CITY OF ALBUQUERQUE

April 19, 2016

Terry O. Brown
PO Box 92051
Albuquerque, NM 87199-2051

Re: Envirco Tract (Independence Square)
6701 Jefferson
Traffic Impact Study
Engineer's Stamp dated 04-12-16 (E17-D076)

Dear Mr. Brown,

The subject Traffic Impact Study received on April 14, 2016 has been reviewed and approved by the Transportation Development Section. All comments have been adequately addressed.

The final Traffic Impact Study shall be valid for a period of three years. Should significant modifications to the approved development proposal occur, the approved study shall be revised to incorporate the changes.

If you have any questions, please feel free to contact me at (505) 924-3991.

Sincerely,

Racquel M. Michel, P.E.
Traffic Engineer, Planning Dept.
Development Review Services

via: email
C: Applicant, File

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Terry O. Brown P.E.
Civil / Transportation Engineering

Tuesday, April 12, 2016

Racquel Michel, P.E.
Transportation Development Section
City of Albuquerque Planning Department
600 Second St. NW
Albuquerque, NM 87102

Re: Envirco Tract (Osuna / Jefferson) Traffic Impact Study

Dear Racquel:

Attached is a copy of the FINAL Traffic Impact Study for the referenced land development project for your approval. I have modified the Study to address Jeanne Wolfenbarger's comments as follows:

1) Page 5, Following discussion on "Proposed Development", discuss off-site developments and reference "Osuna Widening Project", projected construction year for improvements, and include discussion of addition of the one westbound lane on Osuna Road along with other applicable improvements.

Response: A paragraph has been added to Page 5 as requested.

2) Sheet 10 on queue analysis, where it shows "999" for existing lane length of the westbound right turn lane at the Osuna/Jefferson intersection, update queue analysis table plan to show approximate 300-foot length from the "Osuna Widening Project".

Response: Change has been made to Page 10 as requested.

3) Page A-4, use the updated "Long Range Roadway System" map from April, 2015.

Response: Page A-4 has been corrected as requested.

4) Sheet 14, list date and time at the top of the page for the traffic signal warrant analysis. Also reference date and time of traffic counts on Page 3.

Response: Page 14 has been corrected as requested.

5) Sheet 9, mitigated geometry only includes the added westbound lane at the Osuna/Jefferson intersection to bring it to an acceptable LOS?? (Add text next to "Osuna Widening Project will add third westbound thru lane." emphasizing that this added westbound lane is the only mitigated geometry.)

Terry O. Brown • tobe@swcp.com • P.O. Box 92051 • Albuquerque, NM 87199 • 505 · 883 · 8807

Re: Envirco Tract (Osuna / Jefferson) Traffic Impact Study

Response: Page 9 has been corrected as requested.

6) Lengthen northbound and southbound left turn lanes as much as feasible given the "PM build queues" for the Osuna/Jefferson intersection. It appears that narrowing of the medians to additional extra left turn bay length on either side is feasible.

Response: A recommendation has been added to Page 21 to address this comment.

7) On Page A-35, there should be trips assigned to the southbound left turn movement for the Osuna/Jefferson intersection.

Response: Page A-35 has been corrected as requested.

8) Coordinate with COA Traffic Operations regarding the requested traffic signal at Jefferson/Calvary Drive given their current stance on installing signals for private development. If this intersection is to be developed as a signalized intersection, provide recommended length of left-thru lane and right turn lane for eastbound traffic, especially since it was analyzed this way. Line up driveway on the opposite side of Jefferson with Calvary Drive as discussed at the scoping meeting. Provide a sketch that shows the overall recommended configuration of the intersection based on number of lanes used for the intersection analysis, and include discussions of any proposed right-of-way take. Also, for "No-Build Conditions", a northbound left turn lane and a westbound right turn lane are analyzed where they do not exist (Page A-74). Revise intersection analysis for "No Build" and "Build" Conditions to show correct number of current lanes and accurately reflect proposed number of lanes proposed.

Response: Coordination with the CoA Traffic Operations (DMD) has occurred. The Recommendations section of the Traffic Impact Study define the length of the eastbound left turn lane on the Calvary Driveway. The analysis does consider the northbound and southbound left turn lane on Jefferson St. at the Calvary Driveway.

9) Qualitatively, discuss benefit of adding a signal at Calvary/Jefferson versus not providing a signal for further justification. Address concern of spacing between signalized intersections as well with the proposed added signal.

Response: Qualitative discussion of the benefits of a new traffic signal is included now on Page 15 of the report.

10) Provide shared access agreement with Calvary Church in order to access their private drive. Provide copies of other shared access agreements with property to the south.

Response: Shared Access Agreement is included on Appendix Pages A-107 through A-120 of the report.

11) Restripe westbound left turn lane at Ellison/Jefferson to reflect AM Peak queue length.

Response: A recommendation has been added to the report as requested.

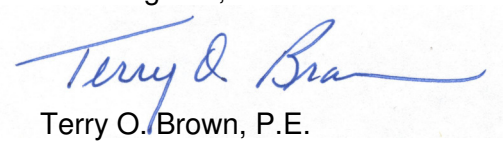
Re: Envirco Tract (Osuna / Jefferson) Traffic Impact Study

12) Analysis of three driveways accessing Osuna Road under "Build" conditions do not reflect proposed three lanes in each direction under the "Osuna Road Widening" project. Revise as necessary.

Response: Analysis has been modified as requested.

Please call me if you have questions.

Best Regards,



Terry O. Brown, P.E.

attachments as noted

cc: Ronald R. Bohannan, Tierra West, LLC w/2 copies of report

Envirco Tract

(Osuna Rd. / Jefferson St.)

Traffic Impact Study

April 12, 2016

F I N A L

Presented to:

City of Albuquerque
Transportation Development Section
Planning Department

Prepared for:

Argus Jefferson Partners, LLC
4700 Montgomery Blvd. #200
Albuquerque, NM 87109

Terry O. Brown P.E.
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Albuquerque, NM 87199
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Envirco Tract (Osuna Rd. / Jefferson St.)
TRAFFIC IMPACT STUDY

Table of Contents

Envirco Tract (Osuna Rd. / Jefferson St.)
TRAFFIC IMPACT STUDY

STUDY PURPOSE

The study is being conducted in conjunction with a request for approval of a commercial development plan for the property located on the north side of Osuna Rd. west of Jefferson St. The purpose of this study is to identify the impact of the Development on the adjacent transportation system, and to make recommendations to mitigate any significant adverse impact on the adjacent transportation system resulting from the implementation of the project. This report is being prepared to meet the requirements of the City of Albuquerque Transportation Development Section in association with the development of the proposed project associated with this site plan.

STUDY PROCEDURES

A scoping meeting was held with City of Albuquerque staff on April 30, 2015 (Jeanne Wolfenbarger) prior to beginning the Envirco Tract study to discuss scope and methodology to be utilized within that report.

The resulting basic procedure followed in this study is described as follows:

1) Calculate the generated trips for the proposed office / commercial development consisting of a proposed 2,010 S.F. of coffee/donut shop w/ drive-thru window, a drive-in bank w/3 windows, 8,000 S.F. of shopping center and an 84,340 S.F. office building. (See Appendix Pages A-8 thru A-12).
2) Calculate trip distribution for the newly generated trips by this development. The commercial trips shall be distributed based on population data within a two-mile radius of the proposed site and the office trips based on population citywide. Socioeconomic data will be based on the Mid-Region Council of Governments' data. (See Appendix Pages A-13 thru A-24).
3) Determine Trip Assignments for the newly generated trips based on the results of the Trip Distribution Analysis and logical routing to and from the site. (See Appendix Pages A-16 thru A-18 and A-23 thru A-24).
4) Obtain AM Peak Hour and PM Peak Hour turning movement traffic counts at the intersection of Ellison St. / Jefferson St., Osuna Rd. / Jefferson St., Calvary Dr. / Jefferson St., existing driveways along Osuna (west driveway, middle driveway, and Valero driveway), and Driveway "A" / Jefferson St. (across from the proposed main entrance). (See Appendix Pages A-96 thru A-102).
5) Calculate Historic Growth Rates for each of the approaches to the intersections targeted for analysis where the historic data was available. Historic Growth Rates were calculated using Mid-Region Council of Governments Traffic Flow Maps for the years 2004 thru 2013. (See Appendix Pages A-25 thru A-31).
6) Determine 2017 NO BUILD intersection volumes by growing the data from the existing traffic counts at the calculated historic growth rate to the analysis year. There are no recently approved projects to be added to these volumes. (See Appendix Pages A-32 thru A-51).

7) Add in data from Trip Assignments Maps and Tables to the 2017 NO BUILD Volumes to obtain 2017 BUILD Volumes for this project. Additionally, a 30% passby trip reduction was applied to the commercial trips. (See Appendix Pages A-32 thru A-51).
8) Provide signalized and unsignalized intersection analyses for the following intersections:

INTERSECTION	TYPE CONTROL	NO BUILD	BUILD
Osuna Rd./ Jefferson St. (1)	Traffic Signal	2017	2017
Ellison St. / Jefferson St. (2)	Traffic Signal	2017	2017
Calvary Dr. / Jefferson St. (3)	Stop Sign	2017	2017
Driveway "A" / Jefferson St. (4)	Stop Sign	2017	2017
Osuna Rd. / West Dr. (5)	Stop Sign	2017	2017
Osuna Rd. / Middle Dr. (6)	Stop Sign	2017	2017
Osuna Rd. / Valero Dr. (7)	Stop Sign	2017	2017
Driveway "B" / Jefferson St. (8)	Stop Sign	2017	2017
Driveway "C" / Jefferson St. (9)	Stop Sign	N/A	2017

PREVIOUS RELATED TRAFFIC IMPACT STUDIES

There were no previously approved Traffic Impact Studies to be added to this study.

