

Lomas Boulevard / 14th Street Traffic Study FINAL REPORT

City of Albuquerque



Lomas Boulevard / 14th Street Traffic Study Final Report

Albuquerque, New Mexico



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City of Albuquerque

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1. INTRODUCTION

The City of Albuquerque – Department of Municipal Development (Engineering Design Division) has requested that Souder, Miller & Associates conduct a traffic study at the intersection of Lomas Boulevard and 14th Street in southwest Albuquerque.

1.A. PROJECT PURPOSE

A traffic study at the intersection of Lomas Boulevard and 14th street will be conducted to determine the following:

- Traffic operations
- Alternatives for pedestrian and bicycle crossings

As part of this study, an evaluation of existing roadway conditions and collection of historical ADT, 12 – hour intersection turning movement counts, 12 – hour pedestrian and bicycle counts, and crash data will be completed. Traffic operation and analyses will be completed to develop alternatives that address vehicle, pedestrian, and bicycle access.

1.B. PROJECT DESCRIPTION

The project area is located at the intersection of Lomas Boulevard and 14th Street. Figure 1.B.1 displays the study limits.





FIGURE 1.B.1.
STUDY LIMITS



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2. EXISTING CONDITIONS

2.A. FUNCTIONAL CLASSIFICATION

Lomas Boulevard is classified as an urban principal arterial according to the Mid-Region Council of Governments' (MRCOG) Current Roadway Functional Classification Map published in 2010. 14th Street is classified as a residential street and is also signed as a bicycle boulevard.

2.B. EXISTING POSTED SPEED LIMITS

The existing posted speed limit for Lomas Boulevard in the study area is 35 mph.

The existing posted speed limit for 14th Street is 18 mph due to it being a bicycle boulevard.

2.C. PEDESTRIAN / BICYCLE FACILITIES

Currently, 14th Street is a bicycle boulevard that intersects Lomas Boulevard. Lomas Boulevard does not presently have any striped bicycle lanes and is not signed as a bicycle path. Sidewalk exists on both north and south side of Lomas Boulevard.

According to the MRCOG's Metropolitan Transportation Plan Pedestrian and Bicycle Projects map, 14th Street is labeled as an existing Bicycle Boulevard. Sidewalk exists on both east and west side of 14th street.

Figure 2.C.1. displays the existing pavement markings and signs that exist at the study intersection.

2.D. INTERSECTION TRAFFIC CONTROL

Currently, the intersection of Lomas Boulevard and 14th Street is a two way stop controlled intersection. 14th Street is a stop condition and Lomas Boulevard is a free flow condition. This is also displayed in Figure 2.C.1.

2.E. EXISTING INTERSECTION SIGHT TRIANGLE

An intersection sight distance analysis was conducted for northbound and southbound 14th Street and adequate sight distance of 430 feet exists for both directions on Lomas Boulevard.

2.F. EXISTING TYPICAL SECTIONS

Lomas Boulevard is currently a five lane section with two travel lanes and a designated left turn lane in each direction with a median. The typical section is four 12-foot through lanes, 18-foot median, two 7-foot parking lanes, 3-foot buffers for parking, and 4-foot sidewalks.

14th Street typical section consists of a 21 foot pavement section, standard curb and gutter, 9 foot buffers between the pavement section and sidewalk, and a varying 5.5 to 6.5 foot sidewalk.

Figure 2.F.1. displays the existing typical sections for the segments in the study area.



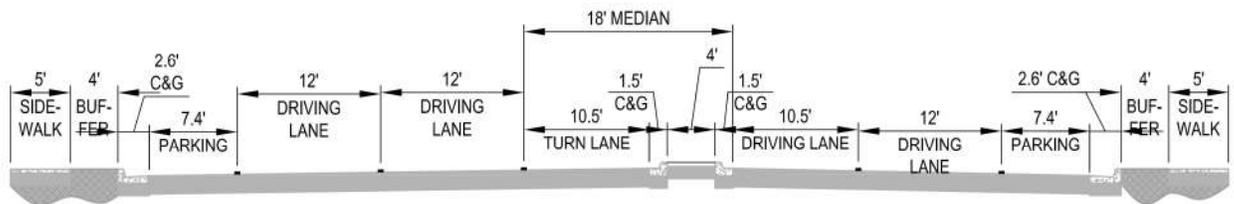
FIGURE 2.C.1.

