**Avanzando Development – Albuquerque, NM**
Southeast Quadrant of Rio Bravo Blvd. & Loris Dr.

# D R A F T
## Addendum 1 - 2017 Traffic Impact Study

March 18, 2022
(Revised to use HCS8)

**Presented to:**
Margaret Haynes, P.E.
New Mexico Department of Transportation
District 3
7500 Pan American Fwy
Albuquerque, NM 87109

Julie Luna
Bernalillo County Public Works
415 Silver SW
Albuquerque, NM 87102

**Prepared for:**
Wes Butero
Maestas Development Group
7620 Jefferson St., NE
Albuquerque, NM 87109

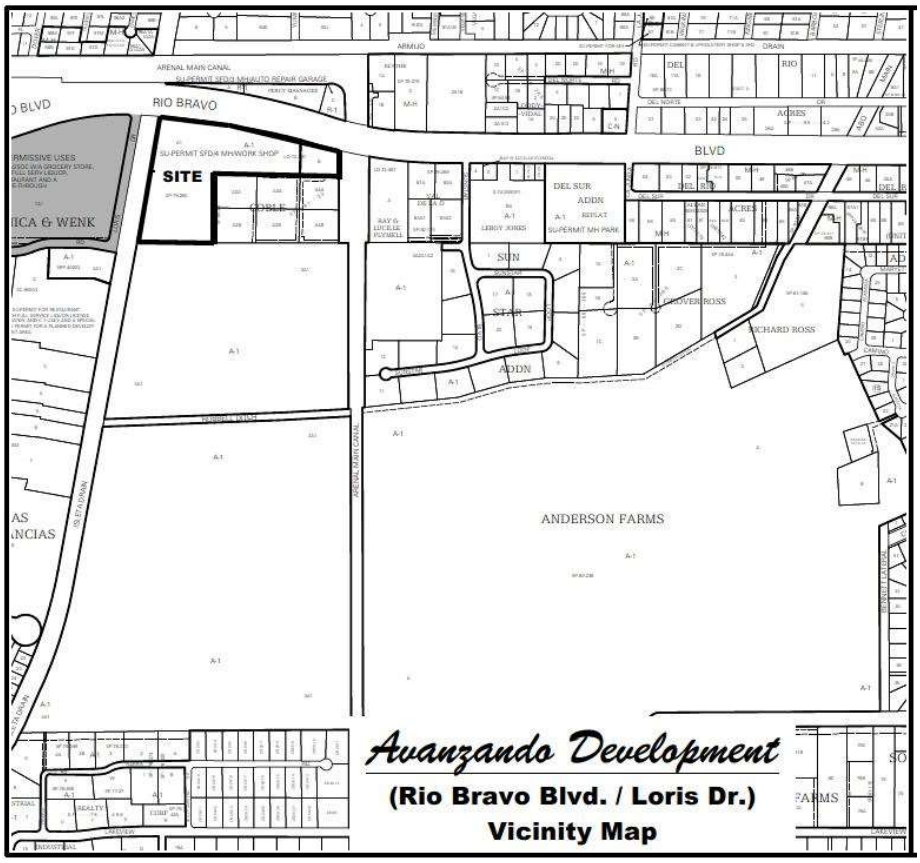

Terry O. Brown P.E.
P.O. Box 92051
Albuquerque, NM 87199
505 · 883 · 8807

**Avanzando Development**
**(Southeast Corner of Rio Bravo Blvd. / Loris Dr.)**
**Addendum 1 - 2017 Traffic Impact Study**

## Executive Summary

This Traffic Impact Study (TIS) is an addendum to the original 2017 TIS dated December 9, 2017. The main reason for this addendum is traffic distributions have changed from the 2017 TIS because Driveway 'A', formally located on Loris Dr., has been eliminated from the site plan and now only one restricted access, Driveway 'B' on Rio Bravo, will provide access to the site. The purpose of this addendum is to provide analysis of five intersection impacted by this change, three new intersections and two original intersections from the 2017 TIS. This study addendum is prepared to meet the requirements of Bernalillo County and the New Mexico Department of Transportation, District 3.

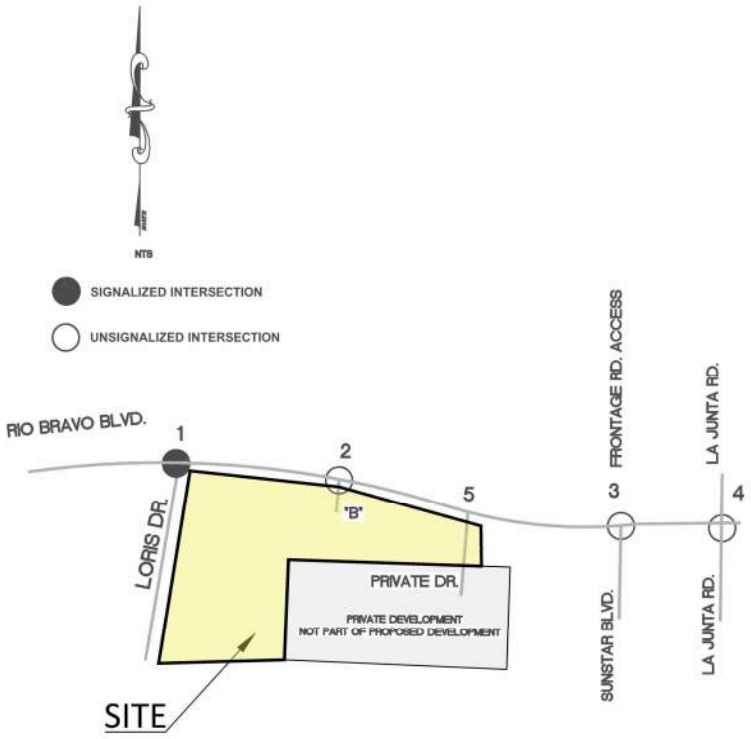
The proposed development is located south of Rio Bravo Blvd. and east of Loris Dr. See the site location map below.




The study area for the addendum includes the intersections of (also see diagram below):

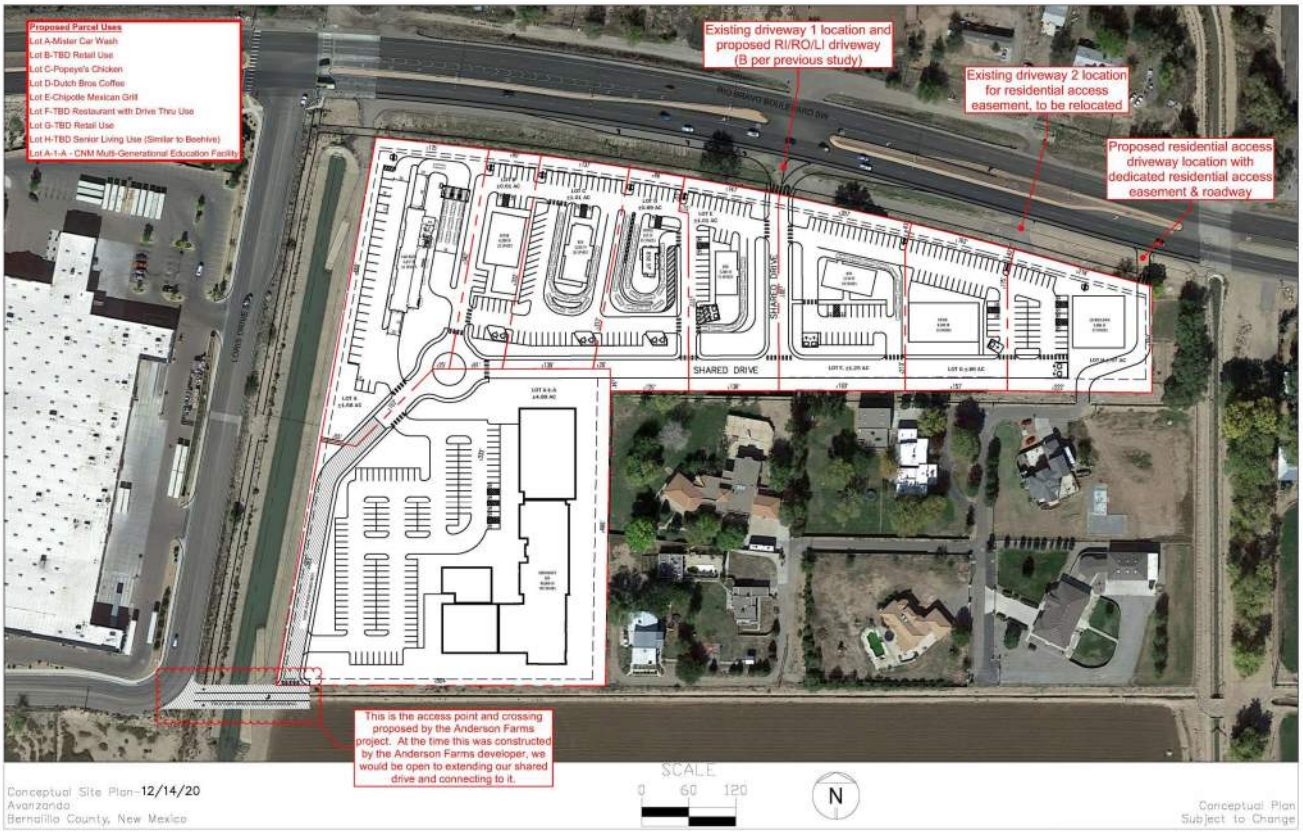
1. Rio Bravo Blvd. / Loris Dr. (signalized, revised from the 2017 TIS),
2. Rio Bravo Blvd. / Driveway "B" (unsignalized, revised from the 2017 TIS).
3. Rio Bravo Blvd./Sunstar Rd. (unsignalized, new); and
4. Rio Bravo Blvd./La Junta Rd. (unsignalized, new)
5. Rio Bravo Blvd./Private Driveway (unsignalized, residential, new).

Intersections 1 thru 4 have been analyzed to determine level of service, delays, and queueing capacity in accordance with the Highway Capacity Manual, Sixth Edition (HCM6). New Mexico Department of Transportation's deceleration lane warrant analysis has been performed for Intersections 2 thru 3.




The proposed development is described as approximately 13.12-acres of property with approximately 33,000 SF shopping Center (ITE Land Use 820) and a 200-student Junior Community College (ITE Land Use 540). See the Site Plan below. As agreed by the New Mexico Department of Transportation and Bernalillo County representatives, the ITE trip generation presented in the 2017 TIS is used as a basis for this addendum. The 2017 TIS site plan included a 45,000 s.f. shopping center **(12,000 sf more than the current plan)** which was projected to generate approximately 4,386 trips daily. During the weekday AM Peak Hour period, it is anticipated that it will generate approximately 131 entering trips and 50 exiting trips.

