

EAST CENTRAL AVE SAFETY STUDY



East Central Ave Safety Study

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Executive Summary

The East Central Ave corridor is noted for the combination of auto-oriented land uses and road design yet a high level of pedestrian activity and transit usage. A direct consequence is high crash rates, including a disproportionate number of pedestrian-involved crashes resulting in injuries or fatalities. Regional analysis by the Mid-Region Council of Governments (MRCOG) show crash rates consistently above the regional average, with one out of every five pedestrian deaths in Albuquerque occurring along East Central Ave in 2019. Since the study area has particularly high rates of crashes and a substantially larger portion of residents that are low-income and minority than the city collectively, addressing safety in this area is a social justice issue.

The purpose of this study is to identify existing safety challenges and specific recommendations and potential improvements that could be applied along the East Central Ave corridor from Louisiana Blvd to Eubank Blvd. Design and construction efforts will take place in later phases. Based on a review of existing roadway conditions and the sources and locations of crashes, this study identifies various design issues that create unsafe conditions along the corridor. Among the issues identified include long distances between crossings and high speeds between signalized intersections that can lead to severe crashes. In addition, East Central Ave features sidewalk conditions that adversely affect pedestrian travel, including the presence of obstructions along the sidewalks, uneven surfaces due to frequent driveways, and little separation between pedestrians and motorists.

This study identifies three tiers of recommendations based on feasibility and overall need. The first tier (**Tier 1**) represents a suite of recommendations that could be undertaken in the near-term and that specifically address existing conditions and design issues along the corridor. Depending on the success of those strategies, a set of additional measures (**Tier 2**) may be applied, including a temporary road diet using additional striping. The final tier (**Tier 3**) represents the long-term recommendation for the corridor: a permanent road diet in which the permanent infrastructure of the roadway is reconfigured. While such a reconfiguration comes with various challenges and the exact design is not yet known, a road diet on Central Ave is supported by various policy documents and regional planning analysis conducted by the Mid-Region Council of Governments and represents the most comprehensive long-term strategy for addressing pedestrian safety along the corridor.

- **Tier 1: Near-term recommendations:** HAWK signals, restriping/lane narrowing, pedestrian-scale lighting, intersection striping improvements, sidewalk improvements
- **Tier 2: Conditional measures:** Temporary road diet through striping; evaluation of median fencing
- **Tier 3: Long-Term Recommendation:** Permanent road diet and reconfiguration of the roadway infrastructure along the corridor



Existing Conditions

Project Background

Various studies and planning efforts have identified safety concerns along East Central Ave through the International District and highlighted the need to create a more pedestrian-oriented environment. Regional analysis by the Mid-Region Council of Governments (MRCOG) show crash rates consistently above the regional average, with one out of every five pedestrian deaths in Albuquerque occurring along East Central Ave in 2019. The purpose of this study is to identify specific recommendations and potential improvements that could be applied along the two-mile stretch of the corridor from Louisiana Blvd to Eubank Blvd. Design efforts will take place in later phases.

The built environment is a major contributor to crash rates and conditions along the corridor and presents a range of challenges that contribute to unsafe conditions for pedestrians. Central Ave is a major transit corridor with high levels of pedestrian activity. Vehicle speeds are high and there are no buffers or separation between the outside travel lanes and sidewalks. Sidewalks are in generally poor conditions with frequent obstructions and uneven surfaces. Due to these conditions, there are disproportionate consequences when common driving and pedestrian errors occur. These design issues exacerbate the social and public health challenges that are present along the corridor. Safety along Central Ave is also an issue of equity and social justice as low-income and minority populations are disproportionately represented in the study area.

This section describes the existing conditions throughout the study area. The purpose of this analysis is to understand the current transportation conditions, locations and sources of crashes, and to review the previous analyses and planning efforts conducted along Central Ave and in the International District. The subsequent section considers design factors that may be addressed along the corridor, as well as specific recommendations to address the identified safety concerns.

Study Area Characteristics and Existing Conditions

General Roadway Conditions

Central Ave is a principal arterial that traverses the city of Albuquerque from east to west. Central Ave is also a critical corridor for transit and there are two major transit routes along Central Ave through the study area: the ART Green Line (Route 777) and Route 66. Due to the presence of frequent transit service and the area demographics, there are a high number of pedestrians that travel along the corridor. However, sidewalks are not separated from vehicle traffic and are strewn with obstructions, while land uses are generally auto-oriented, creating unsafe conditions that result in conflicts among various users.

Central Avenue across the study area features three lanes in each direction plus a median/center turn lane. Lane widths vary slightly but are generally 10-11'. At Louisiana Blvd to the west of the study area the corridor transitions to two general purpose lanes in each direction plus dedicated transit lanes.



Figure 1: Typical Section from Louisiana Blvd to Wyoming Blvd with Raised Median



Figure 2: Typical Section from Wyoming Blvd to Eubank Blvd with Two Way Left Turn Lane



Travel Patterns and Operations

From a roadway performance perspective, Central Ave currently **operates well below capacity**. Traffic volumes across the study area range from 26,200 to 31,400 vehicle per day, while PM peak period volume-to-capacity are around 0.5 – well within the acceptable range – indicating only 50% of the roadway capacity is utilized at the highest traffic portion of the day (see Table 1). To the extent that congestion occurs along the corridor, it is related to delays at intersections and non-recurring congestion from traffic incidents.

Table 1: General Transportation Conditions in Study Area

Termini (west to east)	Daily Traffic Volume (2018)	Volume-to-Capacity (V/C) Ratio – PM Peak Period	Posted Speed (MPH)	Observed Speed – PM Peak Period
Louisiana Blvd to Pennsylvania Rd	31,400	EB: 0.53 WB: 0.51	35	EB: 27.2 WB: 25
Pennsylvania Rd to Wyoming Blvd	26,200	EB: 0.52 WB: 0.41	35	EB: 26.9 WB: 26.4
Wyoming Blvd to Zuni Rd	26,700	EB: 0.51 WB: 0.38	35	EB: 28.3 WB: 22.5
Zuni Rd to Eubank Blvd	28,800	EB: 0.53 WB: 0.33	40	EB: 26.5 WB: 27.6

Notes: Dates for observed traffic counts data vary by location (source: MRCOG TAQA tool); speed data taken from INRIX data on MRCOG TAQA tool for Tuesdays, Wednesdays, and Thursdays in September 2016



Posted speeds are 35 MPH from Louisiana Blvd to Zuni Rd and 40 MPH east of Zuni Rd, with average observed speeds around 26-28 MPH.¹ It is important to note that **observed speed** data is based on the average speed across the corridor rather than at segment mid-points where speeds are typically the highest. This speed differential is likely the result of intersection delays; major cross-streets such as Louisiana Blvd, Wyoming Blvd, and Eubank Blvd are all principal arterials where competing traffic movements cause motorists to wait for traffic signals to change. Though speed data is not available at segment mid-points, evidence suggests speeding is an issue between signalized intersections. See the section on sources of crashes for discussion of excessive speeding as a contributing factor.

Traffic Signals/Intersection Spacing

Signalized intersections are located about 0.5 miles apart along Central Ave through the study area. The exception is the intersection of Central Ave and Zuni Rd, which is located about 0.33 miles east of Wyoming Blvd and 0.17 miles west of Moon St. Due to the signal spacing, there are long distances between signalized pedestrian crossings, which creates an incentive for people to cross at uncontrolled or unmarked locations.

Access Control/Center Turn Lanes

The study area currently has raised medians with turn bays from Louisiana Blvd to Wyoming Blvd and from General Hodges St to Moon St that allow left turns at intersections and at some driveways. The raised medians in this area will be transformed into landscaped medians in the immediate future (refer to the Current Projects section for more information). The majority of the corridor to the east of Wyoming Blvd features a two-way left turn lane.

Sidewalk Conditions

In general, Central Ave features sidewalks of appropriate width along with adequate ramps at intersections and crosswalks. However, frequent driveways create uneven surfaces that require slope modification to ensure full ADA compliance. Detectable warning surfaces are also missing from the majority of curb ramps and will need to be installed. On the south side of Central Ave, utility poles create regular sidewalk obstructions along the entirety of the corridor, which will need to be addressed with passing spaces, sidewalks expansion, or utility relocation. Obstructions on the north side of Central Ave are more sporadic but involve similar conditions.

ADA Compliance

The three main factors that affect the overall ADA compliance include:

- 1) Maintaining a sidewalk width of over four feet*
- 2) Presence of curb ramps with warning surfaces at intersections and crosswalks*
- 3) Presence of obstructions that interfere with safe pedestrian travel along sidewalks*

¹ Overall average speed information at the segment level is available from MRCOG using data from INRIX.



A major obstacle along sidewalks throughout the study area is the presence of driveways and curb cuts that enable vehicle turning movements and create uneven sidewalk conditions. Preliminary analysis identified more than 100 driveways along the study area, including multiple driveway access points for many individual properties, of which approximately 35% would be in violation of the location criteria established in the Development Process Manual for minimum distances from intersections if the owners of these properties were to apply for a permit for site and building improvements. A full analysis of driveways and opportunities to manage access can be found in the Design Factors and Recommendations section.

Figure 3: Frequent Driveways along East Central Ave



Intersection Design

A preliminary review of intersections along the corridor revealed modest design and maintenance issues related to striping, sight distance, and ADA compliance. The results of this analysis are provided in Table 2. A preliminary review of curb return radii did not reveal any locations where the radii exceed the desired values provided in the DPM.

Table 2: Summary of Intersection Design Issues

Intersection	Location	Issue
Louisiana Blvd	Northeast Corner	Possible sight distance issues for southbound vehicles turning right (west) onto Central Ave and for westbound motorists turning north onto Louisiana Blvd (pedestrians may not be visible to motorists)
Alcazar St	Southeast Corner	Possible sight distance issues for northbound vehicles (building, bus stop, utility poles, sign structure); No detectable warning surfaces at curb ramp
Alcazar St	Southbound	Possible sight distance issues for southbound vehicles as a result of queuing at Louisiana; Queuing could impede southbound vehicles from turning left (east) or continuing southbound. No detectable warning surfaces intersections on north side of Central Ave.
Pennsylvania Rd	Northbound / Southeast Corner	Possible sight distance issues for northbound vehicles turning right (east) onto Central Ave
Pennsylvania Rd	Southbound / Northeast Corner	Sight distance issue for southbound vehicles turning right
Pennsylvania Rd	All corners	No detectable warning surfaces present
Wisconsin St	Driveway to East of Wisconsin	Vehicle likely coming out of McDonald's parking lot trying to turn left (east) onto Central Ave, disrupts intersection movements and creates potential conflicts. Extending median nose may help prevent vehicles from attempting this maneuver.
Wisconsin St	All corners	No detectable warning surfaces present
Wyoming Blvd	Northwest Corner	Bollard (immovable object) is in place to protect fire hydrant (designed as a breakaway object) and creates higher risk of injury if an errant vehicle collides with it
Wyoming Blvd	Northwest Corner	Sidewalk obstructions create risks to pedestrians and are not ADA compliant; no detectable warning surface present
Wyoming Blvd	Southeast Corner	Sidewalk obstructions create risks to pedestrians and are not ADA compliant; no detectable warning surface present
Wyoming Blvd	Southwest Corner	No detectable warning surfaces present; sidewalk obstructions create risks to pedestrians and are not ADA compliant



Intersection	Location	Issue
Wyoming Blvd	Southwest Corner	Deteriorating crosswalk striping
Zuni Blvd	Northwest Corner	Deteriorating crosswalk striping
Zuni Blvd	Northwest Corner	No detectable warning surfaces present; sidewalk obstructions create risks to pedestrians and are not ADA compliant
Zuni Blvd	Southwest Corner	No detectable warning surfaces present; sidewalk obstructions create risks to pedestrians and are not ADA compliant
Moon St	Southbound / Northeast Corner	Possible sight distance issues for southbound vehicles turning right (west) onto Central; no detectable warning surfaces present
Moon St	Northwest corner	Sidewalk obstructions create risks to pedestrians and are not ADA compliant
Moon St	Northbound / Southwest Corner	Possible sight distance issues for northbound vehicles turning right (east) onto Central Ave
Moon St	Southwest Corner	Deteriorating crosswalk striping; no detectable warning surfaces present
Eubank Blvd	Northeast Corner	Sidewalk obstructions create risks to pedestrians and are not ADA compliant
Eubank Blvd	Overall Intersection	Deteriorating crosswalk and lane striping; no detectable warning surfaces; poor asphalt conditions throughout intersection

Safety/Crash Data Analysis

The Project Team completed a thorough review of crash data along the corridor, including analysis of locations, severity, and sources of crashes. This section considers total crashes and bicycle and pedestrian-involved crashes in both the study area and overall totals for the city of Albuquerque to allow for comparative analysis.