GENERAL AREA CHARACTERISTICS

Surrounding land uses include commercial in the vicinity of Osuna Rd. / Jefferson St. and residential uses farther west on Osuna Rd. and east of I-25. The project is at the northwest corner of Osuna Rd. / Jefferson St.

AREA STREET NETWORK

Osuna Rd. is classified as an Existing Urban Principal Arterial roadway on the Current Roadway Functional Classification System for the Albuquerque Metropolitan Planning Area. It is currently a paved urban four-lane facility with raised medians and curbs and gutters on both sides of the street. There is a planned CIP improvement project that will widen Osuna Rd. to six lanes sometime in 2016. The posted speed limit on Osuna Rd. is 40 M.P.H.

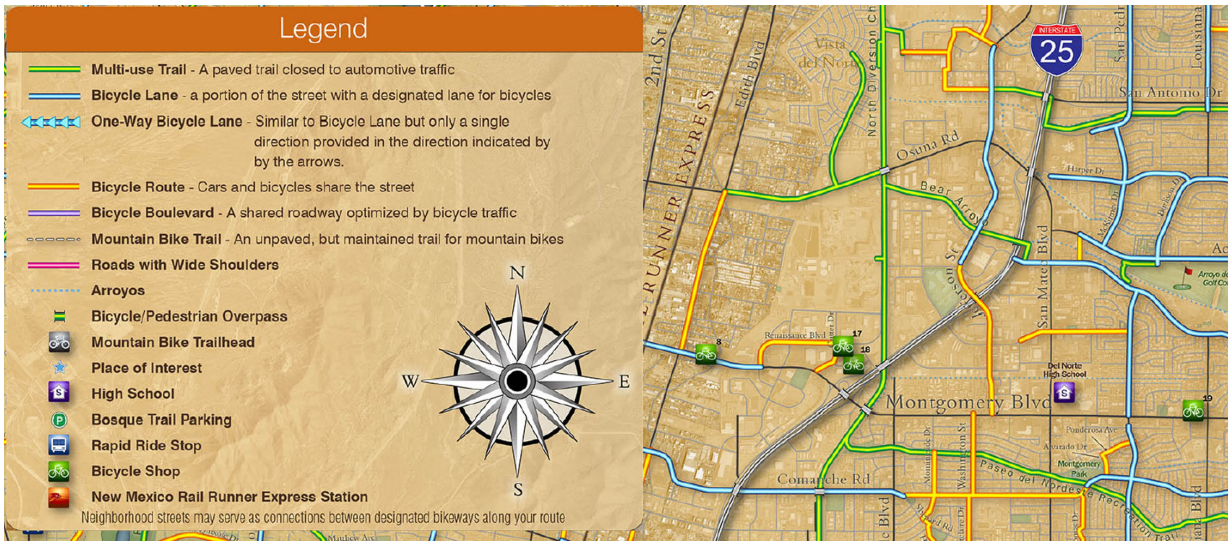
Ellison Rd. (east of Jefferson St.) is classified as an Existing Urban Collector roadway on the Current Roadway Functional Classification System for the Albuquerque Metropolitan Planning Area. It is an urban-type four lane paved roadway with no raised medians west of Jefferson St. San Antonio Rd. (Ellison east of Jefferson) is a divided highway. The posted speed limit on Ellison Rd. is 35 M.P.H.

Jefferson St. is classified as an Existing Urban Minor Arterial roadway on the Current Roadway Functional Classification System for the Albuquerque Metropolitan Planning Area. It is currently a paved urban four-lane facility with raised medians and curbs and gutters on both sides of the street. The posted speed limit on Jefferson St. is 35 M.P.H.

There are several Suntran bus routes in the area. Route 140/141 runs on San Mateo Blvd. from the VA Hospital north & west to Jefferson St. then north to the Balloon Fiesta Park Every half hour. The weekend route goes north only to Ellison Rd. before looping back south. Route

251 runs on Jefferson St. from the Century Rio 24 theater complex north to El Pueblo Rd. & the Railrunner Station then west to Coors Blvd. and north to Southern Blvd. before turning around at Unser Blvd. Route 551 is a peak hour only route that follows Route 251 with the exception that it does not stop at the Railrunner Station.

There are also bike routes, lanes and multi-use trails in the area, as shown on the following map.



EXISTING TRAFFIC VOLUMES

2013 Average Weekday Traffic Volumes (AWDT) for major streets in the site plan area are shown on Pages A-6 and A-7 in the Appendix.

Existing AM and PM peak hour turning movement counts for the year 2015 (collected on May 13, 2015 from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm) were provided by the consulting engineer for the following intersections:

Osuna Rd. / Jefferson St.
Ellison Rd. / Jefferson St.
Calvary Dr. / Jefferson St.
Driveway "A" / Jefferson St.
Osuna Rd. / West Drive
Osuna Rd. / Middle Drive
Osuna Rd. / Valero Drive
Driveway "B" / Jefferson St.

The existing traffic counts are included at the end of the Appendix. All of the above traffic counts were conducted on Wednesday, May 13, 2015 from 7:00 am to 9:00 am for the AM Peak Hour volumes and from 4:00 pm to 6:00 pm for the PM Peak Hour volumes.

EXISTING LEVELS OF SERVICE

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

LOS A	10.0" or less	Most Vehicles do not stop
LOS B	10.1 to 20.0"	Some Vehicles stop
LOS C	20.1 to 35.0"	Significant number of vehicles stop
LOS D	35.1 to 55.0"	Many vehicles stop.
LOS E	55.1 to 80.0"	Limit of acceptable delay.
LOS F	> 80.0"	Unacceptable delay.

The Highway Capacity Manual defines Level of Service (LOS) for unsignalized intersections in terms of average controlled delay per vehicle also. However, the thresholds for the various levels of service for unsignalized intersections vary from that of signalized intersections. The following table summarizes the thresholds for various levels of service at unsignalized intersections:

LOS A	0 to10.0"
LOS B	10 to 15"
LOS C	15 to 25"
LOS D	25 to 35"
LOS E	35 to 50"
LOS F	> 50"

Level of Service D is generally considered acceptable in urban areas and is the desirable base condition for analysis in a traffic study. In addition to consideration of the overall level-of-service of the signalized intersection, the levels-of-service of each individual movement should be considered also.

Existing Levels-of-Service were not calculated for this study. Instead, the 2017 NO BUILD and the 2017 BUILD Conditions were evaluated. The 2017 NO BUILD analysis should closely approximate the existing levels-of-service for this analysis.

PROPOSED DEVELOPMENT

The development plan is comprised of proposed office and commercial uses consisting of approximately 84,340 S.F. of office floor space, 8,000 S.F. of shopping center, a drive-thru bank w/3 windows and a 2,100 S.F. coffee shop w/drive-thru. The land uses utilized for this analysis should be representative of the type of uses that will result from the proposed development. Should the development occur in such a manner that the actual number of trips generated significantly exceed that projected in this study, the City of Albuquerque may require an updated Traffic Impact Study.

Access is provided into the proposed facility via a number of full-access and restricted driveways accessing Osuna Rd. and Jefferson St. The overall access to the project is as depicted on the Conceptual Site Development Plan on Page A-3 of this study. There are three existing unsignalized intersections onto Osuna Rd. to the west of Jefferson St. The West Drive is a full access intersection while the Middle & Valero Drives are right-in, right-out only. Driveways "A","B" and "C" will access Jefferson St. Driveway "B" is an existing right-in, right-out only driveway that will be shared with the Valero Gas Station. Driveway "A" is

proposed to be a full access driveway aligned with an existing driveway on the east side of Jefferson St. Driveway "C" is proposed as a right-in, right-out only driveway.

There is cross access with the adjacent properties to the south of this project. Therefore, the three existing driveways along the north side of Osuna Rd. west of Jefferson may be utilized to access this project also.

Finally, there is the existing Calvary Access onto Jefferson St. approximately 900 feet (centerline to centerline) north of Osuna Rd. that will be utilized to access this project. There is an agreement with Calvary Chapel to share this access (see Appendix Pages A-107 thru A-120).

The City has implemented the Osuna widening project which, generally speaking, will add a third lane eastbound and a third lane westbound on Osuna Rd. The project is currently under construction and should be completed by the end of 2016. The Signing & Striping Plan for the intersection of Osuna Rd. / Jefferson St. is included on Appendix Page A-106.

TRIP GENERATION

Projected trips were calculated from data in the Institute of Transportation Engineers Trip Generation report (9th Edition, 2012). Trips for the development were determined based on land uses projected to be associated with the site plan for this property.

The resulting number of trips generated for the proposed development is summarized in the following table:

Envirco Tract (Osuna Rd. / Jefferson St.)

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)	8.00	1,315	21	13	53	57
Drive-In Bank (912)	3	418	17	11	49	51
Coffee/Donut Shop w/ Drive Thru Window (937)	2.10	1,719	108	103	45	45
General Office Building (710)	84.34	1,153	147	20	29	144
Subtotal		**4,605**	**293**	**147**	**176**	**297**
Retail Commercial Trips Subject to Pass-by Trips		3,452	146	127	147	153
Pass-by Trips	**30%**	***(1,036)***	***(44)***	***(38)***	***(44)***	***(46)***
Net New Retail Commercial Trips		2,416	102	89	103	107
New Office Trips		1,153	147	20	29	144
Total Trips Adjusted for Pass-by		**3,569**	**249**	**109**	**132**	**251**

NOTE: Red numbers are subject to pass-by trip rate.

(Also, see Pages A-8 thru A-12 in the Appendix of this report for Trip Generation Worksheets and Summary Table). Note that there is a passby trip adjustment to the commercial trips of 30%.

TRIP DISTRIBUTION

Primary and Diverted Linked Trips:

Trips were distributed as follows:

Commercial Land Uses

Primary and diverted linked trips for the commercial land use development were distributed proportionally to the 2017 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 2030 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 2017 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 is shown in the Appendix. The commercial Trip Distribution map can be found in the Appendix on Page A-13.