During the weekday PM Peak Hour period, it is anticipated that it will generate approximately 238 entering trips and 223 exiting trips.




The development will be accessed via only one driveway, Driveway "B," an unsignalized right-in/right-out/left-in only access driveway on the south side of Rio Bravo Blvd. **Driveway "A" (formerly located on Loris Dr.) has been removed from the 2017 site plan.** Driveway "B" is located approximately 800 feet east of Loris Dr. (centerline to centerline). An existing right-in, right-out only private driveway along Rio Bravo Blvd. east of Driveway "B" will be relocated 200-ft further east of its current location with the implementation of the Avanzando Development. The access on Loris Dr. is proposed by the Anderson Farms project south of the site and is not currently part of this project.

Analysis results by analysis year are included in the following table:

## HCM Results Summary Table

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Implementation Year -2025 | | | | | | Horizon Year -2035 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NO BUILD | | BUILD | | BUILD Mitigated | | NO BUILD | | BUILD | | BUILD Mitigated | |
| | | LOS | Delay[1] (s/veh) | LOS | Delay1 (s/veh) | LOS | Delay1 (s/veh) | LOS | Delay[1] (s/veh) | LOS | Delay1 (s/veh) | LOS | Delay1 (s/veh) |
| 1 - Rio Bravo Blvd. & Loris Dr. | Signalized | AM | | | | | | | | | | | |
| | | B | 16.5 | B | 16.8 | B | 14.2 | B | 15.6 | B | 18.2 | B | 15 |
| | | PM | | | | | | | | | | | |
| | | C | 25.3 | C | 25.5 | C | 17.6 | C | 32.3 | C | 36 | C | 21.7 |
| 2 -Rio Bravo Blvd. & Driveway 'B' | Unsignalized | AM | | | | | | | | | | | |
| | | B | 12.6 | C | 15.7 | | | B | 14 | C | 18.8 | | |
| | | PM | | | | | | | | | | | |
| | | B | 12.5 | B | 13.3 | | | B | 13.6 | B | 14.9 | | |
| 3 - Rio Bravo Blvd. & Sunstar Rd. | Unsignalized | AM | | | | | | | | | | | |
| | | D | 31.2 | D | 27.3 | | | E | 47.9 | E | 36.1 | | |
| | | PM | | | | | | | | | | | |
| | | F | 113.8 | F | 192 | | | F | 174.7 | F | $ | | |
| 4 - Rio Bravo Blvd. & La Junta | Unsignalized | AM | | | | | | | | | | | |
| | | F | 183.7 | F | 96.5 | | | F | $353.90 | F | 171.3 | | |
| | | PM | | | | | | | | | | | |
| | | F | 58.9 | F | $996.60 | | | F | 82.6 | F | $ | | |

1 - Level of Service (LOS)/ Delay for unsignalized intersections are for movements with worst results

$ - Delay exceeds 300 seconds

In summary, this report concludes that development of the subject site will have moderate adverse impact on the adjacent transportation system. The greatest impact of the development is at Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd. Drivers wanting to make left-turn movements onto Rio Bravo Blvd. from the minor approaches at these intersections experience extremely high delays for the NO BUILD condition. These delays become worse with the additional traffic generated from the development. The eastbound left-turn movements at these intersections go from LOS C to LOS F during the PM peak hour due to the additional U-turn traffic from the development. This further impedes access for the minor street drivers.
A summary of the deficiencies, impacts, and recommendations of this study are as follows.

## Summary of Deficiencies and Anticipated Impacts

1. Driveway “A” has been eliminated from the site plan. Driveway ‘B,’ an unsignalized restricted access on the south side of Rio Bravo Blvd., is to be the only access to the site.

2. Capacity analysis of the four intersections analyzed on Rio Bravo Blvd. indicates that there are several movements and intersections that have unacceptable LOS (less than D) for the NO BUILD and BUILD conditions.
   a. **Intersection 1 – Rio Bravo Blvd./Loris Dr**.: The LOS for the intersection is acceptable for all conditions evaluated in this Study. Optimizing the signal timing improves the operation of the intersection slightly.
   b. **Intersections 3 & 4 – Rio Bravo Blvd./Sunstar and Rio Bravo Blvd./La Junta:** Drivers wanting to make left-turn movements onto Rio Bravo Blvd. from the minor approaches at these intersections experience extremely high delays and LOS F for the NO BUILD condition and delays become worse with the additional traffic generated by the development. LOS for the **EBL** movements at these intersections degrade from LOS C to LOS F during the PM peak hour due to the additional U-turn traffic generated by the development, a condition that further impedes access for the minor street drivers.
3. Queueing analysis indicates that congestion and queueing issues identified at the Rio Bravo Blvd./Loris Dr. can be alleviated by optimizing the signal timing.
4. Warrant analysis concluded that an eastbound right-turn and a westbound left-turn deceleration lane are warranted at Rio Bravo Blvd./Driveway 'B.' Eastbound left-turn lanes are warranted at Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd. No deceleration lanes are warranted for the private driveway.

## Recommendations

1. Design of the site access facilities must maintain adequate sight distances for traffic approaching, entering, and exiting the site from the driveway.
2. The site should be accessed via one driveway, Driveway "B," an existing full access unsignalized driveway that shall be reconstructed as an unsignalized restricted access (right-in/right-out/left-in) driveway with one exiting and one entering turn lane.
3. **Rio Bravo Blvd./Driveway 'B' –** Construct a 370 feet long (including a 12.5:1 taper) eastbound right turn deceleration lane. Extend the existing westbound left-turn lane to 370 feet (including a 12.5:1 taper)**.**
4. **Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd.-** The existing eastbound left-turn lanes at these two intersections should be extended from 150-ft long (measured from the start of the return to the centerline of side street using aerial photography) to **370-ft long (**including a 12.5:1 taper**).** There are no reasonable physical improvements that can be made by the development to this intersection to alleviate the poor level of service and high delays. Therefore, no mitigative recommended for these intersections.

**Avanzando Development**
**(Southeast Corner of Rio Bravo Blvd. / Loris Dr.)**
**Addendum 1 - 2017 Traffic Impact Study**

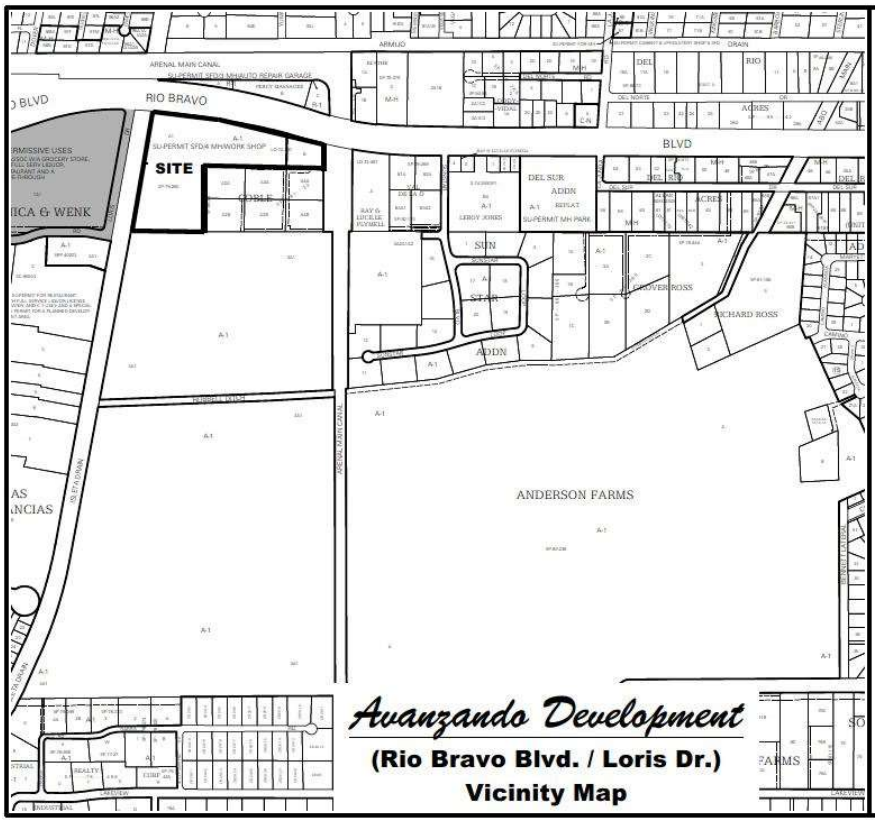
## Table of Contents

**Avanzando Development**
**(Southeast Corner of Rio Bravo Blvd. / Loris Dr.)**
**Addendum 1 - Traffic Impact Study**

## Introduction

This Traffic Impact Study (TIS) is an addendum to the original 2017 TIS dated December 9, 2017. The main reason for this addendum is traffic distributions have changed from the 2017 TIS because Driveway 'A', formally located on Loris Dr., has been eliminated from the site plan and now only one restricted access, Driveway 'B' on Rio Bravo, will provide access to the site. The purpose of this addendum is to provide analysis of five intersection; three new intersections and two original intersections from the 2017 TIS where traffic distributions have changed. This study addendum is prepared to meet the requirements of Bernalillo County and the New Mexico Department of Transportation, District 3.

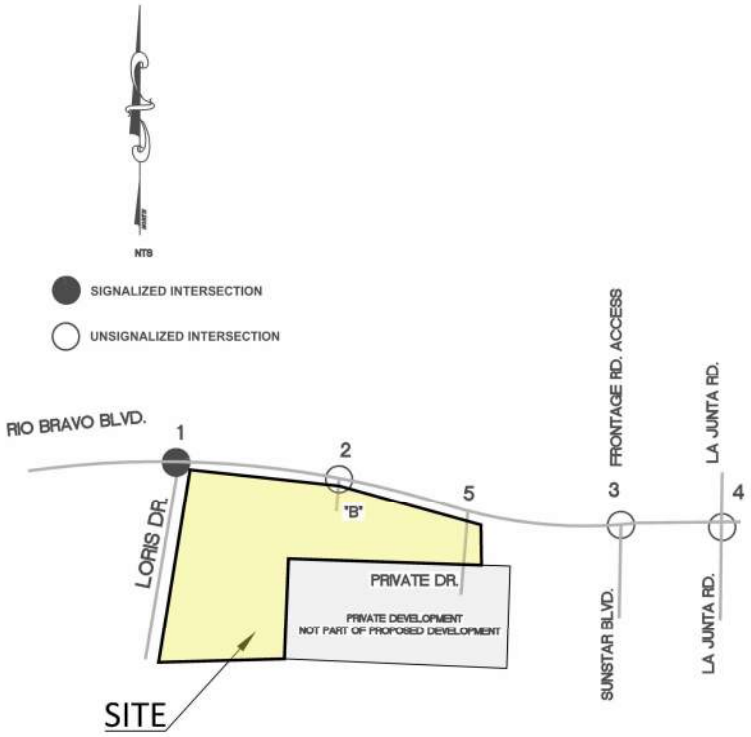
The proposed development is located south of Rio Bravo Blvd. and east of Loris Dr. See the site location map below.