EXISTING SIGNS AND PAVEMENT MARKINGS

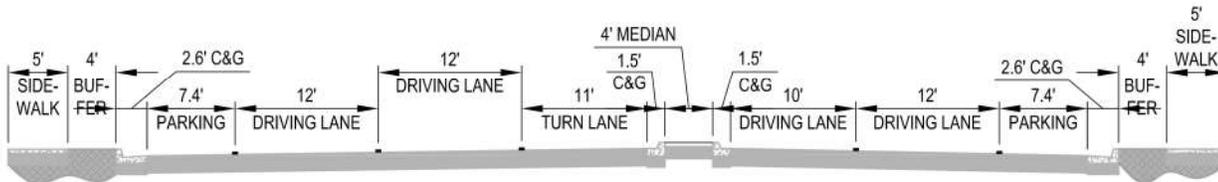


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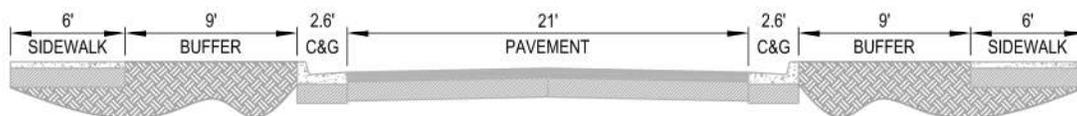
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TYPICAL SECTION "A"



TYPICAL SECTION "B"



TYPICAL SECTION "C"

FIGURE 2.F.1.
 EXISTING TYPICAL SECTIONS



3. DATA

3.A. TRAFFIC DATA

Prior to analyzing any facility for existing conditions, traffic data in the form of traffic volumes is obtained. Typically, there are two forms of data collected. Average Daily Traffic (ADT) in vehicles per day (VPD) and 9 – hour or 12 – hour movement counts in vehicles per hour (VPH). ADT counts are usually counted for a period of 48 – hour counts during weekdays along roadway segments using tube counters or other approved electronic counting devices. The 48 – hour counts are then averaged to obtain a 24 – hour average count. The ADT data collected criteria and methods employed for this traffic study complied with the NMDOT Data Collection Bureau’s Traffic Monitoring Standards and FHWA requirements.

12 – hour turn movement counts were utilized for this traffic study and the data was collected between the hours of 6:30 am and 6:30 pm to obtain the vehicle movements for each lane at each approach. The highest hourly intervals refer to the heaviest utilized time periods for a given intersection and are measured in vehicles per hour (VPH). These are more typically known as the design hours or “peak hours” and normally occur during the 7:00 am – 9:00 am hours, 11:00 am – 1:00 pm, and 4:00 pm – 6:00 pm hours of a given week or weekend day.

3.B. ADT / AWDT

The ADT and average weekday daily traffic (AWDT) volume for the study area was obtained through the Mid-Region Council of Government from the years 2010 to 2012. The ADT and AWDT data was collected in the region east of Central Avenue and west of 12th Street. Table 3.B.1. below displays the ADT and AWDT. As displayed in Table 3.B.1. below, the ADT and AWDT from the years 2010 through 2014 has been decreasing each year.

Lomas Boulevard ADT/AWDT				
YEAR	ADT		YEAR	AWDT
2014	11701		2014	12317
2013	12068		2013	12441
2012	12211		2012	12773
2011	12337		2011	12929
2010	12489		2010	13113
TABLE 3.B.1				

3.C. 12 – HOUR TURN MOVEMENT COUNTS

The 12 – hour turn movement counts collected for this traffic study also included pedestrian and bicycle counts. Cyclists who utilized the sidewalks and crossed at intersection crosswalks were counted as pedestrians. The weekday and weekend 12 – turn movement counts are displayed in Figures 3.B.1. and 3.B.2. respectively. Also, the weekday and weekend bike / pedestrian counts are displayed in Figures 3.B.3. and 3.B.4. respectively.



LEGEND

- = UNSIGNALIZED INTERSECTION
- XX = AM PEAK TRAFFIC VOLUME (7:30 AM - 8:30 AM)
- [XX] = MIDDAY PEAK TRAFFIC VOLUME (12:00 PM - 1:00 PM)
- (XX) = PM PEAK TRAFFIC VOLUME (4:30 PM - 5:30 PM)



FIGURE 3.B.1.
 WEEKDAY VEHICULAR TURN MOVEMENT COUNTS



LEGEND

- = UNSIGNALIZED INTERSECTION
- XX = AM PEAK TRAFFIC VOLUME (9:00 AM - 10:30 AM)
- [XX] = MIDDAY PEAK TRAFFIC VOLUME (12:15 PM - 1:15 PM)
- (XX) = PM PEAK TRAFFIC VOLUME (2:45 PM - 3:45 PM)



FIGURE 3.B.2.
 WEEKEND VEHICULAR TURN MOVEMENT COUNTS



LEGEND

-  = 12 - HOUR TOTAL BIKE COUNT
-  = 12 - HOUR TOTAL PED. COUNT



FIGURE 3.B.3.
 BIKE / PEDESTRIAN WEEKDAY COUNTS



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LEGEND

-  = 12 - HOUR TOTAL BIKE COUNT
-  = 12 - HOUR TOTAL PED. COUNT



FIGURE 3.B.4.
 BIKE / PEDESTRIAN WEEKEND COUNTS



4. TRAFFIC ANALYSIS AND FINDINGS

The 12 – hour turn movement counts were used to compute the LOS for the intersection for their respective peak hours. Highway Capacity Software by McTrans(HCS), which is used for a variety of roadway and intersection analysis. HCS may be use to analyze two-way or all-way stop sign controlled intersections, roundabouts, roadway capacities, freeway ramp merge/diverge areas, and lane weaving. This was the tool used to conduct the analysis and the results are shown below in Table 4.1.