Overall, from 2013 to 2017 there were 1,464 total crashes and approximately 770 severe crashes in the study area. Annually, there were 293 crashes per year, or about four crashes every five days.

Table 3 contains total crashes, fatal crashes, and injury crashes for major intersections in the study area included in the MRCOG Fatal and Injury Network (HFIN), which highlights intersections and road segments that are prone to high rates of crashes and to severe crashes in particular. Per MRCOG data, vehicle crashes occur along the corridor at rates above the regional average, while pedestrian crashes occur at each of the major intersections at rates more than twice the regional average.

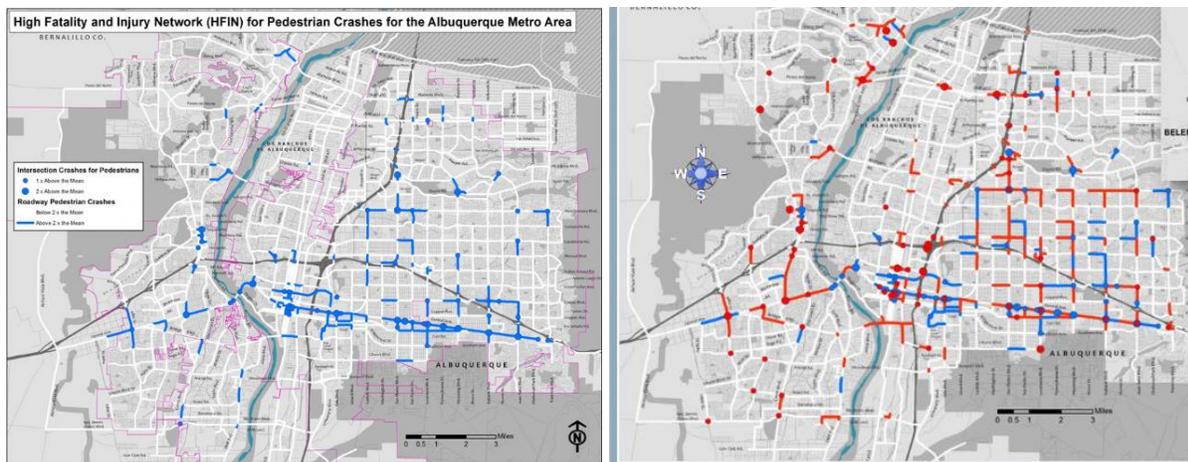


Table 3: Total Crashes at Major Intersections (2013-2017)

Intersection	Total Crashes [^]	Total Fatal Crashes [^]	Total Injury Crashes [^]	HFIN Intersection Crashes*	HFIN Pedestrian Intersection Crashes*
Central Ave & Louisiana Blvd	364	1	103	1x Above Mean	2x Above Mean
Central Ave & Eubank Blvd	310	0	87	1x Above Mean	2x Above Mean
Central Ave & Wyoming Blvd	173	0	50	—	2x Above Mean
Central Ave & Pennsylvania Ave	74	0	35	—	2x Above Mean
All Other Locations	543	5	486	N/A	N/A
Total	1,464	6	761		

Source: NMDOT (2013 to 2017)[^]; MRMPO (2011-2015)*

Figure 4: High Fatality and Injury Network and High Crash Rate Network (MRCOG)



The individual intersections along Central Ave with the highest number of crashes from 2013 to 2017 are Louisiana Blvd and Eubank Blvd; about 46% of all crashes in the study area took place at these two intersections, with crashes at Central Ave and Louisiana Blvd taking place at a rate of about one per five days. Overall, the majority of crashes in the study area are clustered between Louisiana Blvd and Wyoming Blvd, likely due to the greater number of destinations and pedestrian activity in this portion of the corridor. This concentration of crashes occurs despite the fact that the roadway design in the western part of the study area is somewhat more conducive to overall safety as the presence of medians reduces potential conflicts among motorists traveling in opposite



directions, creates informal refuge areas, and reduces the potential left turns that can be made across Central Ave.

The intersection with Louisiana Blvd is of particular concern as it has the highest amount of pedestrian-involved crashes (n=23), severe crashes (n=104), and overall crashes (n=364). The primary causes of crashes at Louisiana Blvd include failure to yield and driver inattention, reflecting the conflicts associated with turning movements. Though fewer crashes took place at Pennsylvania Rd than other signalized intersections in the study area, the intersection has the second highest number of pedestrian-involved crashes (n=10).

Note on Crash Data Sources

The information used in this safety analysis consists of crash rate data from NMDOT data from 2013 to 2017 and intersection and link-level crash rate data from MRCOG for the years 2011 to 2015. MRCOG rates are based on regional averages and contrasted against every intersection and individual point using the NMDOT data.

Figure 5: Crash Hot Spots Along Central Ave

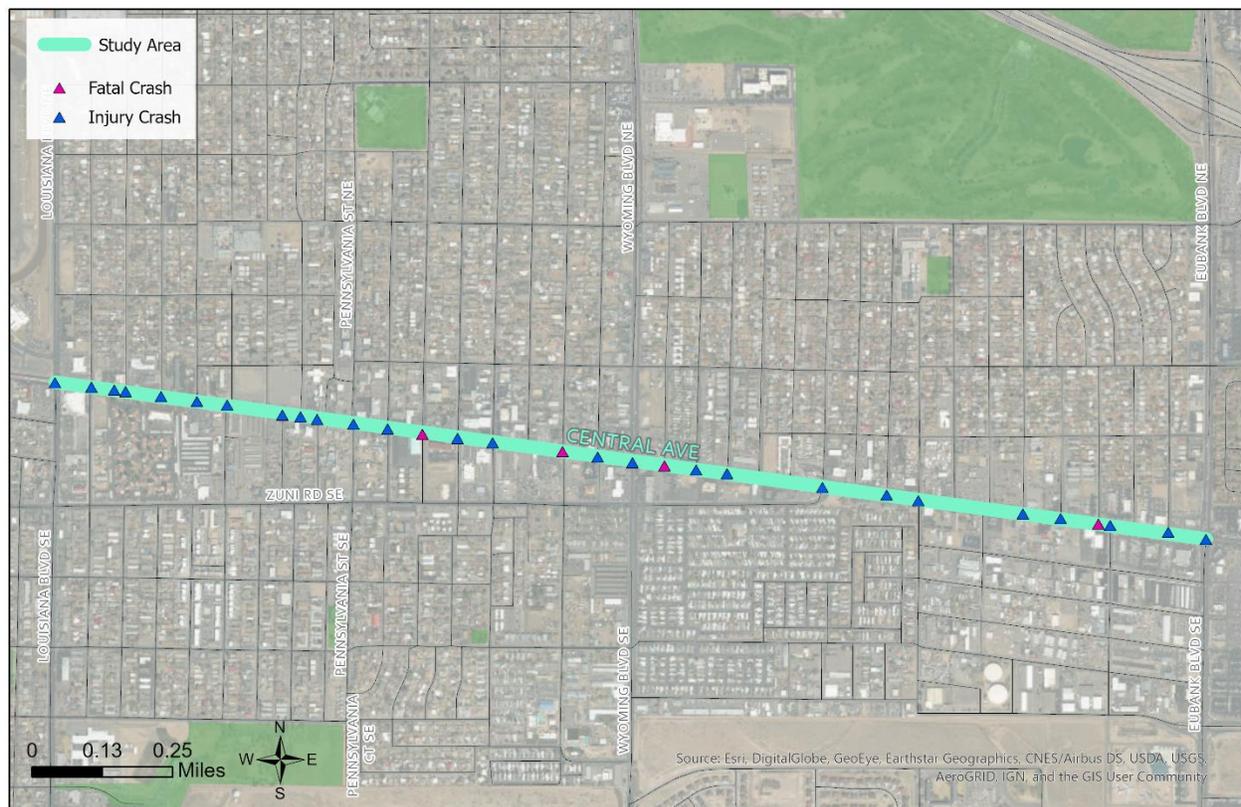


Table 4: Total Crashes by Type by Location

Location	Total Crashes	Severe Crashes	Pedestrian-Involved	Bicycle-Involved
Louisiana Blvd & Central Ave	364	104	23	0
Eubank Blvd & Central Ave	310	87	9	0
Wyoming Blvd & Central Ave	173	50	9	2
Pennsylvania St & Central Ave	74	35	10	0
General Chennault St / Zuni Rd & Central Ave	69	24	0	1
Wisconsin St & Central Ave	44	17	5	0
Alcazar St & Central Ave	35	10	3	0
Moon St & Central Ave	32	8	0	2
Utah St & Central Ave	30	12	4	2
All Other Locations	333	145	45	10
Total	1,464	492	108	17

Source: NMDOT (2013 to 2017)

Figure 6: Pedestrian & Bicycle-Involved Severe Crashes



Though crashes involving pedestrians and bicyclists took place across the study area, the majority occurred between Louisiana Blvd and Wyoming Blvd (see Figure 5). Table 5 indicates the count and percent of pedestrian and bicycle-involved crashes in the study area and the City of Albuquerque as a whole. Of the 1,464 total crashes in the study area, 108 were pedestrian-involved and 17 were bicycle-involved crashes (combined about 8.5% of all crashes). Most notably, pedestrian-involved crashes within the study area (7.4%) make up a much higher share of crashes than the City of Albuquerque overall (1.7%). In addition, five of the six fatalities in the study area were pedestrians. Two of the pedestrian fatalities took place at Conchas St in separate incidents in 2014.

Table 5: Pedestrian- and Bicycle-Involved Crashes by Location

	Study Area		City	
	Count	Percent	Count	Percent
Pedestrian-Involved Crashes	108	7.4%	1,376	1.7%
Bicycle-Involved Crashes	17	1.2%	830	1.0%
All Other Crashes	1,339	91.5%	81,117	97.4%
Total	1,464	100.0%	83,323	100.0%

Source: NMDOT (2013-2017)

Note: not all total percentages equal 100% due to rounding

Crash Severity

Crashes in the study area are more likely to result in fatality and injury compared to the city overall; about one-third of all crashes in the study area are classified as severe, indicating serious injury to at least one party involved (see Table 6). In the study area, 0.4% of all crashes were fatal and 33.2% resulted in injury, compared to 0.3% and 29.3% respectively across the City of Albuquerque. The study area also has a slightly higher share of pedestrian- and bicycle-involved severe crashes that resulted in either a fatality or injury compared to the City (94.4% v. 92.1%). In general, crashes at unsignalized intersections are more likely to result in severe injuries than crashes at signalized intersections.

Table 6: Severity of Crashes by Location by Type

	All Crashes				Pedestrian & Bicycle-Involved			
	Study Area		City		Study Area		City	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Fatal	6	0.4%	265	0.3%	5	4.0%	112	8.1%
Injury	486	33.2%	24,373	29.3%	113	90.4%	1156	84.0%
Property Damage Only	972	66.4%	58,685	70.4%	7	5.6%	108	7.8%
Total	1464	100.0%	83,323	100.0%	125	100.0%	1,376	100.0%

Source: NMDOT (2013-2017)

Note: Not all total percentages equal 100% due to rounding.