The study area for the addendum includes the intersections of (also see diagram below):

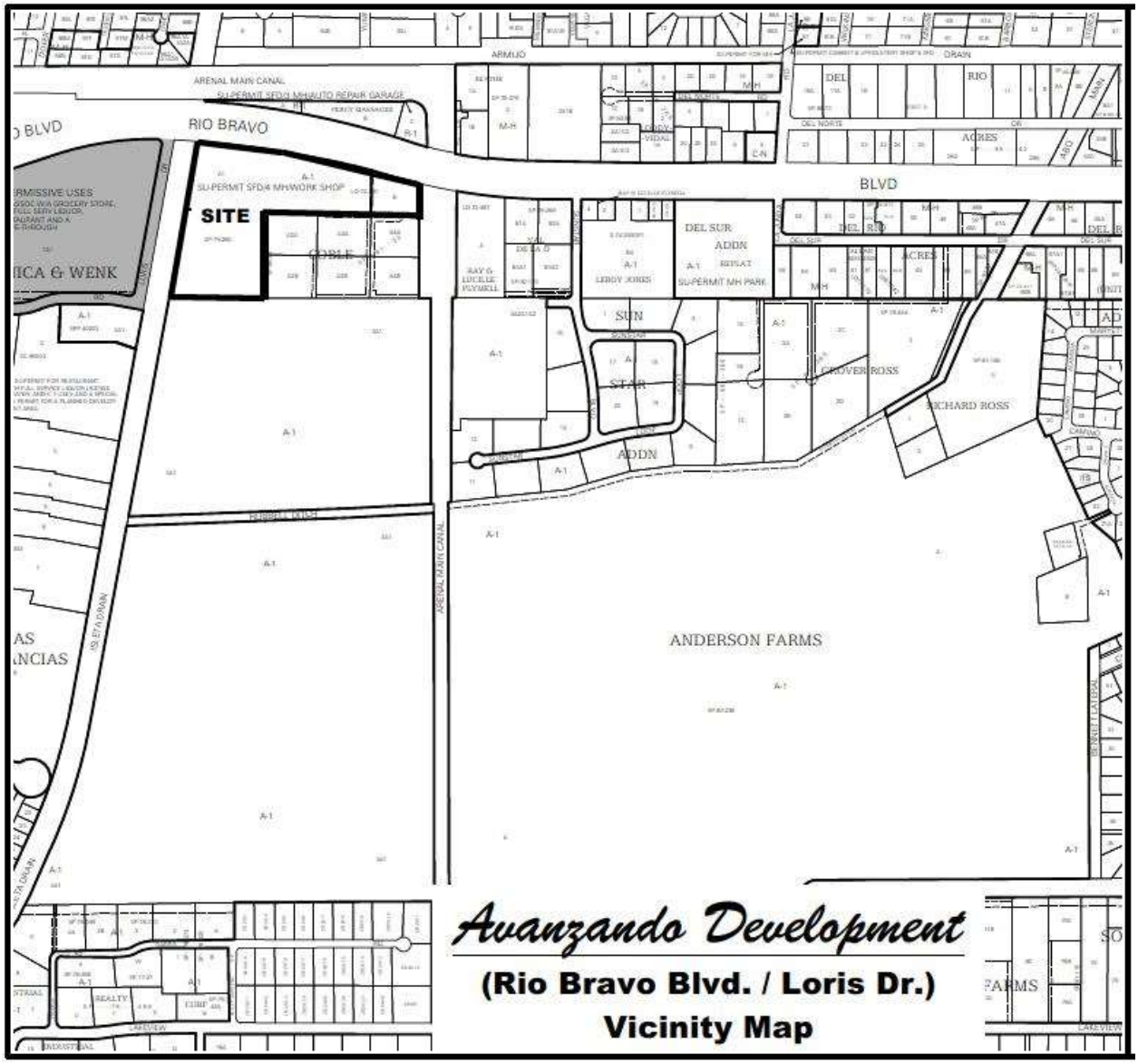
1. Rio Bravo Blvd. / Loris Dr. (signalized, revised from the 2017 TIS),
2. Rio Bravo Blvd. / Driveway "B" (unsignalized, revised from the 2017 TIS).
3. Rio Bravo Blvd./Sunstar Rd. (unsignalized, new); and
4. Rio Bravo Blvd./La Junta Rd. (unsignalized, new)
5. Rio Bravo Blvd./Private Driveway (unsignalized, new).

Intersections 1 thru 4 have been analyzed to determine level of service, delays, and queueing capacity in accordance with the Highway Capacity Manual, Sixth Edition (HCM6). New Mexico Department of Transportation's deceleration lane warrant analysis has been performed for Intersections 2 thru 3.




The proposed development is located at the southeast corner of Rio Bravo Blvd. / Loris Dr. If the property were to develop in a manner significantly different than the proposed plan considered in this report such that the number of generated trips is significantly greater, then an update to this study may be required by the County.

Following is a vicinity map depicting the location of the proposed project:



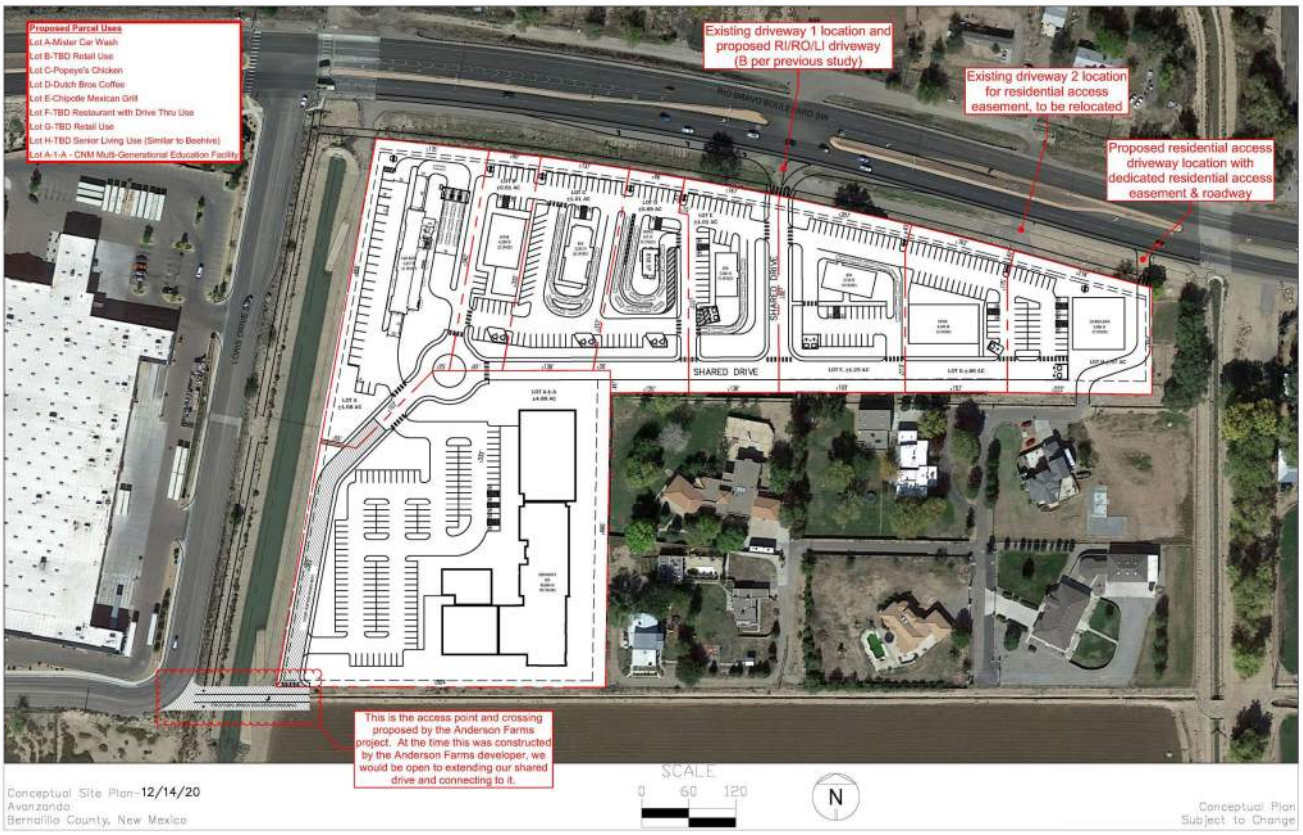

## Description of Proposed Development

The proposed project is described as approximately 13.12-acres of property with approximately 33,000 SF shopping Center (ITE Land Use 820) and a 200-student Junior Community College (ITE Land Use 540) on Tracts A1 and B Land Division Plat Summary Subdivision "Land of Eugene Coble" located near the southeast corner of Rio Bravo Blvd. / Loris Dr. The project lies within Bernalillo County and will be entitled through the Bernalillo County land development review process. The project fronts on a Regional Principal Arterial Roadway which is maintained by the New Mexico Department of Transportation. Therefore, the project will be required to comply with the requirements of Bernalillo County and the New Mexico Department of Transportation.

The property is currently zoned A-1 and is proposed for a special use permit for C-1 permissive and conditional uses and the C-2 use of mini-warehouse and storage.

Access to the subject site from Rio Bravo is proposed via only one restricted access (Driveway "B"). Driveway "B" is an existing full access driveway located along the south side of Rio Bravo Blvd. approximately 800 feet east of Loris Dr. (centerline to centerline). Driveway 'B' will be restricted to right-in/right-out/left-in only under this plan.

Following is the updated proposed site development plan depicting the driveway (access) location (see Appendix Page A-4). See Appendix page A-3 for the old 2017 site plan.



## Other Developments or Transportation Projects

Anderson Farms is a planned residential subdivision south of the Avanzando site to be accessed from Loris Drive. However, this projected is on hold with no projected re-start date.

In August of 2020, the New Mexico Department of Transportation published an Access Management Plan for the NM 500 (Rio Bravo Boulevard) Corridor from I-25 in the east to Coors Boulevard (NM 45) in the west. The purpose of this planning document is to be a guide for future access along the corridor. In the study area for the Avanzando project, the plan proposes closures of several median openings and upgrading the Rio Bravo/La Junta intersection to a signalized intersection. These changes, if implemented would impact the results of the analysis in this TIS. Appendix pages A-98 thru A-100 illustrate the Access Management Plans' proposals for the Avanzando study area. Appendix page 101 contains a graph of the number of crashes in the same area. Note the relatively high number of crashes at the La Junta intersection compared to other intersections along this segment of Rio Bravo Blvd.