The operational analysis of an intersection is based on the level of service (LOS) criteria. LOS is a term used to qualitatively describe intersection traffic operations LOS is expressed in letter grade format from A to F, with LOS A representing acceptable operating conditions and LOS F representing an unacceptable operation condition. LOS descriptions are or as follows:

- LOS A: Travel time is as efficient as the roadway or intersection facility can provide. Individual users travel unaffected by the presence of other vehicles.
- LOS B: Travel time remains efficient. Motorists have a high degree of freedom to select speed and operating conditions, but are slightly influenced by other road users.
- LOS C: The efficiency of travel is reduced, but delays are well within reasonable limits. Traffic flow is becoming more restricted as individual users interact substantially with other road users.
- LOS D: Travel time continues to increase, and motorist delay approaches but is still within reasonable limits. Motorists are able to travel at designated speeds for the facility, but freedom to maneuver in the traffic stream is restricted.
- LOS E: Travel time is substantially affected. Delays have reached and may exceed reasonable limits. The capacity of the facility utilized.
- LOS F: Travel along the roadway or through an intersection is very inefficient. Traffic flow is forced as the amount of traffic approaching a point exceeds the amount that can be served, thus resulting in roadway facility failure.

Lomas Blvd. / 14th St. LOS		
Peak Hour	Control Delay	LOS
Weekday - AM Peak	21.4	C
Weekday - Midday Peak	17.1	C
Weekday - PM Peak	21.7	C
Weekend - AM Peak	12.3	B
Weekend - Midday Peak	13.4	B
Weekend - PM Peak	15.8	C

TABLE 4.1.

The intersection of Lomas Boulevard and 14th Street operates with a satisfactory LOS C. Complete results from the HCS analysis can be found in Appendix A – HCS Results.



5. CRASH DATA AND ANALYSIS

The purpose of collecting and analyzing historic traffic crash data for a roadway during consecutive years (usually three years) is to identify possible crash patterns and to determine the probable cause of those crashes. The crash analysis includes patterns related to roadway conditions; time of day, weather conditions, type of crash, locations (i.e.; roadway, intersection, etc.), crash severity, and driver characteristics.

Utilizing crash data also assists with determining expected values of a specific type of crash and ultimately identifying benefit costs and estimated Rate of Return (ROR) for improving roadway segment or intersection locations within the study area. These “estimated” ROR values should not be construed as “true” values but more as approximated for planning purposes.

Crash data was requested from the years 2010 to the most recent data available from the MRCOG. Crash data can be found in Appendix B – Crash Data.

5.A. CRASH DATA

The turn movement counts were used to calculate the intersection crash rate for the study intersection. Crash types are displayed below which are broken down by the type of collision (fatal, injury, and property damage only) in Table 5.A.1.

LOMAS BLVD. / 14TH ST. CRASHES										
CRASH TYPES	2010		2011		2012		2013		2014	
	CRASHES	%	CRASHES	%	CRASHES	%	CRASHES	%	CRASHES	%
PROPERTY DAMAGE ONLY	1	100%	0	0%	0	0%	1	50%	0	0%
INJURY	0	0%	3	100%	0	0%	1	50%	0	0%
FATAL	0	0%	0	0%	0	0%	0	0%	0	0%
TOTAL CRASHES	1	100%	3	100%	0	0%	2	100%	0	0%

TABLE 5.A.1.

In order to create a comparison between crashes from one location to another, crash rates are used. These rates are based on data such as traffic volume, intersection, and period of time in years. Typical crash rate equations for intersections are rates per million of entering vehicles (RMEV) and for roadway intersections are rates per 1 million entering vehicles.

$$RMEV = \frac{C * 1,000,000}{n * 365 * l * v}$$

RMEV = Roadway Crash Rate per million entering vehicles

C = Total crashes in a n-year period

n = year period of study (minimum of 3 years, suggested 5 years)

v = total entering volume of vehicles per day

The crash rates for the study intersection was calculated and is shown below in Table 5.A.2.

LOMAS BLVD. / 14 ST. CRASH RATES						
YEAR	2010	2011	2012	2013	2014	AVERAGE
NUMBER OF CRASHES	1	3	0	2	0	-
CRASH RATE	0.21	0.64	0.00	0.43	0.00	0.26

TABLE 5.A.2.

Causes of the crashes were due to driver inattention (3), following to close, failure to yield, excessive speed, and unknown.

The Lomas Boulevard and 14th Street intersection crash rate of 0.26 is significantly lower than the overall average Albuquerque Metropolitan Area crash rate of 1.0602 reported in the 2009 to 2013 MRCOG Regional Safety Report.

It should be noted that the ADT for 14th Street was not available from the MRCOG's traffic count data. To estimate a reasonable ADT, the highest peak hour total (left, through, right) turn movement count from the 12 – hour turn movement count data collected was multiplied by 10 to estimate an ADT. This ADT was then summed with the MRCOG ADT data for each of the years analyzed to calculate an intersection crash rate.