Top Contributing Factors

General Observations

The top three contributing factors for all crashes in the study area, as indicated in reports from the Albuquerque Police Department, include:

- Driver inattention (27.5%)
- Failure to yield (19.2%)
- Driver error (17.2%)

These factors are attributed to similar shares of crashes at the overall City-level. More significant differences are evident when considering the pedestrian and bicycle-involved crashes as each of the top contributing factors for these types of crashes occur at significantly higher rates in the study area compared to the city overall. While the most frequent source of crashes, pedestrian error, is attributed to 36.5% of crashes in the study area compared to 35.0% for the city overall, alcohol/drug-involved crashes (32.7% vs. 22.7%) and crashes resulting from driver inattention (13.5% vs. 3.5%) are far more likely to occur in the study area compared to the city overall.²

Table 7: Top Contributing Factor by Location by Type

Top Contributing Factor	All Crashes				Pedestrian & Bicycle-Involved			
	Study Area		City		Study Area		City	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Alcohol/Drug Involved	90	7.3%	3,175	4.8%	34	32.7%	330	22.9%
Disregard Traffic Signal	113	9.2%	5,778	8.8%	1	1.0%	109	7.6%
Driver Error	211	17.2%	10,375	15.7%	6	5.8%	122	8.5%
Driver Inattention	337	27.5%	20,735	31.5%	14	13.5%	50	3.5%
Excessive Speed	83	6.8%	5,797	8.8%	1	1.0%	36	2.5%
Failure to Yield	235	19.2%	11,244	17.1%	10	9.6%	284	19.7%
Following Too Closely	110	9.0%	8,217	12.5%	0	0.0%	4	0.3%
Pedestrian Error	47	3.8%	589	0.9%	38	36.5%	504	35.0%
Total	1226	100.0%	65,910	100.0%	104	100.0%	1,439	100.0%

Source: NMDOT (2013-2017)

Notes: No data was provided for an additional 259 crashes; not all total percentages equal 100% due to rounding.

Behavioral Health Issues and Unforgiving Roadway Design

The combination of auto-oriented street design, high levels of pedestrian activity, and public health issues along Central Ave are evident from the crash data. In addition to the high share of alcohol/drug involved crashes, the study area has a notably higher share of all crashes due to pedestrian error compared to Albuquerque (3.8% v. 0.9%). These data point to a need for pedestrian infrastructure that prioritizes easily accessible and convenient opportunities for crossing Central Ave safely. Improved pedestrian infrastructure, including buffers between

² Pedestrian error is a broad term that is applied to a range of pedestrian actions, including some which are legal but ill-advised, such as wearing dark clothes at night or crossing at an unmarked crosswalk.



pedestrians and motor vehicles, could also be considered to increase safety. Refer to the Design Factors section for more information on design opportunities.

Time of Day

An analysis of crashes by time of day reveals that a highly disproportionate share of crashes involving pedestrians take place at night; about 17.4% of the crashes at night involve pedestrians or bicyclists while 6.0% of the crashes during the day involve pedestrians or bicyclists (see Table 8). In addition, a slightly higher share of crashes along the study area occur at night (19.5% of crashes are classified as dark-lighted hours) compared to the city overall (16.3%).

For pedestrian- and bicycle-involved crashes, 31.5% of crashes in the study area occurred at night compared to 28.2% for the city overall. Since there are a greater number of pedestrians that travel along the study area, it is difficult to determine from the data if the *rate* of crashes at night is greater than other parts of the city. However, risks associated with nighttime conditions are clearly exacerbated when additional pedestrians are present.

It is also possible to contrast the sources of crashes during the day compared to at night (see Table 9). Noteworthy differences in the contributing factors include a substantially higher share of crashes at night in which drugs or alcohol are involved, while a higher share of crashes at night are attributed to pedestrian error (separate from impairment).

Table 8: Crashes by Time of Day by Location by Type

Time of Day	All Crashes				Pedestrian & Bicycle Involved			
	Study Area		City		Study Area		City	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Dark-Lighted	266	19.5%	12,409	16.3%	39	31.5%	373	28.2%
Dark-Not Lighted	35	2.6%	2,953	3.9%	9	7.3%	131	9.9%
Dawn	15	1.1%	1,146	1.5%	1	0.8%	17	1.3%
Daylight	1,002	73.4%	57,406	75.4%	67	54.0%	767	57.9%
Dusk	48	3.5%	2,206	2.9%	8	6.5%	37	2.8%
Total	1366	100.0%	76,120	100.0%	124	100.0%	1,325	100.0%

Source: NMDOT (2013-2017)

Notes: No data was provided for an additional 98 crashes; not all total percentages equal 100% due to rounding.



Table 9: Top Contributing Factor - Daytime vs. Night

Top Contributing Factor	Daytime				Dark			
	All Crashes		Ped & Bike-Involved		All Crashes		Ped & Bike-Involved	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Alcohol/Drug Involved	28	3.2%	10	19.2%	49	19.4%	19	43.2%
Disregard Traffic Signal	86	9.9%	1	1.9%	18	7.1%	0	0.0%
Driver Error	145	16.7%	3	5.8%	42	16.6%	4	9.1%
Driver Inattention	244	28.1%	9	17.3%	68	26.9%	5	11.4%
Excessive Speed	60	6.9%	1	1.9%	18	7.1%	0	0.0%
Failure to Yield	182	21.0%	6	11.5%	35	13.8%	2	4.5%
Following Too Closely	93	10.7%	0	0.0%	7	2.8%	0	0.0%
Pedestrian Error	29	3.3%	22	42.3%	16	6.3%	14	31.8%
Total	867	100.0%	52	100.0%	253	100.0%	44	100.0%

Transit Service

Central Ave east of Louisiana Blvd is served by two high frequency transit routes that traverse the corridor from Unser Blvd to Tramway Blvd: Route 66 is a local service that stops every two blocks, while the ART Green Line (Route 777) is a bus rapid transit service with stops at Louisiana Blvd, Wyoming Blvd, and Eubank Blvd. All transit stops through the study area are located at curbside, though the ART Green Line stops at a median station area on the west side of Louisiana Blvd. Both routes operate with 15-minute frequencies throughout the day (service frequency on Route 66 declines after 8 PM).

The high level of transit service is critical as the study area features a high share of residents with incomes below the median level for the city and who are disproportionately likely to rely on public transit for basic transportation needs. Boarding and alighting data from August 2018 indicate that about 700 boardings per day – or 13% of total ridership on Route 66 – are associated with the study area. About 750 total boardings per day took place in February 2020 across the three ART stops in the study area; the majority of ART trips took place at Louisiana Blvd, which serves both the ART Green Line and ART Red Line (which turns north on Louisiana Blvd from Central Ave and does not pass through the study area). See the Demographics section for additional information.

Pedestrian Level of Service

Methodology

The Project Team conducted a Pedestrian Level of Service (LOS) analysis for the study area to better discern overall comfort levels and safety along the East Central Avenue corridor. Pedestrian LOS is a nationally recognized method for measuring the quality of existing infrastructure based on pedestrian comfort, safety, ease of mobility, and various roadway elements and traffic conditions.



Advantages of completing a LOS analysis include the ability to diagnose where conditions could be improved to create a safer and more comfortable pedestrian-environment and the magnitude of benefits from certain pedestrian infrastructure improvements.

Segments along the study area were evaluated using a combination of data retrieved from MRCOG and observations and measurements from Google Earth. For each of the segments, the LOS analysis produced an overall score ranging from A to D. In general, segments with C or below for Pedestrian LOS are designated as uncomfortable and/or unsafe for pedestrian travel. To complete this analysis, the Project Team utilized a custom tool derived from the *Multi-Modal Level of Service for Urban Streets (NCHRP 2008)*. Data inputs for the LOS analysis consisted of the following:

- Daily traffic volume (ADT)
- Posted speed limit
- Number of travel lanes
- Outside travel lane width
- Sidewalk width (if applicable)
- Sidewalk buffer width (if applicable)

Results

Two scenarios were calculated using the Pedestrian LOS tool: *Scenario 1* is based on existing conditions and assumes that all sidewalks along the corridor are 6' wide and clear of obstructions; *Scenario 2* is based on existing conditions but assumes that the walkable area of the sidewalk is 3-4' based on the impacts of obstructions such as light poles, fire hydrants, and utility boxes on pedestrian comfort level. No buffers between the sidewalk and outside driving lane are included in either scenario. As demonstrated in Scenario 1 (see Table 10), the results validate that pedestrian conditions along Central Ave are acceptable (i.e. LOS C) – though below preferred conditions – if no obstructions are present. However, where obstructions or uneven sidewalk surfaces exist, as in Scenario 2, pedestrian conditions are quantifiably less comfortable (see Table 11). In summary, the Pedestrian LOS analysis validates that an additional two or three feet of sidewalk width makes a substantial difference in pedestrian comfort level. It should be noted that the higher speed limit east of Zuni Rd also negatively affects Pedestrian LOS.



Table 10: Scenario 1 – Existing Conditions

Location	ADT	Speed Limit (mph)	Lane Width (ft)	Sidewalk Width (ft)	Level of Service*
Louisiana Blvd to Pennsylvania St	31,400	35	11	6	3.38 C
Pennsylvania St to Wyoming Blvd	26,200	35	11	6	3.18 C
Wyoming Blvd to Zuni Rd	26,700	35	11	6	3.19 C
Zuni Rd to Eubank Blvd	28,800	40	11	6	3.43 C

*Larger numbers represent more unfavorable LOS scores; scoring is based on A (most favorable) to F (least favorable)

Table 11: Scenario 2 – Existing Conditions with Obstructions and 3’ or 4’ Sidewalks

Location	ADT	Speed Limit (mph)	Lane Width (ft)	Sidewalk Width (ft)**	Level of Service*
Louisiana Blvd to Pennsylvania St	31,400	35	11	3 / 4	4.48 / 3.60 E / D
Pennsylvania St to Wyoming Blvd	26,200	35	11	3 / 4	4.64 / 3.40 E / C
Wyoming Blvd to Zuni Rd	26,700	35	11	3 / 4	4.66 / 3.42 E / C
Zuni Rd to Eubank Blvd	28,800	40	11	3 / 4	4.89 / 3.65 E / D

*Higher values represent more unfavorable LOS scores; scoring is based on A (most favorable) to F (least favorable)

**Considers sidewalk obstructions including light poles, fire hydrants, and utility boxes that limit safe pedestrian travel and can take up two (2) to three (3) feet of the sidewalk

Demographics

An analysis of socioeconomic conditions and demographic characteristics in the study area reveals substantial differences as compared to the city overall. Among these differences include higher poverty rates and a higher percentage of residents of marginalized racial/ethnic groups. (For the purposes of this study, marginalized groups are defined as racial/ethnic groups that experience economic and social disparities). Almost 65% of study area residents identify as Hispanic compared to 49.0% of all Albuquerque residents. Additionally, 4.1% of study area residents identify as Black/African American compared to 3.2% of city residents, while 7.2% of study area residents identify as American Indian compared to 4.6% of city residents.