Office Land Uses

Primary and diverted linked trips for the office land use development were distributed proportionally to the 2017 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 2030 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 2017 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 office Trip Distribution map can be found in the Appendix on Page A-19.

TRIP ASSIGNMENT

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 in the Appendix on Pages A-13 thru A-18. Percentage trip assignments for office trips are shown in the Appendix on Pages A-19 thru A-24. An adjustment of 30% for Pass-by Trips was applied on this project.

BACKGROUND TRAFFIC GROWTH

Implementation year (2017) 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 2004 thru 2013 Traffic Flow maps prepared by the Mid-Region Council of Governments. Most of the Traffic Flow Data for those years taken from the MRCOG Traffic Flow Maps were Standard Data. The data from those years for each approach was plotted on a graph and a linear "regression trend line" calculated using the equation format y=mx+b. The growth rate was determined by calculating the average volume increase per year during the time period considered and dividing that volume into the most recent AWDT used in the analysis from which future volumes will be calculated. The rate of growth of that trend line was utilized as the annual growth rate for each approach if that calculated rate appeared feasible. However, there were some instances where the rate indicated a negative growth trend or appeared to be unreasonably high or low. In those cases, an appropriate growth rate from an adjacent segment of the same roadway was used, a shorter time span was used to determine the growth rate, or the growth rate was considered to be a generic 0.5% if appropriate. Additionally, if the R^2 value of the trend line was low, other means of establishing a probable growth rate from the data accumulated was considered. Historical Growth Rate Graphs with linear regression trendlines are shown in the Appendix on Pages A-25 thru A-31. 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-32 thru A-51).

PROJECTED PEAK HOUR TURNING MOVEMENTS FOR 2017 BUILDOUT

The calculated annual growth rates were applied to the existing (2015) peak hour traffic counts furnished by the consultant to establish the 2017 background traffic volumes. To these volumes, the generated trips based on implementation of the proposed land uses for this project were added to obtain the 2017 BUILD volumes for the intersection analyses. See Appendix Pages A-32 thru A-51 for further information regarding turning movement counts.

INTERSECTION CAPACITY ANALYSIS

Intersection capacity analyses were performed in accordance with the procedures for signalized and unsignalized intersections in the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010, using Synchro Version 8 Software (Build 803) for signalized and unsignalized intersections. For signalized intersections, the operational method of analysis was used for 2017 conditions (NO BUILD and BUILD). In addition to utilizing the operational analysis for the intersections, the 1985 planning method may also be used to

provide additional information at the intersection to help define critical lane volumes and to help analyze a solution.

Capacity analyses were performed for the following traffic conditions.

⇒ 2017 without development of the subject property (NO BUILD)
⇒ 2017 with development as per the assumed land uses considering total implementation of the plan.

The results of the 2017 NO BUILD and the 2017 BUILD capacity analyses are summarized in the following sections – *Results and Discussion of Intersection Capacity Analyses*.

Synchro HCM 2010 Worksheets are found on the following pages in the Appendix:

2017 AM Peak Hour NO BUILD Analyses: A-52 thru A-60
2017 AM Peak Hour BUILD Analyses: A-61 thru A-70
2017 PM Peak Hour NO BUILD Analyses: A-71 thru A-79
2017 PM Peak Hour BUILD Analyses: A-80 thru A-89

2017 AM and PM Peak Hour MITIGATED GEOMETRY: A-90 thru A-95

RESULTS OF SIGNALIZED INTERSECTION CAPACITY ANALYSES

IMPLEMENTATION YEAR (2017)

Intersection #1 – Osuna Rd. / Jefferson St.

The results of the 2017 implementation year analysis of the signalized intersection of Osuna Rd. / Jefferson St. are summarized in the following table:

Intersection: **1 - Osuna Rd. / Jefferson St.**

2017 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	2	E - 62.9	2	E - 62.9	2	D - 53.7
	T	3	C - 22.7	3	C - 23.1	3	C - 31.0
	R	>	C - 23.0	>	C - 23.5	>	C - 32.3
WB	L	2	D - 54.0	2	D - 53.9	2	D - 51.6
	T	2	D - 53.3	2	E - 73.7	**3**	D - 49.6
	R	1	C - 21.1	1	C - 23.1	1	D - 39.0
NB	L	1	**F** - 92.2	1	**F** - 95.5	1	D - 46.4
	T	2	D - 45.7	2	D - 46.3	2	D - 36.2
	R	1	C - 34.0	1	C - 34.0	1	C - 26.7
SB	L	1	C - 33.9	1	C - 33.7	1	C - 24.1
	T	2	**F** - 110	2	**F** - 140	2	E - 67.2
	R	>	**F** - 112	>	**F** - 141	>	E - 69.1
Intersection:		***D - 53.4***		***E - 63.4***		***D - 45.4***	

2017 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	2	D - 47.0	2	D - 46.6	2	D - 42.6
	T	3	D - 35.9	3	D - 38.4	3	D - 49.3
	R	>	D - 38.6	>	D - 42.3	>	E - 57.2
WB	L	2	D - 47.7	2	D - 47.6	2	D - 44.8
	T	2	D - 48.8	2	D - 54.3	**3**	D - 41.3
	R	1	B - 17.7	1	B - 18.3	1	C - 21.3
NB	L	1	D - 36.6	1	D - 42.0	1	D - 40.8
	T	2	D - 50.3	2	D - 49.6	2	D - 44.7
	R	1	C - 34.7	1	C - 34.3	1	C - 29.8
SB	L	1	D - 40.9	1	D - 45.7	1	D - 50.4
	T	2	D - 41.8	2	E - 61.6	2	E - 69.3
	R	>	D - 43.2	>	E - 63.5	>	E - 70.9
Intersection:		***D - 41.6***		***D - 47.3***		***D - 49.1***	

Note: ">" designates a shared right or left turn lane.

Osuna Widening Project will add third westbound thru lane.

There are excessive delays for the southbound thru and right turn movements during the 2017 AM Peak Hour analysis above. The pending Osuna Widening construction project will provide a third westbound thru lane on Osuna Rd. at Jefferson St. which should help remedy the problem. This assumption is based on the recommendation for Alternative #1 in the Essayons Blvd., Osuna Rd. to Alameda Blvd. Feasibility Study prepared by Lee Engineering in 2010. The third westbound thru lane is the only mitigated geometry at this intersection.

The 95th Percentile Queuing Analysis for this intersection results in the lanes length changes summarized in the following table:

Queueing Analysis Summary Sheet

Project: Envirco Tract (Osuna Rd. / Jefferson St.)

Intersection: **Osuna Rd. / Jefferson St.**

2017

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*301*	*200*	*3*	*753*	*Cont*	*0*	*110*	*0*
AM NO BUILD Queue	2	304	225	3	761	350	0	111	175
AM BUILD Queue	**2**	**304**	**225**	**3**	**787**	**350**	**0**	**119**	**175**
Existing Lane Length	*2*	*264*	*200*	*3*	*1,050*	*Cont*	*0*	*96*	*0*
PM NO BUILD Queue	2	267	200	3	1,061	**450**	0	97	**150**
PM BUILD Queue	**2**	**267**	**200**	**3**	**1,134**	**500**	**0**	**111**	**175**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*2*	*125*	*180*	*2*	*947*	*Cont*	*1*	*393*	*300*
AM NO BUILD Queue	2	126	125	2	956	575	1	397	450
AM BUILD Queue	**2**	**126**	**125**	**2**	**1,029**	**600**	**1**	**434**	**500**
Existing Lane Length	*2*	*69*	*180*	*2*	*769*	*Cont*	*1*	*192*	*300*
PM NO BUILD Queue	2	70	75	2	777	**475**	1	194	**250**
PM BUILD Queue	**2**	**70**	**75**	**2**	**809**	**500**	**1**	**210**	**275**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*138*	*175*	*2*	*278*	*Cont*	*1*	*49*	*150*
AM NO BUILD Queue	1	139	200	2	281	225	1	49	100
AM BUILD Queue	**1**	**154**	**225**	**2**	**288**	**225**	**1**	**49**	**100**
Existing Lane Length	*1*	*162*	*175*	*2*	*522*	*Cont*	*1*	*220*	*150*
PM NO BUILD Queue	1	164	225	2	527	350	1	222	275
PM BUILD Queue	**1**	**173**	**225**	**2**	**532**	**350**	**1**	**222**	**275**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*205*	*200*	*2*	*409*	*Cont*	*0*	*248*	*0*
AM NO BUILD Queue	1	207	275	2	413	300	0	250	300
AM BUILD Queue	**1**	**207**	**275**	**2**	**416**	**300**	**0**	**263**	**325**
Existing Lane Length	*1*	*358*	*200*	*2*	*462*	*Cont*	*0*	*345*	*0*
PM NO BUILD Queue	1	362	425	2	467	325	0	348	**400**
PM BUILD Queue	**1**	**362**	**425**	**2**	**474**	**325**	**0**	**384**	**450**

	AM	PM
Cycle Length:	110	110

NOTE: Queue lengths are in feet.

Calculated Right Turn Queue Lengths can be reduced by 50% to account for right-turns-on-red and right turn overlaps.

The two queue lengths that seem the most in need are the northbound and southbound left turn movements on Jefferson St. Neither of the two left turn lanes can be extended without compromising adjacent complimentary left turn lanes into adjacent driveways. The design of this project should optimize the lengths of the existing northbound and southbound left turn lanes without jeopardizing other complimentary left turn lanes. It appears that the northbound left turn lane can be lengthened by reducing the existing median width.

Intersection #2 – Ellison Rd. / Jefferson St.

The results of the 2017 implementation year analysis of the signalized intersection of Ellison Rd. / Jefferson St. are summarized in the following table:

Intersection: 2 - Ellison St. / Jefferson St.