6. HAWK WARRANT ANALYSIS

A Pedestrian Hybrid Beacon (PHB) (formerly known as High-Intensity Activated Crosswalk (HAWK)) is a special type of hybrid beacon used to warn and control traffic at an unsignalized location to assist pedestrians crossing a street or highway at a marked crosswalk. When activated, the PHB uses a red indication to inform drivers to stop, thereby creating a time period for pedestrians to cross the major roadway, in this case it would be Lomas Boulevard.

The PHB is not illuminated until it is activated by a pedestrian, triggering the warning flashing yellow lens on the major street. After a set amount of time, the indication changes to a solid yellow light to inform drivers to prepare to stop. The beacon then displays a dual solid red light to drivers on the major street and a walking person symbol to pedestrians. At the conclusion of the walk phase, the beacon displays an alternating flashing red light, and pedestrians are shown an upraised hand symbol with a countdown display informing them of the available crossing time. During the alternating flashing red lights, drivers can proceed after coming to a full stop and checking that pedestrians have already crossed their lane of travel. Each successive driver is legally required to come to a full stop before proceeding the alternating red phase. The alternating flashing red phase allows the driver delay to match the actual crossing needs of the pedestrian(s). Drivers can proceed with a stop-and-go operation during the flashing red phase if a pedestrian walks faster than the assumed walking speed and clears the roadway, as appropriate. If pedestrians need more time, then the drivers must remain stopped until the pedestrian finishes crossing the roadway. The ability to balance the needs of the pedestrian(s) with driver delay is a valuable component of the PHB treatment. Concerns have been expressed regarding driver behavior and understanding of the dark phase (non-illuminated) and flashing red phase. More information can be found in the Manual of Uniform Traffic Control Devices (MUTCD) pages 509 – 512.

The MUTCD requires a minimum of 20 total pedestrians per hour crossing a major street to warrant the use of a PHB (MUTCD Figure 4F-1 and 4F-2, page 510). The study for Lomas Boulevard recorded 37 cyclists and 57 pedestrians during a weekday 12-hour count (averaging 3.1 cyclists per hour and 4.75 peds per hour/maximum of 5 cyclists per hour and 12 peds per hour) and 31 cyclists and 80 pedestrians during the weekend 12-hour count (2.6 cyclists per hour and 6.7 peds per hour/maximum of 5 cyclists per hour and 11 peds per hour) (Appendix C). These counts are less than the 20 pedestrians per hour required by the MUTCD, the minimum criteria is not met and the use of a PHB is not warranted.



7. RECOMMENDATION FOR FACILITY IMPROVEMENTS

7.A. RECOMMENDATION 1 – NO BUILD

The first recommendation for the facility is a no build alternative. The intersection of Lomas Boulevard and 14th Street operates at a satisfactory LOS C. The volume of pedestrians and cyclists crossing Lomas Boulevard is minimal in comparison to the volumes to warrant a HAWK. There are no accidents involving pedestrians and/or cyclists reported in the MRCOG crash data. Adequate gaps in traffic on both streets accommodate the pedestrians and cyclists utilizing the area. Also, existing signage and pavement markings warning drivers on Lomas Boulevard that they will be encountering an area where there is permitted pedestrian and cyclist crossing. Therefore, no construction improvements are required.

7.B. RECOMMENDATION 2 – PEDESTRIAN REFUGE ISLAND/RIGHT IN-RIGHT OUT

Recommendation 2 involves construction a pedestrian refuge island and bulbouts at the Lomas Boulevard and 14th Street intersection (Figure 7.B.1. on page 19). The size and location of the refuge island will restrict traffic on 14th Street to only right out for northbound and southbound traffic, but will allow pedestrians and cyclists to utilize traffic gaps to cross one direction of travel at a time, while the bulbouts decrease actual crossing distances. Cost of construction for this alternative is estimated to be \$174,523.35 (Table 7.B.8. on page 18).

Tables 7.B.1. to 7.B.6. displays the percentage of right turn movements for both northbound and southbound 14th Street in comparison to the total turn movement counts for both the weekend and weekday from the data collected. From the tables below, it can be determined that from the low turn movement counts from either approach, the amount of vehicles impacted from the right in – right out condition would not adversely impact the existing LOS.

Weekend AM Peak Right Turn Percentage											
Start Time	14th Street Northbound					% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total	Left		Thru	Right	Total		
9:00 AM	3	0	3	6	50.0%	0	0	1	1	100.0%	
9:15 AM	1	1	4	6	66.7%	1	0	1	2	50.0%	
9:30 AM	0	1	7	8	87.5%	0	2	1	3	33.3%	
9:45 AM	1	0	2	3	66.7%	0	1	0	1	0.0%	
Total	5	2	16	23	69.6%	1	3	3	7	42.9%	

TABLE 7.B.1.

