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Ventana Ranch Retail Commercial Development
(Paseo del Norte / Universe Blvd.)

Traffic Impact Study

October 30, 2020

DRAFT

Presented to:

City of Albuquerque
Transportation Development

Prepared for:

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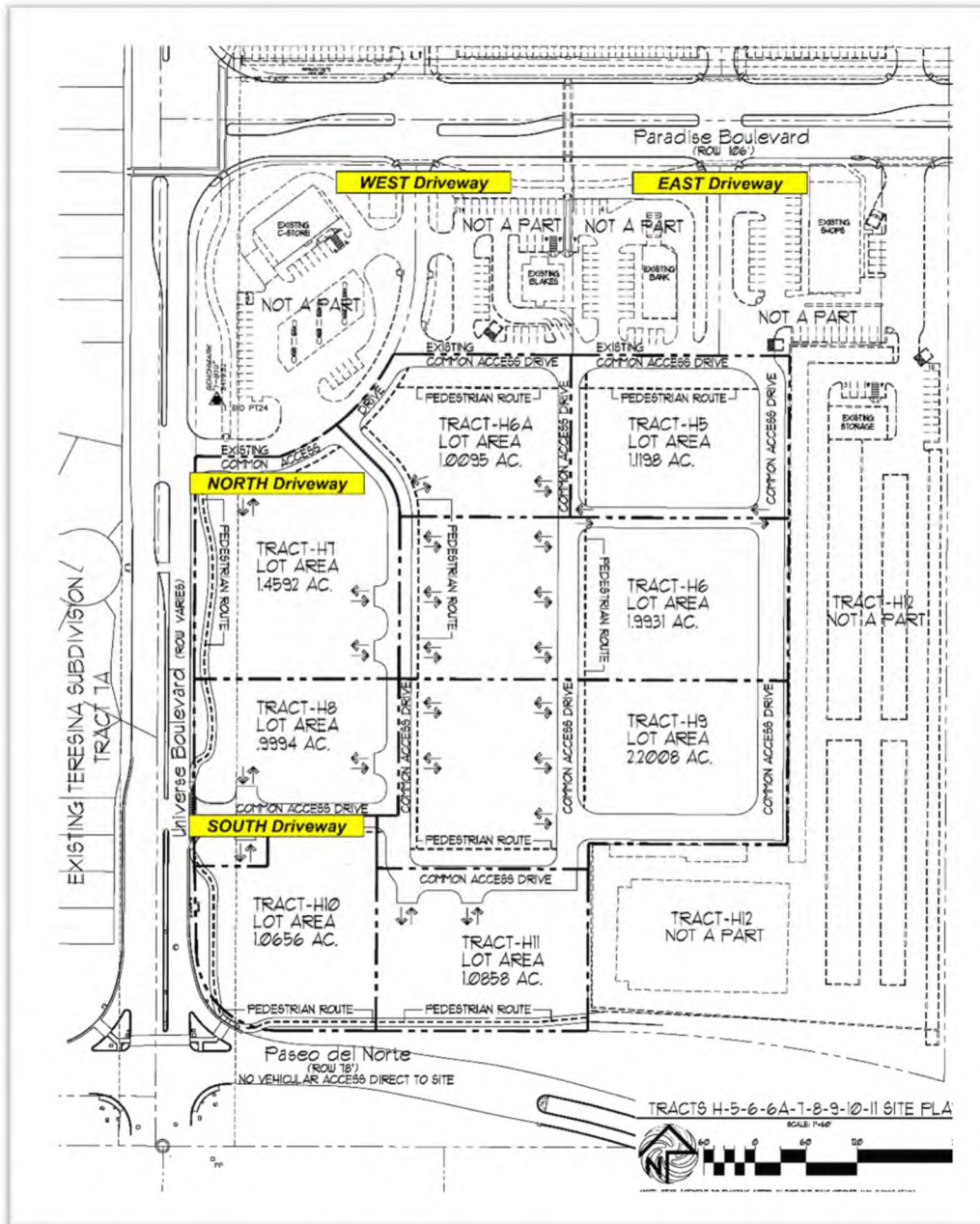
**Ventana Ranch Retail Commercial Development
Paseo del Norte/Universe Blvd. – Albuquerque, NM
Traffic Impact Study**

Executive Summary

The purpose of this Traffic Impact Study (TIS) is to evaluate the transportation conditions before and after implementation of the proposed the Ventana Ranch Retail Commercial Development to determine the impact of the development on the adjacent transportation system and recommend mitigation measures where necessary. This study is prepared in accordance with the requirements of the City of Albuquerque Transportation Development Section of the Planning Department.

The proposed Ventana Ranch Retail Commercial Development is to be located at the northeast corner of Paseo del Norte and Universe Blvd. within the City of Albuquerque, New Mexico. It is to be developed as approximately 120,000 square feet of retail commercial floor space on 11 acres of land. Shared use of three existing access driveways and one new access driveway are proposed for the new development. The driveways are to be shared with existing commercial development situated north of the new development. The existing EAST and WEST Driveways are full access driveways located on the south side of Paradise Blvd. The EAST Driveway is 650 feet east of Universe Blvd (centerline to centerline) and the WEST Driveway is 290-feet east of Universe Blvd. (centerline to centerline). The existing NORTH Driveway is a full access driveway located on the east side of Universe Blvd. 360-feet south of Paradise Blvd. (centerline to centerline). The new SOUTH Driveway will be a full access driveway located 750-feet south of Paradise and 380-feet north of Paseo del Norte. No access is proposed off Paseo del Norte.

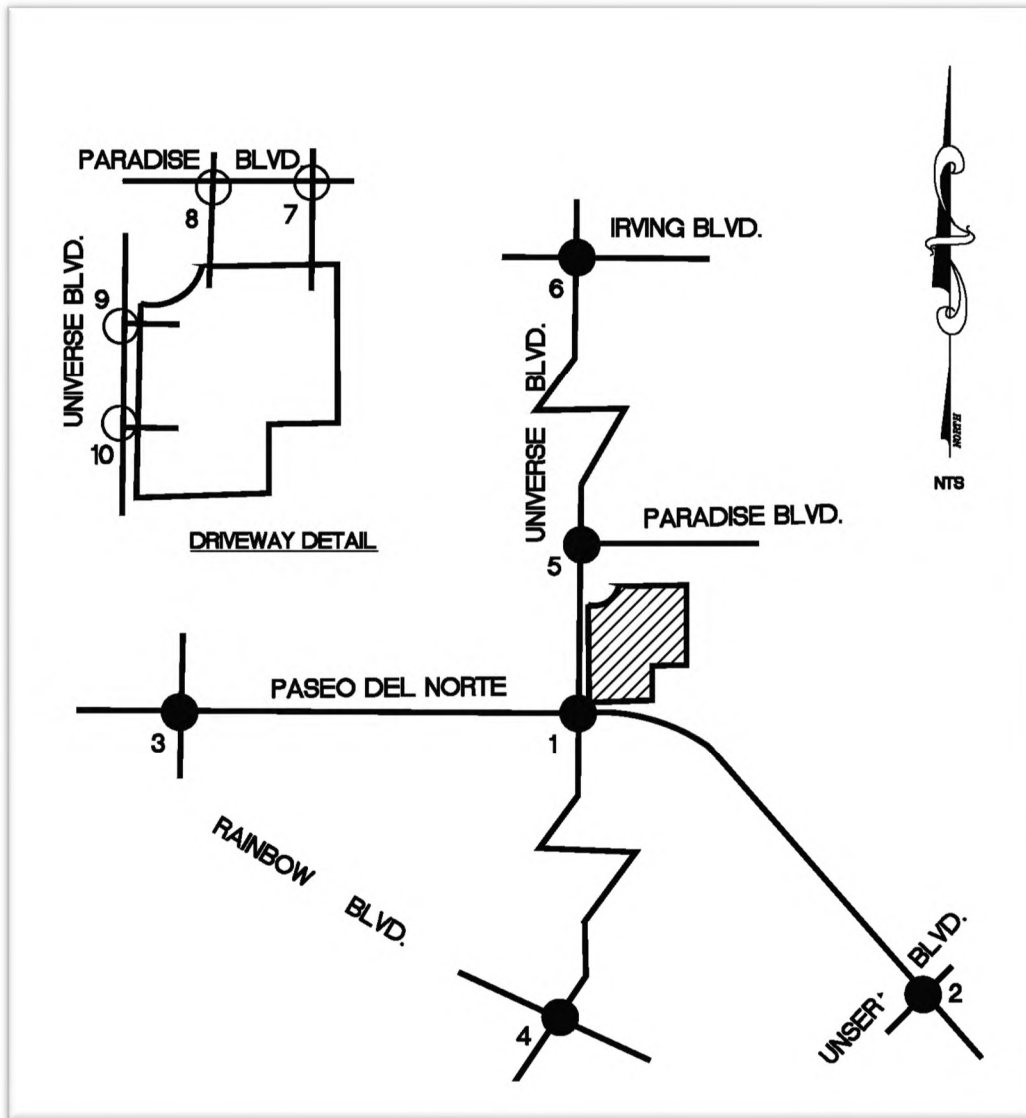
The proposed site plan is shown below.



The study area includes the ten intersections listed below and shown on the following map:

1. Paseo del Norte & Universe Blvd. (Signalized)
2. Paseo del Norte & Unser Blvd. (Signalized)
3. Paseo del Norte & Rainbow Blvd. (Signalized)
4. Rainbow Blvd. & Universe Blvd. (Signalized)
5. Paradise Blvd. & Universe Blvd. (Signalized)

6. Irving Blvd. & Universe Blvd. (Signalized)
7. Paradise Blvd. & EAST Driveway (Unsignalized)
8. Paradise Blvd. & WEST Driveway (Unsignalized)
9. NORTH Driveway & Universe Blvd. (Unsignalized)
10. SOUTH Driveway & Universe Blvd. (Unsignalized)



The anticipated implementation year for this project is 2025 and the horizon year is 2035. According to the Institute of Traffic Engineers' (ITE) trip generation rates, the project is anticipated to generate 231 new entering trips and 192 new exiting trips during the weekday AM Peak Hour period and 279 new entering trips and 283 new exiting trips during the PM Peak Hour period. A 30% pass-by trip rate reduction is included in the trips generated.

A summary of the Highway Capacity Manual (HCM) analysis results is included in the following table:

HCM Results Summary Table
Ventana Ranch Retail Development
Northeast Corner of Universe Blvd. and Paseo del Norte - Albuquerque, NM

OCT. 2020

Intersection No.	Intersection Name	Signalization	Case	Implementation Year (2025) Conditions				Horizon Year (2035) Conditions			
				AM Peak	AM Peak Mitigated	PM Peak	PM Peak Mitigated	AM Peak	AM Peak Mitigated	PM Peak	PM Peak Mitigated
1	Paseo del Norte & Universe Blvd.	Signalized	NO BUILD	D - 49.5		D - 50.5		F - 225.9		F - 88.3	
			BUILD	E - 75.5	C - 29.8	E - 70.4	C - 28.0	F - 292.0	D - 41.5	F - 111.7	C - 31.0
2	Paseo del Norte & Unser Blvd.	Signalized	NO BUILD	F - 248.8		F - 212.3		F - 498.0		F - 448.1	
			BUILD	F - 302.7	D - 36.1	F - 217.4	D - 36.7	F - 570.0	E - 63.1	F - 450.5	D - 44.3
3	Paseo del Norte & Rainbow Blvd.	Signalized	NO BUILD	C - 23.5		C - 20.9		C - 22.7		C - 25.5	
			BUILD	C - 25.8		C - 22.2		C - 24.8		C - 26.8	
4	Rainbow Blvd. & Universe Blvd.	Signalized	NO BUILD	D - 36.8		C - 21.6		E - 70.6		E - 58.6	
			BUILD	D - 49.7	C - 26.4	C - 21.7	C - 20.3	F - 94.8	D - 39.7	E - 58.5	C - 21.8
5	Paradise Blvd. & Universe Blvd.	Signalized	NO BUILD	B - 10.2		C - 20.2		A - 4.1		B - 15.2	
			BUILD	B - 10.8		C - 25.6		A - 4.5		B - 18.8	
6	Irving Blvd. & Universe Blvd.	Signalized	NO BUILD	C - 22.4		C - 24.6		C - 24.7		C - 25.7	
			BUILD	C - 26.1		C - 25.6		D - 41.5		C - 27.0	
7	Paradise Blvd. & EAST Driveway ¹	Unsignalized	NO BUILD	C-18.8		F-693		C-22.5		F.*	
			BUILD	D-28.9		F.*		C-16.0		F.*	
8	Paradise Blvd. & WEST Driveway ¹	Unsignalized	NO BUILD	F-62.9		F.*		D-33.2		F.*	
			BUILD	E-42.1		F.*		C-19.7		F.*	
9	NORTH Driveway & Universe Blvd. ¹	Unsignalized	NO BUILD	E-36.4		A-8.8		E-47.0		F-724	
			BUILD	F-292		A-9.2		C-17.1		F.*	
10	SOUTH Driveway & Universe Blvd. ¹	Unsignalized	NO BUILD								
			BUILD	F-148		F-970		B-14.3		F.*	

¹ Worst LOS for Driveway Exit and Entrance Movements

* Calculated Delays Exceed 999 s/veh

As shown in the table above, Signalized Intersections 1 (Paseo del Norte/Universe), 2 (Paseo del Norte/Unser) , and 4 (Paseo del Norte/Rainbow) have unacceptable existing or NO BUILD LOS (E or F) with delays ranging from 58.6 s/veh to almost 500 s/veh. As expected, delays worsen with the additional traffic generated by the development. The unsignalized driveways have similar performance issues. For intersections with acceptable NO BUILD LOS (D or greater), the impact from the new development is minimal and the LOS remains the same from the NO BUILD condition to the BUILD condition.

Since it is clear that the performance problems at some of the intersections in the study area are caused by insufficient capacity in the existing roadway system and are not made significantly worse by the additional traffic generated by the development, no mitigation measures are proposed for this development. However, given the growth rates for the area and the existing poor LOS for the signalized intersections along Paseo del Norte, improvements to this corridor should be considered by the City of Albuquerque. Mitigated scenarios for the failing intersections are included in this report, however, a broader area study is recommended prior to implementation of these mitigative measures.

Recommendations

Three of the six signalized intersection in the study area have NO BUILD Level of services' (LOSs') that do not meet the Minimum Acceptable Level of Service Standards (LOS=D or better, City of Albuquerque Development Process Manual (DPM)). It was found that signal retiming alone does not significantly improve the LOS for most failing intersections, however, signal retiming combined with lane geometry modifications restores the LOS to acceptable levels even in the horizon year.

The mitigation measures recommended below are provided to the City of Albuquerque for planning purposes and are not considered the sole responsibility of the Ventana Ranch Retail Commercial Development Project since traffic volumes generated by the project do not significantly contribute to the poor LOS. One exception is the intersection of Paseo del Norte & Universe Blvd. For the 2025 Implementation year (AM and PM Peak Hour), the NO BUILD LOS is D, and the BUILD LOS is E. However, the project only contributes 8% more traffic to this intersection and without major improvements to Paseo del Norte, no reasonable mitigative measures by the development, such as adding a second southbound left-turn lane on Universe Blvd., can be implemented. Additionally, this project contributes only 2% of the traffic volume to Paseo del Norte & Unser and only 4% to Rainbow Blvd. & Universe Blvd.

Intersection 1 - Paseo del Norte/ Universe Blvd.

1. Widen Paseo del Norte east and west of the intersection by adding one thru lane in each direction, at least 1000-feet long.

2. Construct one additional 250-foot long eastbound left-turn lane including return (creating dual left-turn lanes).
3. Construct one additional 250-foot long westbound left-turn lane including return (creating dual left-turn lanes).
4. Construct one additional 250-foot long southbound left-turn lane including return (creating dual left-turn lanes).