		2017 AM Peak Hour BUILD (EXIST. GEOM.)				2017 PM Peak Hour BUILD (EXIST. GEOM.)			
		NO BUILD		BUILD		NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	1	D - 37.2	1	D - 37.0	1	C - 30.5	1	C - 31.4
	T	1	E - 63.4	1	E - 63.4	1	E - 67.1	1	E - 80.2
	R	>	E - 63.4	>	E - 63.4	>	E - 67.1	>	E - 80.2
WB	L	1	E - 76.3	1	E - 75.1	1	D - 41.1	1	D - 50.9
	T	1	D - 40.9	1	D - 36.3	1	C - 29.2	1	C - 28.6
	R	1	**F** - 199	1	**F** - 152	1	B - 19.7	1	B - 19.2
NB	L	1	C - 22.1	1	C - 26.3	1	C - 23.8	1	C - 22.6
	T	2	D - 42.8	2	C - 32.6	2	D - 46.4	2	C - 21.1
	R	1	B - 17.0	1	B - 11.9	1	C - 30.0	1	B - 12.6
SB	L	1	C - 25.3	1	C - 26.2	1	D - 41.4	1	D - 39.0
	T	2	C - 29.2	2	D - 35.9	2	C - 26.6	2	C - 27.8
	R	>	C - 29.0	>	D - 35.6	>	C - 26.5	>	C - 27.7
Intersection:		***E - 67.7***		***E - 57.8***		***D - 38.1***		***C - 32.6***	

Note: ">" designates a shared right or left turn lane.

No mitigation recommended.

This report demonstrates that the operation of the signalized intersection of Ellison Rd. / Jefferson St. is marginal during the 2017 AM Peak Hour condition and acceptable for the projected 2017 PM Peak Hour conditions analyzed. The projected 2017 AM Peak Hour analysis demonstrated that the intersection would be LOS “E” for the projected 2017 AM Peak Hour NO BUILD and BUILD Condition. A slight improvement to the operation of the intersection may be gained by converting the westbound thru lane on Ellison Dr. to a thru / right turn lane. No analysis for the thru / right turn lane is provided in this report. The improvement is suggested to remedy an existing adverse situation. The City may opt to leave the geometry as is.

It should be noted that the BUILD condition delays for this intersection show a reduction below the NO BUILD condition for both the AM and the PM Peak Hours. This is probably due to two different factors. First, the traffic generated by the proposed Envirco Tract development contributes to turning movements at this intersection that have low delays. Thus the weighted average delay of the intersection is reduced. Secondly, the optimization of the signalized intersection in the BUILD conditions allots more green time to movements with lower delay. Again, this causes the average intersection delay to be reduced.

The Queuing Analysis for this intersection results in the lanes length changes summarized in the following table:

Queueing Analysis Summary Sheet

Project: Envirco Tract (Osuna Rd. / Jefferson St.)

Intersection: **Ellison St. / Jefferson St.**

2017

Approach	Left Turns			Thru Movements			Right Turns		
Eastbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*24*	*125*	*1*	*82*	*Cont*	*0*	*69*	*0*
AM NO BUILD Queue	1	24	50	1	83	125	0	70	125
AM BUILD Queue	**1**	**24**	**50**	**1**	**83**	**125**	**0**	**70**	**125**
Existing Lane Length	*1*	*33*	*125*	*1*	*223*	*Cont*	*0*	*79*	*0*
PM NO BUILD Queue	1	33	75	1	225	275	0	80	125
PM BUILD Queue	**1**	**33**	**75**	**1**	**225**	**275**	**0**	**80**	**125**
Westbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*275*	*270*	*1*	*243*	*Cont*	*1*	*536*	*999*
AM NO BUILD Queue	1	292	350	1	258	325	1	569	625
AM BUILD Queue	**1**	**331**	**400**	**1**	**258**	**325**	**1**	**569**	**625**
Existing Lane Length	*1*	*186*	*270*	*1*	*71*	*Cont*	*1*	*172*	*999*
PM NO BUILD Queue	1	198	**250**	1	75	125	1	183	250
PM BUILD Queue	**1**	**232**	**300**	**1**	**75**	**125**	**1**	**183**	**250**
Northbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*113*	*140*	*2*	*734*	*Cont*	*1*	*120*	*150*
AM NO BUILD Queue	1	114	175	2	741	475	1	121	175
AM BUILD Queue	**1**	**114**	**175**	**2**	**754**	**475**	**1**	**150**	**200**
Existing Lane Length	*1*	*44*	*140*	*2*	*644*	*Cont*	*1*	*236*	*150*
PM NO BUILD Queue	1	44	75	2	650	**425**	1	238	**300**
PM BUILD Queue	**1**	**44**	**75**	**2**	**702**	**450**	**1**	**279**	**350**
Southbound	# Lanes	Vol.	Length	# Lanes	Vol.	Length	# Lanes	Vol.	Length
Existing Lane Length	*1*	*167*	*160*	*2*	*798*	*Cont*	*0*	*14*	*0*
AM NO BUILD Queue	1	169	225	2	806	500	0	14	50
AM BUILD Queue	**1**	**169**	**225**	**2**	**859**	**525**	**0**	**14**	**50**
Existing Lane Length	*1*	*314*	*160*	*2*	*756*	*Cont*	*0*	*19*	*0*
PM NO BUILD Queue	1	317	375	2	764	475	0	19	50
PM BUILD Queue	**1**	**317**	**375**	**2**	**782**	**475**	**0**	**19**	**50**

	AM	PM
Cycle Length:	110	110

NOTE: Queue lengths are in feet.

Calculated Right Turn Queue Lengths can be reduced by 50% to account for right-turns-on-red and right turn overlaps.

The deficiency of the westbound left turn lane and the southbound left turn lane are mitigated by existing conditions since a two-way center left turn lane exists for each to contain the spillover from the dedicated left turn lanes. However, per City of Albuquerque, the westbound left turn lane shall be re-striped to 400 feet plus transition.

RESULTS OF UNSIGNALIZED INTERSECTION CAPACITY ANALYSES

IMPLEMENTATION YEAR (2017)

Intersection #3 – Calvary Dr. / Jefferson St.

The results of the analysis of the unsignalized intersection of Calvary Dr. / Jefferson St. are summarized in the following table:

Intersection: 3 - Calvary Driveway / Jefferson St.

2017 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	>	**F** - 84.2	>	**F** - 6860	1	C - 25.7
	T	1	**F** - 84.2	1	**F** - 6860	1	C - 25.7
	R	>	**F** - 84.2	>	**F** - 6860	>	C - 25.7
WB	L	>	A - 0.0	>	**F** - 1492	>	C - 23.2
	T	1	A - 0.0	1	**F** - 1492	1	C - 23.2
	R	>	A - 0.0	>	B - 14.2	>	C - 23.5
NB	L	1	B - 14.0	1	C - 15.9	1	A - 1.0
	T	2	A - 1.5	2	A - 3.9	2	A - 1.4
	R	>	A - 0.0	>	A - 0.0	>	A - 1.3
SB	L	>	A - 0.0	>	B - 12.1	>	A - 0.1
	T	2	A - 0.0	2	A - 2.0	2	A - 0.9
	R	>	A - 0.0	>	A - 0.0	>	A - 0.9
Intersection:		***u - 1.4***		***u - 188***		***A - 1.9***	

2017 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	>	D - 27.1	>	**F** - 533	1	D - 25.4
	T	1	D - 27.1	1	**F** - 533	1	D - 25.4
	R	>	D - 27.1	>	**F** - 533	>	D - 25.4
WB	L	>	A - 0.0	>	**F** - 142	>	C - 22.8
	T	1	A - 0.0	1	**F** - 142	1	C - 22.8
	R	>	A - 0.0	>	B - 12.7	>	C - 23.0
NB	L	1	B - 11.4	1	B - 12.1	1	A - 0.3
	T	2	A - 0.2	2	A - 0.0	2	A - 1.0
	R	>	A - 0.0	>	A - 0.0	>	A - 1.0
SB	L	>	A - 0.0	>	B - 10.8	>	A - 0.8
	T	2	A - 0.0	2	A - 0.3	2	A - 1.0
	R	>	A - 0.0	>	A - 0.0	>	A - 1.0
Intersection:		***u - 0.6***		***u - 21.7***		***u - 2.1***	

Note: ">" designates a shared right or left turn lane.

Recommend signalization of Calvary Driveway / Jefferson St. (Half cycle length). Align existing driveway on east side of Jefferson with Calvary Driveway.