Weekend Midday Peak Right Turn Percentage										
Start Time	14th Street Northbound				% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total		Left	Thru	Right	Total	
12:15 PM	1	1	9	11	81.8%	0	1	3	4	75.0%
12:30 PM	0	1	10	11	90.9%	1	0	1	2	50.0%
12:45 PM	4	1	12	17	70.6%	0	0	2	2	100.0%
1:00 PM	3	0	4	7	57.1%	0	0	3	3	100.0%
Total	8	3	35	46	76.1%	1	1	9	11	81.8%

TABLE 7.B.2.

Weekend PM Peak Right Turn Percentage										
Start Time	14th Street Northbound				% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total		Left	Thru	Right	Total	
2:45 PM	1	1	3	5	60.0%	0	4	0	4	0.0%
3:00 PM	2	1	8	11	72.7%	1	1	2	4	50.0%
3:15 PM	0	0	5	5	100.0%	2	1	1	4	25.0%
3:30 PM	1	1	10	12	83.3%	0	0	2	2	100.0%
Total	4	3	26	33	78.8%	3	6	5	14	35.7%

TABLE 7.B.3.

Weekday AM Peak Right Turn Percentage										
Start Time	14th Street Northbound				% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total		Left	Thru	Right	Total	
7:30 AM	0	0	8	8	100.0%	1	0	0	1	0.0%
7:45 AM	0	3	8	11	72.7%	3	0	0	3	0.0%
8:00 AM	0	2	4	6	66.7%	2	2	3	7	42.9%
8:15 AM	1	1	7	9	77.8%	3	1	2	6	33.3%
Total	1	6	27	34	79.4%	9	3	5	17	29.4%

TABLE 7.B.4.

Weekday Midday Peak Right Turn Percentage										
Start Time	14th Street Northbound				% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total		Left	Thru	Right	Total	
12:00 PM	2	3	10	15	66.7%	2	1	0	3	0.0%
12:15 PM	0	1	10	11	90.9%	0	0	2	2	100.0%
12:30 PM	0	0	10	10	100.0%	0	1	2	3	66.7%
12:45 PM	2	1	14	17	82.4%	1	2	0	3	0.0%
Total	4	5	44	53	83.0%	3	4	4	11	36.4%

TABLE 7.B.5.

Weekday PM Peak Right Turn Percentage										
Start Time	14th Street Northbound				% Right Turns	14th Street Southbound				% Right Turns
	Left	Thru	Right	Total		Left	Thru	Right	Total	
4:30 PM	0	1	11	12	91.7%	1	0	2	3	66.7%
4:45 PM	0	2	9	11	81.8%	1	1	1	3	33.3%
5:00 PM	2	3	13	18	72.2%	0	2	0	2	0.0%
5:15 PM	2	3	13	18	72.2%	0	2	2	4	50.0%
Total	4	9	46	59	78.0%	2	5	5	12	41.7%

TABLE 7.B.6.

Also analyzed was the traffic operations from this recommendation. Table 7.B.7. displays the LOS from existing conditions to the conditions described above for recommendation 2. From the data analyzed, it can be concluded that the intersection operates at an acceptable LOS C for urban conditions. This is due to drivers not waiting for a driver to cross the roadway to make a left movement or thru movement. Drivers will only need to merge into traffic and not cross through traffic. This recommendation will affect a small amount of drivers due to the restricted movements, but it will enhance the intersection for drivers, pedestrians, and cyclists alike.

Lomas Blvd. / 14th St. LOS (Existing vs. Recommendation #2)								
Peak Hour	Existing Conditions				Recommendation #2 Conditions			
	Northbound 14th Street		Southbound 14th Street		Northbound 14th Street		Southbound 14th Street	
	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
Weekday - AM Peak	21.4	C	20.3	C	14	B	10.1	B
Weekday - Midday Peak	13.3	B	17.1	C	10.6	B	10.9	B
Weekday - PM Peak	14	B	21.7	C	9.7	A	12.8	B
Weekend - AM Peak	11.2	B	12.3	B	9.7	A	9.4	A
Weekend - Midday Peak	12.6	B	13.4	B	10.5	B	10.5	B
Weekend - PM Peak	11.4	B	15.8	C	10.0	A	10.3	B

TABLE 7.B.7.