## Traffic Analysis

### *Existing Traffic Volumes*

Existing traffic volumes for each intersection in the study area were determined as follows:

- **Rio Bravo Blvd./Loris Dr.** - turning movement counts were collected at Rio Bravo Blvd./Loris Dr. on Tuesday, May 1, 2018 as part of the Final TIA for Anderson Farms Development, dated December, 2018. See Appendix pages A-102
- **Rio Bravo Blvd./Driveway 'B' -** Existing traffic volumes for **thru movements** at Rio Bravo Blvd./Driveway B were extracted from the traffic counts at Rio Bravo Blvd/Loris Dr.
- **Rio Bravo Blvd./Private Driveway -** Existing traffic volumes for **thru movements** at the private driveway were extracted from the traffic counts at Rio Bravo Blvd/Loris Dr. Traffic volumes exiting and entering the private driveway were generated using the ITE Trip Generation Manual - 10th Edition for a Single Family Detached Housing Development (ITE Code 210) with nine dwelling units; the results are provided in the table below.

*Avanzando Development (Rio Bravo Blvd. / Loris Dr.)*

***Private Driveway East of Driveway B***

**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 | | | | | |
| Single-Family Detached Housing (210) | 9.00 | 113 | 3 | 8 | 6 | 4 |
| **Subtotal** | | **113** | **3** | **8** | **6** | **4** |

- **Rio Bravo Blvd. at Sunstar Rd. and La Junta Rd**. - Existing traffic volumes (2019, pre-COVID 19) for Rio Bravo Blvd. at Sunstar Rd. and La Junta Rd. were generated by the Streetlight Data model. This data is in Appendix pages A-103.

### *Trip Generation from Proposed Development*

The proposed development is described as approximately 13.12-acres of property with approximately 33,000 SF shopping Center (ITE Land Use 820) and a 200-student Junior Community College (ITE Land Use 540). However, to be conservative and as agreed by the New Mexico Department of Transportation and Bernalillo County representatives, the ITE trip generation presented in the 2017 TIS is used as a basis for this addendum. The 2017 TIS site plan included a 45,000 s.f. shopping center **(12,000 sf more than the current plan)** which was projected to generate approximately 4,386 trips daily. During the weekday AM Peak Hour period, it is anticipated that it will generate approximately 131 entering trips and 50 exiting trips. During the weekday PM Peak Hour period, it is anticipated that it will generate approximately 238 entering trips and 223 exiting trips. Adjustments for Pass-by Trips were not made for this study.

The following table from the 2017 TIS summarizes the generated driveway trips that will occur for this development:

*Avanzando Development (Rio Bravo Blvd. / Loris Dr.) - 2017 Plan*

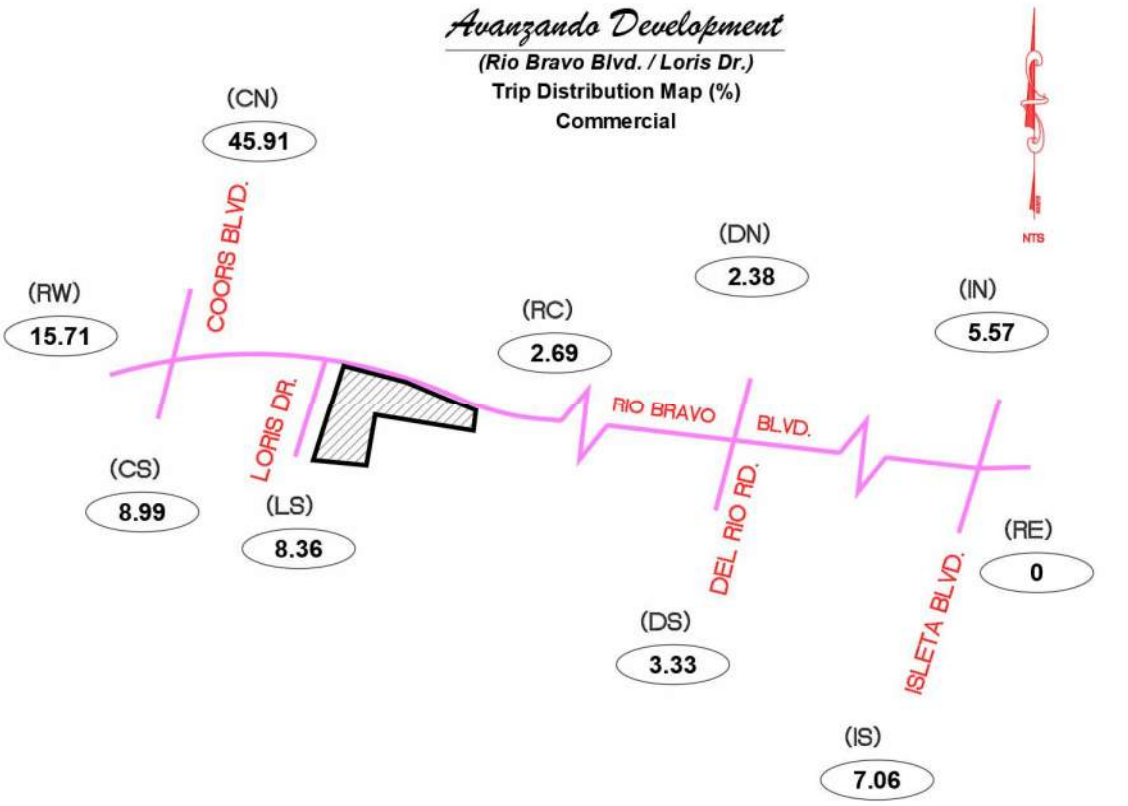
**Trip Generation Data** (ITE Trip Generation Manual - 9th Edition)

| USE (ITE CODE) | | 24 HR VOL | A. M. PEAK HR. | | P. M. PEAK HR. | |
|---|---|---|---|---|---|---|
| *DESCRIPTION* | | *GROSS* | *ENTER* | *EXIT* | *ENTER* | *EXIT* |
| **Summary Sheet** | Units | | | | | |
| Shopping Center (820) | 45.00 | 4,041 | 59 | 36 | 168 | 182 |
| Junior / Community College (540) | 200 | 345 | 72 | 14 | 70 | 41 |
| **Total Primary Trips** | | **4,386** | **131** | **50** | **238** | **223** |

### *Trip Distribution*

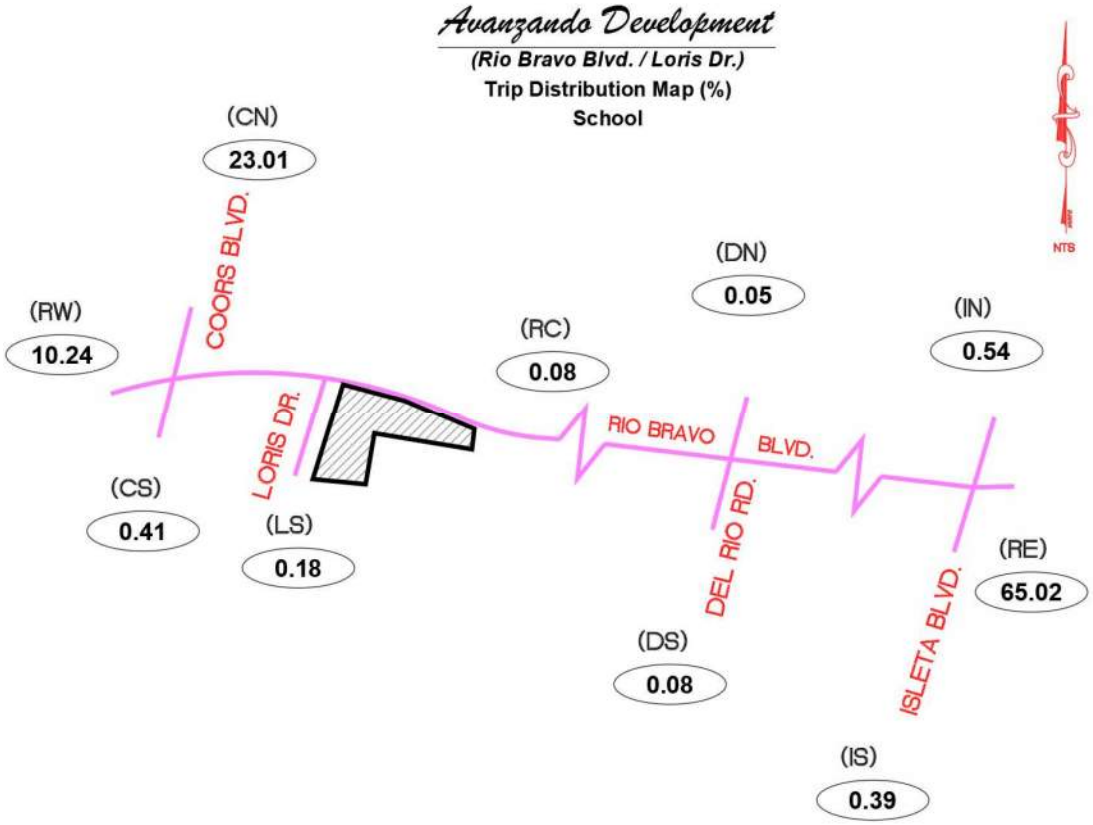
**Commercial Land Uses**

The Gravity Model from the 2017 TIS was used to determine trip distribution where primary trips for the commercial land use development were distributed proportionally to the 2020 projected population of Data Analysis Subzones within a two-mile radius of the proposed development. Population data for the years 2015 and 2025 were taken from the 2035 Socioeconomic Forecasts by Data Analysis Subzones for the Mid-Region of New Mexico, supplied by the Mid Region Council of Governments (MRCOG). Population data from the years 2015 and 2025 was interpolated linearly to obtain 2025 population data to utilize for this analysis. Population Subzones were grouped based on the major street(s) or route(s) to the subject development. The trip distribution worksheets and associated map of data analysis subzones is shown in the Appendix on Pages A-9 thru A-13. The commercial Trip Distribution map can be found below and in the Appendix on Page A-14.