Intersection 2 - Paseo del Norte/ Unser Blvd.

1. Widen Paseo del Norte east and west of the intersection by adding one thru lane in each direction, at least 1000-feet long.
2. Widen Unser Blvd. north and south of the intersection by adding one thru lane in each direction, at least 1000-feet long.
3. Construct one additional 250-foot long southbound left-turn lane including return (creating dual left-turn lanes).

Intersection 4 – Rainbow Blvd./ Universe Blvd.

1. Construct 150-foot long channelized right-turn lanes on the northbound and southbound approaches of Universe Blvd.

In summary, the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact to the adjacent transportation system except to the intersection of Paseo del Norte & Universe Blvd. Since the development will only be a minor contributor to the traffic volume at this intersection and the problems at this intersection require a broader area study and major modifications to Paseo del Norte, no mitigative measures are recommended for this project.

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Paseo del Norte/Universe Blvd. – Albuquerque, NM
Traffic Impact Study**

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The map displays a complex network of land parcels, many of which are labeled with codes such as R-1A, R-1B, R-1C, R-1D, R-1E, R-1F, R-1G, R-1H, R-1I, R-1J, R-1K, R-1L, R-1M, R-1N, R-1O, R-1P, R-1Q, R-1R, R-1S, R-1T, R-1U, R-1V, R-1W, R-1X, R-1Y, R-1Z, R-1AA, R-1AB, R-1AC, R-1AD, R-1AE, R-1AF, R-1AG, R-1AH, R-1AI, R-1AJ, R-1AK, R-1AL, R-1AM, R-1AN, R-1AO, R-1AP, R-1AQ, R-1AR, R-1AS, R-1AT, R-1AU, R-1AV, R-1AW, R-1AX, R-1AY, R-1AZ, R-1BA, R-1BB, R-1BC, R-1BD, R-1BE, R-1BF, R-1BG, R-1BH, R-1BI, R-1BJ, R-1BK, R-1BL, R-1BM, R-1BN, R-1BO, R-1BP, R-1BQ, R-1BR, R-1BS, R-1BT, R-1BU, R-1BV, R-1BW, R-1BX, R-1BY, R-1BZ, R-1CA, R-1CB, R-1CC, R-1CD, R-1CE, R-1CF, R-1CG, R-1CH, R-1CI, R-1CJ, R-1CK, R-1CL, R-1CM, R-1CN, R-1CO, R-1CP, R-1CQ, R-1CR, R-1CS, R-1CT, R-1CU, R-1CV, R-1CW, R-1CX, R-1CY, R-1CZ, R-1DA, R-1DB, R-1DC, R-1DD, R-1DE, R-1DF, R-1DG, R-1DH, R-1DI, R-1DJ, R-1DK, R-1DL, R-1DM, R-1DN, R-1DO, R-1DP, R-1DQ, R-1DR, R-1DS, R-1DT, R-1DU, R-1DV, R-1DW, R-1DX, R-1DY, R-1DZ, R-1EA, R-1EB, R-1EC, R-1ED, R-1EE, R-1EF, R-1EG, R-1EH, R-1EI, R-1EJ, R-1EK, R-1EL, R-1EM, R-1EN, R-1EO, R-1EP, R-1EQ, R-1ER, R-1ES, R-1ET, R-1EU, R-1EV, R-1EW, R-1EX, R-1EY, R-1EZ, R-1FA, R-1FB, R-1FC, R-1FD, R-1FE, R-1FF, R-1FG, R-1FH, R-1FI, R-1FJ, R-1FK, R-1FL, R-1FM, R-1FN, R-1FO, R-1FP, R-1FQ, R-1FR, R-1FS, R-1FT, R-1FU, R-1FV, R-1FW, R-1FX, R-1FY, R-1FZ, R-1GA, R-1GB, R-1GC, R-1GD, R-1GE, R-1GF, R-1GG, R-1GH, R-1GI, R-1GJ, R-1GK, R-1GL, R-1GM, R-1GN, R-1GO, R-1GP, R-1GQ, R-1GR, R-1GS, R-1GT, R-1GU, R-1GV, R-1GW, R-1GX, R-1GY, R-1GZ, R-1HA, R-1HB, R-1HC, R-1HD, R-1HE, R-1HF, R-1HG, R-1HH, R-1HI, R-1HJ, R-1HK, R-1HL, R-1HM, R-1HN, R-1HO, R-1HP, R-1HQ, R-1HR, R-1HS, R-1HT, R-1HU, R-1HV, R-1HW, R-1HX, R-1HY, R-1HZ, R-1IA, R-1IB, R-1IC, R-1ID, R-1IE, R-1IF, R-1IG, R-1IH, R-1II, R-1IJ, R-1IK, R-1IL, R-1IM, R-1IN, R-1IO, R-1IP, R-1IQ, R-1IR, R-1IS, R-1IT, R-1IU, R-1IV, R-1IW, R-1IX, R-1IY, R-1IZ, R-1JA, R-1JB, R-1JC, R-1JD, R-1JE, R-1JF, R-1JG, R-1JH, R-1JI, R-1JJ, R-1JK, R-1JL, R-1JM, R-1JN, R-1JO, R-1JP, R-1JQ, R-1JR, R-1JS, R-1JT, R-1JU, R-1JV, R-1JW, R-1JX, R-1JY, R-1JZ, R-1KA, R-1KB, R-1KC, R-1KD, R-1KE, R-1KF, R-1KG, R-1KH, R-1KI, R-1KJ, R-1KL, R-1KM, R-1KN, R-1KO, R-1KP, R-1KQ, R-1KR, R-1KS, R-1KT, R-1KU, R-1KV, R-1KW, R-1KX, R-1KY, R-1KZ, R-1LA, R-1LB, R-1LC, R-1LD, R-1LE, R-1LF, R-1LG, R-1LH, R-1LI, R-1LJ, R-1LK, R-1LL, R-1LM, R-1LN, R-1LO, R-1LP, R-1LQ, R-1LR, R-1LS, R-1LT, R-1LU, R-1LV, R-1LW, R-1LX, R-1LY, R-1LZ, R-1MA, R-1MB, R-1MC, R-1MD, R-1ME, R-1MF, R-1MG, R-1MH, R-1MI, R-1MJ, R-1MK, R-1ML, R-1MN, R-1MO, R-1MP, R-1MQ, R-1MR, R-1MS, R-1MT, R-1MU, R-1MV, R-1MW, R-1MX, R-1MY, R-1MZ, R-1NA, R-1NB, R-1NC, R-1ND, R-1NE, R-1NF, R-1NG, R-1NH, R-1NI, R-1NJ, R-1NK, R-1NL, R-1NM, R-1NN, R-1NO, R-1NP, R-1NQ, R-1NR, R-1NS, R-1NT, R-1NU, R-1NV, R-1NW, R-1NX, R-1NY, R-1NZ, R-1OA, R-1OB, R-1OC, R-1OD, R-1OE, R-1OF, R-1OG, R-1OH, R-1OI, R-1OJ, R-1OK, R-1OL, R-1OM, R-1ON, R-1OO, R-1OP, R-1OQ, R-1OR, R-1OS, R-1OT, R-1OU, R-1OV, R-1OW, R-1OX, R-1OY, R-1OZ, R-1PA, R-1PB, R-1PC, R-1PD, R-1PE, R-1PF, R-1PG, R-1PH, R-1PI, R-1PJ, R-1PK, R-1PL, R-1PM, R-1PN, R-1PO, R-1PP, R-1PQ, R-1PR, R-1PS, R-1PT, R-1PU, R-1PV, R-1PW, R-1PX, R-1PY, R-1PZ, R-1QA, R-1QB, R-1QC, R-1QD, R-1QE, R-1QF, R-1QG, R-1QH, R-1QI, R-1QJ, R-1QK, R-1QL, R-1QM, R-1QN, R-1QO, R-1QP, R-1QQ, R-1QR, R-1QS, R-1QT, R-1QU, R-1QV, R-1QW, R-1QX, R-1QY, R-1QZ, R-1RA, R-1RB, R-1RC, R-1RD, R-1RE, R-1RF, R-1RG, R-1RH, R-1RI, R-1RJ, R-1RK, R-1RL, R-1RM, R-1RN, R-1RO, R-1RP, R-1RQ, R-1RR, R-1RS, R-1RT, R-1RU, R-1RV, R-1RW, R-1RX, R-1RY, R-1RZ, R-1SA, R-1SB, R-1SC, R-1SD, R-1SE, R-1SF, R-1SG, R-1SH, R-1SI, R-1SJ, R-1SK, R-1SL, R-1SM, R-1SN, R-1SO, R-1SP, R-1SQ, R-1SR, R-1SS, R-1ST, R-1SU, R-1SV, R-1SW, R-1SX, R-1SY, R-1SZ, R-1TA, R-1TB, R-1TC, R-1TD, R-1TE, R-1TF, R-1TG, R-1TH, R-1TI, R-1TJ, R-1TK, R-1TL, R-1TM, R-1TN, R-1TO, R-1TP, R-1TQ, R-1TR, R-1TS, R-1TT, R-1TU, R-1TV, R-1TW, R-1TX, R-1TY, R-1TZ, R-1UA, R-1UB, R-1UC, R-1UD, R-1UE, R-1UF, R-1UG, R-1UH, R-1UI, R-1UJ, R-1UK, R-1UL, R-1UM, R-1UN, R-1UO, R-1UP, R-1UQ, R-1UR, R-1US, R-1UT, R-1UU, R-1UV, R-1UW, R-1UX, R-1UY, R-1UZ, R-1VA, R-1VB, R-1VC, R-1VD, R-1VE, R-1VF, R-1VG, R-1VH, R-1VI, R-1VJ, R-1VK, R-1VL, R-1VM, R-1VN, R-1VO, R-1VP, R-1VQ, R-1VR, R-1VS, R-1VT, R-1VU, R-1VV, R-1VW, R-1VX, R-1VY, R-1VZ, R-1WA, R-1WB, R-1WC, R-1WD, R-1WE, R-1WF, R-1WG, R-1WH, R-1WI, R-1WJ, R-1WK, R-1WL, R-1WM, R-1WN, R-1WO, R-1WP, R-1WQ, R-1WR, R-1WS, R-1WT, R-1WU, R-1WV, R-1WW, R-1WX, R-1WY, R-1WZ, R-1XA, R-1XB, R-1XC, R-1XD, R-1XE, R-1XF, R-1XG, R-1XH, R-1XI, R-1XJ, R-1XK, R-1XL, R-1XM, R-1XN, R-1XO, R-1XP, R-1XQ, R-1XR, R-1XS, R-1XT, R-1XU, R-1XV, R-1XW, R-1XX, R-1XY, R-1XZ, R-1YA, R-1YB, R-1YC, R-1YD, R-1YE, R-1YF, R-1YG, R-1YH, R-1YI, R-1YJ, R-1YK, R-1YL, R-1YM, R-1YN, R-1YO, R-1YP, R-1YQ, R-1YR, R-1YS, R-1YT, R-1YU, R-1YV, R-1YW, R-1YX, R-1YY, R-1YZ, R-1ZA, R-1ZB, R-1ZC, R-1ZD, R-1ZE, R-1ZF, R-1ZG, R-1ZH, R-1ZI, R-1ZJ, R-1ZK, R-1ZL, R-1ZM, R-1ZN, R-1ZO, R-1ZP, R-1ZQ, R-1ZR, R-1ZS, R-1ZT, R-1ZU, R-1ZV, R-1ZW, R-1ZX, R-1ZY, R-1ZZ.

Zone Atlas Page:
B-10-Z

Legend:

- Easement
- Escarpment
- Petroglyph National Monument
- Areas Outside of City Limits
- Airport Protection Overlay (APO) Zone
- Character Protection Overlay (CPO) Zone
- Historic Protection Overlay (HPO) Zone
- View Protection Overlay (VPO) Zone

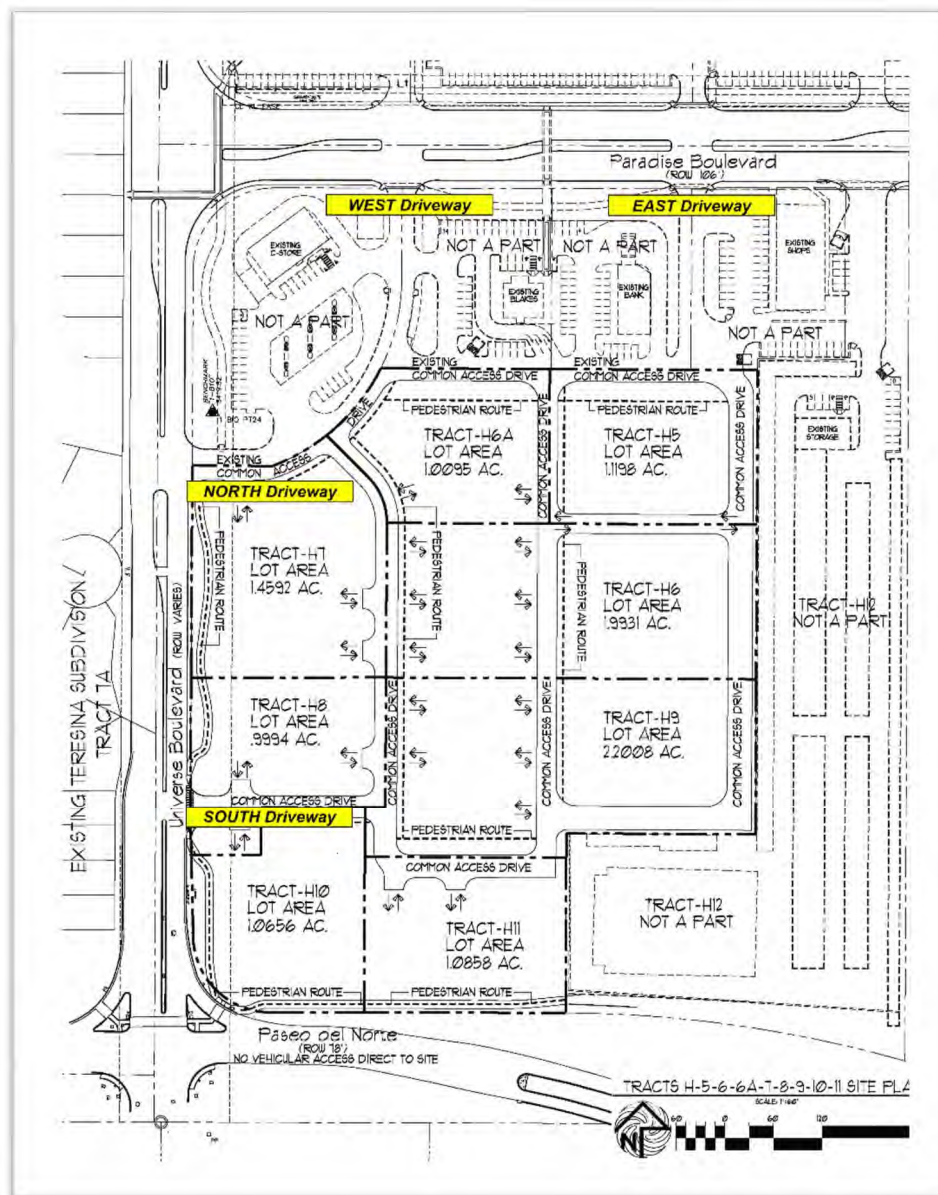
Gray Shading Represents Area Outside of the City Limits

Scale: 0, 250, 500, 1,000 Feet

North Arrow

Map features include Rio Grande, I-40, I-25, and various overlays.