Recommendation 2 - Pedestrian Refuge Island/Right In-Right Out Engineer's Opinion of Probable Construction Cost					
Item ID No.	Item Description	Unit	Quantity	Unit Price	Amount
6.01	Construction Project Sign, cip.	EA	2	\$500.00	\$1,000.00
19.01	Construction Traffic Control and Barricading, cip.	LS	1	\$15,000.00	\$15,000.00
116.02b	Placement Arterial Asphalt Concrete 2" thick, with machine laydown, for quantities greater than 200 SY, cip.	SY	5900	\$1.90	\$11,210.00
301.02	Subgrade Prep 12" at 95% compaction, including final grading less than 0.2', cip	SY	1475	\$2.80	\$4,130.00
302.01	Aggregate Base Course, crushed, 6" at 95%, place and compact, cip. SD 2407 & 2408	SY	1475	\$6.50	\$9,587.50
336.01	Prime Coat, emulsified asphalt	SY	1475	\$0.35	\$516.25
336.12	Tack Coat, Cationic, Emulsified Asphalt, cip.	SY	4425	\$1.00	\$4,425.00
340.0231	Wheelchair Access Ramp, 4" PCC, Std. Curb, per Std. Dwg. 2418, Includes header curb, cip.	SY	130	\$55.00	\$7,150.00
341.0231a	Detectable warning surface on new or existing wheelchair ramps, cip.	SF	150	\$22.00	\$3,300.00
340.050b	Curb and Gutter, standard, Portland Cement Concrete, incl. subgrade preparation, per LF. (For quantities or more than 300 LF, per site), cip. SD 2415A	SF	260	\$22.00	\$5,720.00
340.06	Curb and Gutter, median, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2408 & 2415B	LF	600	\$16.00	\$9,600.00
343.02	Existing Pavement, Asphalt Concrete, sawcut, remove and dispose, 6" or less in thickness, compl.	SY	500	\$11.00	\$5,500.00
343.08	Existing Curb and Gutter or Valley Gutter, Portland Cement Concrete, remove and dispose, compl.	LF	540	\$10.00	\$5,400.00
343.09	Existing Sidewalk and/or Drivepad, sawcut, remove and dispose, compl.	SY	90	\$15.00	\$1,350.00
346.100	Textured Median Pavement, 4" thick colored, Portland Cement Concrete, incl. Subgrade compaction, cip. SD 2408	SF	1420	\$10.00	\$14,200.00
440.001	Reflectorized Painted Marking, 4" width, cip.	LF	110	\$1.30	\$143.00
440.01	Reflectorized Painted Marking, Arrow, Symbol or Word, cip.	EA	4	\$75.00	\$300.00
450.001	Panel Sign, Aluminum, cip.	SF	90	\$20.00	\$1,800.00
450.01	Steel Post and Base for signs, cip.	LF	90	\$12.00	\$1,080.00
621.4.1	Mobilization (5%)	LS	1	\$5,320.59	\$5,320.59
641.4.2	Demobilization (5%)	LS	1	\$5,320.59	\$5,320.59
XXXX.XXX	Construction Surveying and Staking Services, compl.	LS	1	\$5,000.00	\$5,000.00
XXXX.XXX	Construction Management (7%)	LS	1	\$8,193.70	\$8,193.70
				Subtotal =	\$125,246.63
				Contingency @ 30% =	\$37,573.99
				NMGRT @ 7.1875% =	\$11,702.73
				Total =	\$174,523.35

TABLE 7.B.8.