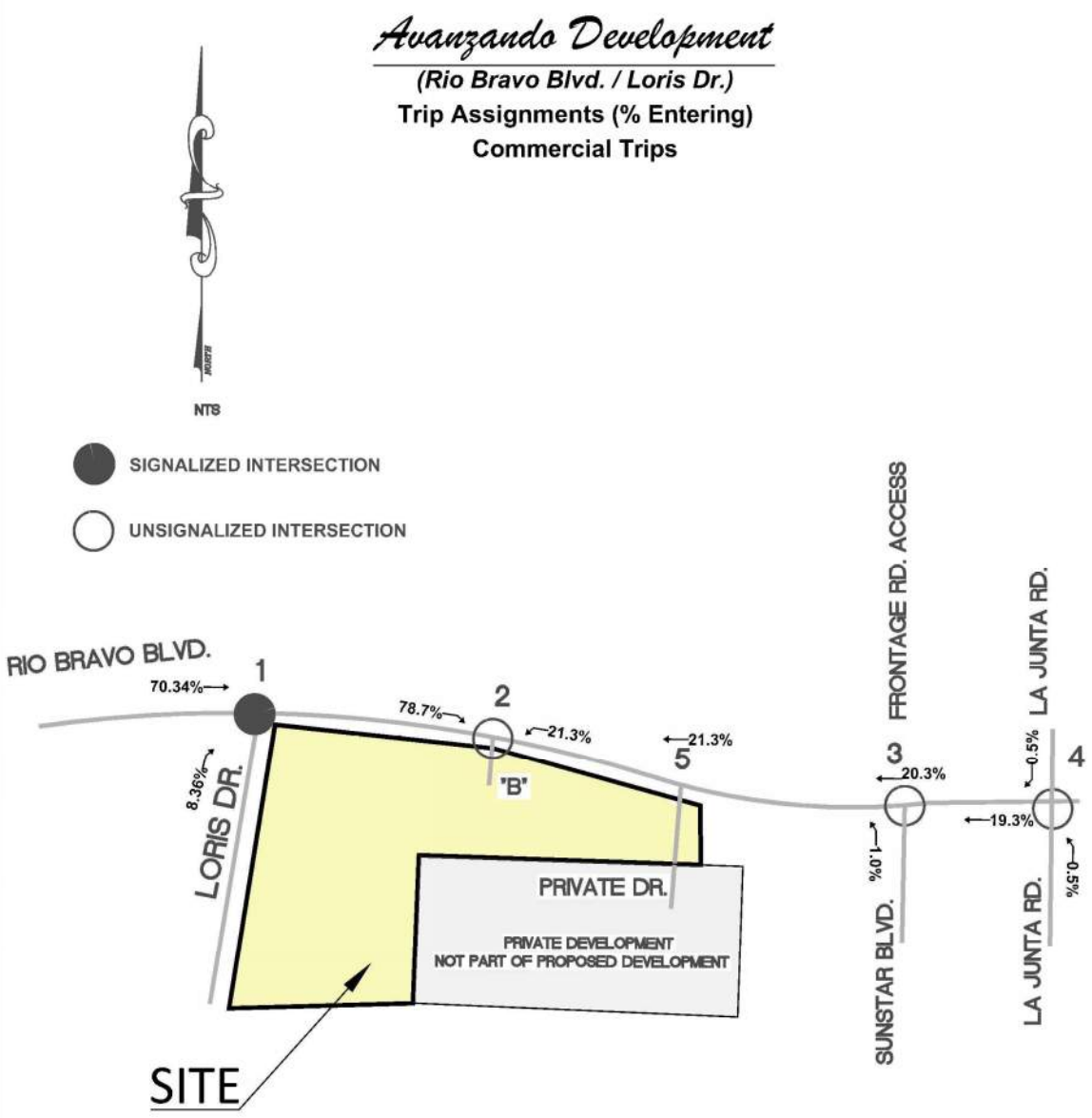


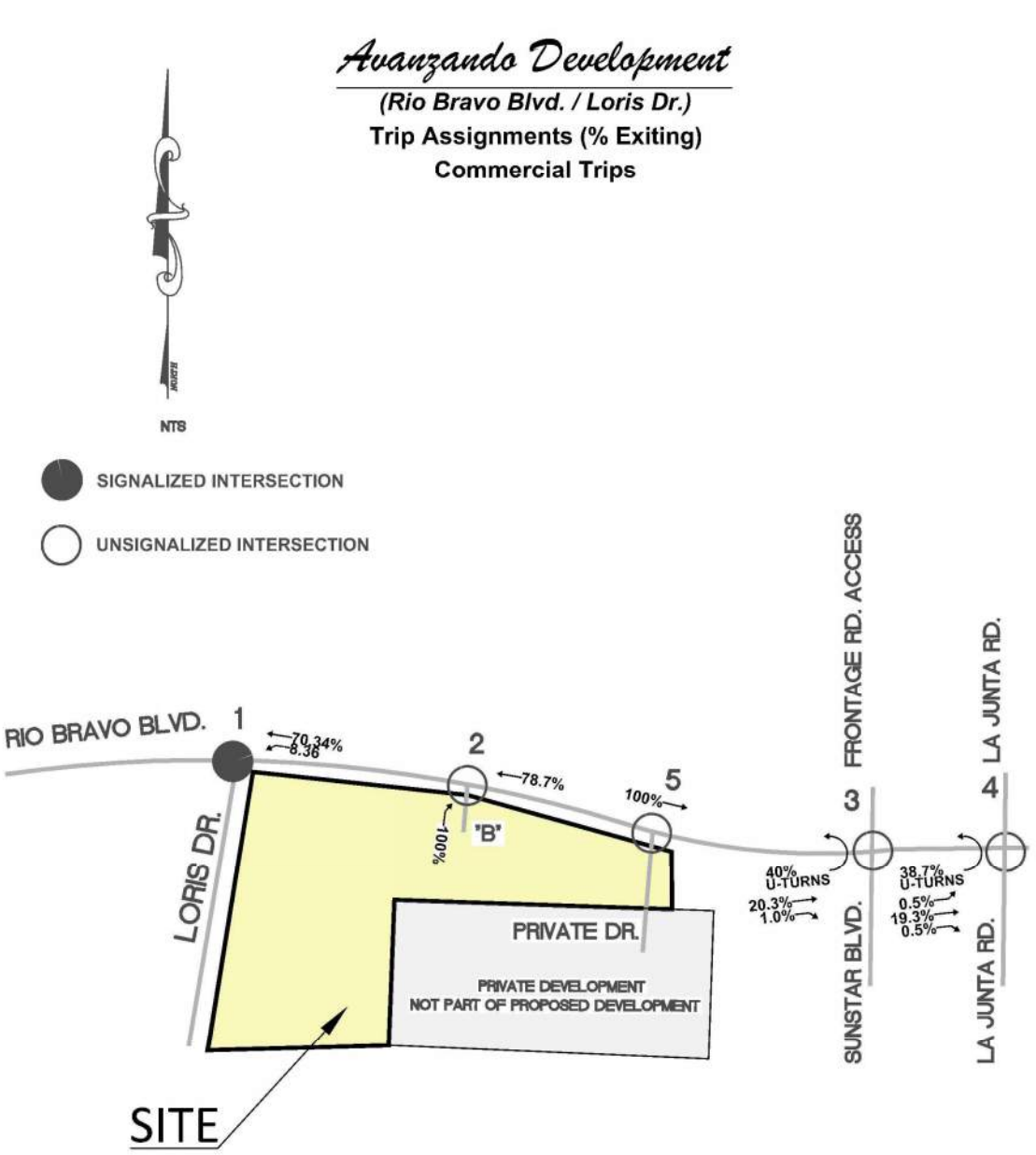

**School Land Uses**

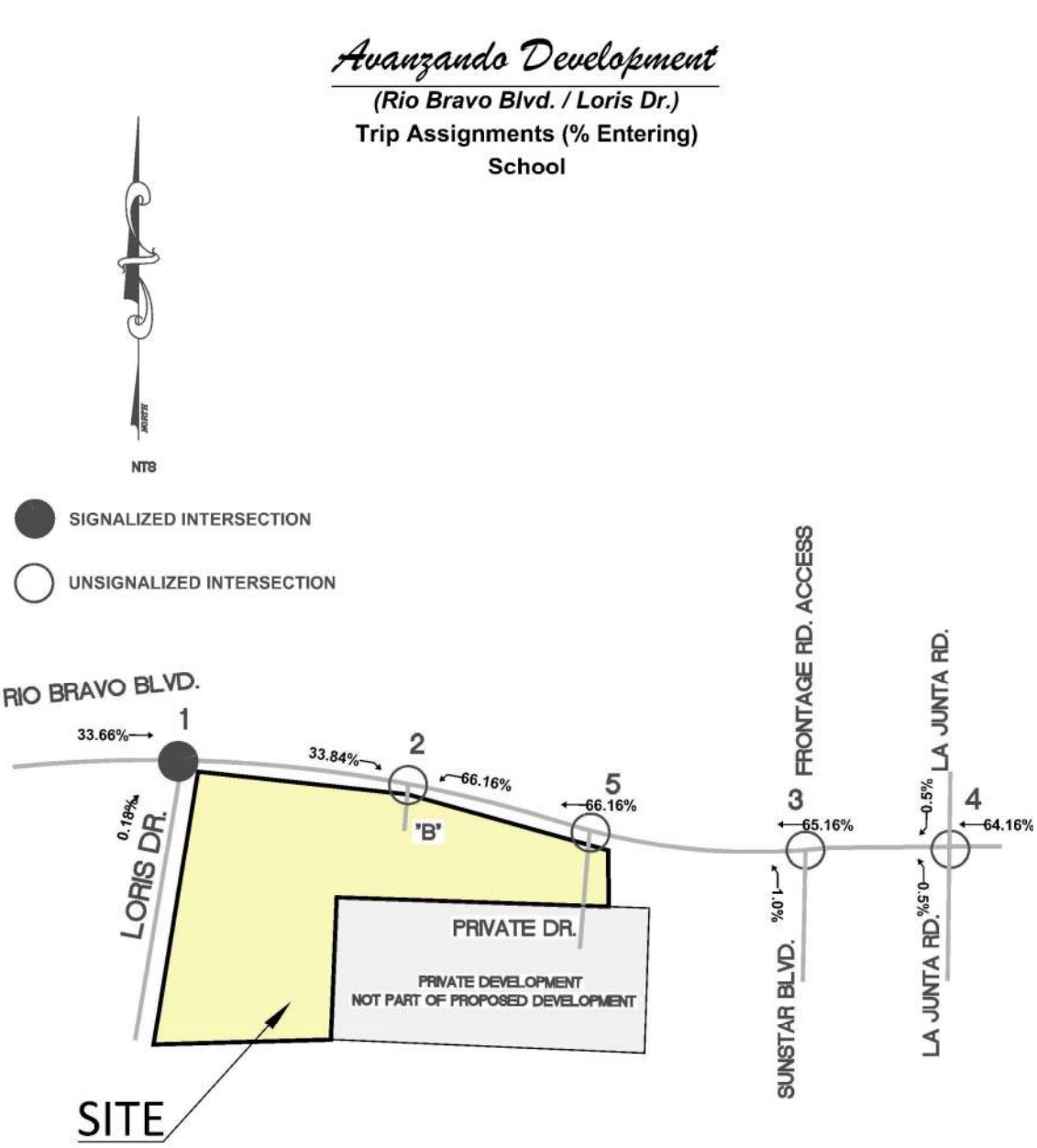
The Gravity Model was used to determine trip distribution where primary trips for the office land use development were distributed proportionally to the 2020 projected population of Data Subareas citywide inversely proportional to the distance of the subarea from the project location. Population data for the years 2015 and 2025 were taken from the 2035 Socioeconomic Forecasts by Data Analysis Subzones for the MRCOG Region supplied by the Mid-Region Council of Governments (MRCOG). Population data from the years 2015 and 2025 was interpolated linearly to obtain 2020 population data to utilize for this analysis. Population Subareas 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 is shown in the Appendix. The trip distribution worksheets and associated map of data analysis subzones is shown in the Appendix on Pages A-17 thru A-21. The office / school Trip Distribution map can be found below and in the Appendix on Page A-22.