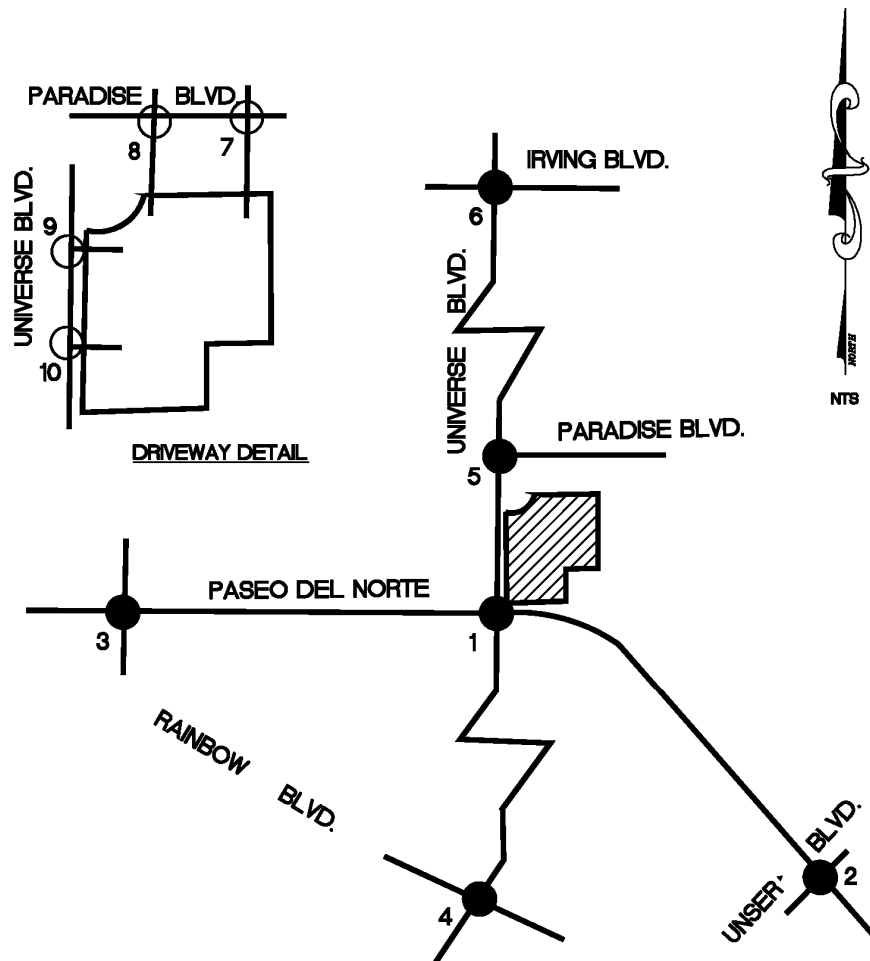
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The study area includes the ten intersections listed below and shown on the following map:

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8. Paradise Blvd. & WEST Driveway (Unsignalized)
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10. SOUTH Driveway & Universe Blvd. (Unsignalized)

See the intersection map below.

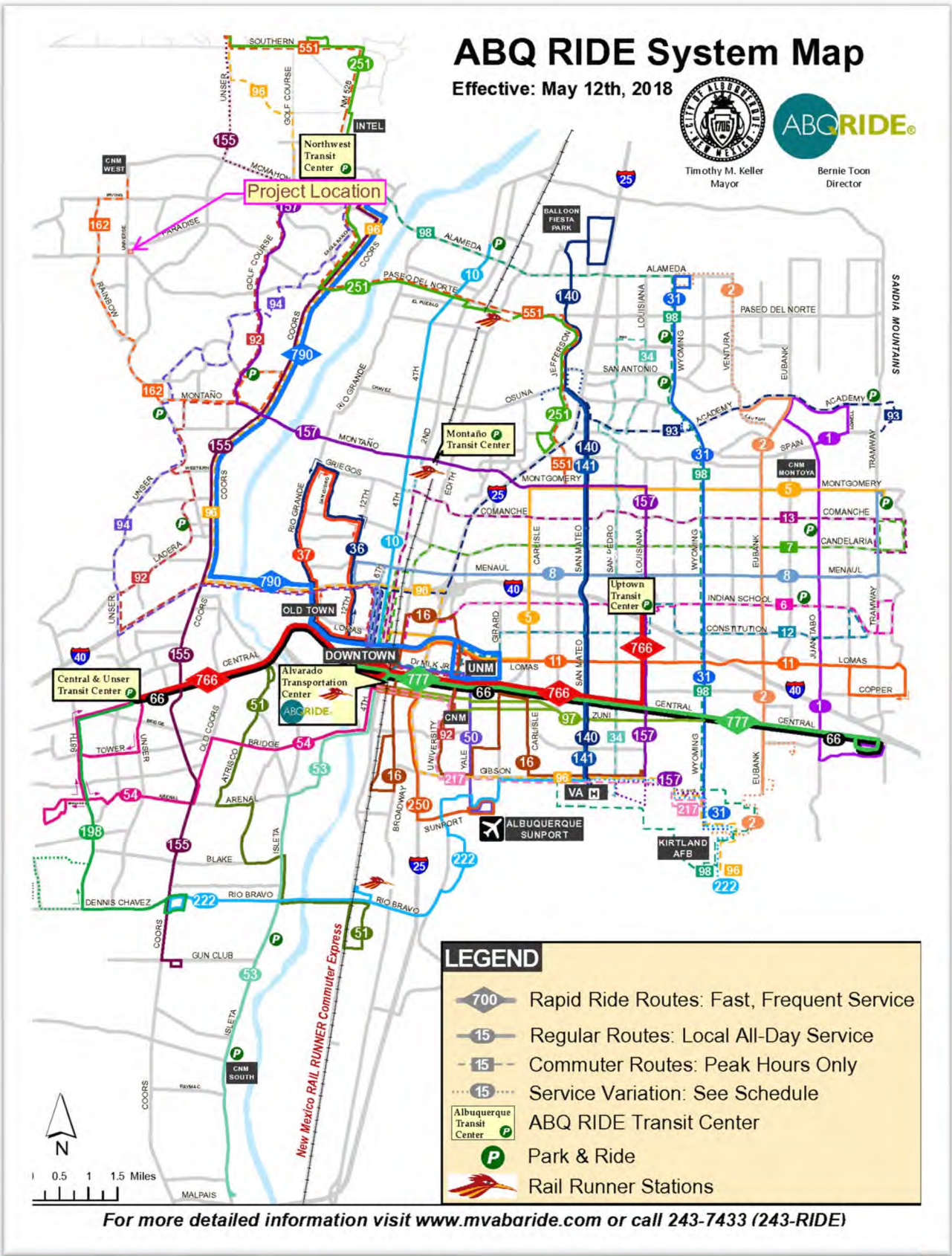


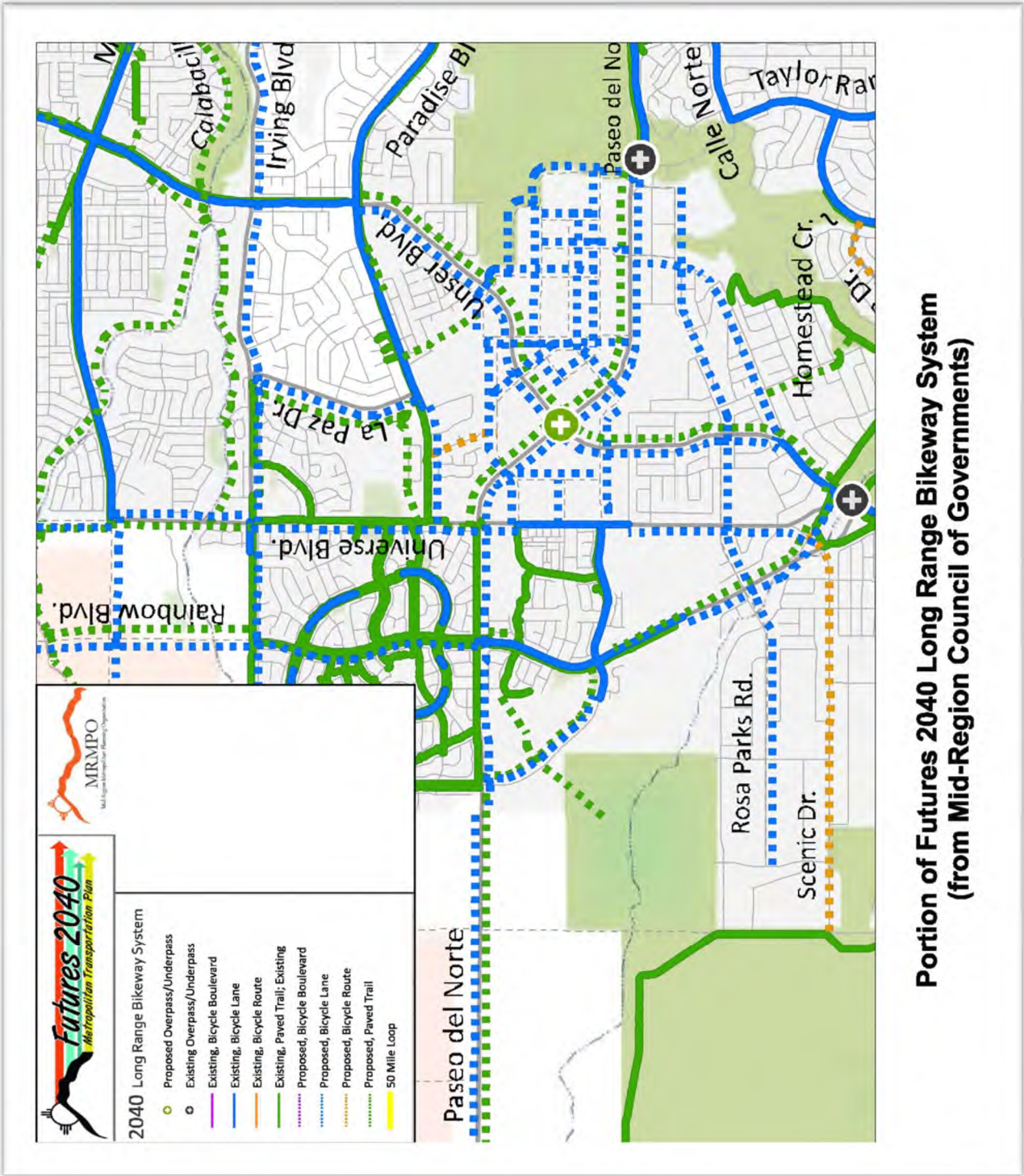
Study Area Conditions

A Traffic Impact Study Scoping Meeting was held (online) on August 6, 2020 with City of Albuquerque staff and the consultant team. At the Scoping Meeting, it was determined that the study area for the TIS would include the intersections listed in the section above. The characteristics of the study area used in the analysis are as follows:

- Three existing driveways and one proposed driveway will be used to access the new development. The driveways are to be shared with existing commercial development located north of the new development.
- The site and the adjacent lands are zoned MX-M (Mixed-use, Medium Density)
- The land for the project undeveloped and the study area is partially developed. There is at least one planned or approved development in the influence area, Sonata Apartments located 2000-feet south of the Paseo del Norte/Universe Blvd.
- There are existing pedestrian facilities (sidewalks, trails, or paths) in the project area along Paradise Blvd. and south of Paradise Blvd. along Universe in the developed areas.
- There are no bike lanes/shoulders along Paseo del Norte or Universe Blvd. in the vicinity of the project.
- Paseo del Norte and Unser Blvd are classified as urban principal arterial roadways on the NMDOT Regional Roadway Functional Class Map. In the study area, Paseo del Norte is a two-lane roadway with a raised divided median east of Universe Blvd. with curbs and gutters along the median and no median or curbs and gutters West of Universe Blvd. Unser Blvd. is a two-lane roadway with a raised divided median south of Paseo del Norte with curbs and gutters along the median and no median or curbs and gutters north of Paseo del Norte. The posted speed limit for both roadways is 35-mph.
- Universe Blvd., Rainbow Blvd., and Paradise Blvd. are classified as minor arterial roadways on the NMDOT Regional Roadway Functional Class Map. Universe has 2-lanes with a raised divided median with curbs and gutters north of Paseo del Norte and no median or curbs or gutters south of Paseo del Norte. Rainbow and Paradise have 4-lanes with raised divided medians with curbs and gutters and pedestrian paths on both sides of the roads. The speed limits for both roads are 35 mph.
- Irving Blvd. is a major collector with curbs and gutters. It has 4-lanes with a raised divided median and curbs and gutters. The speed limit is 35 mph.
- All existing signalized intersections have lighting.

Following are portions of the following regional transportation maps for more information. These include the 2018 Traffic Flow Map, ABQ Ride (Bus) System Map, Futures 2040 Long Range Bikeway System Map.





Existing Traffic Volumes and Analysis

Existing Signalized Intersections Traffic Volumes

Starting in March of this year a shutdown of all non-essential businesses was ordered by the Governor of New Mexico due to the COVID-19 virus. It is estimated that traffic volumes in New Mexico are reduced from 20% to 40% on average due to the employment layoffs and furloughs and the high percentage of people working from their homes during this crisis period. Since normal traffic counts could not be obtained due the COVID-19 shutdown, existing traffic volumes (turning movement counts) used in this study were determined using the Streetlight Data Model and Transportation Analysis & Querying Application (TAQA) data provided by the Mid-Region Council of Governments (MRCOG). The methodology used for producing the existing traffic volume data is as follows.

1. The Streetlight Data Model was used to generate 2019 (pre COVID-19) traffic volumes for each movement at each intersection for the AM and PM Peak Hours. Streetlights does not generate 15-minute volumes, so the peak period volumes were approximated by simply dividing the Peak Hour volumes by four.
2. TAQA data was used to calibrate the Streetlights Data volumes. TAQA data is generated by tube counts so it is considered more accurate than the Streetlights Data model, but it only provides approach volumes, not volumes for each movement. So, the TAQA data was used to develop approach specific calibration factors.
3. For approaches where no TAQA data was available, the average of TAQA calibration factors for the other approaches was used. For example, if TAQA data was only available for the NB and SB movements, the average calibration factor from these movements was applied the WB and EB Streetlights Data volumes.
4. The Streetlights Data volumes were then multiplied by calibration factors to obtain the existing traffic volumes for each movement. See equations below.

$$\begin{array}{lcl} \text{Existing} & & \text{TAQA} \\ \text{Traffic Volume} & = & \text{Streetlights Data Traffic Volume} \quad \times \quad \text{Calibration} \\ \text{(per movement)} & & \text{(per movement)} \quad \quad \quad \text{Factor} \end{array}$$

Where,

$$\begin{array}{lcl} \text{TAQA} & = & \frac{\text{Total TAQA Approach Volume}}{\text{Total Streetlights Data Approach Volume}} \\ \text{Calibration} & & \\ \text{Factor} & & \end{array}$$

The existing traffic volume based on this approach are in Appendix Pages A-4 thru A-10. These volumes are the basis of this Study.

Existing Unsignalized Site Access Traffic Volumes

Base traffic volume data for the three existing unsignalized driveways was determined using the Institute of Traffic Engineers (ITE) Trip Generation Manual (10th Edition) and Trip Distribution methodology. The number of trips generated by the existing commercial facilities in the developments on the southeast and northeast quadrants of Paradise Blvd./Universe Blvd. during the AM and PM Peak Hours was approximated using ITE Codes 820 (Shopping Center), 933 (Fast Food Restaurant w/o Drive-Thru), 934 (Fast Food Restaurant w/Drive-Thru), and 911 (Walk-in Bank). See the trip generation tables below for the two existing developments that will generate traffic at the driveway intersections.

Ventana Ranch Retail Commercial (PdN / Universe Blvd.)

