 AM and PM peak hour Mitigated scenarios. **Table 17** also includes the 2023 and 2028 AM and PM peak hour Build conditions for comparison. The Synchro results for the AM and PM peak hour analyses of the 2023 and 2028 Mitigation are included in **Appendix M**.

Table 17 – Operational Measures for Mitigation Scenarios

Intersection Number	Location	Alternative	AM Peak Hour			PM Peak Hour		
			Delay (sec)	LOS	V/C	Delay (sec)	LOS	V/C
6	University Blvd & Fritts Crossing	2023 Build	12.2 (WB)	B	0.32	29.6 (WB)	D	0.50
		2028 Build	14.2 (WB)	B	0.57	562.6 (WB)	F	1.96
		2023 Signalized	2.8	A	0.36	6.7	A	0.43
		2028 Signalized	2.7	A	0.34	5.9	A	0.45
		2023 Roundabout	6.2	A	0.42	6.7	A	0.43
		2028 Roundabout	6.7	A	0.46	7.0	A	0.43
		2023 AWSC	18.9	C	0.73	24.6	C	0.83
		2028 AWSC	19.2	C	0.77	98.8	F	1.45
7	University Blvd & Eastman Crossing/ Bobby Foster	2023 Build	93.9 (EBL)	F	0.83	25.6 (EBL)	D	0.58
		2028 Build	** (WBL)	F	3.83	** (WBL)	F	2.82
		2023 Signalized	6.0	A	0.37	8.3	A	0.57
		2028 Signalized	9.0	A	0.59	12.4	B	0.78
		2023 Roundabout	5.8	A	0.16	7.0	A	0.29
		2028 Roundabout	13.7	B	0.74	14.5	B	0.64
		2023 AWSC	11.3	B	0.42	13.1	B	0.48
		2028 AWSC	52.7	F	0.78	148.5	F	1.78
8	University Blvd & Strand Loop	2023 Build	21.0 (EB)	C	0.57	184.5 (EB)	F	1.21
		2028 Build	184.7 (EB)	F	1.25	** (WBL)	F	3.50
		2023 Signalized	10.8	B	0.67	20.6	C	0.89
		2028 Signalized	10.4	B	0.68	26.2	C	0.97
		2023 Roundabout	5.4	A	0.25	13.9	B	0.71
		2028 Roundabout	7.7	A	0.50	45.1	E	1.24
		2023 AWSC	11.2	B	0.47	70.7	F	1.17
		2028 AWSC	18.1	C	0.64	213.9	F	1.96

**-Intersection delay calculated in Synchro was too high. As a result, Synchro reports delay as "Err".

6.3 Recommendations Intersections

From the mitigation analyses conducted in Synchro, it can be seen that signalizing or roundabout at Intersections 6 and 7 results in a LOS of B or better in both the 2023 and 2028 Build conditions. For Intersection 8, signalizing the interseciton results in a LOS of C or better in both the 2023 and 2028 Build conditions. A roundabout at Intersection 8 would improve the LOS in 2023, but in the 2028 PM Peak, a LOS E is expected. It is recommended that signal warrants be conducted in order to verify if a signal or roundabout is warranted.

An AWSC for Intersection 6-8 is not recommended, since the LOS F remains in the 2028 PM peak hour when compared to the Build Conditions. In the AM peak, the LOS improves to a LOS C or better in 2023 and 2028 except for Intersection 8 which experiences a LOS F in the 2028 AM peak hour. In the PM peak, the LOS improves to a LOS C or better in 2023 except for Intersection 8 which experiences a LOS F in the 2023 AM peak hour.

6.4 Highway Capacity Analysis Recommendations

From the highway capacity analysis for University Blvd from Crick Ave to Rio Bravo Blvd, it was noted that the northbound demand volume is lower than the southbound demand volume. This is expected since there is one lane northbound and two lanes southbound along University Blvd. It is important to note that once the volume during the peak hour exceeds the demand volume, the LOS F will be experienced along University Blvd. Assuming a similar truck percentage and PHF as the data collected in April 28, 2021, the demand volumes for the AM peak northbound, AM peak southbound, PM peak northbound, and PM peak southbound are 1097, 2194, 1180, and 2360, respectively. After conducting the 2023 and 2028 Build conditions analyses, the roadway is expected to experience a LOS B for 2023 AM and PM peak hours and a LOS D or better for 2028 AM and PM peak hours. In 2035, the LOS F is expected on University Blvd once the full Build-Out traffic from the Albuquerque Studios is present.