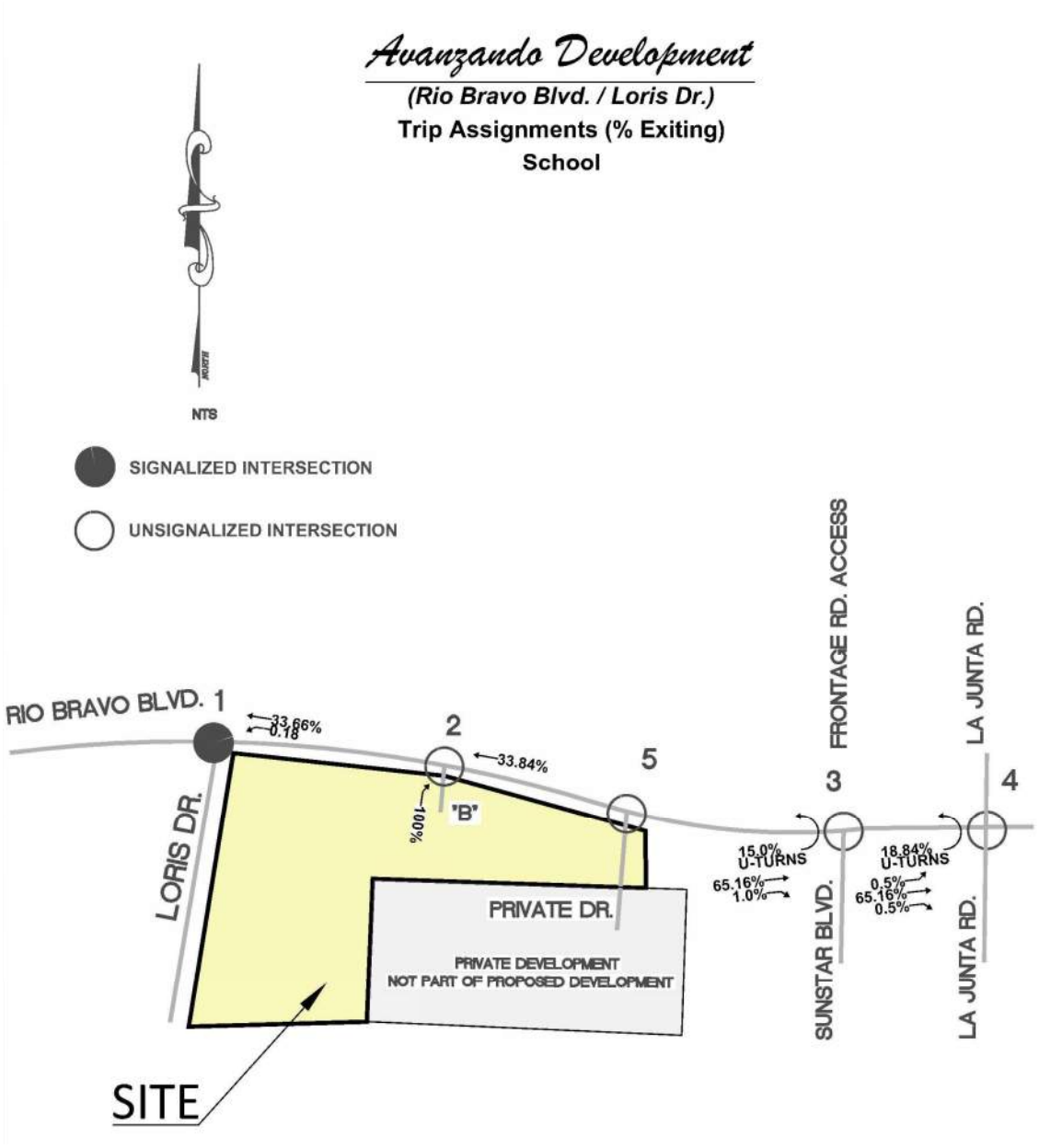



Trip assignments are first made on a percentage basis derived from data established in the trip distribution determination process and logical routing to and from the site. Those percentages are then applied to the projected trips to determine individual traffic movements. Percentage trip assignments for commercial and school trips are shown below and in the Appendix on Pages A-15 thru A-16 and Pages A-23 thru A-24, respectively. No adjustments for pass-by trips on this project were applied. **Note: the trip distributions have changed from the 2017 TIS due to elimination of Driveway 'A' on Loris Dr. from the site plan.**


Avanzando Development
(Rio Bravo Blvd. / Loris Dr.)
Trip Assignments (% Entering)
Commercial Trips
NTS
SIGNALIZED INTERSECTION
UNSIGNALIZED INTERSECTION
RIO BRAVO BLVD.
70.34%
1
78.7%
2
21.3%
21.3%
5
8.36%
LORIS DR.
"B"
PRIVATE DR.
PRIVATE DEVELOPMENT
NOT PART OF PROPOSED DEVELOPMENT
SITE
FRONTAGE RD. ACCESS
3
20.3%
19.3%
1.0%
SUNSTAR BLVD.
LA JUNTA RD.
0.5%
4
0.5%
LA JUNTA RD.


Avanzando Development
(Rio Bravo Blvd. / Loris Dr.)
Trip Assignments (% Exiting)
Commercial Trips
NTS
SIGNALIZED INTERSECTION
UNSIGNALIZED INTERSECTION
RIO BRAVO BLVD.
1
70.34%
8.36
2
78.7%
100%
"B"
5
100%
LORIS DR.
PRIVATE DR.
PRIVATE DEVELOPMENT
NOT PART OF PROPOSED DEVELOPMENT
SITE
FRONTAGE RD. ACCESS
3
40%
U-TURNS
20.3%
1.0%
SUNSTAR BLVD.
LA JUNTA RD.
4
38.7%
U-TURNS
0.5%
19.3%
0.5%
LA JUNTA RD.


Avanzando Development
(Rio Bravo Blvd. / Loris Dr.)
Trip Assignments (% Entering)
School
NTS
SIGNALIZED INTERSECTION
UNSIGNALIZED INTERSECTION
RIO BRAVO BLVD.
1
33.66%
2
33.84%
66.16%
5
66.16%
"B"
0.18%
LORIS DR.
PRIVATE DR.
PRIVATE DEVELOPMENT
NOT PART OF PROPOSED DEVELOPMENT
SITE
FRONTAGE RD. ACCESS
3
65.16%
1.0%
SUNSTAR BLVD.
LA JUNTA RD.
0.5%
4
64.16%
0.5%
LA JUNTA RD.


Avanzando Development
(Rio Bravo Blvd. / Loris Dr.)
Trip Assignments (% Exiting)
School
NTS
SIGNALIZED INTERSECTION
UNSIGNALIZED INTERSECTION
RIO BRAVO BLVD.
LORIS DR.
FRONTAGE RD. ACCESS
LA JUNTA RD.
SUNSTAR BLVD.
LA JUNTA RD.
1
2
3
4
5
33.66%
0.18
33.84%
100%
"B"
15.0%
U-TURNS
65.16%
1.0%
18.84%
U-TURNS
0.5%
65.16%
0.5%
PRIVATE DR.
PRIVATE DEVELOPMENT
NOT PART OF PROPOSED DEVELOPMENT
SITE

### *Historical Growth Rates*

Background annual traffic growth rates for the project were considered for each individual approach to an intersection that was targeted for analysis based on data from the 2016 and 2040 Link Volumes prepared by the Mid-Region Council of Governments (Appendix Pages A-25 thru A-26). The growth rate utilized for each approach to an intersection is printed at the top of the Turning Movement sheets for each intersection (Appendix Pages A-27 thru A-40).

### *NO BUILD and BUILD Traffic Volumes*

Existing (background) traffic volumes, trip generation data, trip distribution, trip assignments, and historical traffic growth rates were used to determine the NO BUILD and BUILD volumes presented in the Turning Movement sheets (Appendix Pages A-27 thru A-40).

### *Traffic Analysis*

A capacity analysis using existing AM and PM traffic signal timing (Appendix Pages A-47 and A-53) was conducted for the Implementation Year (2025) and Horizon Year (2035) for the NO BUILD and BUILD Conditions. The capacity analysis was conducted in accordance with the HCM6 for the signalized and unsignalized intersections using Synchro 10 (Build 10.3.122.0). The signal timing sheets used in the analysis are in Appendix pages A-89 thru A-92. The results of the analysis for the intersections in the study area are summarized in a table the Executive Summary. The detailed HCM Synchro 10 reports are in Appendix pages A-41 thru A-88 and discussed below.

### *Level of Service Standards*

The Highway Capacity Manual, Sixth Edition (HCM6) defines Level of Service (LOS) for signalized and unsignalized intersections in terms of average controlled delay per vehicle as follows:

**LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS**

| Average Delay (secs) | Level-of-Service |
|---|---|
| ≤ 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**

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

As Rio Bravo Blvd. is a New Mexico Department of Transportation maintained facility, analysis of signalized and unsignalized intersections along Rio Bravo Blvd. will need to meet the

requirements of the New Mexico Department of Transportation's State Access Management Manual Table 15.C-1 (Minimum Acceptable Level of Service Standards) as follows:

**Table 15.C-1**
**Minimum Acceptable Level of Service Standards**

| Facility Type[1] | Access Categories | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | UINT | UPA | UMA | UCOL | RINT | RPA | RMA | RCOL |
| Freeway Sections | D | - | - | - | C | - | - | - |
| Ramp Junctions | D | -[2] | -[2] | -[2] | C | -[2] | -[2] | -[2] |
| Weaving Areas | D | -[2] | -[2] | -[2] | C | -[2] | -[2] | -[2] |
| Multi-Lane Highways | - | D | D | C | - | C | C | B |
| Two-Lane Highways | - | D | D | C | - | C | C | B |
| Signalized Intersections | - | D | D | D | - | C | C | C |
| Unsignalized Intersections | - | D | D | D | - | D | D | C |

Notes: 1. The Facility Types are per the Highway Capacity Manual.
2. Evaluate safety and operational concerns using the best available technique.