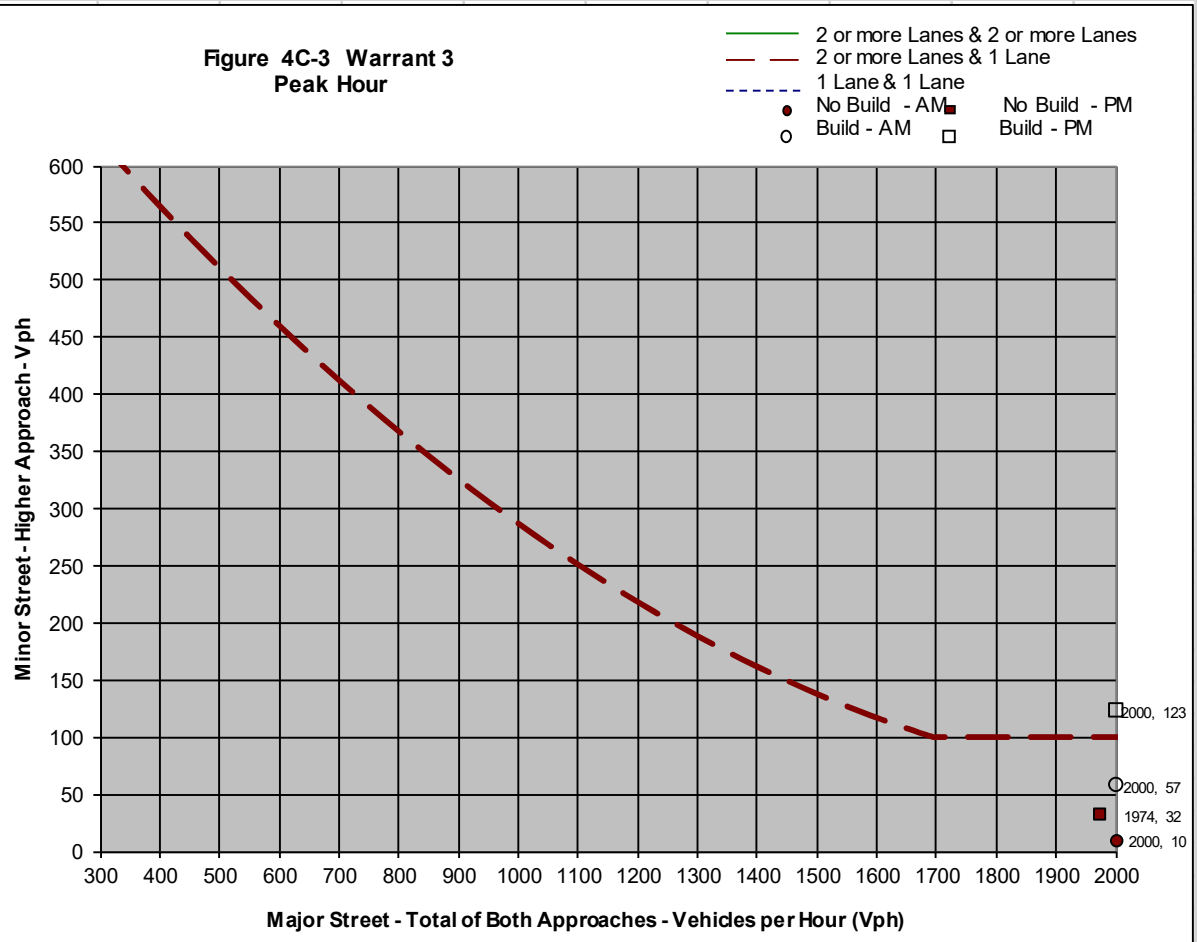
The intersection of Calvary Driveway / Jefferson St. is projected to fail massively in the BUILD condition associated with this project. This intersection may be a candidate for signalization.

Calvary Driveway is located approximately 900 feet north of Osuna Rd. and approximately 850 feet south of Ellison St., both being existing signalized intersections. It should also be noted that the Calvary Driveway serves as an access to Calvary Chapel Church which generates a high traffic volume on Saturday evenings and for each of the three church services on Sunday mornings. Over the past years, the church has been hiring police officers to direct traffic at their driveways, one of them being the access of the Calvary Driveway onto Jefferson St.

This intersection was tested for the Peak Hour (Warrant 3) signal warrant. During the weekday peak hour, it marginally warrants based on a single lane approach on the Calvary Driveway. Following is the Peak Hour Warrant graph demonstrating the warrant:

Project Name		Analysis Year Traffic Volumes					
Envirco Tract		**AM**	Major	Minor	**PM**	Major	Minor
Intersection		No Build	2144	10	No Build	1974	32
Calvary Dr. / Jefferson St.							
Analysis Year							
2017							
		Build	2301	57	Build	2064	123
Number of Lanes							
Major St.	4						
Minor St.	1						

Figure 4C-3 Warrant 3
Peak Hour



Comments - Peak Hour Signal Warrant is met based on single approach on Calvary Driveway.

In addition, the driveway on the east side of Jefferson shall be relocated north to line up with Calvary Dr.

The analysis of the signalized intersection of the Calvary Driveway with Jefferson St. is based on a half cycle length for a two phase signal. This signal should provide capacity for the proposed development as well as facilitating Calvary Chapel's peak weekend traffic. The calculated average delays for the signalized intersection are very reasonable. In addition, coordinating the traffic signals along Jefferson St. and adding progression will alleviate some of the southbound queuing at the intersection of Osuna Rd. / Jefferson St. as well as the entire corridor. The progression should optimize the green time along Jefferson allotting only a small percentage of the green time to the sides streets. This will create gaps along Jefferson St. for all of the driveways along the corridor allowing for vehicles to turn onto and from Jefferson with greater ease.

Currently, the existing traffic signals of Ellison St. / Jefferson St. and Osuna Rd. / Jefferson St. are approximately 1,730 feet apart. The new spacing with the proposed traffic signal would be approximately 850 feet from Ellison to the Calvary Driveway and approximately 880 feet from the Calvary Driveway to Osuna Rd. See the Progression Analysis dated January 26, 2016 for further detail information. This study recommends that the intersection of the Calvary Chapel Driveway / Jefferson St. be signalized after a full Traffic Signal Warrant Analysis is conducted and shows to warrant a traffic signal in the future.

Intersection #4 – Driveway "A" / Jefferson St.

Driveway "A" is an existing driveway east of the project. The main access for this project will be the fourth leg of this intersection. The results of the analysis of the unsignalized intersection of Driveway "A" / Jefferson St. are summarized in the following table:

Intersection: **4 - Driveway "A" / Jefferson St.**

		2017 AM Peak Hour BUILD (EXIST. GEOM.)				2017 PM Peak Hour BUILD (EXIST. GEOM.)			
		NO BUILD		BUILD		NO BUILD		BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	>	A - 0.0	>	**F** - 126	>	A - 0.0	>	**F** - 146
	T	1	A - 0.0	1	**F** - 126	1	A - 0.0	1	**F** - 146
	R	1	A - 0.0	1	B - 13.8	1	A - 0.0	1	C - 15.7
WB	L	>	D - 34.2	>	**F** - 104	>	D - 33.0	>	**F** - 55.1
	T	1	A - 0.0	1	**F** - 104	1	A - 0.0	1	**F** - 55.1
	R	>	D - 34.2	>	**F** - 104	>	D - 33.0	>	**F** - 55.1
NB	L	1	A - 0.0	1	B - 12.1	1	A - 0.0	1	B - 12.9
	T	2	A - 0.0	2	A - 0.0	2	A - 0.0	2	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0	>	A - 0.0
SB	L	>	B - 11.2	>	B - 12.1	>	B - 11.1	>	B - 11.1
	T	2	A - 0.0	2	A - 0.0	2	A - 0.0	2	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0	>	A - 0.0
Intersection:		***u - 0.0***		***u - 1.3***		***u - 0.3***		***u - 1.1***	

Note: ">" designates a shared right or left turn lane.

Driveway "A" is recommended to be a full access unsignalized driveway to align with existing driveway on east side of

As with many unsignalized driveways on major streets in Albuquerque, this driveway is projected to experience some long delays on the side street (driveway). By virtue of the fact that there is a signal to the south of this driveway and there is a proposed signal to the north, then the two signals should work together to produce gaps in northbound and in southbound traffic on Jefferson St. to help let the side street traffic make left and right turns onto Jefferson St.

A second consideration for Driveway “A” is that the calculated southbound 95th percentile queue length on Jefferson at Osuna Rd. is projected to extend back to the proposed Driveway “A” and beyond, thus potentially blocking the driveway at times. This is a fairly common issue with other driveways on major roadways near major intersections.

Intersection #5 – Osuna Rd. / West Drive

This driveway is the westernmost existing driveway on Osuna Rd. for the project. It is a full access unsignalized driveway. The results of the analysis of the unsignalized intersection of Osuna Rd. / West Drive are summarized in the following table:

Intersection: **5 - Osuna Rd. / West Dr.**

2017 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	>	C - 16.9	>	C - 20.7	>	B - 14.7
	T	2	A - 0.0	2	A - 0.0	3	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0
WB	L	1	B - 14.3	1	B - 14.2	1	D - 25.3
	T	2	A - 0.0	2	A - 0.0	3	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0
NB	L	>	**F** - 1735	>	**F** - 790	>	C - 17.2
	T	2	**F** - 1735	2	**F** - 790	2	C - 17.2
	R	>	**F** - 790	>	**F** - 790	>	C - 17.2
SB	L	>	**F** - 9999	>	**F** - 7343	>	B - 11.4
	T	1	**F** - 9999	1	**F** - 7343	1	B - 11.4
	R	1	**F** - 9999	1	**F** - 7343	1	B - 11.4
Intersection:		***u - 97.9***		***u - 183***		***u - 2.3***	

2017 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
EB	L	>	B - 12.6	>	B - 13.3	>	C - 22.8
	T	2	A - 0.0	2	A - 0.0	3	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0
WB	L	1	B - 14.1	1	B - 14.0	1	C - 24.6
	T	2	A - 0.0	2	A - 0.0	3	A - 0.0
	R	>	A - 0.0	>	A - 0.0	>	A - 0.0
NB	L	>	**F** - 318	>	**F** - 756	>	C - 17.1
	T	2	**F** - 318	2	**F** - 756	2	C - 17.1
	R	>	**F** - 141	>	**F** - 272	>	C - 17.1
SB	L	>	**F** - 731	>	**F** - 6917	>	C - 17.0
	T	1	**F** - 731	1	**F** - 6917	1	C - 17.0
	R	1	B - 14.5	1	C - 15.2	1	C - 17.0
Intersection:		***u - 7.3***		***u - 291***		***u - 4.0***	

Note: ">" designates a shared right or left turn lane.

Existing full access unsignalized driveway. No recommendation.
(Mitigated Geometry is Osuna Widening Project geometry).