Figure 7: Census Tracts in the Study Area

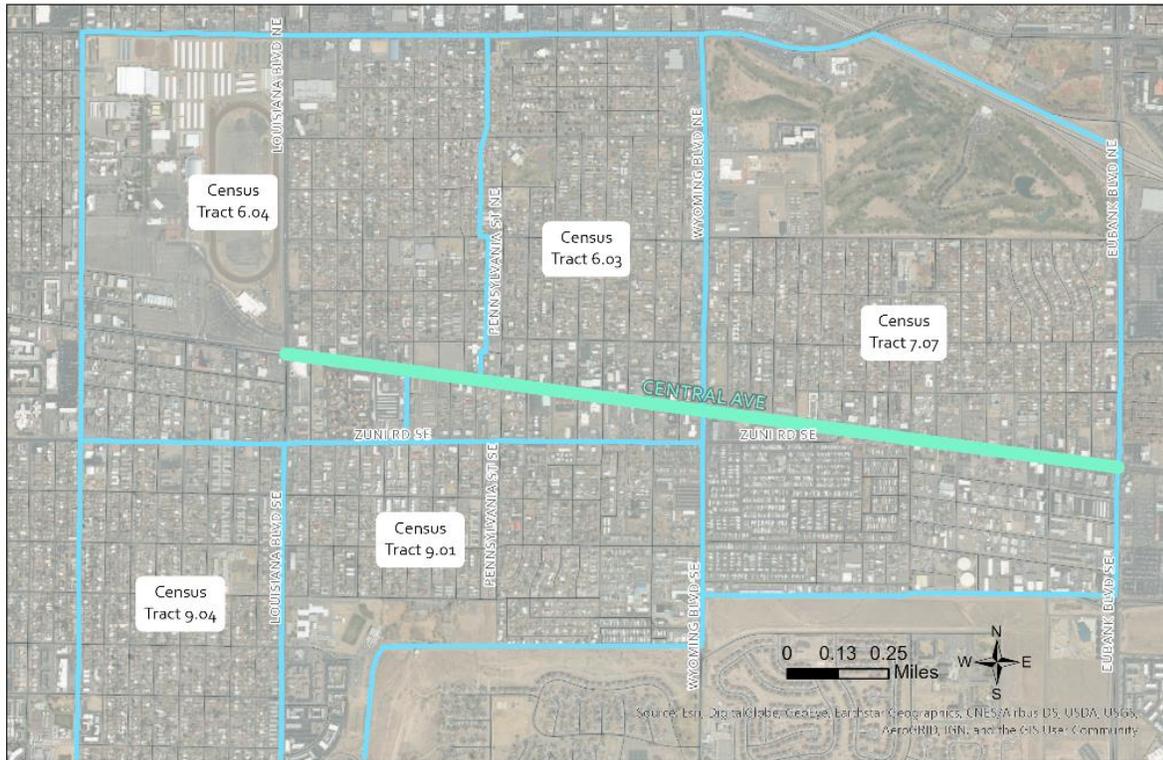


Table 12: Race/Ethnicity by Census Tract

Race / Ethnicity	6.03	6.04	7.07	9.01	9.04	All Tracts	City of Albuquerque
White (Non-Hispanic)	19.3%	23.7%	22.3%	17.6%	35.2%	22.8%	39.4%
White (Hispanic)	41.1%	27.8%	52.7%	45.8%	29.5%	41.3%	34.1%
Black / African American	6.9%	2.8%	3.4%	4.4%	2.8%	4.1%	3.2%
American Indian	10.0%	7.3%	1.9%	12.1%	4.0%	7.2%	4.6%
Asian	1.4%	1.8%	0.0%	0.9%	3.1%	1.3%	2.8%
Other	21.2%	36.7%	19.7%	19.1%	25.2%	23.2%	15.9%
Total	100%						
Total Hispanic	65.7%	63.1%	71.5%	64.2%	55.3%	64.6%	49.0%
Total Non-Hispanic	34.3%	36.9%	28.5%	35.8%	44.7%	35.4%	51.0%

In addition to having a disproportionately high percentage of racial and ethnic minorities, census tracts in and surrounding the study area have notably higher poverty levels and a lower median household income as compared to the Albuquerque average. Over one third of study area residents are below the poverty level compared to 17.6% of city residents. While each individual census tract within the study area has a median income below the city average, the highest levels of poverty are found in the neighborhood to the east of Louisiana Blvd and south of Zuni Rd (census tract 9.01) and to the north of Central Ave and east of Pennsylvania Rd (census tract 6.03).



Higher rates of poverty are also demonstrated by Census data on means of transportation to work (see Table 14). In particular, a notably higher percentage of study area residents use public transportation (6.5%) compared to city residents (2.0%). This difference in commuting behavior is particularly noteworthy as transit users in the study area invariably access transit stops via walking, and are therefore at higher risk for experiencing unsafe conditions when traveling along Central Ave.

Table 13: Income and Poverty levels

Location	Below Poverty Level	Median Household Income
6.03	47.2%	\$20,116
6.04	26.0%	\$26,612
7.07	32.1%	\$29,596
9.01	51.5%	\$20,682
9.04	27.3%	\$39,198
All Census Tracts	38.6%	\$25,691
City of Albuquerque	17.6%	\$51,128

Table 14: Means of Transportation to Work

Means of Transportation to Work	6.03	6.04	7.07	9.01	9.04	All Census Tracts	City of Albuquerque
Drove Alone	63.3%	79.3%	77.1%	78.3%	75.3%	75.1%	80.5%
Carpooled	18.9%	12.2%	8.4%	13.1%	10.5%	12.2%	9.2%
Public Transit	10.5%	6.1%	7.2%	6.5%	2.2%	6.5%	2.0%
Bicycle	0.8%	0.0%	0.0%	0.0%	1.2%	0.3%	1.2%
Walked	4.4%	0.0%	0.7%	1.1%	1.0%	1.4%	1.9%
Other Means	0.0%	1.8%	2.1%	0.0%	1.6%	1.1%	0.7%
Worked at Home	2.2%	0.6%	4.6%	1.0%	8.2%	3.4%	4.4%
Total	100%	100%	100%	100%	100%	100%	100%

Policy Guidance

A variety of planning efforts and studies have been conducted along Central Ave through the study area. This section summarizes relevant guidance and findings related to land use, development, community concerns, and transportation infrastructure at the local and regional levels. In addition to general policy ideas, many of these documents provide location-specific strategies to address safety challenges.

City of Albuquerque Plans and Policies

Albuquerque-Bernalillo County Comprehensive Plan

The Comprehensive Plan (2017), the long-term vision document for the City and County, considers challenges faced daily by pedestrians and bicyclists and prioritizes expanded transportation options and improved mobility for those who cannot or do not wish to drive. In addition to a range



of land use and transportation policies, the Comprehensive Plan contains policies related to pedestrian-oriented street improvements, including desired street design elements. These policies are accompanied by action items that call for grade separated crossings, medians, pedestrian refuge islands, and landscape elements that all serve to enhance the built environment in a way that prioritizes the comfort and safety of pedestrians and bicyclists. Specific guidance for transportation infrastructure and urban design are provided through Center and Corridor designations. Central Ave through the study area is designated as Major Transit Corridor while areas around Central Ave and Louisiana Blvd are designated as Activity Centers.

Major Transit Corridor

The designation as a Major Transit Corridor indicates that Central Ave is intended to provide high frequency local transit service and that development along the corridor should be transit and pedestrian-oriented. Infrastructure improvements are also essential to facilitate convenient and safe access to transit for pedestrians. As such, the designation as a Major Transit Corridor affects recommended roadway design, including wider sidewalks than typical roadways. The use of landscape buffers should be prioritized, while frequent pedestrian crossings and lower design speeds than other arterial roadways are recommended.

Premium Transit Station Areas

The area around Central Ave and Louisiana Blvd is considered a Premium Transit Station Area due to the presence of the ART station on the west side of the intersection. Per the Comprehensive Plan, Premium Transit Station Areas should feature a high level of pedestrian access, while lower vehicle LOS is considered acceptable to allow for transit to take priority and for frequent pedestrian crossings. Other ART stops along the corridor are not considered Premium Transit Station Areas since the stops are unimproved. However, pedestrian travel is a policy priority throughout the study area based on the designation as a Major Transit Corridor.

Activity Center

The critical intersection of Central Ave and Louisiana Blvd is located at the confluence of two designated Activity Centers: the International Market and the State Fair (refer to Figure 8). As defined by the Comprehensive Plan, Activity Centers are appropriate locations for mixed-use and multi-family housing at a slightly higher density than the surrounding single-family homes. Development patterns should support pedestrian-friendly design and access to public transit. Roadways within Activity Centers are generally intended to feature wider sidewalks and buffers to allow more comfortable trips on foot within the area.



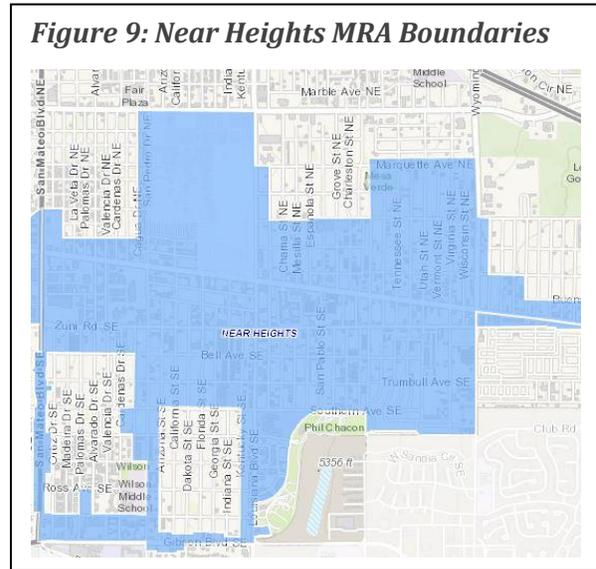
Table 15: Policies Related to Pedestrian Safety from the Comprehensive Plan

Policy	Relevant Considerations	Action Items
6.2.3: Pedestrian and Bicycle Connectivity	<ul style="list-style-type: none"> • Design streets, streetscapes, and sidewalks to enhance pedestrian and bicyclist mobility for commuting, recreation, and activities of daily living. • Preserve and maintain pedestrian, biking, and equestrian opportunities on neighborhood streets, in alleys, and along acequias. • Provide comfortable, barrier-free, direct pedestrian and bicycle routes to Transit Centers, transit stations, and transit stops. 	<ul style="list-style-type: none"> • Analyze gaps in connectivity, prioritize improvement projects, and assess progress over time.
6.3.2: Street Design for Pedestrian Safety	<ul style="list-style-type: none"> • Improve the comfort and safety of pedestrians in areas with high pedestrian volume, particularly at signalized and unsignalized crosswalks on arterials and collector streets, near schools, and in Centers. • Provide buffers between pedestrians and traffic (e.g. on-street parking, landscaped buffers, etc.). • Prioritize and incentivize public and private pedestrian-scale lighting to increase pedestrian visibility and security. 	<ul style="list-style-type: none"> • Implement FHWA proven safety countermeasures, such as medians and pedestrian crossing islands, at intersections with high auto and pedestrian traffic levels and sufficient right-of-way. • Coordinate with FHWA and MRMPO on pedestrian road safety assessments and implement recommended improvements at priority intersections.
7.2.1: Walkability	<ul style="list-style-type: none"> • Improve the pedestrian environment through coordinated design of subdivisions, streets, development sites, and buildings. • Improve pedestrian safety and comfort by providing wider sidewalks, street trees and landscape buffers, lighting, on-street parking, street furniture, and waiting areas and median refuges at large or busy intersections. • Ensure the location and design of sidewalks reflects the existing or planned character and intensity of surrounding land uses. • Enhance existing streets and trails as linear paths connecting destinations throughout the region. • Promote trees and landscape elements in the public right-of-way, along trails, and within private development to ensure a high-quality, pleasant, and healthy built environment. • Design and place incidental structures such as signs, guywires, poles, fire hydrants, street furniture, and overhead utility wires to minimize visual intrusion and mobility impediment to pedestrians. 	<ul style="list-style-type: none"> • Develop sidewalk and street design standards that improve pedestrian comfort and safety while maintaining neighborhood character in historic and rural neighborhoods.



Metropolitan Redevelopment Area Plans

The study area was designated as part of a Metropolitan Redevelopment Area in 1998 based on findings of blighted conditions as defined in the Metropolitan Redevelopment Code.³ Multiple MRA plans have since been adopted including the Near Heights Metropolitan Redevelopment Area Plan (2000) which spans Central Ave and Zuni Rd from San Mateo Blvd to Moon Ave, and the Near Heights Metropolitan Development Area Expansion Plan (2010) which includes San Mateo Blvd from Bell Ave to Gibson Blvd and Gibson Blvd from San Mateo to Kentucky Ave. Figure 9 depicts the Near Heights MRA boundaries including the expansion area.



The Near Heights MRA plan highlights the area surrounding Central Ave and Louisiana Blvd as being particularly unwelcoming for pedestrians due to high traffic speeds and lack of pedestrian infrastructure. The plan recommends streetscape improvements, such as allowing vendors to utilize sidewalk space and to create an ambiance of an ethnic commercial district as part of the International Market. In turn, the plan suggests that the International Market can leverage the high visibility and activity surrounding the Central Ave and Louisiana Blvd intersection by fronting pedestrian friendly retail along these corridors. Other recommendations and priorities identified in the plan include eliminating blight, stimulating public and private investment, increasing the number of jobs, and furthering economic sustainability in the area.