EXISTING DEVELOPMENT SOUTHEAST CORNER

Trip Generation Data (ITE Trip Generation Manual - 10th Edition)

USE (ITE CODE)		24 HR VOL	A. M. PEAK HR.		P. M. PEAK HR.	
	DESCRIPTION	GROSS	ENTER	EXIT	ENTER	EXIT
Summary Sheet		Units				
	Fast Food Restaurant w/ Drive-Thru Window (934)	3.60	1,695	74	71	61
	Walk-In Bank (911)	9.00	-	-	-	48
	Fast Food Restaurant w/o Drive-Thru Window (933)	5.00	1,731	173	115	71
	Shopping Center (820)	10.50	1,298	97	60	49
	Subtotal	28.10	4,724	344	246	229
	<i>Pass-By Trips</i>	30%		-103	-74	-69
	Total Primary Trips			241	172	160

Ventana Square (Paradise/ Universe Blvd.)

EXISTING DEVELOPMENT NORTHEAST CORNER

Trip Generation Data (ITE Trip Generation Manual - 10th Edition)

USE (ITE CODE)		24 HR VOL	A. M. PEAK HR.		P. M. PEAK HR.	
	DESCRIPTION	GROSS	ENTER	EXIT	ENTER	EXIT
Summary Sheet		Units				
	Fast Food Restaurant w/ Drive-Thru Window (934)	4.00	1,884	82	79	68
	Shopping Center (820)	94.00	5,764	123	76	249
	Subtotal		7,648	205	155	317
	<i>Pass-By Trips</i>	30%		-62	-47	-95
	Total Primary Trips			143	108	222

Turning movements counts were determined by distributing the trips generated proportionally to the 2021 projected population of Data Analysis Subzones (DASZ) within a 1.5-mile radius. See trip distribution discussion in the next section for more details. See the turning movement map below for volume data.

Analysis of Existing Conditions

An analysis of existing conditions was not conducted for this Study because the implementation year analysis is only a few years into the future.

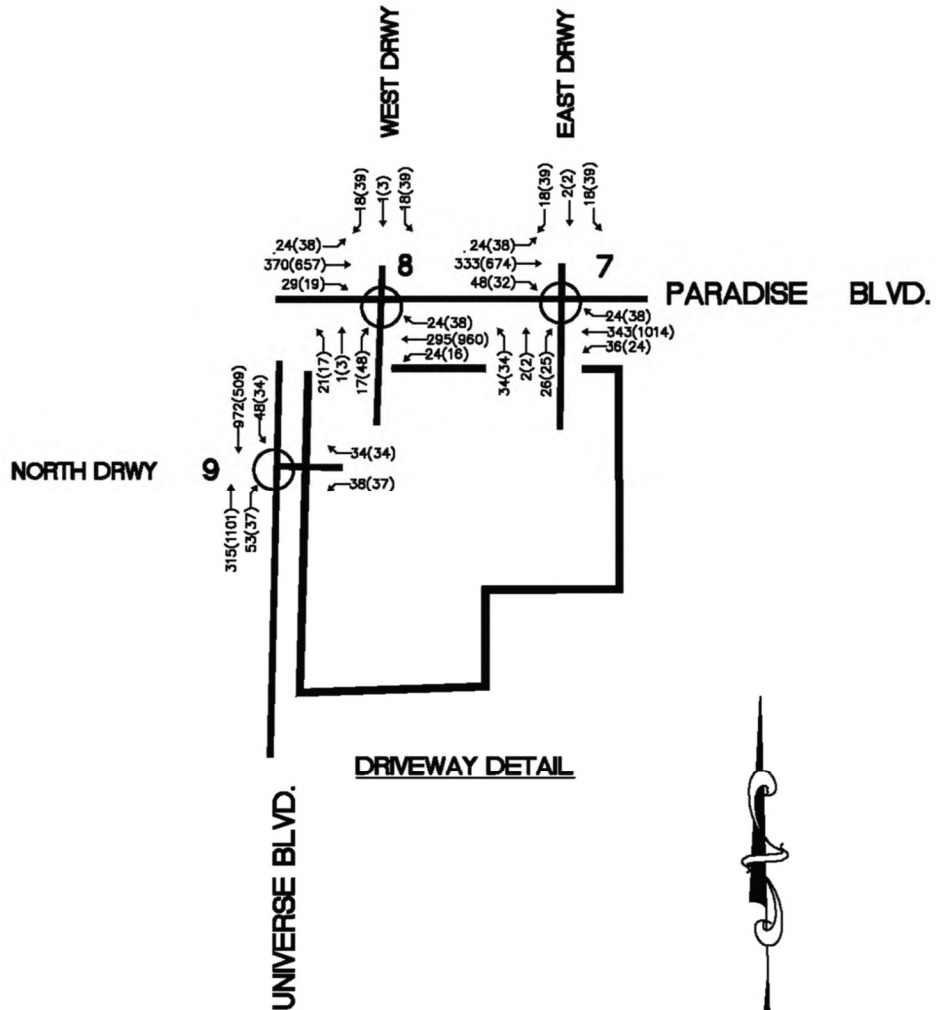
Murphy Express

Montgomery Blvd./ Eubank Blvd. - Albuquerque, NM

Existing Conditions Traffic Volumes for Unsignalized Driveways

Trips Entering and Exiting (veh/hr)

AM Peak Hour Volume (PM Peak Hour Volume)



- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION



NTB

Implementation Year and Horizon Year Volumes & Analysis

Project Generated Traffic Volumes and Growth Rates

The anticipated implementation year for this project is 2025 and the Horizon Year is 2035. The study area is partially developed and the calculated **growth rate** at the intersections are 4% for the Implementation Year and 3% for the Horizon Year. See Appendix A-11 thru A-19.

Background traffic volumes were calculated by applying historical annual background traffic growth rates to the existing traffic volumes for the implementation year. The MRCOG Regional Transportation Model data from 2009 to 2018 was used to determine the historical growth rates.

Projected trips were calculated based on the Institute of Traffic Engineers (ITE) Trip Generation Manual (10th Edition). The number of trips generated by the facility during the AM and PM Peak Hours have been approximated using ITE Code 934 (Fast Food Restaurant w/Drive-thru Window) and 820 (Shopping Center), for the facilities in the development.

According to the Institute of Traffic Engineers' (ITE) trip generation rates, the weekday AM Peak Hour period is anticipated to generate 231 new entering trips and 192 new exiting trips during the AM Peak Hour. During the weekday PM Peak Hour period, it is anticipated that it will generate 279 new entering trips and 283 new exiting trips. Pass-by trip rate reduction of 30% is applied to the trips generated. See the Trip Generation Data Table below.

Ventana Ranch Retail Commercial (PdN / Universe Blvd.)

NEW DEVELOPMENT

Trip Generation Data (ITE Trip Generation Manual - 10th Edition)

USE (ITE CODE)		24 HR VOL	A. M. PEAK HR.		P. M. PEAK HR.	
DESCRIPTION		GROSS	ENTER	EXIT	ENTER	EXIT
Summary Sheet	Units					
Fast Food Restaurant w/ Drive-Thru Window (934)	10.24	4,821	210	202	174	161
Shopping Center (820)	82.00	5,253	120	73	225	244
Subtotal	92.24	10,074	330	275	399	405
<i>Pass-By Trips</i>	30%		-99	-83	-120	-122
Total Primary Trips			231	192	279	283

Trip Distribution

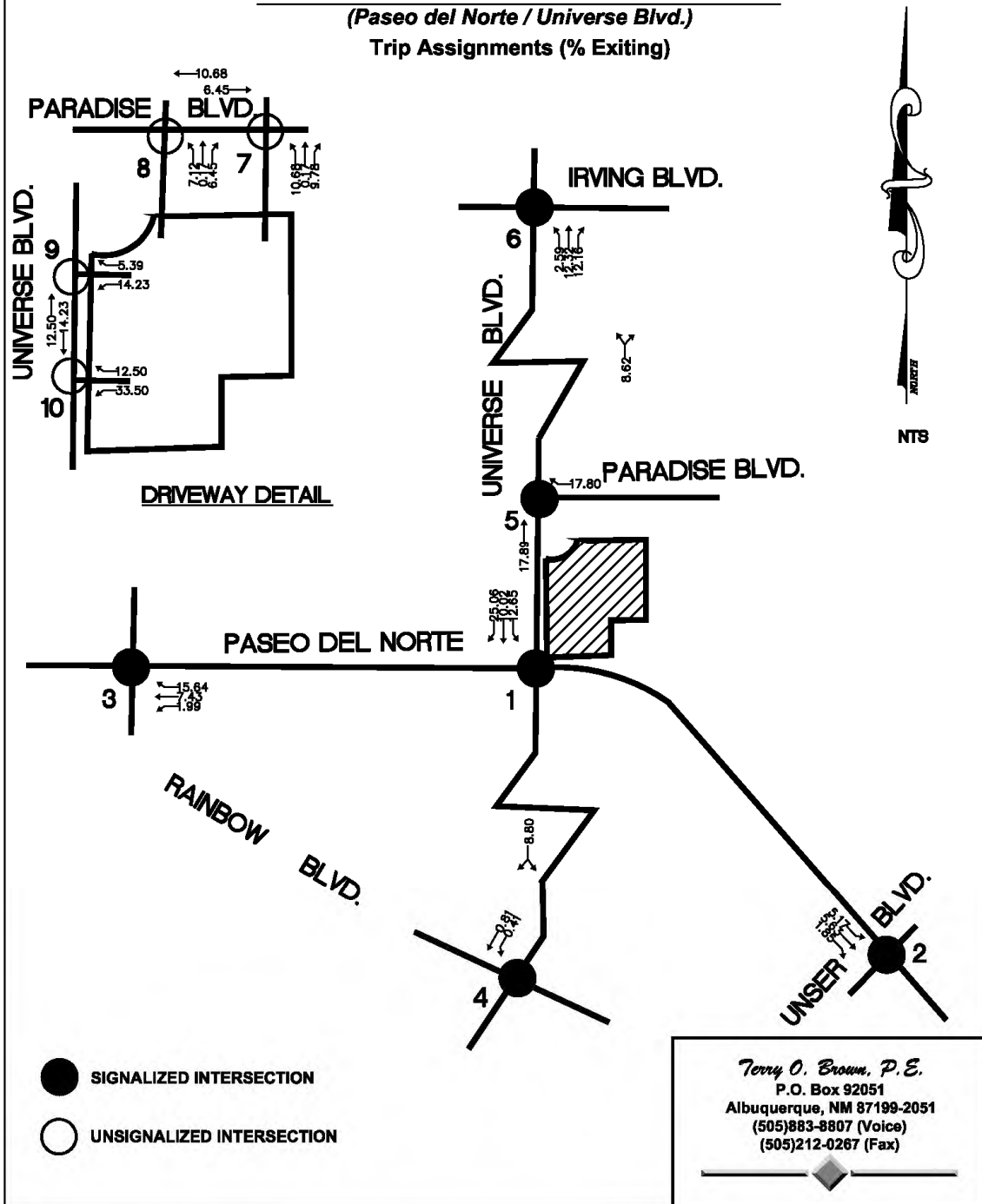
The Gravity Model was used to determine trip distribution where primary trips for the commercial land use development were distributed proportionally to the 2021 projected population of Data Analysis Subzones (DASZ) within a 2.0-mile radius. Population data for the years 2012 and 2040 were taken from the 2040 Socioeconomic Forecasts by Subareas for the Mid-Region of New Mexico supplied by the Mid-Region Council of Governments (MRCOG). Population data from the

years 2012 and 2040 was interpolated linearly to obtain 2021 population data to utilize for this analysis. Population Subzones were grouped based on the most likely major street(s) or route(s) to the subject development. The trip distribution worksheets and associated map of data analysis subzones are shown in the Appendix on Pages A-24 thru A-30. The commercial Trip Distribution map can be found below and in the Appendix on Page A-31.

Ventana Ranch Retail Development

(Paseo del Norte / Universe Blvd.)

Trip Assignments (% Exiting)



Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

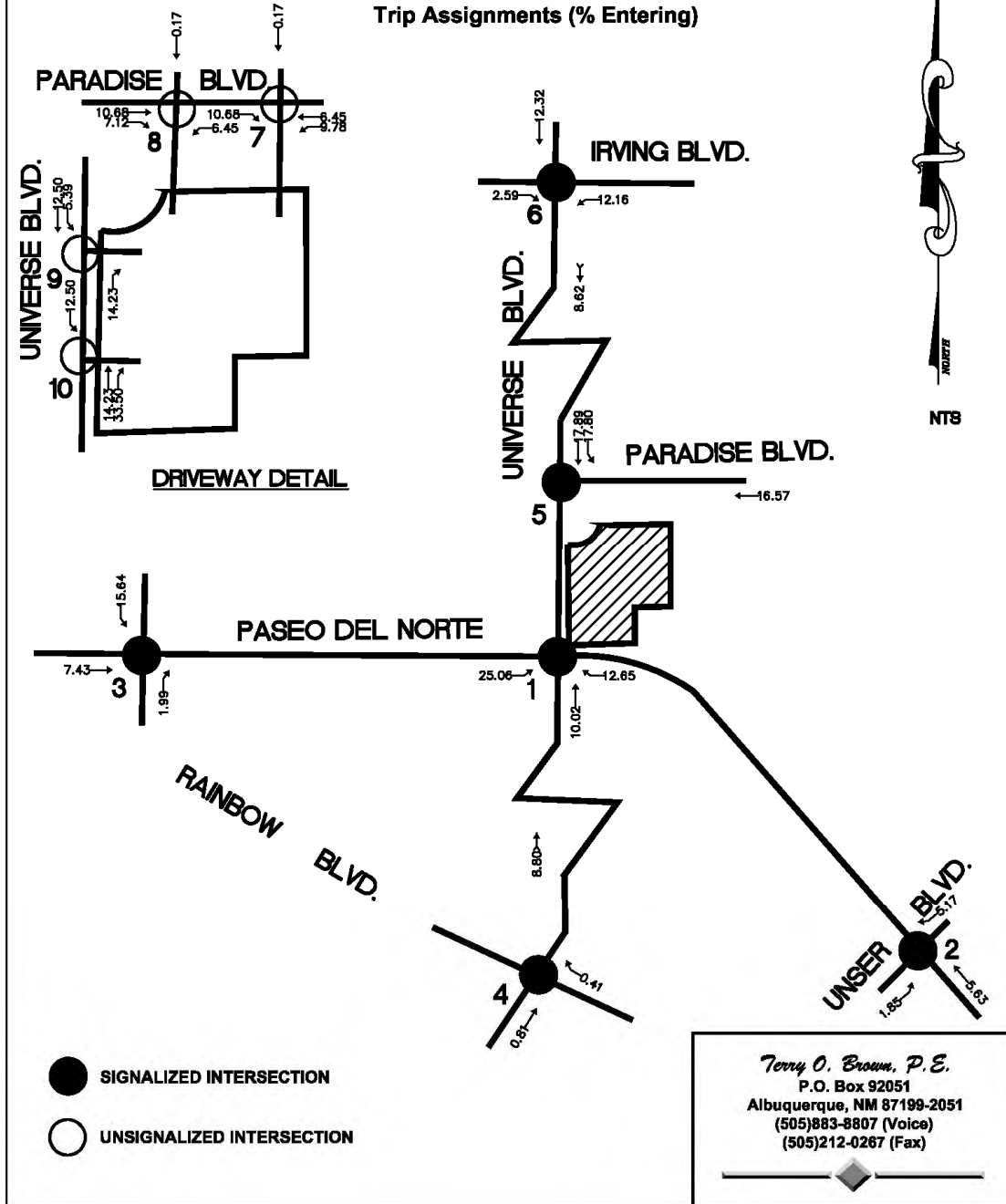
Trip assignments are first made on a percentage basis derived from data established in the trip distribution determination process and logical routing. Those percentages are then applied to the projected trips to determine individual traffic movements. Percentage trip assignments for commercial trips are shown below and on Appendix on Pages A-32 thru A-34. The trip assignments maps in this Study assume that the proposed right-in, right-out driveways on the east side of Universe Blvd. and on the north of Paseo del Norte

Peak Hour volumes for BUILD, and NO BUILD conditions for the implementation and horizon years were calculated in accordance with the Highway Capacity Manual (HCM), 6th Edition by multiplying the peak 15-minute period turning movement counts for each condition by four. **Existing traffic volumes** were based on the analysis method described in the “Analysis of Existing Conditions” section above. **NO BUILD volumes** were generated by adjusting the demand volumes with the background traffic growth and adding the traffic volumes generated by the recent developments in the area. **BUILD volumes** were calculated by adding the trips generated by the project to the NO BUILD volumes. The projected turning movement worksheets are provided in Appendix Pages A-36 thru A-45.