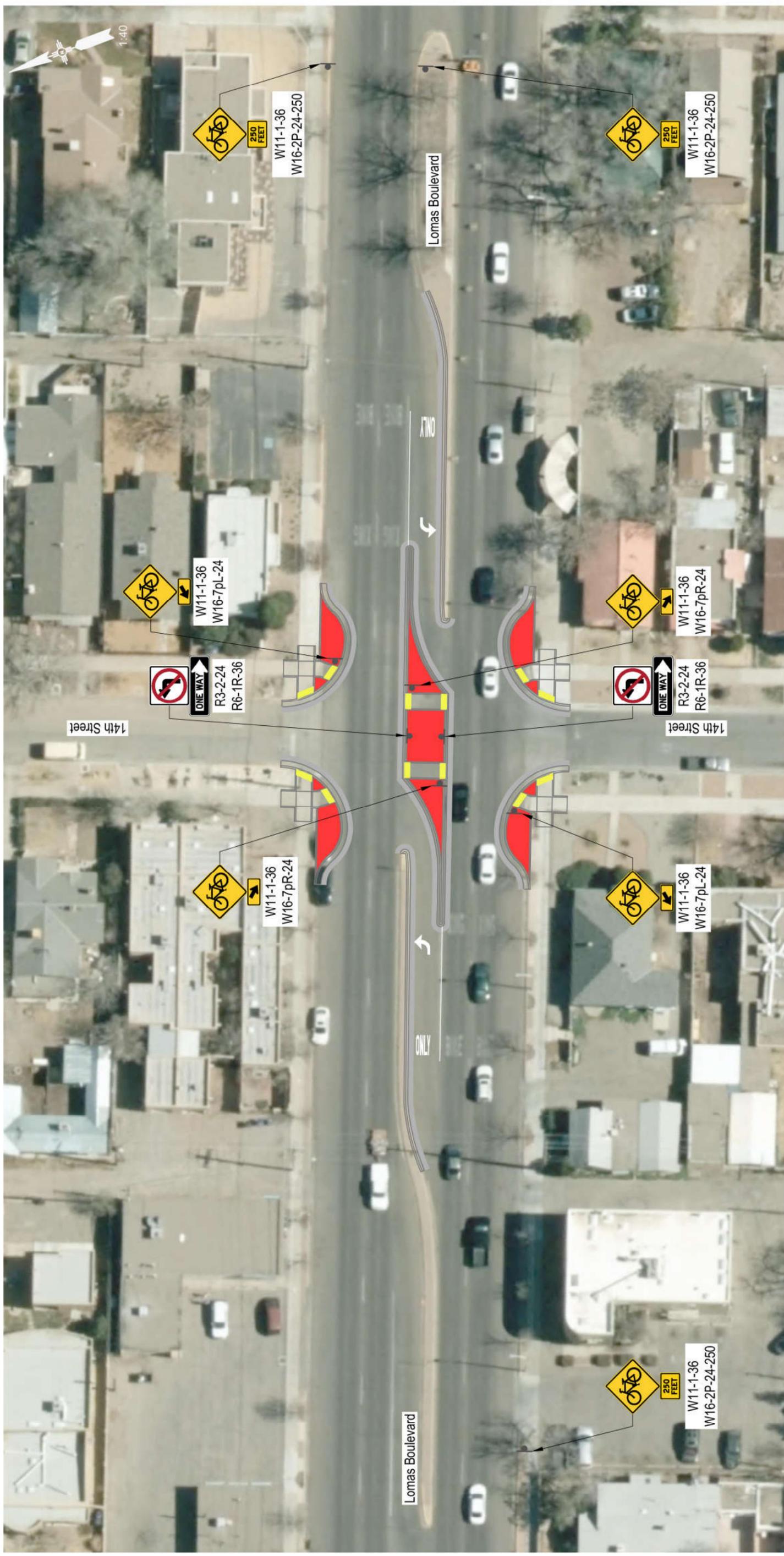


FIGURE 7.B.1.
 RECOMMENDATION 2 EXHIBIT

7.C. RECOMMENDATION 3 – 14TH STREET MEDIAN CLOSURE

This recommendation was added to the Lomas Boulevard / 14th Street Traffic Study at the request of the City of Albuquerque. If this recommendation is the preferred alternative, an additional traffic study would need to be conducted to analyze the effect this would have on the existing Lomas Boulevard / 14th Street intersection, surrounding streets, and impacts to city services (i.e. emergency first responders and solid waste) within the vicinity.

Recommendation 3 involves a full median closure of 14th Street through Lomas Boulevard (Figure 7.C.2. on page 23). The full median closure of 14th Street through Lomas Boulevard would restrict the following movements:

1. Eastbound Lomas Boulevard to northbound 14th Street
2. Westbound Lomas Boulevard to southbound 14th Street
3. Northbound 14th through Lomas Boulevard
4. Southbound 14th Street through Lomas Boulevard
5. 14th Street northbound to westbound Lomas Boulevard
6. Southbound 14th Street to eastbound Lomas Boulevard

The median closure would serve as a refuge island that would allow pedestrian and cyclists to utilize traffic gaps to cross. The altered traffic movements that would be affected with this recommendation are shown on Figure 7.C.1. on page 22. Cost of construction for this alternative is estimated to be \$162,437.22 (Table 7.B.9. on page 21).



Recommendation 3 - 14th Street Median Closure Engineer's Opinion of Probable Construction Cost					
Item ID No.	Item Description	Unit	Quantity	Unit Price	Amount
6.01	Construction Project Sign, cip.	EA	2	\$500.00	\$1,000.00
19.01	Construction Traffic Control and Barricading, cip.	LS	1	\$15,000.00	\$15,000.00
116.02b	Placement Arterial Asphalt Concrete 2" thick, with machine laydown, for quantities greater than 200 SY, cip.	SY	520	\$1.90	\$988.00
301.02	Subgrade Prep 12" at 95% compaction, including final grading less than 0.2', cip	SY	130	\$2.80	\$364.00
302.01	Aggregate Base Course, crushed, 6" at 95%, place and compact, cip. SD 2407 & 2408	SY	220	\$6.50	\$1,430.00
336.01	Prime Coat, emulsified asphalt	SY	130	\$0.35	\$45.50
336.12	Tack Coat, Cationic, Emulsified Asphalt, cip.	SY	390	\$1.00	\$390.00
340.0231	Wheelchair Access Ramp, 4" PCC, Std. Curb, per Std. Dwg. 2418, Includes header curb, cip.	SY	25	\$55.00	\$1,375.00
341.0231a	Detectable warning surface on new or existing wheelchair ramps, cip.	SF	40	\$22.00	\$880.00
340.06	Curb and Gutter, median, Portland Cement Concrete, incl. subgrade compaction, cip. SD 2408 & 2415B	LF	545	\$16.00	\$8,720.00
343.02	Existing Pavement, Asphalt Concrete, sawcut, remove and dispose, 6" or less in thickness, compl.	SY	690	\$11.00	\$7,590.00
343.08	Existing Curb and Gutter or Valley Gutter, Portland Cement Concrete, remove and dispose, compl.	LF	365	\$10.00	\$3,650.00
346.100	Textured Median Pavement, 4" thick colored, Portland Cement Concrete, incl. Subgrade compaction, cip. SD 2408	SF	4985	\$10.00	\$49,850.00
450.001	Panel Sign, Aluminum, cip.	SF	90	\$20.00	\$1,800.00
450.01	Steel Post and Base for signs, cip.	LF	80	\$12.00	\$960.00
621.4.1	Mobilization (5%)	LS	1	\$4,752.13	\$4,952.13
641.4.2	Demobilization (5%)	LS	1	\$4,752.13	\$4,952.13
XXXX.XXX	Construction Surveying and Staking Services, compl.	LS	1	\$5,000.00	\$5,000.00
XXXX.XXX	Construction Management (7%)	LS	1	\$7,318.27	\$7,626.27
				Subtotal =	\$116,573.02
				Contingency @ 30% =	\$34,971.91
				NMGRT @ 7.1875% =	\$10,892.29
				Total =	\$162,437.22