Based on the above table, signalized intersections along Rio Bravo Blvd. should be level-of-service D or better.

*Intersection #1 - Rio Bravo Blvd. / Loris Dr. – Appendix Pages A-45 thru A-68*

The results of the 2025 Implementation Year and 2035 Horizon Year analysis of the signalized intersection of Rio Bravo Blvd. / Loris Dr. are summarized in the following tables:

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Implementation Year -2025 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | | BUILD Mitigated | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay1 (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 1 - Rio Bravo Blvd. & Loris Dr. | Signalized | EB Rio Bravo | B | 13.1 | None | None | B | 13.2 | None | None | B | 13.00 | None | None |
| | | WB Rio Bravo | B | 10.2 | None | None | B | 10.3 | None | None | B | 13.00 | None | None |
| | | NB Loris Dr. | D | 36.3 | None | NBR=1.46 | D | 36.0 | None | NBR=1.50 | D | 36.60 | NBR=1.20 | None |
| | Intersection Delay (s/veh) | | B 16.5 | | | | B 16.8 | | | | B 14.2 | | | |
| | | | PM | | | | | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | | BUILD Mitigated | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Signalized | EB Rio Bravo | B | 13.5 | None | None | B | 13.8 | None | None | B | 13.80 | None | None |
| | | WB Rio Bravo | B | 11.1 | None | None | B | 11.2 | None | None | B | 11.20 | None | None |
| | | NB Frontage Rd. | F | 115.1 | NBR=1.066 | NBR=2.50 | F | 115.1 | NBR=1.066 | NBR=2.50 | D | 51.10 | None | NBR=1.71 |
| | Intersection Delay (s/veh) | | C 25.3 | | | | C 25.5 | | | | C 17.6 | | | |

1 - Level of Service (LOS)/ Delay for unsignalized intersections are for movements with worst results

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Horizon Year -2035 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | | BUILD Mitigated | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 1 - Rio Bravo Blvd. & Loris Dr. | Signalized | EB Rio Bravo | B | 12.8 | None | None | B | 11 | None | None | B | 13.4 | None | None |
| | | WB Rio Bravo | A | 9.8 | None | None | B | 18.9 | None | None | B | 10.7 | None | None |
| | | NB Loris Dr. | E | 61.6 | None | NBR=1.33 | E | 69.6 | None | NBR=1.68 | D | 42.1 | None | NBR=1.33 |
| | Intersection Delay (s/veh) | | B 15.6 | | | | B 18.2 | | | | B 15 | | | |
| | | | PM | | | | | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | | BUILD Mitigated | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Signalized | EB Rio Bravo | B | 13.8 | None | None | B | 13.8 | None | None | B | 13.8 | None | None |
| | | WB Rio Bravo | B | 11.2 | None | None | B | 11.2 | None | None | B | 11.2 | None | None |
| | | NB Driveway 'B' | F | 156.4 | NBR =1.186 | NBR =3.19 | F | 176.5 | NBR =1.2380 | NBR =3.52 | E | 75.2 | None | NBR=2.33 |
| | Intersection Delay (s/veh) | | C 32.3 | | | | D 36 | | | | C 21.7 | | | |

1 - Level-of-Service / Delay for an unsignalized intersection are reported based on the turning movement with the worst results.

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

**Capacity Analysis** demonstrates that this signalized intersection will operate at acceptable levels-of-service for the 2025 and 2035 AM Peak Hour and PM Peak Hour NO BUILD and BUILD Conditions with signal optimization. Generally speaking, the LOS / delay for the overall signalized intersection is acceptable in all cases analyzed, but there are individual turning movements with long delays and / or excessive queuing. Also, the volumes contributed by this project constitute only about 5% additional vehicles per hour. Optimizing the signal timing improves the **intersection LOS** and **NBR LOS** to D for the 2025 AM / PM Peak and to E for the 2035 PM Peak. Both are an improvement to the operation of the NBR from the NO BUILD Conditions. See Appendix pages A-45 thru A-56 for HCS2022 (or HCS8) Signalized Intersection Reports for this intersection.

**Queueing analysis** shows that lane capacities for NBR turn lanes will are exceeded for all cases analyzed as indicated by the Queue Storage Ratios >1 for these movements. However, this is an existing problem not made significantly worse by the traffic from the development. Also, the situation is slightly improved due to the recommended mitigation measure of optimizing signal timing. Volume to capacity ratios (V/C's) are greater than 1.0 for the NBR movement during the AM and PM peak hour, indicating an elevated level of congestion in these lanes. Signal optimization lowers the V/C ratios to less than 1.0, improving traffic flow through the intersection.

*Intersection #2 – Rio Bravo/Driveway 'B' – Appendix Pages A-69 thru A-76*

This driveway is proposed as an unsignalized restricted access driveway (right-in/right-out/left-in) with one entering lane and one exiting lane. The results of the 2025 Implementation Year and 2035 Horizon Year analysis of the unsignalized intersection of Rio Bravo Blvd. /Driveway 'B' are summarized in the following tables:

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Implementation Year -2025 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 2 -Rio Bravo Blvd. & Driveway 'B' | Unsignalized | EB Rio Bravo | A | 8.8 | None | None | A | 8.9 | None | None |
| | | WB Rio Bravo | - | - | None | None | B | 11.9 | None | None |
| | | NB Driveway 'B' | | | | | C | 15.7 | None | None |
| | | SB Frontage Rd. | B | 12.6 | None | None | A | 0 | None | None |
| | Intersection Delay (s/veh) | | B 12.6 | | | | C 15.7 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | B | 12.5 | None | None | B | 13.3 | None | None |
| | | WB Rio Bravo | - | - | None | None | A | 8.7 | None | None |
| | | NB Driveway 'B' | | | | | B | 11.8 | None | None |
| | | SB Frontage Rd. | A | 0 | None | None | A | 0 | None | None |
| | Intersection Delay (s/veh) | | B 12.5 | | | | B 13.3 | | | |

1 - Level-of-Service / Delay for an unsignalized intersection are reported based on the turning movement with the worst results.

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Horizon Year -2035 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 2 -Rio Bravo Blvd. & Driveway 'B' | Unsignalized | EB Rio Bravo | A | 9 | None | None | A | 0 | None | None |
| | | WB Rio Bravo | - | - | None | None | B | 13.9 | None | None |
| | | NB Driveway 'B' | | | | | C | 18.8 | None | None |
| | | SB Frontage Rd. | B | 14 | None | None | A | 0 | None | None |
| | Intersection Delay (s/veh) | | B 14 | | | | C 18.8 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | B | 13.6 | None | None | B | 14.9 | None | None |
| | | WB Rio Bravo | - | - | None | None | A | 9.2 | None | None |
| | | NB Driveway 'B' | | | | | B | 13.1 | None | None |
| | | SB Frontage Rd. | A | 0 | None | None | A | 5 | None | None |
| | Intersection Delay (s/veh) | | B 13.6 | | | | B 14.9 | | | |

1 - Level-of-Service / Delay for an unsignalized intersection are reported based on the turning movement with the worst results.

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

This study demonstrates that this unsignalized intersection will operate at acceptable levels-of-service for the 2020 AM Peak Hour and PM Peak Hour BUILD Conditions. Therefore, no recommendation is made for the Rio Bravo Blvd./Driveway 'B' intersection.

*Intersection #3 - Rio Bravo Blvd. / Sunstar Rd. – Appendix Pages A-77 thru A-84*

Rio Bravo Blvd./Sunstar Rd. intersection is an unsignalized intersection with Sunstar Rd on the southern approach and a minor frontage road access on the northern approach. The results of the 2025 Implementation Year and 2035 Horizon Year analysis of the unsignalized intersection of Rio Bravo Blvd. /Sunstar Rd. are summarized in the following tables:

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Implementation Year -2025 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 3 - Rio Bravo Blvd. & Sunstar Rd. | Unsignalized | EB Rio Bravo | A | 8.9 | None | None | B | 10.3 | None | None |
| | | WB Rio Bravo | C | 15.5 | None | None | C | 15.7 | None | None |
| | | NB Sunstar | D | 31.2 | None | None | D | 27.3 | None | None |
| | | SB Frontage Rd. | D | 26.6 | None | None | C | 17.5 | None | None |
| | | Intersection Delay (s/veh) | D 31.2 | | | | D 27.3 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | D | 25.3 | None | None | F | 128.8 | None | None |
| | | WB Rio Bravo | A | 9.9 | None | None | B | 10.1 | None | None |
| | | NB Sunstar NBR | F | 110.3 | None | None | F | 149 | None | None |
| | | SB Frontage Rd. | F | 113.8 | None | None | F | 192 | None | None |
| | | Intersection Delay (s/veh) | F 113.8 | | | | F 192 | | | |

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Horizon Year -2035 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 3 - Rio Bravo Blvd. & Sunstar Rd. | Unsignalized | EB Rio Bravo | A | 9.1 | None | None | B | 10.7 | None | None |
| | | WB Rio Bravo | C | 17.5 | None | None | C | 17.7 | None | None |
| | | NB Sunstar | E | 47.9 | None | None | E | 36.1 | None | None |
| | | SB Frontage Rd. | D | 33.6 | None | None | C | 19.5 | None | None |
| | | Intersection Delay (s/veh) | E 47.9 | | | | E 36.1 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | C | 18.3 | None | None | F | 274.5 | None | None |
| | | WB Rio Bravo | B | 10.3 | None | None | A | 8.7 | None | None |
| | | NB Sunstar | F | 185.9 | None | None | F | $ | None | None |
| | | SB Frontage Rd. | F | 174.7 | None | None | F | $ | None | None |
| | | Intersection Delay (s/veh) | F 174.7 | | | | F $ | | | |

1 - Level-of-Service / Delay for an unsignalized intersection are reported based on the turning movement with the worst result

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

$ - Delays exceed 300 seconds per vehicle

This study demonstrates that this unsignalized intersection will operate at unacceptable levels-of-service for the 2035 AM Peak Hour and 2025 and 2035 PM Peak Hour, NO BUILD and BUILD Conditions. The northbound and southbound movements will experience excessive delays for both the PM Peak Hour NO BUILD and BUILD Conditions due to the high volume of traffic on Rio Bravo Blvd. and no nearby traffic signals to create sufficient gaps for traffic to access Rio Bravo. The poor LOS and high delays for the EB approach for the BUILD condition is caused by westbound traffic exiting the development. Since Driveway 'B' is the only driveway for the development and is a restricted access, 100% of the westbound traffic exiting the site must make U-turns at Sunstar Rd. or La Junta Rd. There are no reasonable physical improvements that can be made by the development to this intersection to alleviate the problem. Therefore, no recommendation is made for the Rio Bravo Blvd. /Sunstar Blvd. intersection.