Ventana Ranch Retail Development

(Paseo del Norte / Universe Blvd.)

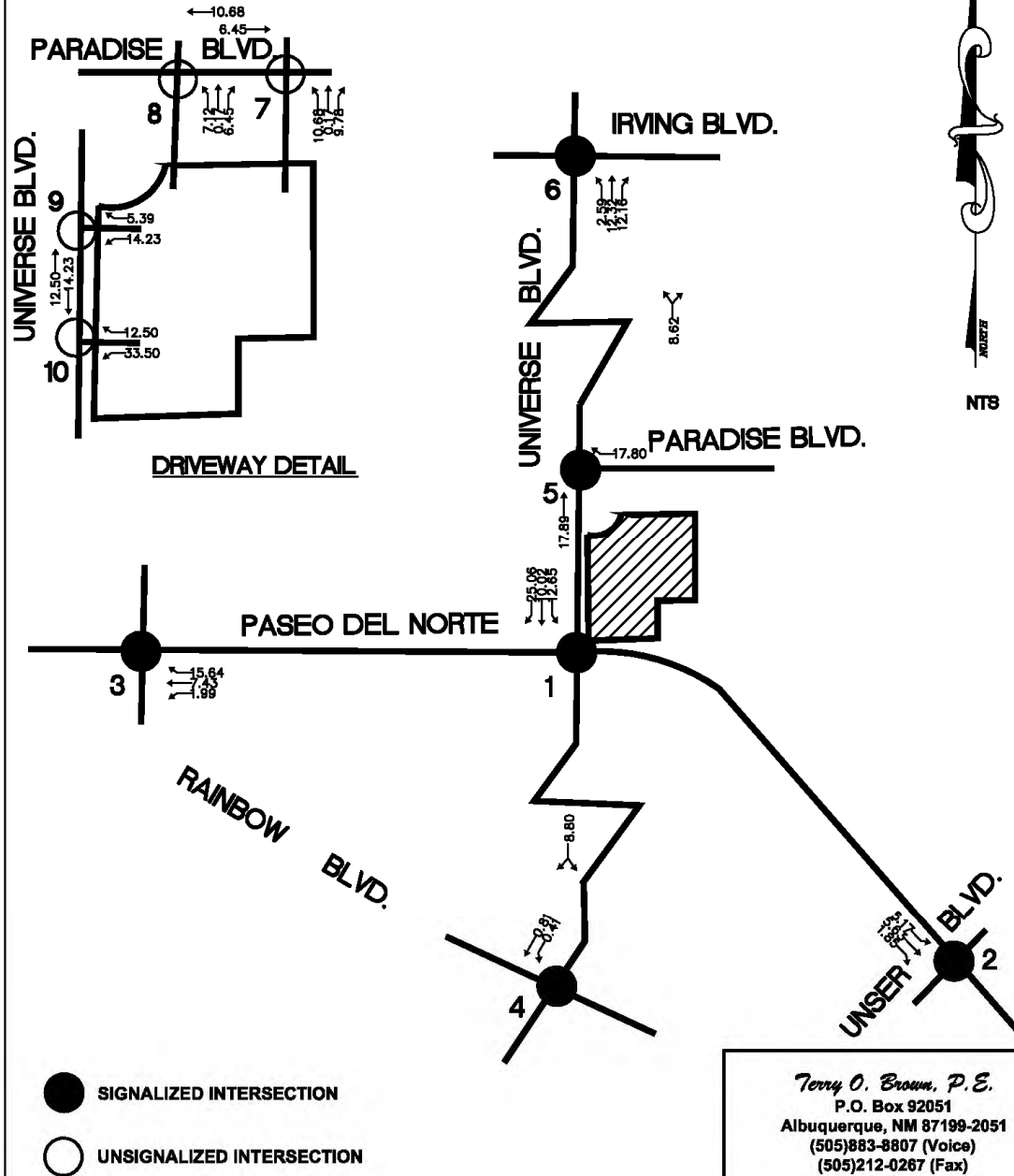
Trip Assignments (% Entering)



Ventana Ranch Retail Development

(Paseo del Norte / Universe Blvd.)

Trip Assignments (% Exiting)



Terry O. Brown, P.E.
P.O. Box 92051
Albuquerque, NM 87199-2051
(505)883-8807 (Voice)
(505)212-0267 (Fax)

Traffic Analysis

The Highway Capacity Manual, 6th Edition defines signalized and unsignalized intersection levels-of-service (LOS) based on the calculated average control delay of a turning movement, lane group, or overall intersection. The thresholds for various levels-of-service are summarized in the following tables:

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

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

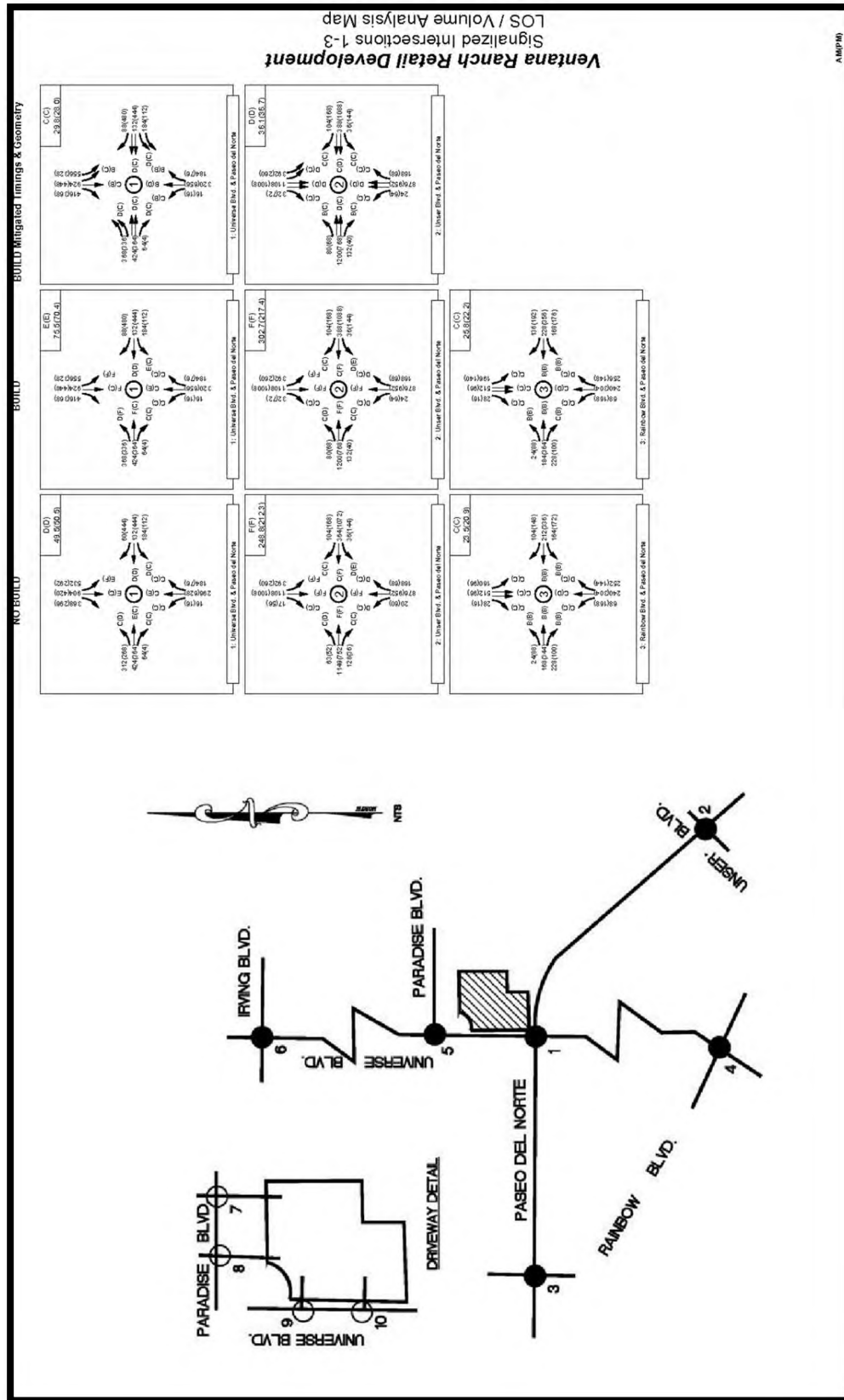
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

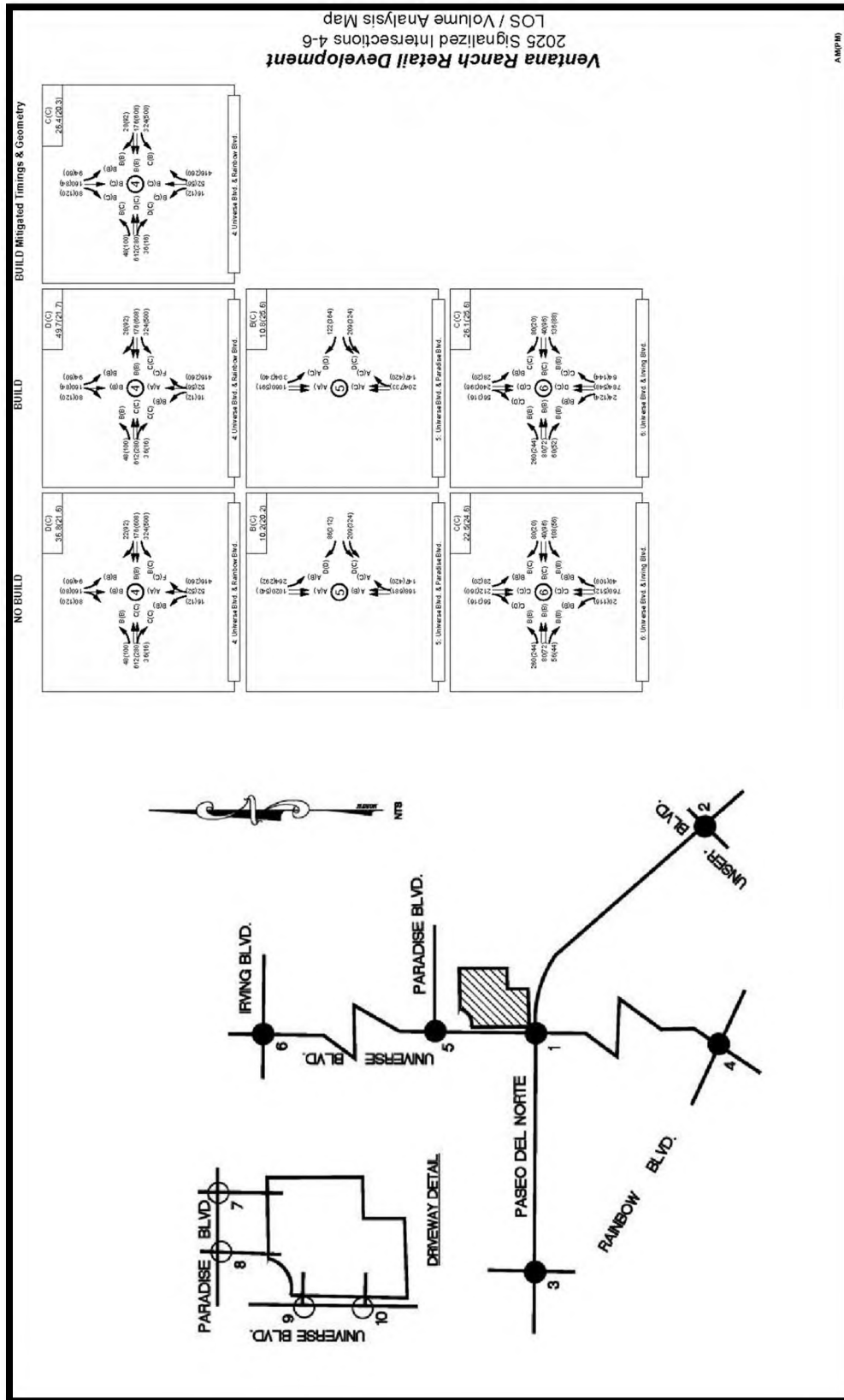
<u>Average Delay</u> <u>(secs)</u>	<u>Level-of-Service</u>
≤ 10	A
> 10 and ≤ 15	B
> 15 and ≤ 25	C
> 25 and ≤ 35	D
> 35 and ≤ 50	E
> 50	F

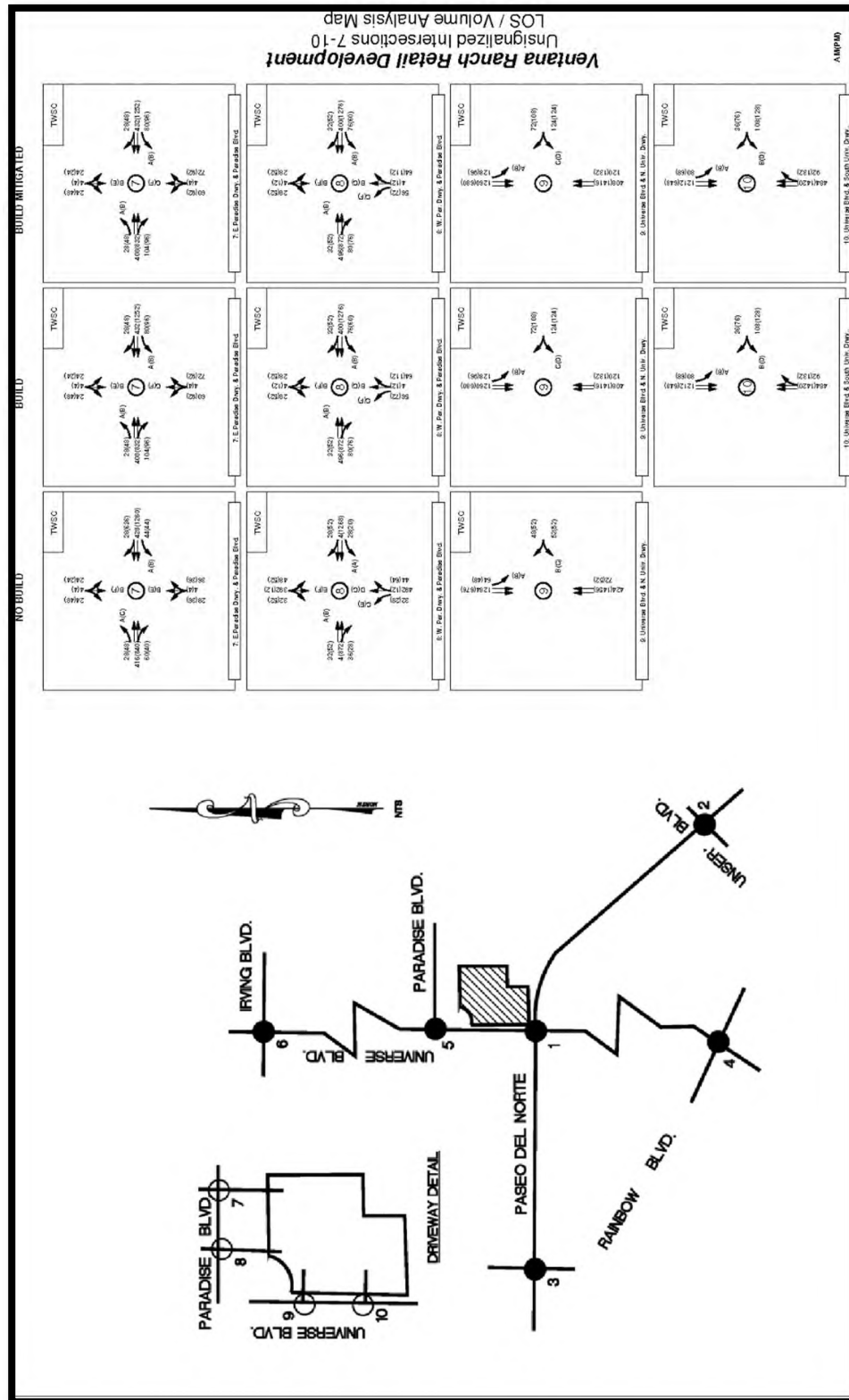
A Level-of-Service D or better is an acceptable parameter in urban areas for design purposes.