The operation of West Drive based on projected 2017 AM and PM Peak Hour BUILD Volumes in this report is, as expected, excessive due to the high volumes of traffic on Osuna Rd. The wide median in Osuna allows for staged left turns from the driveways onto Osuna. Thus, a vehicle desiring to turn left from the driveway onto Osuna will seek a gap in the Osuna directional traffic nearest the driveway, and travel from the driveway to the wide median refuge area where the vehicle will stop and wait for a break in the traffic travelling in the other direction on Osuna Rd. The staged left turns will operate somewhat better than what the table above would reflect.

Intersection #6 – Osuna Rd. / Middle Drive

This driveway is the middle existing driveway on Osuna Rd. for the project. It is a right-in, right-out only driveway. The results of the analysis of the unsignalized intersection of Osuna Rd. / Middle Drive are summarized in the following table:

Intersection: 6 - Osuna Rd. / Middle Dr.

2017 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
SB	L		A - 0.0	>	A - 0.0	>	A - 0.0
SB	T		A - 0.0	0	A - 0.0	0	A - 0.0
SB	R	1	C - 18.8	1	C - 19.9	1	C - 22.6
Intersection:		*u - 0.1*		*u - 0.1*		*u - 0.1*	

2017 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
SB	L	0	A - 0.0	>	A - 0.0	>	A - 0.0
SB	T	0	A - 0.0	0	A - 0.0	0	A - 0.0
SB	R	1	B - 15.0	1	C - 15.2	1	C - 17.0
Intersection:		*u - 0.1*		*u - 0.1*		*u - 0.1*	

Note: ">" designates a shared right or left turn lane.

Existing right-in, right-out only unsignalized driveway. No recommendation.
(Mitigated geometry is Osuna Widening Project geomtry.)

The operation of Middle Drive based on projected 2017 AM and PM Peak Hour BUILD Volumes in this report is acceptable. Therefore, no recommendation is made.

Intersection #7 – Osuna Rd. / Valero Drive

This driveway is the easterly existing driveway on Osuna Rd. for the project. The results of the analysis of the unsignalized intersection of Osuna Rd. / Valero Drive are summarized in the following table:

Intersection: 7 - Osuna Rd. / Valero Driveway

2017 AM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
SB	L		A - 0.0	0	A - 0.0	0	A - 0.0
SB	T		A - 0.0	0	A - 0.0	0	A - 0.0
SB	R	1	C - 22.9	1	D - 27.3	1	D - 33.5
Intersection:		*u - 0.5*		*u - 0.7*		*u - 0.9*	

2017 PM Peak Hour BUILD

		(EXIST. GEOM.) NO BUILD		(EXIST. GEOM.) BUILD		(MIT. GEOM.) BUILD	
		Lanes	LOS-Delay	Lanes	LOS-Delay	Lanes	LOS-Delay
SB	L	0	A - 0.0	0	A - 0.0	0	A - 0.0
SB	T	0	A - 0.0	0	A - 0.0	0	A - 0.0
SB	R	1	C - 16.5	1	C - 17.7	1	C - 20.5
Intersection:		*u - 0.4*		*u - 0.5*		*u - 0.6*	

Note: ">" designates a shared right or left turn lane.

Existing right-in, right-out only unsignalized driveway. No recommendation.
(Mitigated Geometry is Osuna Widening Project geometry.)

The operation of Valero Driveway based on projected 2017 AM and PM Peak Hour BUILD Volumes in this report is acceptable. Therefore, no recommendation is made.

Intersection #8 – Driveway "B" / Jefferson St.

Driveway "B" is an existing driveway for the Valero Gas Station. It will be shared access for this project. The results of the analysis of the unsignalized intersection of Driveway "B" / Jefferson St. are summarized in the following table:

Intersection: 8 - Driveway "B" / Jefferson St.

2017 AM Peak Hour BUILD **2017 PM Peak Hour BUILD**

		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay		(EXIST. GEOM.) BUILD Lanes	LOS-Delay		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay		(EXIST. GEOM.) BUILD Lanes	LOS-Delay
EB	L		A - 0.0	>	A - 0.0	L		0	A - 0.0	>	A - 0.0	
	T		A - 0.0	0	A - 0.0	T		0	A - 0.0	0	A - 0.0	
	R	1	B - 13.5	1	B - 13.7	R		1	B - 14.5	1	C - 15.2	
Intersection:			***u - 0.1***		***u - 0.1***				***u - 0.1***		***u - 0.2***	

Note: ">" designates a shared right or left turn lane.

No Recommendation.

The operation of Driveway "B" based on projected 2017 AM and PM Peak Hour BUILD Volumes in this report is acceptable. Driveway "B" is an existing right-in, right-out only unsignalized driveway.

Intersection #9 – Driveway "C" / Jefferson St.

Driveway "C" is a proposed driveway at the north of the project. The results of the analysis of the unsignalized intersection of Driveway "C" / Jefferson St. are summarized in the following table:

Intersection: 9 - Driveway "C" / Jefferson St.

2017 AM Peak Hour BUILD **2017 PM Peak Hour BUILD**

		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay		(EXIST. GEOM.) BUILD Lanes	LOS-Delay		(EXIST. GEOM.) NO BUILD Lanes	LOS-Delay		(EXIST. GEOM.) BUILD Lanes	LOS-Delay
EB	L		A - 0.0	>	A - 0.0	L		0	A - 0.0	>	A - 0.0	
	T		A - 0.0	0	A - 0.0	T		0	A - 0.0	0	A - 0.0	
	R	1	A - 0.0	1	C - 16.2	R		1	A - 0.0	1	B - 13.6	
Intersection:			***u - 0.0***		***u - 0.1***				***u - 0.0***		***u - 0.1***	

Note: ">" designates a shared right or left turn lane.

Driveway does not existing in the NO BUILD condition. No recommendation.

The operation of Driveway "C" based on projected 2017 AM and PM Peak Hour BUILD Volumes in this report is acceptable. Driveway "C" is proposed as a right-in, right-out unsignalized driveway.

It should be noted that Levels of Service (LOS) for unsignalized intersections cannot be compared directly with Levels of Service for signalized intersections. LOS for unsignalized intersections is based on reserve capacity, which is converted to generalized levels of delay; LOS for signalized intersections is based on actual delay in seconds.

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

Generally speaking, a Level-of-Service D or better is an acceptable parameter for design purposes.

CONCLUSIONS

This analysis was conducted using the following methodology: Trip Generation was established using the Institute of Transportation Engineers' (ITE's) Trip Generation Manual (9th Edition). Generated Trips were distributed proportionately based on the Population Data Analysis Subzones within a 2-mile radius of the site for commercial and citywide for office; growth rates of background traffic volumes were established based on a ten-year history of Average Weekday Traffic Volumes published by the Mid-Region Council of Governments; and the intersection analyses were performed in accordance with the 2010 Highway Capacity Manual utilizing Synchro 8 software. The Traffic Impact Study showed a moderate increase in traffic congestion for the adjacent transportation network based on 100% buildout of the proposed project.

The City of Albuquerque desires to investigate the feasibility of adding a right turn lane for the southbound movement at Osuna / Jefferson given the queue length at Osuna / Jefferson. Construction of a new southbound right turn lane on Jefferson at Osuna would provide a benefit to the operation of the intersection by reducing both queuing and delays. However, at present there is insufficient available right-of-way on Jefferson St. to construct the needed right turn lane.

In summary, the proposed development of the Envirco Tract at the northwest corner of Osuna Rd. / Jefferson St. will present no significant adverse impact to the adjacent transportation system provided that the following recommendations are followed:

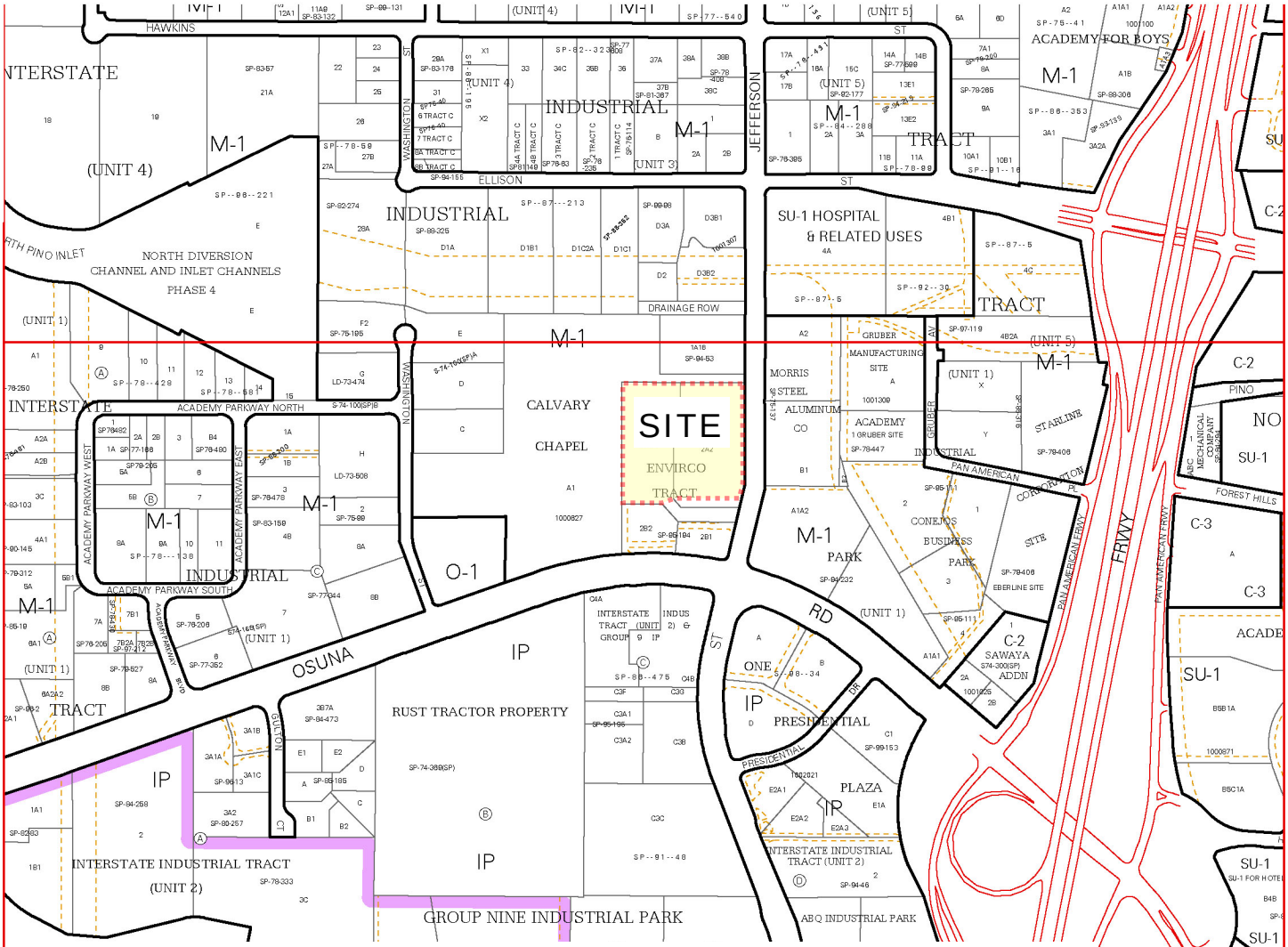
RECOMMENDATIONS

FROM IMPLEMENTATION YEAR (2017) ANALYSIS

- Design and construction of the proposed development should be such that adequate site distances are maintained at all proposed driveways and intersections, and at existing intersections contingent to this site.
- The westbound left turn lane and adjacent two-way left turn lane at Ellison / Jefferson should be restriped to create a 400-foot westbound left turn lane plus transition.
- Access to the project should be via a number of restricted and full access unsignalized driveways on Osuna Rd. and Jefferson St. as depicted on the preliminary site development plan on Page A-3 in the Appendix of this report.
- Driveway "A" on Osuna Rd. should be constructed as a full access unsignalized intersection aligned with an existing driveway on the east side of Jefferson St. approximately 430 feet north of Osuna Rd. (centerline to centerline).
- Calvary Dr. / Jefferson St. meets the Peak Hour Signal Warrant based on weekday traffic volumes generated by the proposed Envirco Tract development. It also will meet the peak hour warrants over the weekend based on traffic generated by Calvary Chapel on Saturday evening and Sunday morning and midday. It is recommended that the existing intersection of the Calvary Driveway / Jefferson St. be signalized. The new signal should be equipped to be compatible with future adaptive signal technology that may be implemented in the future by the City for the coordinated signal system on Osuna and the new coordinated system on Jefferson from Osuna Rd. to Ellison St. The new signal, therefore, should be designed and constructed to incorporate individual lane monitoring loop detectors in the pavement as well as pedestrian push buttons to accommodate pedestrians crossing Jefferson St. or the Calvary Driveway.
- A northbound and southbound left turn lane is recommended for Jefferson St. at the Calvary Driveway. The northbound and southbound left turn lanes should be constructed to the maximum length possible based on field / design constraints. The eastbound approach on the Calvary Driveway at Jefferson shall be designed and constructed to implement an eastbound left turn lane (a minimum length of 100 feet plus transition) and an eastbound thru / right turn lane. The westbound approach (driveway) can be a single lane approach.
- Driveway "C" should be constructed as a right-in, right-out only driveway on Jefferson St. approximately 130 feet south of the Calvary Driveway (centerline to centerline).
- Driveway "B" on Jefferson St. and the three existing driveways along Osuna Rd. shall be maintained and operated as they exist.
- Design and construction of public improvements in public right-of-way associated with the Envirco Tract Development shall meet the requirements of the City of Albuquerque Development Process Manual, current edition.
- The design of this project should optimize the lengths of the existing northbound and southbound left turn lanes at Osuna Rd. / Jefferson St. without jeopardizing other complimentary left turn lanes. It is recommended that the northbound left turn lane be lengthened by reducing the existing median width.

Appendix

APPENDIX



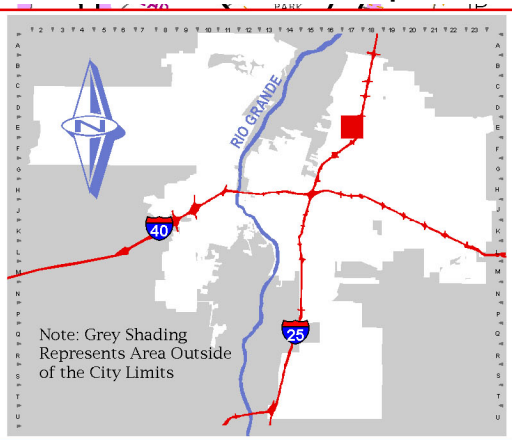
Envirco Tract

(Osuna Rd. / Jefferson St.)

Aerial Map

Albuquerque Geographic Information System

Map amended through: 1/24/2011



Zone Atlas Maps
D & E-17-Z

Selected Symbols

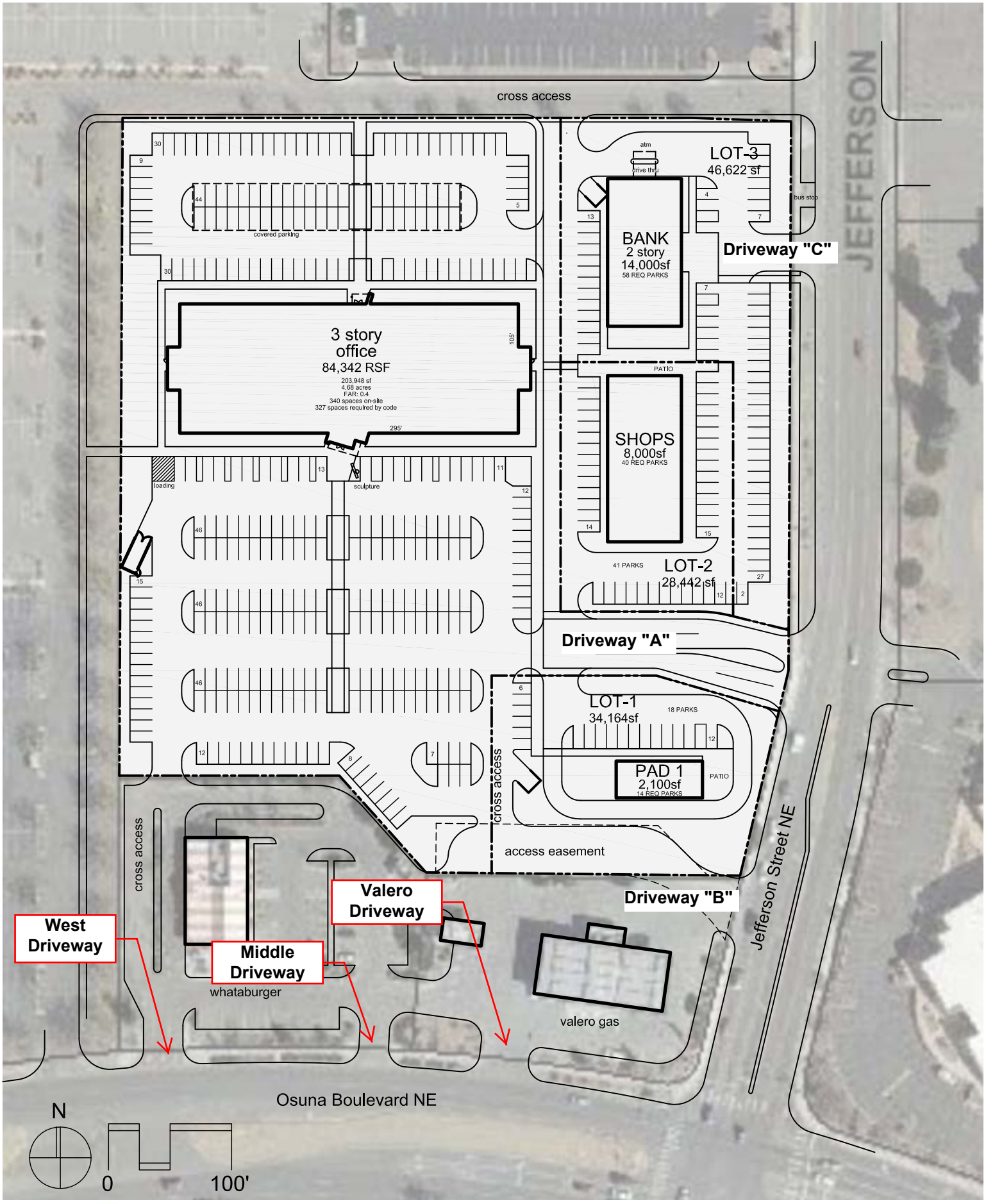
- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 750 1,500 Feet

Envirco Tract

(Osuna Rd. / Jefferson St.)

Aerial Map



Office Building Shell Concept 5g

6701 Jefferson NE
Albuquerque, New Mexico April 29, 2015

ARGUS INVESTMENT REALTY

DEKKER PERICH SABATINI ARCHITECTURE DESIGN INSPIRATION

2040 Long Range Roadway System

- Interchange/Crossing
- Interchange/Crossing, Post 2040
- Freeways
- Regional Principal Arterial
- Community Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Proposed Regional Principal Arterial
- Proposed Community Principal Arterial
- Proposed Minor Arterial
- Proposed Major Collector
- Proposed Minor Collector
- Proposed Regional Principal Arterial, Post 2040
- Proposed Community Principal Arterial, Post 2040
- Proposed Minor Arterial, Post 2040
- Proposed Major Collector, Post 2040
- Proposed Minor Collector, Post 2040
- Classification TBD, Post 2040

The Long Range Roadway System (LRRS) provides future recommended roadways and their regional role. This network includes roadways that are not expected to be constructed in the timeframe of the 2040 MTP, however they are included to in order to identify future needed connections.