Queueing analysis does not indicate any queueing capacity issues for this intersection.

*Intersection #4 - Rio Bravo Blvd. / La Junta Rd. – Appendix Pages A-85 thru A-93*

Rio Bravo Blvd./La Junta Rd. intersection is an unsignalized intersection. The results of the 2025 Implementation Year and 2035 Horizon Year analysis of the unsignalized intersection of Rio Bravo Blvd. /La Junta Rd. are summarized in the following tables:

**HCM Results Summary Table**

Avanzando Commercial Development - Rio Bravo Blvd., Albuquerque, NM

| Intersection | Signalization | Movement | Implementation Year -2025 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 4 - Rio Bravo Blvd. & La Junta | Unsignalized | EB Rio Bravo | A | 8.8 | None | None | A | 9.4 | None | None |
| | | WB Rio Bravo | C | 19.2 | None | None | C | 15.8 | None | None |
| | | NB Sunstar | F | 183.7 | None | None | F | 96.5 | None | None |
| | | SB Frontage Rd. | E | 40.1 | None | None | D | 30 | None | None |
| | | Intersection Delay (s/veh) | F 183.7 | | | | F 96.5 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | C | 19.3 | None | None | F | $996.60 | EBL V/C =2.79 | EBL QSR =2.42 |
| | | WB Rio Bravo | A | 9.9 | None | None | B | 11 | None | None |
| | | NB Sunstar | F | 58.9 | None | None | - | - | None | None |
| | | SB Frontage Rd. | E | 36.4 | None | None | - | - | None | None |
| | | Intersection Delay (s/veh) | F 58.9 | | | | F $996.60 | | | |

1 - Level of Service (LOS)/ Delay for unsignalized intersections are for movements with worst results

2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)

$ - Delay exceeds 300 seconds

| Intersection | Signalization | Movement | Horizon Year -2035 AM | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 |
| 4 - Rio Bravo Blvd. & La Junta | Unsignalized | EB Rio Bravo | A | 9 | None | None | A | 9.7 | None | None |
| | | WB Rio Bravo | C | 22.7 | None | None | C | 18 | None | None |
| | | NB Sunstar | F | 353.9 | None | None | F | 171.3 | None | None |
| | | SB Frontage Rd. | F | 62.4 | None | None | E | 40.1 | None | None |
| | Intersection Delay (s/veh) | | F 353.9 | | | | F 171.3 | | | |
| | | | PM | | | | | | | |
| | | | NO BUILD | | | | BUILD | | | |
| | | | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR>1 | LOS | Delay[1] (s/veh) | Movements w/ V/C ratio >1 | Movements w/ QSR[2]>1 |
| | Unsignalized | EB Rio Bravo | C | 21.1 | None | None | F | $359.20 | EBL V/C =1.5 | EBL QSR =1.8 |
| | | WB Rio Bravo | B | 10.3 | None | None | B | 11.7 | None | None |
| | | NB Sunstar | F | 82.6 | None | None | F | $ | None | None |
| | | SB Frontage Rd. | F | 63.7 | None | None | F | $ | None | None |
| | Intersection Delay (s/veh) | | F 82.6 | | | | F $ | | | |

1 - Level-of-Service / Delay for an unsignalized intersection are reported based on the turning movement with the worst results.
2 - QSR = Queue Storage Ratio = 95th Percentile Queue (ft)/Available Storage Length (ft)
$ Delay exceeds 300 seconds

This study demonstrates that this unsignalized intersection will operate at unacceptable levels-of-service for the 2035 AM Peak Hour and 2025 and 2035 PM Peak Hour, NO BUILD and BUILD Conditions. The northbound and southbound movements will experience excessive delays for both the PM Peak Hour NO BUILD and BUILD Conditions due to the high volume of traffic on Rio Bravo Blvd. and no nearby traffic signals to create sufficient gaps for traffic to access Rio Bravo. The poor LOS and high delays for the EB approach for the BUILD condition are caused by westbound traffic exiting the development. Since Driveway 'B' is the only driveway for the development and is a restricted access, 100% of the westbound traffic exiting the site must make U-turns at Sunstar Rd. or La Junta Rd. There are no reasonable physical improvements that can be made by the development to this intersection to alleviate the problem. Therefore, no recommendation is made for the Rio Bravo Blvd. /La Junta Rd. intersection.

Queueing analysis indicates that the eastbound left turn lane should be extended from 150-ft to 270-ft. (not including transition) by 2035. However, the lane warrant analysis presented in this report warrants a 370-foot lane (including transition) so the lane will be extended sufficiently to accommodate the 2035 queue length.

### *Impact Assessment*

Utilizing projected traffic volumes resulting from the development of this site in conjunction with projected 2025 and 2035 traffic volumes for the adjacent transportation network, this report concludes that development of the subject site will have moderate adverse impact on the adjacent transportation system. The greatest impact of the development is at Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd. Drivers wanting to make left-turn

movements onto Rio Bravo Blvd. from the minor approaches at these intersections experience extremely high delays for the NO BUILD condition. These delays become worse with the additional traffic generated from the development. The eastbound left-turn movements at these intersections go from LOS C to LOS F during the PM peak hour due to the additional U-turn traffic from the development. This further impedes access for the minor street drivers.

### *Determination of Deceleration Lane Warrants*

A determination of deceleration lane warrants analysis was performed in accordance with the New Mexico Department of Transportation's Determination of Warrants for Auxiliary Lanes methodology for the following intersections: Rio Bravo Blvd./Driveway 'B', Rio Bravo Blvd./Sunstar Rd., Rio Bravo Blvd./La Junta Rd. and Rio Bravo Blvd./private driveway. See Appendix pages A-94 thru A-97. The results are as follows.

**Rio Bravo Blvd./Driveway 'B' –** The warrant analysis for Driveway "B" determined that a **370 feet (including a 12.5:1 taper) eastbound right turn deceleration lane** and a **370 feet (including a 12.5:1 taper) westbound left turn deceleration lane** are warranted. According to aerial photography, there is an existing westbound left turn deceleration approximately 150 feet long (measured from the start of the return to the centerline of Driveway 'B'), so the lane should be extended at least 220-ft to meet the requirements of the warrant.

**Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd.-** The existing eastbound left-turn lanes at these two intersections should be extended from 150-ft long (measured from the start of the return to the centerline of side street using aerial photography) to **370-ft long (including transition)**.

**Rio Bravo Blvd./private driveway –** The private driveway is an unsignalized road serving nine existing detached single residences restricted access (right-in/right-out only). Warrant analysis concluded that a right-turn deceleration lane is not warranted for the driveway.

### *Access Design Specifications*

Sight distances at Driveway "B" are adequate. There are no vertical or horizontal curves along this portion of Rio Bravo Blvd. and there are no structures that are blocking sight distance into and out of the driveway.

No pedestrian facilities along the Rio Bravo Blvd. frontage are recommended for the proposed development because they do not exist anywhere near the proposed development in this rural area, except for along the Walmart development to the west of the proposed Avanzando project.

Currently Bicycle lanes do not exist along this portion of Rio Bravo Blvd. and they are shown as a proposed bicycle lane and a proposed multi-use paved trail along Rio Bravo Blvd.

## Summary of Deficiencies and Anticipated Impacts

1. **Driveway "A"** has been eliminated from the site plan. **Driveway 'B,'** an unsignalized restricted access on the south side of Rio Bravo Blvd., is to be the only access to the site.
2. Capacity analysis of the four intersections analyzed on Rio Bravo Blvd. indicates that there are several movements and intersections that have unacceptable LOS (less than D) for the NO BUILD and BUILD conditions.
   a. **Intersection 1 – Rio Bravo Blvd./Loris Dr.**: During the 2025 AM peak hour the LOS for the intersection degrades slightly and the NBR movement operates at unacceptable levels-of-service for the for the NO BUILD and BUILD condition. Optimizing the signal timing improves the **intersection LOS** and **NBR LOS** for the BUILD Conditions to equal or better than that projected for the NO BUILD Conditions.. Signal retiming improves the LOS of the WBL movement from LOS F to LOS D.
   b. **Intersections 3 & 4 – Rio Bravo Blvd./Sunstar and Rio Bravo Blvd./La Junta:** Drivers wanting to make left-turn movements onto Rio Bravo Blvd. from the minor approaches at these intersections experience extremely high delays and LOS F for the NO BUILD condition and delays become worse with the additional traffic generated by the development. LOS for the **EBL** movements at these intersections degrade from LOS C to LOS F during the PM peak hour due to the additional U-turn traffic generated by the development, a condition that further impedes access for the minor street drivers.
3. Queueing analysis indicates that congestion and queueing issues identified at the Rio Bravo Blvd./Loris Dr. can be mitigated by optimizing the signal timing.
4. Warrant analysis concluded that an eastbound right-turn and a westbound left-turn deceleration lane are warranted at Rio Bravo Blvd./Driveway 'B.' Eastbound left-turn lanes are warranted at Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd. No deceleration lanes are warranted for the private driveway.

## Recommendations

1. Design of the site access facilities must maintain adequate sight distances for traffic approaching, entering, and exiting the site from the driveway.
2. The site should be accessed via one driveway, Driveway "B," an existing full access unsignalized driveway that shall be reconstructed as an unsignalized restricted access (right-in/right-out/left-in) driveway with one exiting and one entering turn lane.
3. **Rio Bravo Blvd./Loris Dr. –** Retime the signal using the optimized timings specified for the AM and PM Mitigated conditions in Appendix pages A-49 (AM optimized timing) and A-55 (PM optimized timing).
4. **Rio Bravo Blvd./Driveway 'B' –** Construct a 370 feet long (including a 12.5:1 taper) eastbound right turn deceleration lane. Extend the existing westbound left-turn lane to 370 feet (including a 12.5:1 taper)**.**
5. **Rio Bravo Blvd./Sunstar Rd. and Rio Bravo Blvd./La Junta Rd.-** The existing eastbound left-turn lanes at these two intersections should be extended from 150-ft long (measured from the start of the return to the centerline of side street using aerial photography) to **370-ft long (**including a 12.5:1 taper**).** There are no reasonable physical improvements that can be

made by the development to this intersection to alleviate the poor level of service and high delays. Therefore, no mitigative recommended for these intersections.

## Appendix