A capacity analysis was conducted in accordance with the HCM6 for the signalized and unsignalized intersections using Synchro 10 (Build 10.3.122.0).

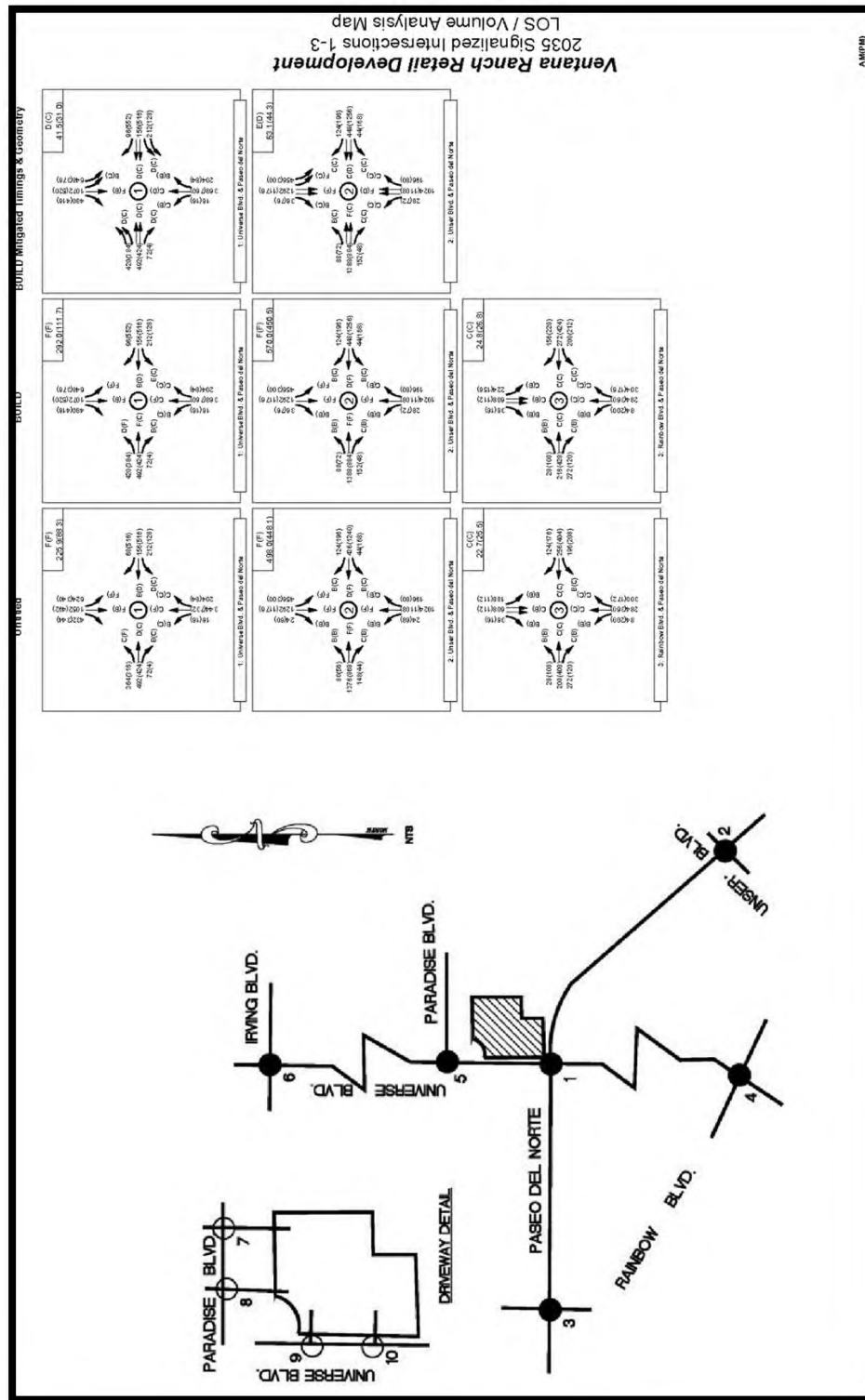
The Lanes Volumes Analysis Maps for the signalized intersection and driveways (2025 Implementation Year) are on the following pages.

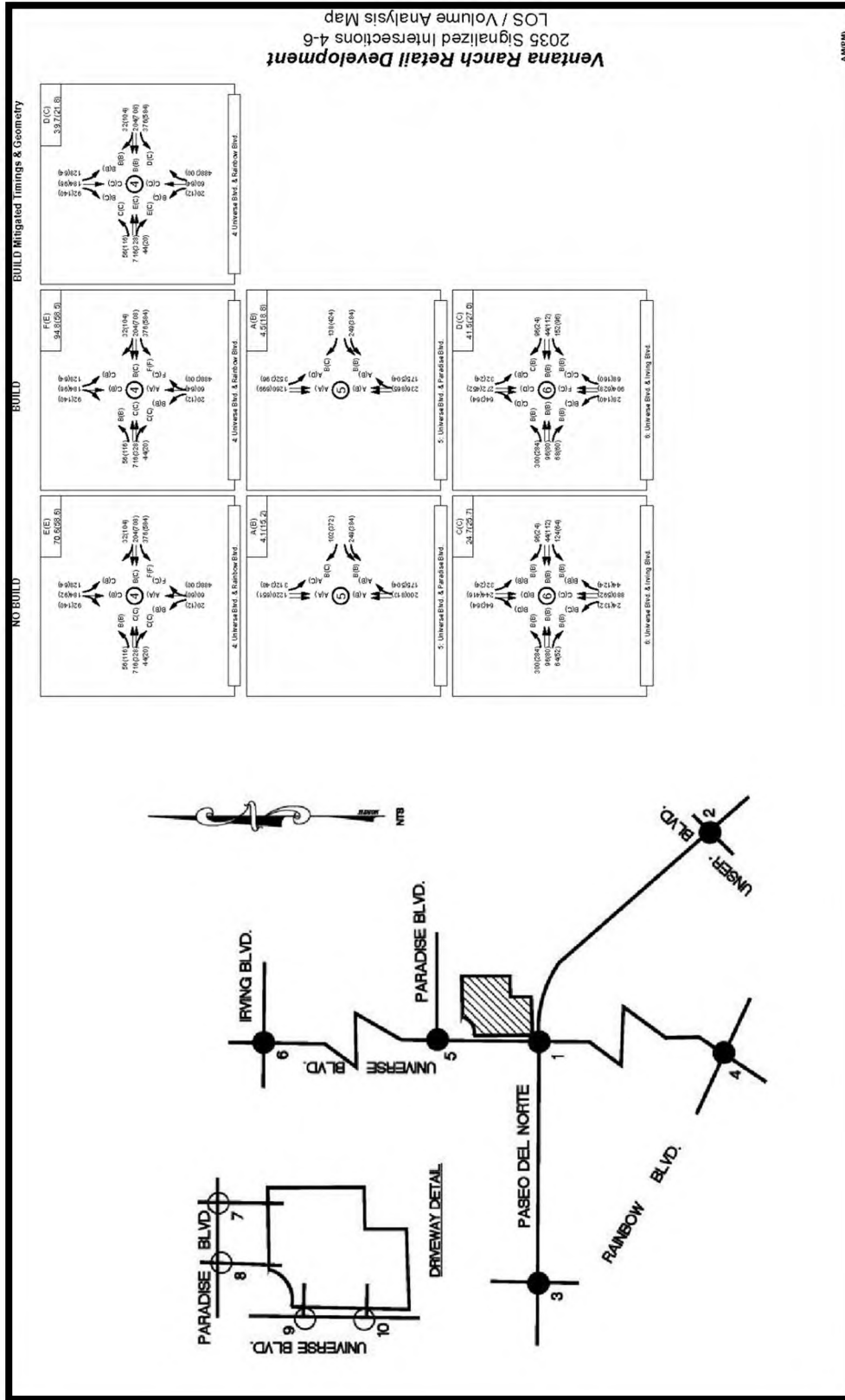


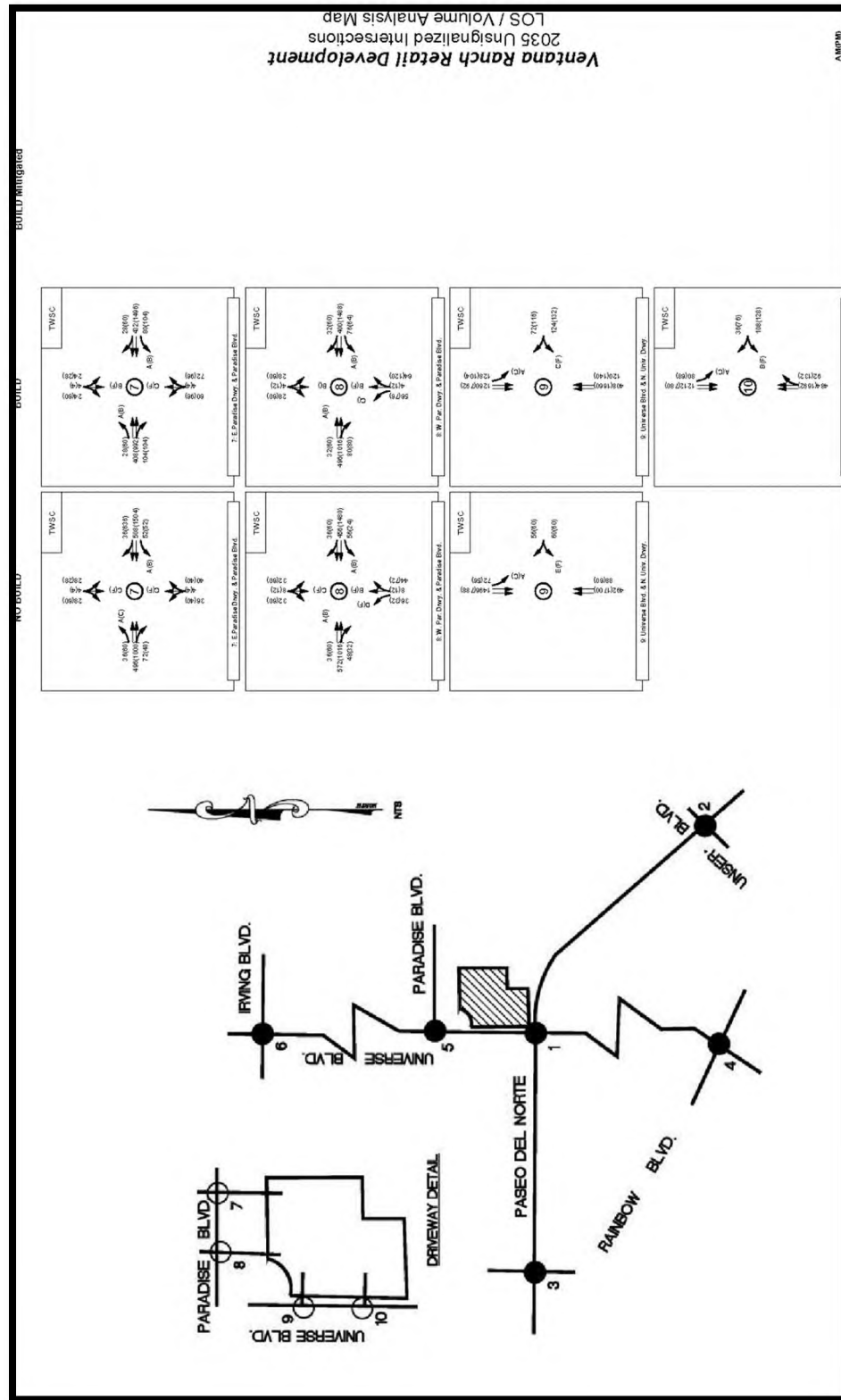




The Lanes Volumes Analysis Maps for the signalized intersection and driveways (2035 Implementation Year) are on the following pages.







The results of the analysis for the intersections in the study area are summarized in a table the Executive Summary and detailed in the following sections:

INTERSECTION 1 – Paseo del Norte & Universe Blvd. (Signalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the signalized intersection of Paseo del Norte & Universe Blvd. See Appendix pages A-46 thru A-53 for analysis reports for all conditions.

2025 Signalized Intersections

Paseo del Norte

Universe Blvd.

Signalized

Paseo del Norte Universe Blvd.	EB (Paseo del Norte)			WB (Paseo del Norte)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	1	1	1	1	0	1	1	1	1	1	1
AM Peak Hour												
NO BUILD Volumes	312	424	64	184	132	60	16	296	184	532	904	368
V/C Ratio	0.67	0.96	0.17	0.77	0.35		0.16	0.42	0.31	0.97	0.96	
Level-of-Service	C	E	C	D	D		C	C	C	E	E	
Control Delay (Seconds)	33.4	72.2	33.6	47.0	38.0	0.0	28.5	27.6	25.9	55.5	56.6	0.0
Intersection LOS	D - 49.5											
95th Percentile Queue (veh)												
BUILD Volumes	368	424	64	184	132	88	16	320	184	556	924	416
V/C Ratio	0.88	1.04	0.19	0.88	0.37		0.20	0.50	0.34	1.18	1.07	
Level-of-Service	D	F	C	E	D		C	C	C	F	F	
Control Delay (Seconds)	49.9	93.5	33.8	63.2	38.3	0.0	29.9	29.1	26.3	124.0	85.8	0.0
Intersection LOS	E - 75.5											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	2	2	1	2	2	1	1	1	1	2	1	1
BUILD Mitigated Timings & Geometry Volumes	368	424	64	184	132	88	16	320	184	556	924	416
V/C Ratio	0.58	0.71	0.24	0.46	0.22		0.11	0.39	0.26	0.53	0.91	
Level-of-Service	D	D	D	D	D		C	B	B	B	C	
Control Delay (Seconds)	39.1	45.5	38.9	35.3	38.2	0.0	22.4	19.4	17.8	11.7	32.8	0.0
Intersection LOS	C - 29.8											
95th Percentile Queue (veh)												

PM Peak Hour

NO BUILD Volumes	268	364	4	112	444	444	16	628	76	292	420	296
V/C Ratio	0.89	0.62	0.01	0.34	0.90		0.04	0.95	0.14	1.07	0.50	
Level-of-Service	D	C	C	C	D		C	E	C	F	C	
Control Delay (Seconds)	51.9	33.4	25.8	28.0	52.0	0.0	22.7	59.2	24.6	105.0	23.8	0.0
Intersection LOS	D - 50.5											
95th Percentile Queue (veh)												
BUILD Volumes	336	364	4	112	444	480	16	656	76	328	448	368
V/C Ratio	1.11	0.62	0.01	0.34	0.90		0.05	0.99	0.14	1.29	0.54	
Level-of-Service	F	C	C	C	D		C	E	C	F	C	
Control Delay (Seconds)	113.0	33.3	25.8	28.0	52.0	0.0	22.9	68.4	24.6	188.0	24.5	0.0
Intersection LOS	E - 70.4											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	2	2	1	2	2	1	1	1	1	2	1	1
BUILD Mitigated Timings & Geometry Volumes	336	364	4	112	444	480	16	656	76	328	448	368
V/C Ratio	0.64	0.46	0.01	0.20	0.61		0.04	0.87	0.12	0.67	0.52	
Level-of-Service	C	C	C	C	C		B	D	B	C	B	
Control Delay (Seconds)	30.0	29.4	25.9	25.3	32.7	0.0	14.4	35.2	15.4	22.4	17.4	0.0
Intersection LOS	C - 28.0											
95th Percentile Queue (veh)												

Analysis of the intersection of Paseo del Norte & Universe Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have an adverse impact on the traffic movements at this intersection. LOS degrades from D for the NO BUILD condition to E for the BUILD condition for the AM and PM Peak Hours. The calculated intersection delays worsen by 15 s/veh and 20 s/veh respectfully. The SBL, SBT, and EBT movements are the most affected. Signal retiming alone provides only a minimal benefit to the performance of the intersection but with geometry modifications the performance of the intersection can be restored to acceptable levels. However, these geometry modifications must include major improvements to Paseo del Norte, namely adding a thru lane to the eastbound and westbound approaches and constructing additional left-turn lanes on the eastbound, westbound, and southbound approaches. Since this project only contributes 7% of the traffic at this intersection during the AM and PM Peak Hours and the major principal arterial, Paseo del Norte, is near capacity, these modifications should not be considered the sole responsibility of the development.