TABLE 7.B.9.



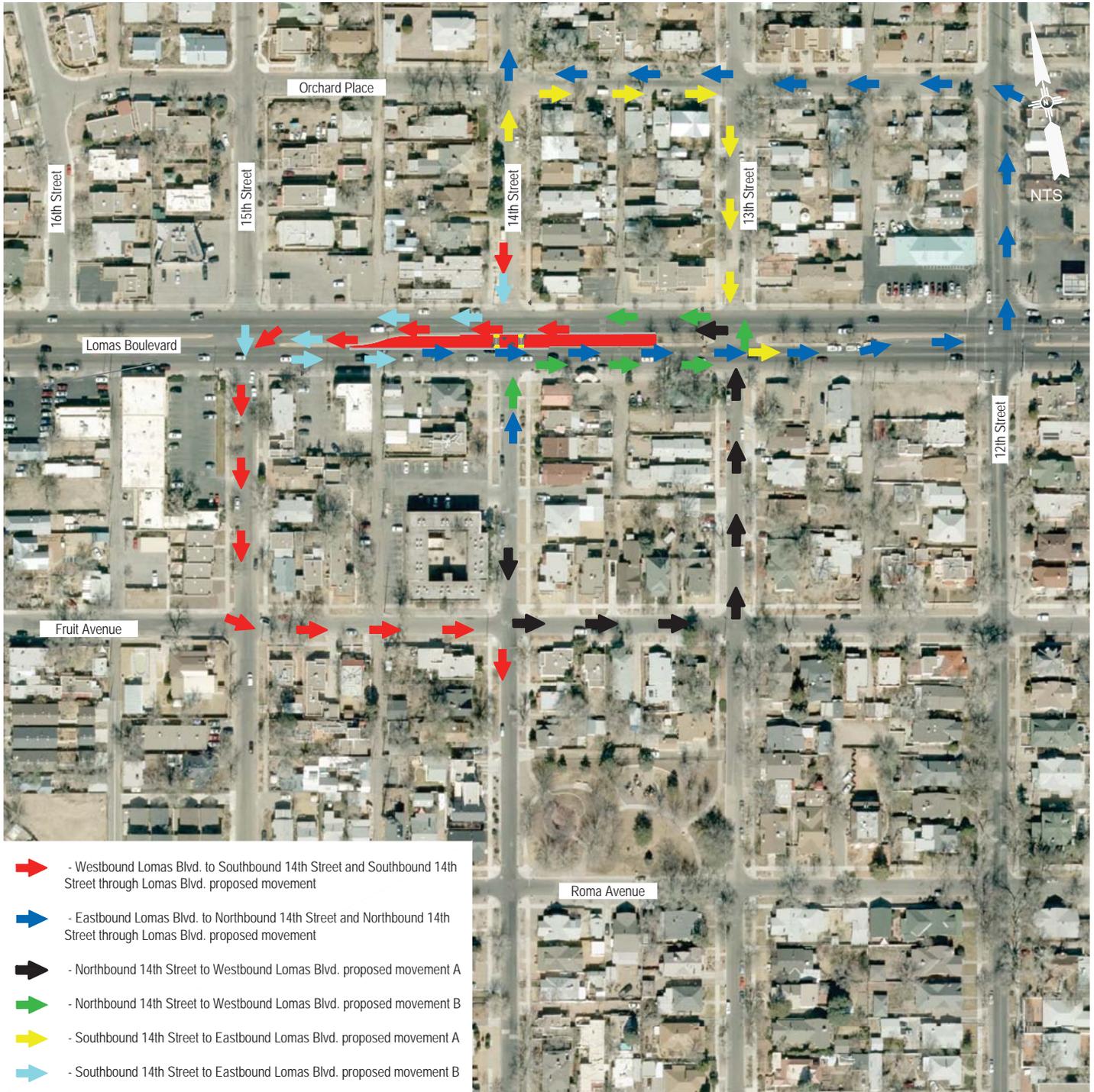


FIGURE 7.C.1.

RECOMMENDATION 3 TRAFFIC MOVEMENTS



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FIGURE 7.C.2.
RECOMMENDATION 3 EXHIBIT