Vision Zero

In 2019, the City of Albuquerque committed to Vision Zero through an Executive Order that established the goal of eliminating all traffic-related fatalities and serious injuries by 2040. The City is currently working on a Vision Zero Action Plan led by a committee made up of City staff representing several departments including MRCOG, APS, NDMOT, and APD. The Action Plan will pay particular attention to “5 E’s” specific to advancing safety efforts in Albuquerque - Equity, Education, Encouragement, Engineering, and Enforcement. Other key components the City hopes to include in the Action Plan include guidance on the types of roadway design features that improve safety, City and State-level policy, meaningful community

Vision Zero is an international movement that sets zero as the only justifiable fatality target and is dedicated to creating safe, healthy, and equitable transportation systems for all to thrive using a social-equity approach and data-driven solutions.

³ The Metropolitan Redevelopment code defines a blighted area as one that includes presence of deteriorated or deteriorating structures, defective or inadequate street layout, lack of adequate housing in the area, or the presence of a significant number of closed businesses.



engagement, and funding considerations. Notably, the Action Plan refers to the High Fatality Injury Network, identified by MRCOG, to prioritize specific projects where safety improvements are most critical. The High Fatality Injury Network highlights East Central Avenue as a key area of concern. To support Vision Zero, the City Council recently set-aside \$5 million in funds for projects that address locations with high numbers of crashes and identified safety concerns.

Complete Streets Ordinance

The City's adoption of a Complete Streets Ordinance demonstrates a commitment to designing streets in a way that prioritizes the safety of all users. Complete Streets is a national movement to ensure that roadways are designed, built and operate to serve everyone – including pedestrians, bicyclists, transit riders, and drivers – and that they consider the needs of people of all ages and abilities. In 2019, the City updated the City's Complete Streets Ordinance, which first passed in 2015, to require City departments to equally consider the efficiency and safety of all types of travel and to apply Complete Streets design features during all roadway rehabilitation projects (routine maintenance projects may be excluded).

In order to achieve Complete Streets, the ordinance presents street design elements that may be applied to all City roadway projects. These elements include: mid-block pedestrian crossings, curb cuts, mitigating insufficient multi-modal facilities such as bike lanes that do not meet minimum engineering criteria for width, traffic calming techniques such as narrowing traffic lanes, providing buffers between vehicle traffic and pedestrian/bicycle facilities and adding parallel parking.

Regional Policy Initiatives

Connections 2040 Metropolitan Transportation Plan

A major focus of the Connections 2040 MTP (adopted in spring 2020), the long-range regional transportation plan for the Albuquerque metropolitan area, is to address existing gaps in the transportation system so that connections can be made across the region by all modes. Common issues identified in the plan related to bicycle and pedestrian connections include unsafe crosswalks, poor facility design such as the lack of buffered bike lanes, the need for additional pedestrian crossings, and well-maintained sidewalks.

The Connections 2040 MTP also highlights the benefits of additional development in targeted locations, including along Central Ave, where transportation infrastructure exists to support future growth. To incentivize infill growth and support the needs of current resident, investments should be made in these locations to support a range of transportation options, including quality bicycle and pedestrian infrastructure and transit service.

MRCOG Complete Streets Resolution

The Metropolitan Transportation Board, of which the City of Albuquerque is a voting member, also passed a Complete Streets resolution in 2011 that directs the creation of a Complete Streets policy and roadway design guidelines. Several jurisdictions in the MRCOG planning area have subsequently passed Complete Streets resolutions or adopted policy that encourages or ensures the development of streets that serve all users. The emphasis on Complete Streets is reflected in more recent MRCOG planning efforts, including the prioritization process used for selection of projects to receive federal funding, as well as the Regional Transportation Safety Action Plan.



MRCOG Regional Transportation Safety Action Plan

The Regional Transportation Safety Action Plan (RTSAP) was completed in 2018 to combat the serious challenges Albuquerque faces with transportation safety and to help create safer streets for everyone. According to the plan, New Mexico has one of the highest pedestrian fatality rates per capita within the US and pedestrian crashes in Albuquerque are disproportionately higher than other metropolitan areas in the Southwest. East Central Ave is identified as a major area where pedestrian challenges should be addressed. In response to these conditions, the plan sets goals for reducing crashes over time. Emphasis areas and potential action items include design aspects such as reducing vehicle turning speeds in areas of high pedestrian traffic by widening curb radii, as well as increasing pedestrian signage and pedestrian scale lighting.

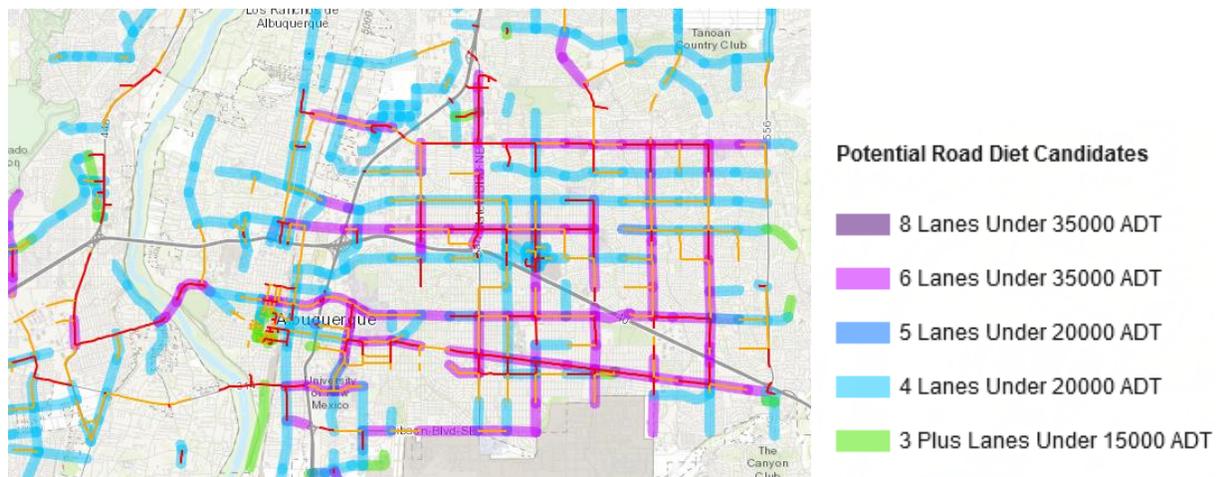
Table 16: RSTAP Goals and Emphasis Areas

RTSAP Goals	RTSAP Emphasis Areas
<ol style="list-style-type: none"> 1. A year over year reduction in fatal and injury crashes: <ol style="list-style-type: none"> a. at high priority corridors and intersections b. related to excessive speed and dangerous driving c. involving pedestrian and bicyclists d. involving alcohol and drugs 2. An overall 5 to 10 percent reduction of the above categories of fatal and injury crashes over the next 5 years 3. A year over year increase in the levels of comfort and safety experienced by bicyclists and pedestrians out in traffic 4. Complete streets approach incorporated by all future construction projects from inception to construction 	<ol style="list-style-type: none"> 1. Reduce excessive speed and dangerous driving 2. Design streets for all modes of travel 3. Implement meaningful behavior change campaigns 4. Expand data collection and traffic management 5. Ensure strong policy and funding mechanisms 6. Provide targeted traffic enforcement

Among the strategies identified in the RTSAP is the implementation of road diets, which can improve safety while reallocating roadway spaces for bicyclists and pedestrians. Analysis by MRCOG indicates that Central Ave through the study area is a candidate for a road diet. Central Ave meets the criteria for a road diet as a 6-lane facility with fewer than 35,000 vehicles per day (actual daily traffic counts are 26,000-31,000).



Figure 10: Potential Road Diet Candidates (MRCOG)



Bernalillo County: Pedestrian Safety Action Plan

The Bernalillo County Pedestrian Safety Action Plan (2012) identifies and prioritizes future facility and policy changes, including the recommendation of a Complete Streets policy and specific pedestrian and bikeway projects. The plan recommends considering adequate pedestrian and bicycle facilities as part of all new roadway projects with higher speed collector and arterial streets as paramount concerns. The plan also recommends improving intersections with continental crosswalk markings, adequate lighting, shortened crosswalk length, smaller turning radii, installation of countdown walk signals, and setting signal timing to accommodate the elderly and children.

Major priorities include streets that serve community facilities, parks, and schools, as well as projects which complete gaps and provide connectivity in the transportation network. Although the project is not specifically identified in the Pedestrian Safety Action Plan, Bernalillo County is designing a HAWK signal at the intersection of Central Ave/Texas St in the study area. This project is consistent with the priorities established in the plan and discussed above. Refer to the Current Projects section for more information.

Previous Planning Efforts in Study Area

International District Sector Plan

The International District Sector Plan, completed in 2012, identified community concerns and priorities related to health and safety and proposed land use regulations and transportation improvements to support revitalization in the area. Though sector development plans have been superseded by the Comprehensive Plan, policy guidance and community input are still relevant and may be considered as part of City investment decisions. The plan places a major emphasis on Complete Streets and in particular pedestrian connectivity and improving sidewalk conditions along Central Ave. Specific recommendations include frequent maintenance of signage and striping to increase motorist compliance, pedestrian scale lighting, and buffers between sidewalks and travel lanes.



Central Avenue Issues (International District SDP, 2012)

- While Central Avenue functions efficiently for vehicular and transit travel with its six lane and median turn bay, there are significant pedestrian safety and comfort issues with the Plan area which negatively impact pedestrian travel.
- Sidewalks are generally 6 feet wide, however, the location of utility poles in the sidewalk along the south side of Central often obstructs pedestrian movement or reduces widths to 3 and 4 feet. While 6 feet wide sidewalks are considered appropriate in the City, in areas designated for community activity centers or where pedestrian activity is encouraged due to transit access, existing or future land uses, wider sidewalks are preferred.
- Sidewalk location, at the curb, exposes pedestrians to unbuffered, high volume, fast moving traffic which creates uncomfortable walking conditions.”
- Frequent curb cuts, some of which have been abandoned by property owners who have fenced off their access, create a difficult walking environment due to the lack of level surfaces and frequent turning movements across the sidewalk.
- There is no streetscape landscaping in the right of way. While some businesses have landscaped their setback, as required by the zoning code, a majority have not. The lack of landscape shade and buffering contributes to the run down aesthetics of the roadway while also creating a very uncomfortable walking environment.
- Pedestrian scale lighting along the sidewalks is lacking, creating an uncomfortable nighttime walking environment. Where street lighting is provided it is located on 40-foot poles in the median and at intersections.
- Pedestrian crossings are limited to the signalized Intersection of San Mateo Boulevard, Alvarado Street, San Pedro Boulevard, Louisiana Boulevard and Wyoming Boulevard. The one exception is the signalized intersection at Alvarado Street which is located a quarter mile between San Mateo Boulevard and San Pedro Boulevard. The long distances between crossings, generally a half mile, result in random mid-block crossings especially in the area of Expo New Mexico, where pedestrian crossings are difficult.

International Community Trail

Central Ave from Louisiana Blvd to Vermont St is included in the International Community Trail, a network of walking routes in southeast Albuquerque that were identified to encourage more physical activity and improve health outcomes. The International Community Trail is the result of a collaborative partnership among City of Albuquerque, NMDOT, and Albuquerque Prescription Trails. Specific steps identified to improve the walking experience through the International District (and along Central Ave) include:

- Widen the sidewalks and level the walking surface
- Move obstacles out of the pedestrian path on sidewalks
- Plant trees between the sidewalk and the curb
- Provide pedestrian-scale streetlights



Central Avenue in Albuquerque's International District: Health in All Policies

This study, led by Bernalillo County Place Matters in partnership with various government agencies, considers health-related impacts of the built environment and identifies strategies to improve public health outcomes. In addition to a field conditions assessment and literature review, the Bernalillo County Place Matters Team conducted dozens of interviews, about 30% of which were in languages other than English. Among the primary conclusions include the fact that residents of the area who walk and bike are concerned about vehicle crashes and consider crime to be a barrier to walking. The study concludes that:

Walking on Central Avenue in the study area is not a pleasant experience: a high volume of traffic produces noise and exhaust, lighting is inadequate at night, and businesses that do not have windows on the street diminish the sense of safety. There is little shade or landscaping and long stretches have high fences or walls adjacent to the sidewalk" (3).