INTERSECTION 2 –Paseo del Norte& Unser Blvd. (Signalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the signalized intersection of Paseo del Norte & Unser Blvd. See Appendix pages A-66 thru A-73 for analysis reports for all conditions.

2: Unser Blvd. & Paseo del Norte

2025 Signalized Intersections

Paseo del Norte

Unser Blvd.

Signalized

Paseo del Norte Unser Blvd.	EB (Paseo del Norte)			WB (Paseo del Norte)			NB (Unser Blvd.)			SB (Unser Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	1	1	1	1	1	1	1	1	1	1	1
AM Peak Hour												
NO BUILD Volumes	63	1,149	128	36	364	104	20	876	168	392	1,108	17
V/C Ratio	0.17	1.41	0.19	0.40	0.46	0.16	0.26	2.06	0.47	1.04	1.50	0.03
Level-of-Service	C	F	C	D	C	C	D	F	D	F	F	C
Control Delay (Seconds)	21.6	231.0	23.2	35.1	28.9	23.7	43.1	537.0	44.4	97.2	271.0	24.0
Intersection LOS	F - 248.8											
95th Percentile Queue (veh)												
BUILD Volumes	80	1,200	132	36	388	104	24	876	168	392	1,108	32
V/C Ratio	0.26	1.61	0.21	0.42	0.55	0.17	0.31	2.24	0.51	1.13	1.64	0.06
Level-of-Service	C	F	C	D	C	C	D	F	D	F	F	C
Control Delay (Seconds)	22.5	318.0	23.7	35.3	31.8	24.7	43.2	617.0	45.1	127.0	336.0	24.7
Intersection LOS	F - 302.7											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	1	2	1	1	2	1	1	2	1	2	2	1
BUILD Mitigated Timings & Geometry Volumes	80	1,200	132	36	388	104	24	876	168	392	1,108	32
V/C Ratio	0.21	0.89	0.22	0.28	0.30	0.18	0.22	0.91	0.39	0.87	0.92	0.06
Level-of-Service	B	D	B	C	C	C	C	D	C	D	D	C
Control Delay (Seconds)	17.0	35.5	19.7	24.4	21.6	20.6	28.3	44.5	28.6	40.9	40.6	20.4
Intersection LOS	D - 36.1											
95th Percentile Queue (veh)												
PM Peak Hour												
NO BUILD Volumes	52	752	36	144	1,072	168	60	952	68	260	1,008	56
V/C Ratio	0.49	1.12	0.06	0.84	1.46	0.27	0.26	1.49	0.13	1.15	1.57	0.10
Level-of-Service	D	F	C	E	F	C	C	F	C	F	F	C
Control Delay (Seconds)	36.9	116.0	27.7	55.1	252.0	27.8	31.6	269.0	29.8	145.0	308.0	29.5
Intersection LOS	F - 212.3											
95th Percentile Queue (veh)												
BUILD Volumes	68	768	40	144	1,088	168	64	952	68	260	1,008	72
V/C Ratio	0.57	1.15	0.07	0.84	1.51	0.27	0.28	1.49	0.13	1.15	1.57	0.13
Level-of-Service	D	F	C	E	F	C	C	F	C	F	F	C
Control Delay (Seconds)	37.3	125.0	27.8	55.1	275.0	28.5	32.0	269.0	29.8	145.0	308.0	29.9
Intersection LOS	F - 217.4											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	1	2	1	1	2	1	1	2	1	2	2	1
BUILD Mitigated Timings & Geometry Volumes	68	768	40	144	1,088	168	64	952	68	260	1,008	72
V/C Ratio	0.42	0.70	0.08	0.53	0.90	0.31	0.34	0.91	0.15	0.66	0.96	0.15
Level-of-Service	C	C	C	C	D	C	C	D	C	C	D	C
Control Delay (Seconds)	24.0	29.1	20.6	20.7	36.6	21.5	26.4	41.2	22.4	30.3	48.7	22.5
Intersection LOS	D - 36.7											
95th Percentile Queue (veh)												

Analysis of the intersection of Paseo del Norte & Unser Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. LOS remains the same for the AM (LOS=F) and PM (LOS=F) Peak Hours, from the NO BUILD to the BUILD condition. Traffic generated by the development makes delays worse, but because of the exponential relationship between traffic volumes and LOS, even the small increase in traffic volumes (2% of the total traffic) from this project disproportionally increase delay (50 s/veh increased delay in the AM Peak Hour). Therefore, no mitigation measures are recommended for the intersection of Paseo del Norte & Unser Blvd by the development. However, to improve the existing performance of the intersection it is recommended to the City of Albuquerque to consider the following modifications to the intersection: 1) widen Paseo del Norte east and west of the intersection by adding one thru lane, at least 1000-feet long, to each approach, 2) widen Unser Blvd. north and south of the intersection by adding one thru lane, at least 1000-feet long, to each approach, and 3) Construct one additional 250-foot long southbound left-turn lane including return. As shown in the table above this will improve the LOS from F to D.

INTERSECTION 3 – Paseo del Norte/Rainbow Blvd. (Signalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of Paseo del Norte/Rainbow Blvd. See Appendix pages A-74 through A-81 for analysis reports for all conditions.

2025 Signalized Intersections

Paseo del Norte

Rainbow Blvd.

Signalized

Paseo del Norte Rainbow Blvd.	EB (Paseo del Norte)			WB (Paseo del Norte)			NB (Rainbow Blvd.)			SB (Rainbow Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	1	1	1	1	1	1	1	1	1	2	1
AM Peak Hour												
NO BUILD Volumes	24	168	228	164	212	104	68	240	252	160	512	28
V/C Ratio	0.04	0.24	0.38	0.30	0.26		0.25	0.66	0.82	0.48	0.59	0.07
Level-of-Service	B	B	B	B	B		C	C	D	C	C	C
Control Delay (Seconds)	13.9	16.6	18.6	11.5	13.8	0.0	23.1	30.2	39.7	21.2	25.9	21.7
Intersection LOS	C - 23.5											
95th Percentile Queue (veh)												
BUILD Volumes	24	184	228	168	228	136	68	240	256	196	512	28
V/C Ratio	0.05	0.30	0.44	0.36	0.31		0.26	0.69	0.86	0.59	0.58	0.07
Level-of-Service	B	B	C	B	B		C	C	D	C	C	C
Control Delay (Seconds)	16.0	19.7	22.2	13.5	16.1	0.0	23.9	33.2	48.0	22.1	25.8	21.5
Intersection LOS	C - 25.8											
95th Percentile Queue (veh)												
PM Peak Hour												
NO BUILD Volumes	88	344	100	172	336	148	168	304	144	96	96	16
V/C Ratio	0.17	0.45	0.15	0.34	0.41		0.37	0.81	0.46	0.38	0.17	0.06
Level-of-Service	B	B	B	B	B		C	D	C	C	C	C
Control Delay (Seconds)	11.7	17.5	14.1	11.3	15.2	0.0	21.3	35.2	26.6	24.6	26.3	25.9
Intersection LOS	C - 20.9											
95th Percentile Queue (veh)												
BUILD Volumes	88	364	100	176	356	192	168	304	148	140	96	16
V/C Ratio	0.18	0.49	0.16	0.37	0.44		0.35	0.82	0.47	0.49	0.15	0.05
Level-of-Service	B	B	B	B	B		C	D	C	C	C	C
Control Delay (Seconds)	12.9	19.5	15.3	12.4	16.9	0.0	21.8	37.4	27.8	23.9	25.8	25.4
Intersection LOS	C - 22.2											
95th Percentile Queue (veh)												

LOS at the Paseo del Norte and Rainbow Blvd. intersection remains the same for the AM (LOS=C) and PM (LOS= C) Peak Hours, from the NO BUILD to the BUILD condition. Additionally, delays become worse by less than 3 sec/veh. Since the project has an insignificant impact the overall intersection and approach delays, no mitigation measures are proposed.

INTERSECTION 4 – Rainbow Blvd./Universe Blvd. (Signalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of Rainbow Blvd. & Universe Blvd. See Appendix pages A-82 thru A-89 for analysis reports for all conditions.

2025 Signalized Intersections

Rainbow Blvd.

Universe Blvd.

Signalized

Rainbow Blvd. Universe Blvd.	EB (Rainbow Blvd.)			WB (Rainbow Blvd.)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	2>	0	1	2>	0	1	1>	0	1	1>	0
AM Peak Hour												
NO BUILD Volumes	48	612	36	324	176	22	16	52	416	94	160	80
V/C Ratio	0.11	0.75	0.75	0.72	0.13		0.04	0.00	1.05	0.45	0.27	
Level-of-Service	B	C	C	B	B		B	A	F	B	B	
Control Delay (Seconds)	18.5	29.0	29.0	19.9	14.1	0.0	17.2	0.0	80.6	19.3	18.0	0.0
Intersection LOS	D - 36.8											
95th Percentile Queue (veh)												
BUILD Volumes	48	612	36	324	176	28	16	52	416	94	160	80
V/C Ratio	0.12	0.82	0.83	0.79	0.14		0.04	0.00	1.17	0.48	0.29	
Level-of-Service	B	C	C	C	B		B	A	F	B	B	
Control Delay (Seconds)	18.9	34.8	34.6	24.2	14.2	0.0	17.8	0.0	122.0	19.7	18.8	0.0
Intersection LOS	D - 49.7											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	1	2>	0	1	2>	0	1	1	1	1	1	1
BUILD Mitigated Timings & Geometry Volumes	48	612	36	324	176	28	16	52	416	94	160	80
V/C Ratio	0.12	0.84	0.84	0.79	0.16	0.17	0.04	0.11		0.18	0.29	0.17
Level-of-Service	B	D	D	C	B	B	B	B		B	B	B
Control Delay (Seconds)	19.5	37.0	36.8	24.4	14.7	14.8	17.7	19.1	0.0	15.3	18.7	17.5
Intersection LOS	C - 26.4											
95th Percentile Queue (veh)												

PM Peak Hour

NO BUILD Volumes	100	280	16	500	608	92	12	52	260	60	80	120
V/C Ratio	0.25	0.34	0.35	0.81	0.47		0.03	0.00	0.70	0.21	0.14	
Level-of-Service	B	C	C	C	B		B	A	C	B	B	
Control Delay (Seconds)	17.9	21.9	21.9	23.5	16.9	0.0	17.5	0.0	30.8	17.8	17.7	0.0
Intersection LOS	C - 21.6											
95th Percentile Queue (veh)												
BUILD Volumes	100	280	16	500	608	92	12	56	260	60	84	120
V/C Ratio	0.25	0.34	0.35	0.81	0.47		0.03	0.00	0.71	0.22	0.15	
Level-of-Service	B	C	C	C	B		B	A	C	B	B	
Control Delay (Seconds)	17.9	21.9	21.9	23.5	16.9	0.0	17.5	0.0	31.2	17.9	17.8	0.0
Intersection LOS	C - 21.7											
95th Percentile Queue (veh)												
Mitigate Lane Geometry	1	2>	0	1	2>	0	1	1	1	1	1	1
BUILD Mitigated Timings & Geometry Volumes	100	280	16	500	608	92	12	56	260	60	84	120
V/C Ratio	0.30	0.41	0.41	0.78	0.53	0.53	0.03	0.13		0.14	0.17	0.29
Level-of-Service	C	C	C	B	B	B	C	C		B	C	C
Control Delay (Seconds)	20.8	25.7	25.7	20.0	17.5	20.5	22.1	0.0	19.1	20.9	22.6	
Intersection LOS	C - 20.3											
95th Percentile Queue (veh)												

Analysis of the intersection of Rainbow Blvd. & Universe Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. The LOS remains the same for the AM (LOS=D) and PM (LOS=C) Peak Hours, from the NO BUILD to the BUILD condition. However, the delay during the AM Peak Hour becomes worse by 13 sec/veh because of the poor performance of the right-turn lane on Universe Blvd. The LOS=F for the NBR for the NO BUILD and BUILD conditions. As shown in the table above adding a channelized NBR turn lane the AM Peak Hour LOS improves to LOS=C and the delays are improved. However, since the project does not contribute to the NBR movement, no mitigation measures are recommended for this intersection by the project.

INTERSECTION 5 – Paradise Blvd. & Universe Blvd. (Signalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of Paradise Blvd. & Universe Blvd. See Appendix pages A-90 thru A-97 for analysis reports for all conditions.

5: Universe Blvd. & Paradise Blvd.

2025 Signalized Intersections

Paradise Blvd.

Universe Blvd.

Signalized

Paradise Blvd. Universe Blvd.	EB (Paradise Blvd.)			WB (Paradise Blvd.)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry				2		1	2	0		1	2	
AM Peak Hour												
NO BUILD Volumes				209		86		168	147	264	1,020	
V/C Ratio				0.70		0.63		0.12	0.13	0.28	0.35	
Level-of-Service				D		D		A	A	A	A	
Control Delay (Seconds)				51.9		53.3		0.2	0.2	2.8	3.0	
Intersection LOS	B - 10.2											
95th Percentile Queue (veh)												
BUILD Volumes				209		122		204	147	304	1,060	
V/C Ratio				0.59		0.76		0.16	0.17	0.37	0.41	
Level-of-Service				D		D		A	A	A	A	
Control Delay (Seconds)				48.0		54.0		0.3	0.3	3.7	4.0	
Intersection LOS	B - 10.8											
95th Percentile Queue (veh)												

PM Peak Hour

NO BUILD Volumes				324		312		681	420	292	543	
V/C Ratio				0.41		0.85		0.67	0.67	0.74	0.24	
Level-of-Service				C		D		B	C	B	A	
Control Delay (Seconds)				26.4		40.6		19.8	20.2	17.9	6.6	
Intersection LOS	C - 20.2											
95th Percentile Queue (veh)												
BUILD Volumes				324		364		733	420	340	591	
V/C Ratio				0.36		0.88		0.77	0.78	0.89	0.28	
Level-of-Service				C		D		C	C	C	A	
Control Delay (Seconds)				24.4		44.5		26.6	27.4	32.3	7.8	
Intersection LOS	C - 25.6											
95th Percentile Queue (veh)												

Analysis of the intersection of Paradise Blvd. & Universe Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. The LOSs' and delays remain the same for the AM and PM Peak Hours, from the NO BUILD to the BUILD condition for all movements. Therefore, no mitigation measures are proposed for this intersection.