The LRRS builds upon functional classification, by considering the character of the roadway, its role in the regional network, the types of trips taken, and the needs to all users.

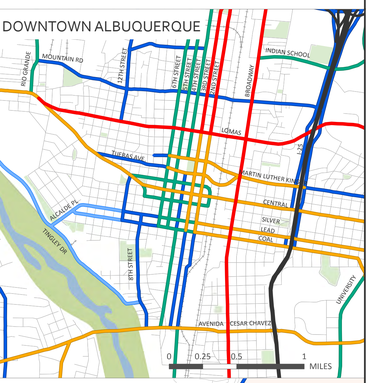
REGIONAL PRINCIPAL ARTERIAL
Trips on regional principal arterials are primarily for traveling longer distances across the region. Regional principal arterials prioritize passenger vehicles and freight. These roadways should have high levels of access management.

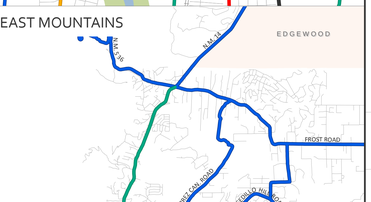
COMMUNITY PRINCIPAL ARTERIAL
Community principal arterial include many destinations with direct access from the arterial. Travel on community principal arterials tends to be over relatively short distances. Community principal arterials do not prioritize one mode over another; instead, they strive to achieve a balance for different user needs.

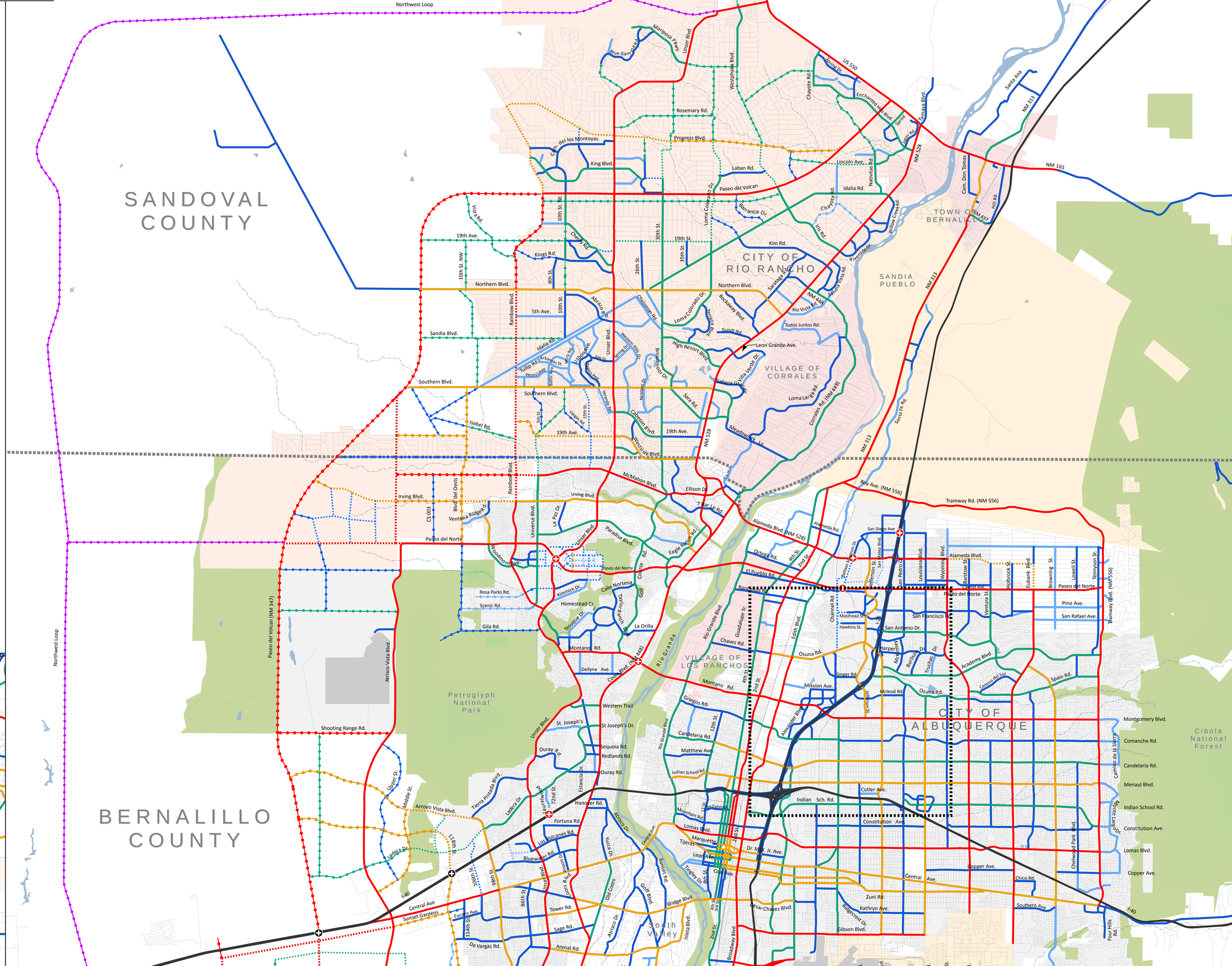
MINOR ARTERIAL
Minor arterials provide the connectivity of principal arterials, but they prioritize slower moving traffic, including bicyclists and pedestrians, to allow these modes additional options to reach destinations without needing to be on a principal arterial.

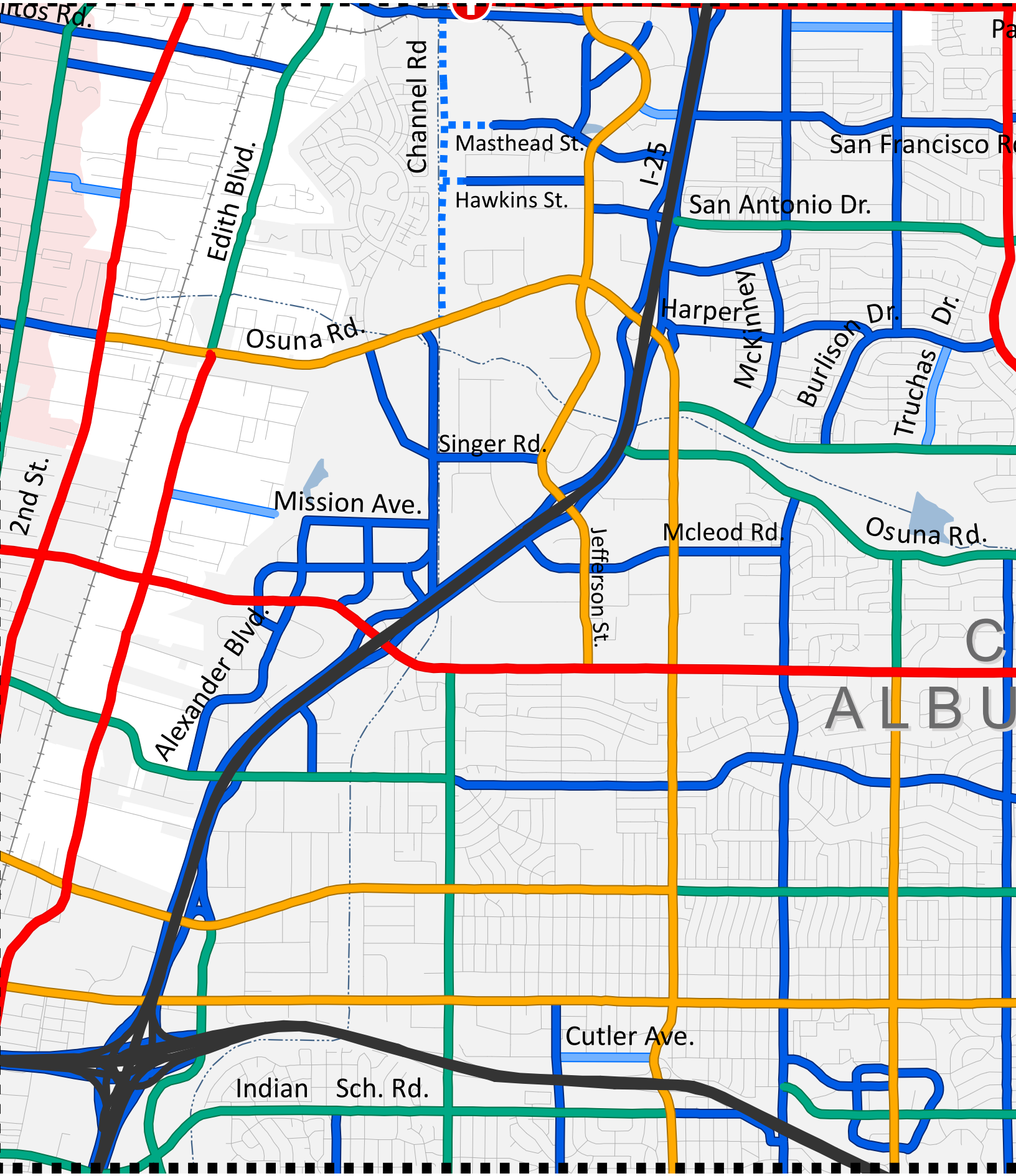
MAJOR COLLECTOR
Major collectors provide additional connectivity between destinations on arterials and neighborhoods. They prioritize bicyclists and pedestrians. Bicyclists should be able to use collectors for long segments of their trips while motorists primarily use them for short segments of their trips.

MINOR COLLECTOR
Minor collectors provide additional connectivity between destinations on arterials and neighborhoods.









Partial 2040 Long Range Roadway System Map