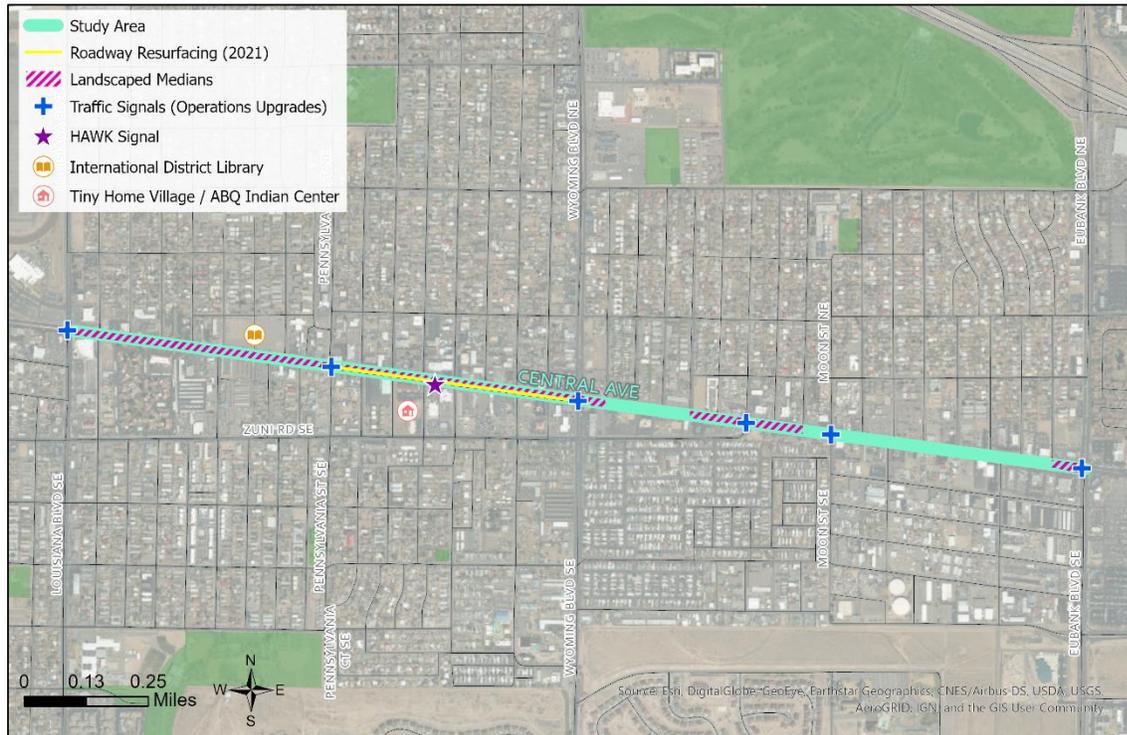
Per the study, other factors that discourage walking include abandoned lots and vacant buildings, sidewalk design and obstructions, as well as inadequate pedestrian lighting. Recommendations include additional raised medians and median refuge islands, more frequent crossings, access management, and enhanced street lighting.



Current Infrastructure Projects

The City of Albuquerque is in the process of implementing a series of projects along Central Ave through the project study area (see Figure 11). These projects are considered as part of this study to ensure recommendations complement ongoing efforts and do not create conflicts.

Figure 11: Projects in Progress along Study Area



HAWK Signal Installation near Central Ave and Texas St

To support the high levels of pedestrian activity in the area, Bernalillo County and the City of Albuquerque are in the process of installing a HAWK signal about 100’ east of Texas St along Central Ave.⁴ The area is noted for the concentration of community destinations and social support services, including the Albuquerque Indian Center, the Southeast Heights Community Health Clinic, as well as the Tiny Home Village, a Bernalillo County-sponsored project currently under construction to provide transitional housing for people experiencing homelessness.

⁴ A HAWK signal is a pedestrian crossing feature that functions like a signalized intersection for pedestrians only. HAWK signals are pedestrian activity rather than operating on a pre-determined cycle. Followed pedestrian activation, there is warning period with flashing yellow lights, followed by red lights that indicate to motorists to come to a complete stop. Pedestrian signals indicate that it is safe to cross the street and generally feature a countdown clock. After the walk-only phase, the beacon displays flashing red lights during which time motorists may pass through the pedestrian crossing after coming to a stop and checking for pedestrians. After the flashing red light phase, all lights deactivate, and motorists may pass through the intersection unimpeded.



The HAWK signal is also consistent with the guidance in the DPM, which calls for a signalized pedestrian crossing every 1,320' or less along a Major Transit Corridor, such as Central Ave. The signal is located between two major signalized intersections: about 1,500 feet west of Wyoming Blvd and about 1,100' east of Pennsylvania Rd. Bus stops are located 50' to the east of Central Ave on the southside of the street and one block west of the HAWK signal on the northside of the street.

The HAWK signal will feature a median refuge island with landscaping patches. The project does not include any closure to driveways, curb cuts, or at the intersection of Texas St. Sidewalk conditions on either side of Central Ave are expected to be unchanged. Though the HAWK signal will operate independently, the signal will be connected to City fiber optic lines and wired into the City traffic control network. This will allow for vehicle detection and enable signal coordination in the future, if needed. The project is expected to be installed by the end of 2020.



Example of HAWK signal in Tucson, AZ

<https://www.fhwa.dot.gov/publications/research/safety/10045/>

East Central Operational Improvements

The Department of Municipal Development (DMD) is currently upgrading traffic equipment at each signalized intersection between Louisiana Blvd and Tramway Blvd to ensure that signal technologies are consistent with the infrastructure in use along the ART corridor and to set up the corridor for future operation needs, including the ability to meet performance measures requirements (Automated Signal Timing Performance Measures [ASTPM]). Components of the project include enhanced communication, CCTV at various locations, a Wavetronix radar detection system, and replacing traffic signal controllers. The upgrades will create the potential for infrastructure-to-vehicle communications as new technology is introduced into private vehicles.

East Central Median Landscaping Improvements

At the time of this study, DMD is in the process of implementing landscaping within existing medians on Central Ave between Pennsylvania Rd and Tramway Blvd. The project does not include the median area at the location of the proposed HAWK signal at Central Ave and Texas St.

East Central Ave Complete Streets Implementation

The City of Albuquerque has \$1 million in federal funds programmed in 2021 for the implementation of Complete Streets-related improvements along East Central Ave. (The City is contributing a local match of \$170,000 to the project.) It is possible that recommendations from this study could be implemented through this project and funding source.



Roadway Rehabilitation: Pennsylvania Rd to Wyoming Blvd

The City of Albuquerque is scheduled to perform a resurfacing project in summer 2021 from Pennsylvania Rd to Wyoming Blvd to improve pavement conditions and provide fresh striping to make them more visible. The project is part of recurring roadway rehabilitation efforts across the city. Portions of the study area to the east of Wyoming Blvd will likely be resurfaced in upcoming years.

Gateway Project

Council Services is in the early stages of a streetscape enhancement project along Wyoming Blvd to the south of I-40. The primary purpose of the project is to create a more welcoming environment along the main entrance route to KAFB. The project would likely include the intersection of Central Ave; no design decisions have been made and recommendations from this study could be integrated into the gateway project.

Public Facilities: International District Library Project

Construction recently began on a new library at the north side of Central Avenue between San Pablo and Charleston streets in the study area. The \$15.5 million International District Library Project involves three main components: 1) a new library, 2) a plaza, and 3) an AMAFCA storm water detention pond.

Given the demographics in the area, multi-modal connections are an important consideration. As part of the project, sidewalks will be widened to 10' on Central Ave with a 4' landscape buffer. Sidewalks will be 6' wide on side streets. The *Project Program for the International District Library* indicates that the site should integrate with existing transit service to the extent possible; however, at present there are no existing crosswalks of Central Ave near the site and there are no bike routes or lanes that reach the site.

Pedestrian and Vehicle Safety Funding

The City has compiled about \$2.4 million in both Federal FAST ACT Surface Transportation Planning Urban Funds and City of Albuquerque Transportation Infrastructure Tax revenue bonds to implement the recommendations resulting from the East Central Avenue Safety Study.



Existing Conditions Summary

This section briefly highlights some of the key takeaways from the analysis of existing conditions. Many of these issues can be addressed through the recommended design modifications. The subsequent section – Design Factors and Recommendations – considers the various safety strategies that could be applied along Central Ave, including their benefits and potential application.

Key Findings

- The study area experiences a high number of crashes overall, and crash rates are disproportionately high for pedestrians compared to the city as whole. Intersections with particularly high rates of crashes include Louisiana Blvd and Eubank Blvd.
- Major issues for all crashes include driver inattention, failure to yield, and other driver errors.
- Pedestrian-involved crashes are dispersed across the corridor, though are somewhat concentrated between Louisiana Blvd and Wyoming Blvd. While the greatest number of crashes take place at intersections, the most severe crashes occur at unsignalized intersections where speeds are generally higher.
- Infrequent pedestrian crossings may create an incentive for people to cross at uncontrolled or unmarked locations.
- A large number of crashes involving pedestrians are ascribed to “pedestrian error” and may be a result of individuals crossing in locations where no safe options to do so are provided. Another top contributing factor in pedestrian-related crashes is driver inattention.
- A higher share of crashes along Central Ave occur at night than the city overall.
- Traffic volumes on Central Ave are well below the roadway capacity; the corridor has been identified by MRCOG as a candidate for a road diet.
- The sidewalks along Central Ave are located immediately adjacent to the outside travel lane and are marked by obstructions and uneven surfaces. Pedestrian LOS analysis indicates a low level of pedestrian comfort along the sidewalks themselves.
- There is little access control along Central Ave; left turns are permitted throughout the corridor and there are an excessive number of driveways and curb cuts along sidewalks.
- The population along the corridor is comprised of higher numbers of racial and ethnic minorities while income levels are significantly below the area median income
- Recurring strategies that were identified during previous planning efforts include the need for additional lighting, more frequent pedestrian crossings, and design features that reduce speeds along the corridor.
- Policy guidance from the Comprehensive Plan calls for investment in pedestrian facilities and more frequent crossings on Central Ave. Regional and city policy supports the implementation of Complete Streets to improve safety and enhance transportation options. The City has also committed to Vision Zero and the explicit goal of eliminating traffic fatalities.



Design Factors and Recommendations

Overview

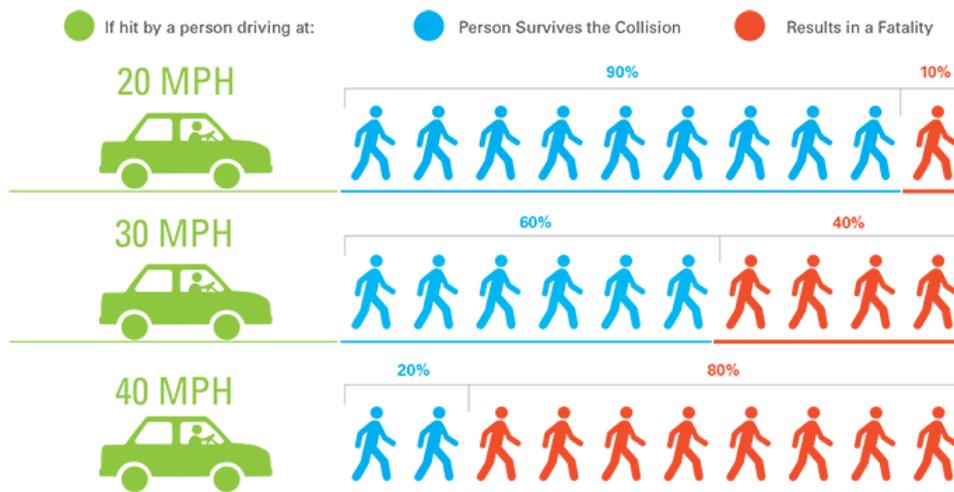
This section considers potential design interventions along Central Ave between Louisiana Blvd and Eubank Blvd in response to specific safety-related issues outlined in the Existing Conditions analysis. The section is organized by design factor and outlines the purpose for considering the design factor, benefits associated with the design factor related to safety outcomes, and specific recommendations to help address pedestrian safety, including locations where such measures are appropriate overall and specific to the study area. Where appropriate, this document proposes both short- and long-term recommendations. Strategies included in the recommendations may be combined with one another, as appropriate and desired, to further enhance safety outcomes.