INTERSECTION 6 – Irving Blvd./Universe Blvd. (Signalized, Existing)

The following table summarizes the 2021 Implementation Year analysis results for the unsignalized intersection of Irving Blvd. & Universe Blvd. See Appendix pages A-98 thru A-105 for analysis reports for all conditions.

6: Universe Blvd. & Irving Blvd.

2025 Signalized Intersections

Irving Blvd.

Universe Blvd.

Signalized

Irving Blvd. Universe Blvd.	EB (Irving Blvd.)			WB (Irving Blvd.)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	2	1	1	2	1	1	2	1	1	2	0
AM Peak Hour												
NO BUILD Volumes	260	80	56	108	40	80	20	760	40	28	212	56
V/C Ratio	0.38	0.07	0.10	0.19	0.04	0.19	0.05	0.79	0.09	0.13	0.27	0.28
Level-of-Service	B	B	B	B	B	B	B	C	B	B	C	C
Control Delay (Seconds)	13.2	15.3	15.8	16.1	18.3	19.9	17.3	29.4	18.9	18.5	20.4	20.6
Intersection LOS	C - 22.4											
95th Percentile Queue (veh)												
BUILD Volumes	260	80	60	136	40	80	24	784	64	28	240	56
V/C Ratio	0.41	0.08	0.13	0.25	0.05	0.20	0.07	0.89	0.16	0.16	0.33	0.34
Level-of-Service	B	B	B	B	B	C	B	D	C	B	C	C
Control Delay (Seconds)	13.7	16.3	16.9	15.9	18.8	20.7	17.6	37.0	20.2	19.6	22.0	22.2
Intersection LOS	C - 26.1											
95th Percentile Queue (veh)												

PM Peak Hour

NO BUILD Volumes	244	72	44	56	96	20	116	512	108	20	360	316
V/C Ratio	0.39	0.06	0.08	0.11	0.11	0.05	0.40	0.48	0.23	0.07	0.74	0.75
Level-of-Service	B	B	B	B	C	C	B	C	B	B	C	D
Control Delay (Seconds)	15.0	16.3	16.6	18.1	20.7	20.4	19.2	22.0	19.9	18.6	33.7	35.3
Intersection LOS	C - 24.6											
95th Percentile Queue (veh)												
BUILD Volumes	244	72	52	88	96	20	124	548	144	20	396	316
V/C Ratio	0.39	0.06	0.10	0.17	0.11	0.05	0.44	0.50	0.30	0.07	0.78	0.79
Level-of-Service	B	B	B	B	C	C	B	C	C	B	D	D
Control Delay (Seconds)	15.1	17.0	17.5	18.1	20.9	20.6	19.5	22.3	20.8	18.8	36.3	38.1
Intersection LOS	C - 25.6											
95th Percentile Queue (veh)												

LOS at the Osuna Rd. and Universe Blvd. intersection remains the same for the AM and PM Peak Hours, from the NO BUILD to the BUILD condition. Overall intersection delays worsen by less than 4 seconds. No mitigation measures are proposed since the project has no significant impact the overall intersection and approach delays.

INTERSECTION 7 – EAST Driveway/Paradise Blvd. (Unsignalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of EAST Driveway & Paradise Blvd. See Appendix pages A-106 thru A-113 for analysis reports for all conditions.

2025 Unsignalized Intersections

EAST Driveway

Paradise Blvd.

Unsignalized

EAST Driveway Paradise Blvd.	EB (EAST Driveway)			WB (EAST Driveway)			NB (Paradise Blvd.)			SB (Paradise Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	1	2	0	1	2	0	0	<1>	0	0	<1>	0
AM Peak Hour												
NO BUILD Volumes	28	416	60	44	428	28	28	4	36	24	4	24
V/C Ratio	0.03			0.05				0.22			0.18	
Level-of-Service	A			A				C			C	
Control Delay (Seconds)	8.5			8.6				18.5			18.8	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.1			0.1				0.8			0.6	
BUILD Volumes	28	408	104	80	432	28	60	4	72	24	4	24
V/C Ratio	0.03			0.09				0.50			0.22	
Level-of-Service	A			A				D			C	
Control Delay (Seconds)	8.5			8.9				28.9			22.4	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.1			0.3				2.6			0.8	
PM Peak Hour												
NO BUILD Volumes	48	840	40	44	1,260	636	36	4	36	24	4	48
V/C Ratio	0.15			0.06				1.41			2.00	
Level-of-Service	C			B				F			F	
Control Delay (Seconds)	18.7			10.0				388.0			693.0	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.5			0.2				6.9			8.2	
BUILD Volumes	48	832	96	96	1,252	48	92	4	92	24	4	48
V/C Ratio	0.09			0.13				3.19			1.38	
Level-of-Service	B			B				F			F	
Control Delay (Seconds)	12.5			10.7				999.0			376.0	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.3			0.5				19.7			6.8	

Analysis of the intersection of EAST Driveway & Paradise Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. The LOSs' and delays for the intersection remain the same for the AM and PM Peak Hours. Delays exiting the development worsen from the NO BUILD to the BUILD condition especially during the PM Peak Hour. High delays, especially left-turn movements, are typical for unsignalized shopping center driveways during peak hours. Driver

behavior such as making a right turn and then a U-turn instead of turning lefts often compensates for these delays. No mitigation measures are proposed for this intersection.

INTERSECTION 8 – WEST Driveway/Paradise Blvd. (Unsignalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of WEST Driveway & Paradise Blvd. See Appendix pages A-106 thru A-113 for analysis reports for all conditions.

2025 Unsignalized Intersections

Paradise Blvd.

WEST Driveway

Unsignalized

Paradise Blvd. WEST Driveway	EB (Paradise Blvd.)			WB (Paradise Blvd.)			NB (WEST Driveway)			SB (WEST Driveway)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry	<0	2>	0	1	2>	0	1	1>	0	0	<1>	0
AM Peak Hour												
NO BUILD Volumes	32	4	36	28	4	28	32	492	44	48	392	32
V/C Ratio	0.02			0.02			0.13	0.84			0.98	
Level-of-Service	A			A			C	D			F	
Control Delay (Seconds)	7.3			7.3			20.9	30.9			62.9	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.1			0.1			0.5	9.3			13.3	
BUILD Volumes	32	496	80	76	400	32	56	4	64	28	4	28
V/C Ratio	0.03			0.09			0.39	0.13			0.26	
Level-of-Service	A			A			E	B			C	
Control Delay (Seconds)	8.4			9.1			42.1	12.5			23.8	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.1			0.3			1.7	0.5			1.0	
PM Peak Hour												
NO BUILD Volumes	52	872	28	20	1,268	52	28	12	64	52	12	52
V/C Ratio	0.10			0.03			0.90	0.56			3.05	
Level-of-Service	B			A			F	F			F	
Control Delay (Seconds)	12.7			9.9			318.0	60.7			999.0	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.3			0.1			3.1	2.8			13.1	
BUILD Volumes	52	872	76	60	1,276	52	72	12	112	52	12	52
V/C Ratio	0.10			0.08			3.60	0.76			4.64	
Level-of-Service	B			B			F	F			F	
Control Delay (Seconds)	12.8			10.5			999.0	74.4			999.0	
Intersection LOS	TWSC											
95th Percentile Queue (veh)	0.3			0.3			9.4	4.8			14.4	

Analysis of the intersection of WEST Driveway & Paradise Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. The LOS and delays for each movement in the intersection remain the same for the AM and PM Peak Hours except for the NBL. Delays exiting the

development worsen for some movements from the NO BUILD to the BUILD condition especially during the PM Peak Hour. High delays, especially left-turn movements, are typical for unsignalized shopping center driveways during peak hours on arterial roadways. Driver behavior such as making a right turn and then a U-turn instead of turning lefts often compensates for these delays. No mitigation measures are proposed for this intersection.

INTERSECTION 9 – NORTH Driveway/Universe Blvd. (Unsignalized, Existing)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of NORTH Driveway & Universe Blvd. See Appendix pages A-106 thru A-113 for analysis reports for all conditions.

2025 Unsignalized Intersections

NORTH Driveway

Universe Blvd.

Unsignalized

NORTH Driveway Universe Blvd.	EB (NORTH Driveway)			WB (NORTH Driveway)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry				1>		0		2	0	1	2	
AM Peak Hour												
NO BUILD Volumes				52		48		424	72	64	1,284	
V/C Ratio				0.49						0.07		
Level-of-Service				E						A		
Control Delay (Seconds)				36.4						8.8		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				2.5						0.2		
BUILD Volumes				124		72		408	120	128	1,260	
V/C Ratio				1.45						0.14		
Level-of-Service				F						A		
Control Delay (Seconds)				292.0						9.2		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				14.0						0.5		

PM Peak Hour

NO BUILD Volumes				52		52		1,456	52	48	676	
V/C Ratio				1.13						0.11		
Level-of-Service				F						B		
Control Delay (Seconds)				218.0						14.2		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				7.0						0.4		
BUILD Volumes				124		108		1,416	132	96	680	
V/C Ratio				3.52						0.23		
Level-of-Service				F						C		
Control Delay (Seconds)				999.0						16.0		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				24.3						0.9		

Analysis of the intersection of WEST Driveway & Universe Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. The delay for the SBL turn is worsened by only 2 sec/veh by the additional traffic from the development. High delays at the driveways for exiting traffic, especially left-turn movements, are typical for unsignalized shopping center driveways during peak hours. Driver behavior such as making a right turn and then a U-turn instead of turning lefts often compensates for these delays. No mitigation measures are proposed for this intersection.

INTERSECTION 10 – SOUTH Driveway/Universe Blvd. (Unsignalized, Proposed)

The following table summarizes the 2025 Implementation Year analysis results for the unsignalized intersection of SOUTH Driveway & Universe Blvd. See Appendix pages A-106 thru A-113 for analysis reports for all conditions.

2025 Unsignalized Intersections

SOUTH Driveway

Universe Blvd.

Unsignalized

SOUTH Driveway Universe Blvd.	EB (SOUTH Driveway)			WB (SOUTH Driveway)			NB (Universe Blvd.)			SB (Universe Blvd.)		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Lane Geometry												
AM Peak Hour												
BUILD Volumes				108		36		484	92	80	1,212	
V/C Ratio				1.05						0.09		
Level-of-Service				F						A		
Control Delay (Seconds)				148.0						9.2		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				8.1						0.3		
PM Peak Hour												
BUILD Volumes				128		76		1,420	132	68	648	
V/C Ratio				2.87						0.16		
Level-of-Service				F						C		
Control Delay (Seconds)				970.0						15.1		
Intersection LOS	TWSC											
95th Percentile Queue (veh)				20.4						0.6		

Analysis of the intersection of SOUTH Driveway & Universe Blvd. demonstrates that the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact on the traffic movements at this intersection. High delays, especially left-turn movements, are typical for unsignalized shopping center driveways during peak hours. Driver behavior such as making a right turn and then a U-turn instead of turning lefts often compensates for these delays. No mitigation measures are proposed for this intersection.

Impact Assessment

The proposed Ventana Ranch Retail Commercial Development will have some significant adverse impacts on the adjacent transportation system at one intersection in the study area, Paseo del Norte & Universe Blvd. However, due to the small increase in traffic volumes from this project and limited capacity of the existing transportation system, no mitigative measures are recommended for this intersection.

Access Design Specifications

No significant vertical or horizontal curves exist along Paseo del Norte or Universe Blvd. in the vicinity of the driveways and there are no structures blocking sight distances into and out of the entrances. Existing Driveways should be modified as necessary to ensure access for delivery vehicles, however, adequate site distances shall be maintained.

Crash Analysis (SECTION IN PROGRESS)

All the intersections in the study area have adequate lighting and a combination of permissive and protected/permissive left-turn phasing, and medium to low pedestrian activity level. The total number of observed crashes from 2016 through 2018 (inclusive) at each of the seven intersections in the study area was provided by the New Mexico Department of Transportation, Traffic Safety Division (Traffic Records). Data was sorted according to intersection, year, and “highest contributing factor to crash”. The “highest contributing factor to crash” data was grouped into nine categories.

1. Alcohol/Drug Involved
2. Disregarded Traffic Signal
3. Driver Inattention
4. Excessive Speed
5. Failure to Yield
6. Following Too Closely/Overtaking
7. Improper Lane Change
8. Other (i.e vehicle malfunction, animal crossing, etc.)
9. Missing Data (no explanation for crash)

A summary of the crash rates (crashes per million vehicles entering) at each intersection is presented in the Crash Analysis Summary graph below. The crash data tables are provided in Appendix pages A-139 thru A-140.

The average intersection Crash Rate for the Albuquerque Metropolitan Planning Area as published by the MRCOG in the “Safety Doesn’t Happen by Accident, General Crash Data Trends, 2001-2010 for the Albuquerque Metropolitan Planning Area (AMPA) is 1.14 Crashes per million vehicles entering.

Summary of Deficiencies, Anticipated Impacts, and Recommendations

Three of the six signalized intersection in the study area have NO BUILD Level of services’ (LOSs’) that do not meet the Minimum Acceptable Level of Service Standards (LOS=D or better, City of Albuquerque Development Process Manual (DPM). It was found that signal retiming alone does not significantly improve the LOS for most failing intersections, however, signal retiming combined with lane geometry modifications restores the LOS to acceptable levels even in the horizon year.

The mitigation measures recommended below are provided to the City of Albuquerque for planning purposes and are not considered the sole responsibility of the Ventana Ranch Retail Commercial Development Project since traffic volumes generated by the project do not significantly contribute to the poor LOS. One exception is the intersection of Paseo del Norte & Universe Blvd. For the 2025 Implementation year (AM and PM Peak Hour), the NO BUILD LOS is D, and the BUILD LOS is E. However, the project only contributes 8% more traffic to this intersection and without major improvements to Paseo del Norte, no reasonable mitigative measures by the development, such as adding a second southbound left-turn lane on Universe Blvd., can be implemented. Additionally, this project contributes only 2% of the traffic volume to Paseo del Norte & Unser and only 4% to Rainbow Blvd. & Universe Blvd.

Intersection 1 - Paseo del Norte/ Universe Blvd.

1. Widen Paseo del Norte east and west of the intersection by adding one thru lane in each direction, at least 1000-feet long.
2. Construct one additional 250-foot long eastbound left-turn lane including return (creating dual left-turn lanes).
3. Construct one additional 250-foot long westbound left-turn lane including return (creating dual left-turn lanes).
4. Construct one additional 250-foot long southbound left-turn lane including return (creating dual left-turn lanes).

Intersection 2 - Paseo del Norte/ Unser Blvd.

1. Widen Paseo del Norte east and west of the intersection by adding one thru lane in each direction, at least 1000-feet long.

2. Widen Unser Blvd. north and south of the intersection by adding one thru lane in each direction, at least 1000-feet long.
3. Construct one additional 250-foot long southbound left-turn lane including return (creating dual left-turn lanes).

Intersection 4 – Rainbow Blvd./ Universe Blvd.

1. Construct 150-foot long channelized right-turn lanes on the northbound and southbound approaches of Universe Blvd.

In summary, the proposed Ventana Ranch Retail Commercial Development will have minimal adverse impact to the adjacent transportation system except to the intersection of Paseo del Norte & Universe Blvd. Since the development will only be a minor contributor to the traffic volume at this intersection and the problems at this intersection require a broader area study and major modifications to Paseo del Norte, no mitigative measures are recommended for this project.

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