Reduced Vehicle Speeds

Purpose/Benefits

Reducing speeds is generally part of a comprehensive strategy to improve safety. It is important to note that addressing other design factors (discussed below) will contribute to speed reductions. Addressing vehicle speeds on Central Ave is particularly important for reducing the severity of crashes, in addition to making roadway conditions more comfortable for pedestrians. Crashes with pedestrians that occur at high speeds are more likely to result in severe and fatal injuries. As vehicle speeds and volumes increase, so too does the level of protection desired by pedestrians. For example, a pedestrian collision with a vehicle travelling 30 MPH results in a 40% chance of pedestrian fatality while a vehicle travelling at 40 MPH results in an 80% chance of pedestrian fatality (see Figure 12).

Figure 12: Severity of Pedestrian Crashes by Speed (ITE, Speed as a Safety Problem)

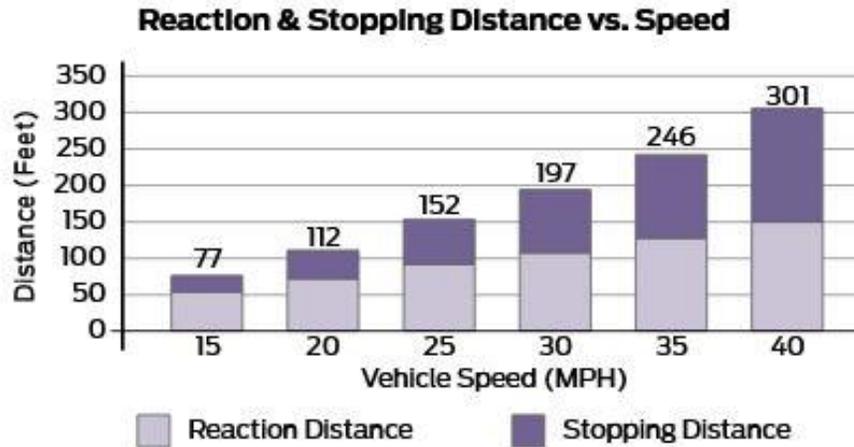


Reduced speeds also lead to increased reaction time for motorists, which is critical along corridors with frequent pedestrian crossings. As depicted in Figure 13, the time and distance it takes a driver



to react and come to a stop increases as speed increases. For example, the difference between traveling 30 and 40 MPH is more than 100' of reaction and stopping distance.

Figure 13: Reacting and Stopping Distance by Speed (NACTO Urban Design Guide, 2012)



Applicability to Study Area Conditions

Observed conditions and evidence from crash reports indicate that high speeds are an issue along the corridor and a contributing factor to crashes. Signalized intersections are spaced about one-half mile apart, providing ample time for motorists to increase vehicle speeds before reaching the next intersection. The potential to increase vehicle speeds at segment mid-points poses a safety concern given that speeding-related crashes are more likely to occur on stretches of the corridor between traffic signals.

Short-Term Implementation Opportunities and Recommendations

There are opportunities to reduce travel speeds and address safety in the short-term along East Central Ave without changing the configuration of the roadway.⁵ These strategies may be combined with other interventions described below.

Restriping/Narrow Travel Lanes: There is an opportunity to narrow the existing general-purpose lanes and reallocate that space to a buffer between the outside travel lanes and the curb/gutter to help improve safety, particularly for pedestrians. In urban contexts, narrow travel lanes generally result in a speed reduction without reducing the capacity of the roadway or increasing crash frequency. Travel lane widths are currently about 11' along the corridor. The interior and middle travel lanes could be reduced to 10' while the outside travel lane should be 10.5' to accommodate ABQ Ride bus travel. The resulting buffer would enhance pedestrian comfort level along the

⁵ Based on the number of lanes, speed, and traffic volume along Central Ave, typical traffic calming devices are not appropriate for the corridor. Overall average speeds along the study area are below posted speed limits; however, low observed speeds from MRCOG data is likely due to delay at the intersections, which reduces the average speed across the entire roadway segment.



sidewalks, provide increased separation between pedestrian and motorists, and would likely result in a modest reduction in travel speeds and (see Figure 14).

Figure 14: Rendering of Central Ave Westbound near Utah St with Striped Buffer



Signal Timing: Traffic signals can be timed to manage vehicle speeds and ensure a more consistent flow of traffic. Signage can be used to indicate to motorists the speed for which signals are timed.

Options for a Temporary Road Diet

A more substantive change to the corridor without moving the curb lines is the installation of a **temporary road diet**. Such a modification along Central Ave could be completed by removing the outside general-purpose lane and utilizing striping, flex posts, temporary planters, or other delineators to separate motorists from other roadway users. In addition to reducing speed along the corridor, a temporary road diet would create additional space for non-auto users and reduce the crossing distance for pedestrians. The City could also install a bike lane in place of the outside travel lane and gauge the level of demand for bicycling along the corridor. If a bike lane is included as part of the road diet, flex posts should be used at intersections to require drivers to stay out of the bike lane and take turns more slowly.

A significant challenge is posed by the number of driveways and the potential conflicts from turning motorists along Central Ave. The installation of a road diet and bike lanes could also increase the number of potential users in these conflict areas. This study asserts that the reduction in speed and crossing distance may outweigh the safety concerns. To mitigate concerns related to turning movements, access management efforts should be undertaken to complement the installation of temporary road diet. Consolidation of driveways would have benefits regardless of whether a road diet is made permanent or if the corridor were to be restored to its current configuration.

If vertical features are installed, considerations include maintaining adequate sight triangles and ensuring that any vertical features in the clear zone are constructed of breakaway objects. A temporary road diet could also utilize removable asphalt curbs at intersections to extend the pedestrian area; this approach would not require costly installation and could be easily removed if a larger reconfiguration project is undertaken.



Figure 15: Concept for Temporary Road Diet



Long-Term Recommendation

Achieving a significant long-term reduction in vehicle speeds will likely require a comprehensive reconfiguration of the corridor. Given the relatively modest traffic volume for the roadway in relation to the number of lanes, this study contends that a **permanent road diet** is the most appropriate long-term strategy to reduce speeds along East Central Ave. In addition to reducing speeds, a road diet could address other design factors described below, such as improved sidewalk design and pedestrian crossing characteristics. The road diet should include landscaping and shade trees along the sidewalk and within raised medians, if present, to help narrow the driver's field of vision and encourage slower speeds. Landscaping is currently under design for existing raised medians along the corridor; locations for additional landscaping depend on other improvements on Central Ave.

A reconfiguration of Central Ave could take multiple forms. The first approach includes the possibility of **extending dedicated transit lanes** east of Louisiana Blvd, either as curbside transit-only lanes or as part of medium-running guideways similar to the infrastructure to the west of Louisiana Blvd. The installation of dedicated transit lanes would likely result in a reduction in general purpose lanes from three to two in each direction. A more **traditional road diet** would also include lane reductions – likely with two lanes in each direction plus a center turn lane – and reallocation of remaining roadway space to widen sidewalks and install landscaping buffers. On-street bike lanes could also be considered. Either approach would require a rigorous design process and should be undertaken as part of a comprehensive strategy for enhancements to Central Ave that extends beyond the study area to Tramway Blvd.

Street Lighting

Purpose/Benefits

Street lighting is generally required in urban settings as a means of addressing nighttime safety. And per the FHWA Toolbox of Countermeasures, enhanced lighting can reduce pedestrian fatality



rates. Lighting design should consider visibility across all roadway users including pedestrians, bicyclists, and motorists, rather than focus on the creation of clear sightlines for moving traffic only. When walking at night, pedestrians might falsely assume that seeing oncoming headlights means the motorist can see them; however, without effective lighting, motorists may not be able to see pedestrians in time to stop. Adequate street lighting is especially important along corridors with significant pedestrian activity as well as high speeds, which requires greater stopping distance.

Applicability to Study Area Conditions

A higher share of total crashes and crashes involving pedestrians take place at night through the study area than the city overall. At this time, all lighting throughout the corridor has an average maintained illuminance greater than the minimum design value outlined in the AASHTO Roadway Lighting Design Guide, and all lighting along the corridor has been updated to LED to meet the new City standard. However, current lighting patterns are focused on creating visibility for moving traffic and lack pedestrian scale lighting at locations where pedestrians are often present.

Existing lighting between Louisiana Blvd and Wisconsin St consists of double arm luminaires within the medians spaced at approximately 160'-180' apart. This spacing can be considered adequate based on City standards from the DPM and national standards such as AASHTO. Existing lighting between Wisconsin St (one block west of Wyoming Blvd) and Eubank Blvd consists of single arm luminaires on both sides of Central Avenue spaced approximately 150' apart. To the east of Wisconsin St, lighting is at the back of the street, which provides greater illumination along the sidewalk.

Implementation Opportunities

Pedestrian-scale Lighting: While the existing lighting meets national standards for roadway illumination, there is room for pedestrian lighting improvement along the sidewalks. Pedestrian lighting should be installed on Central Avenue from Louisiana Blvd to Eubank Blvd. Of priority is installing pedestrian-scale lighting west of Wisconsin St where current lighting is located in the median only. This lighting could illuminate sidewalk areas around major intersections, proposed HAWK signals (discussed below), and other locations where pedestrians may be present. The lighting design would create greater visibility and increase pedestrian comfortable and safety. Installation of pedestrian-scale lighting would also be consistent with recent roadway projects on other corridors, such as San Pedro Dr and portions of Central Ave where sidewalks were improved as part of the ART project.



Correctly spaced combination of street and pedestrian lighting provides both pedestrians and motorists improved awareness of each other's location.

Source: FHWA Lighting Handbook, 2012



Pedestrian Crossing Frequency

Purpose/Benefits

Pedestrian crossings reinforce walkability by providing safe opportunities for pedestrians to access destinations along a corridor. Most people are unwilling to walk out of their immediate direction to cross at an intersection, and many pedestrians will instead cross at random and unpredictable locations with no designated crossings. Well-designed and properly placed crossings and pedestrian management infrastructure can direct and encourage pedestrians to walk at preferred crossing locations while addressing motorist inattention by increasing awareness of the presence of pedestrians.

Applicability to Study Area Conditions

At present, pedestrian crossings are located at signalized intersections approximately every 0.5 miles through the study area, with the exception of the segment from Wyoming Blvd to Moon St, which is split by the signalized intersection at Zuni Rd (about 1/3-mile east of Wyoming Blvd). This spacing is greater than the technical guidance provided by the City. Per the DPM, as a designated Major Transit Corridor, Central Ave should have signalized pedestrian crossings less than or equal to 1,320 feet (0.25 miles) apart while designated pedestrian crossing should be spaced less than or equal to 660 feet (0.125 miles) apart. At present, pedestrians must either walk long distances to reach a signalized crossing, cross at major intersections, or cross at unmarked and undesignated crosswalks along the corridor. Crash data indicates that many pedestrian-involved crashes, including severe crashes, occur between Louisiana Blvd and Wyoming Blvd where crossing opportunities are infrequent.

The proposed HAWK signal at Texas St mentioned below will reduce the distance between signalized crossings from Pennsylvania St to Wyoming Blvd. However, long distances remain east of Louisiana Blvd and from Moon St to Eubank Blvd. There are no pedestrian crossings along the study area besides those located at signalized intersections.

Table 17: Spacing of Existing Signalized Crossings

Segment	Spacing/Distance
Louisiana Blvd to Pennsylvania Rd	0.54 mi / 2,850 ft
Pennsylvania Rd to Wyoming Blvd	0.50 mi / 2,640 ft
Wyoming Blvd to Zuni Rd	0.35 mi / 1,850 ft
Zuni Rd to Moon St	0.17 mi / 900 ft
Moon St to Eubank Blvd	0.51 mi / 2,700 ft

Implementation Opportunities

Additional designated pedestrian crossings along Central Ave through the study area are warranted and, given the roadway conditions, the crossings should be controlled via a full traffic signal or a HAWK signal. Locations for these crossings should be based on spacing guidelines in the DPM and



locations that are experiencing high levels of pedestrian activity. This study recommends that additional signalized pedestrian crossings be installed such that the spacing between the signals is as close to guidance in the DPM as possible and that the distance pedestrians would need to walk to reach a signal are minimized. (If a signalized pedestrian crossing – including full traffic signals or HAWK signals – were installed every ¼-mile, the maximum distance a pedestrian would have to walk to a signal would be 660’.)

A new HAWK signal has been designed for the intersection of Texas St and Central Ave. Additional benefits may result from a sequence of HAWK signals along the corridor that increases motorist awareness toward pedestrians in the area. More frequent opportunities to cross Central Ave would likely increase compliance among motorists and pedestrians since HAWK signals would be a recurring feature along Central Ave. As such, this study recommends two additional HAWK signals: 1) Central Ave and San Pablo St; 2) Central Ave and Conchas St.

Table 18: Signalized Intersection Types

Full Traffic Signal	High Intensity Activated crossWalk (HAWK) Signal
	
<p align="center"><i>Source: The Wise Drive</i></p>	<p align="center"><i>Source: FHWA, 2010⁶</i></p>
<p>Signalized intersections have indications for users, including motor vehicles and pedestrians, on each intersection approach.</p> <p>Traffic signals are appropriate based on land access needs and the spacing of major roads. To identify if a signalized intersection is warranted, it must meet the justifications in the MUTCD which evaluates existing operations and safety and potential improvements to them.</p>	<p>Special type of hybrid beacon signal used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk. Comprised of two red signal heads centered above a yellow signal head and is not illuminated until it is activated by a pedestrian, triggering the warning flashing yellow lens on the major street.</p> <p>HAWK signals are appropriate if gaps in traffic are not adequate to permit pedestrians to cross, if vehicle speeds and traffic volumes on the major street are too high to permit pedestrians to cross, or if pedestrian delay is excessive.</p>
<p>References: FHWA, <i>Pedestrian Hybrid Beacon</i>, FHWA-SA-12-012, October 2014. Available at: http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.cfm</p>	

⁶ <https://www.fhwa.dot.gov/publications/research/safety/10045/>



HAWK Signal at Central Ave and San Pablo St: This intersection is at the west end of the International District Library, which is currently under construction. When complete, the library will serve as a major community facility and is expected to attract a large number of trips via public transit, walking, and biking. The project includes improved sidewalks along both Central Ave and San Pablo St north of Central Ave. However, access from the south side of Central Ave is in need of improvement. In addition to the library, a UNM Health Clinic is located on San Pablo St south of Central Ave; the clinic currently attracts a large number of non-auto trips. From a spacing standpoint, the intersection is a logical location for a crossing since San Pablo St is located about 1,700 ft (1/3-mile) east of Louisiana Blvd and about 1,200 ft west of Pennsylvania Blvd.

HAWK Signal at Central Ave and Conchas St: A signalized pedestrian crossing at this location would provide spacing in line with City guidance and ensure an equitable level of pedestrian connectivity along the corridor by providing a signalized crossing between every major road along the corridor. The intersection is also a high-risk location due to its off-set design in which motorists traveling in opposite directions could come into conflict when making left turns from the center-turn lane. Multiple pedestrian fatalities occurred at the intersection in 2014. Additional benefits from a HAWK signal include the fact that Conchas St is one of few roads in the area that provides access to the neighborhoods north and south of Central Ave.

Table 19: Spacing of Proposed Signalized Crossings

Segment	Spacing/Distance
Louisiana Blvd to San Pablo St (Proposed HAWK)	0.32 mi / 1,700 ft
San Pablo St to Pennsylvania Rd	0.22 mi / 1,150 ft
Pennsylvania Rd to Texas St (HAWK in Progress)	0.22 mi / 1,150 ft
Texas St to Wyoming Blvd	0.29 mi / 1,500 ft
Wyoming Blvd to Zuni Rd	0.35 mi / 1,850 ft
Zuni Rd to Moon St	0.17 mi / 900 ft
Moon St to Conchas St (Proposed HAWK)	0.32 mi / 1,700 ft
Conchas St to Eubank Blvd	0.19 mi / 1,000 ft



Figure 16: Existing and Proposed Traffic and HAWK Signals along Central Ave



Figure 17: Aerial View of Proposed HAWK Signal at San Pablo St



Figure 18: Street-Level Rendering of Proposed HAWK Signal at San Pablo St



Complementary Feature: Median/Fencing

An additional option considered as part of this study to manage pedestrian travel is the use of median barriers with fencing along the corridor. This concept is similar to fencing applied along University Blvd from Coal Ave to Basehart Ave and is specifically intended to reduce pedestrian crossings in locations that are not protected and where more severe crashes have occurred. Median barriers could be applied along the corridor or in a more targeted manner near intersections to encourage pedestrians to cross at the crosswalk rather than mid-block.

Figure 19: Median Barrier Fencing along University Blvd



The installation of median barriers along the corridor carries significant pros and cons. Among the concerns are issue of community perception and impacts to area residents, including limiting pedestrian travel along a corridor with high levels of transit activity and where designated crossings are currently 0.5-mile apart for most of the corridor. The installation of proposed HAWK signals would reduce the spacing of pedestrian crossings to about 0.25 miles on average, which is still a greater distance than most pedestrians are willing to walk to access a crossing location. Median barriers could also substantially reduce business access; if this option were pursued, left turn bays should be provided every ¼-mile or less.

Benefits of median barriers include reducing pedestrian travel in hazardous areas and the potential for crashes involving vehicles traveling in opposite directions. Other benefits of median barriers would be realized if the countermeasure were combined with HAWK signals, which would reduce the distance between crossings. However, the installation of median barriers does not necessarily address the roadway conditions that make Central Ave unsafe (i.e. high speeds, poor sidewalks conditions, little separation between motorists and pedestrians).

This study recommends that median fencing be considered as a potential next step if other countermeasures are ineffective.⁷ However, significant community outreach is warranted to ensure any median fencing is applied in a way that is acceptable to the residents and businesses who would be most affected.

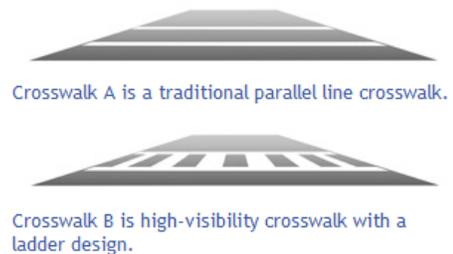
Intersection/Pedestrian Crossing Design

Purpose/Benefits

Intersections comprise major obstacles for pedestrians as they are trying to cross a roadway. Having to walk a long distance to cross a roadway, poorly visible striping, long wait times, and the speed and frequency with which vehicles make turns at intersections can affect safety and pedestrian comfort levels. These barriers can also lead to an increase in the desire for pedestrians to cross at unmarked and undesired locations.

However, the design of crossings can reduce the potential conflicts among pedestrians and motorists. Visible and well-maintained striping and signage can increase visibility of pedestrians. Reducing the length of crossings can reduce barriers for some pedestrians, particularly for those who may travel at slower speeds including kids, parents with strollers, individuals with disabilities, and seniors. To combat this challenge, crossing designs that include techniques such as lane reductions, curb extensions, or median refuge islands can reduce crossing distance and limit the exposure of pedestrians crossing a roadway.

Figure 20: Marked Crosswalk Types



Intersections and designated crossings are a frequent site of pedestrian-involved crashes for the simple reason that more pedestrians are present at these locations. Street design techniques that require motorists to making slower turning movements, such as smaller curb return radii, and

⁷ Per the FHWA: "At some locations, crossing a street would expose the pedestrian to a very high risk of being struck by a motor vehicle. In these instances, the preferred treatment consists of modifying or reconstruction the roadway to make it safer for pedestrians to cross. However, in extreme cases where this is not practical it may be necessary to prohibit certain pedestrian crossings. Since signs ("DO NOT CROSS HERE") are often ineffective, barriers should be considered to direct pedestrians away from hazardous crossing." <https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/17.htm>



restricting right turns on red lights when drivers are scanning for gaps in oncoming traffic rather than looking at the crosswalk, can reduce crash frequency and severity.

Note: This section focuses on signalized crossings as unsignalized crossings are not appropriate along Central Ave under the current configuration.

Applicability to Study Area Conditions

The existing signalized crossings at major intersections in the study area feature long crossing distances (about 85'), which can make crossings challenging for some pedestrians. Options to reduce crossing distance for existing crosswalks are limited. The only intersection with a formal median refuge is the west side of Louisiana Blvd. A raised median is present on the east side of Pennsylvania Rd which blocks the crosswalk and creates a barrier for pedestrians.⁸

The existing crosswalk striping is in poor condition for all intersections except Louisiana Blvd, which was recently improved as part of installation of ART. Most crosswalks feature traditional parallel design, with the exception of Louisiana Blvd which features a continental (also referred to as a ladder) striping design. See Figure 21 for aerial views of signalized intersections along Central Ave. Parallel design crosswalks tend to be less visible than the transverse design alternative depicted in Figure 22. Per the DPM, crosswalks should feature continental striping design, with the option to use additional transverse lines.

Other considerations include:

- Crosswalks are push-button activated, and the pedestrian walk signal is not automatically triggered with each light cycle. The pedestrian crossing times meet MUTCD requirements.
- Sight distance issues were identified at various intersections along the corridor. See the Existing Conditions section for a complete list.
- A preliminary review of curb return radii did not reveal any locations where the radii are greater than the recommended values in the DPM.

⁸ Note: This section focuses on signalized crossings as unsignalized crossings are not appropriate along Central Ave under the current configuration.



Figure 21: Crosswalk Design at Signalized Intersections along Central Ave

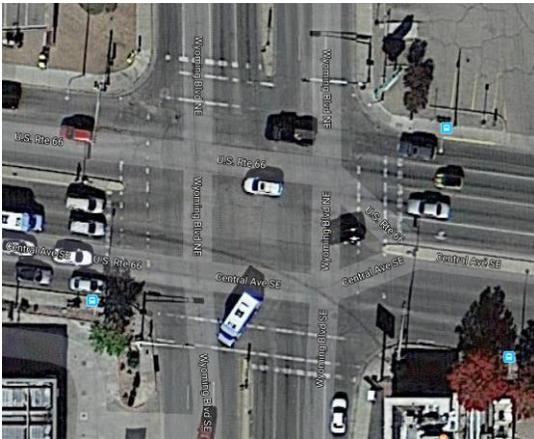
Louisiana Blvd



Pennsylvania Rd



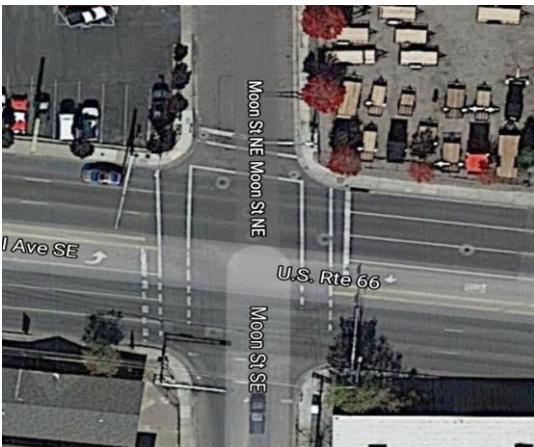
Wyoming Blvd



Zuni St



Moon St



Eubank Blvd



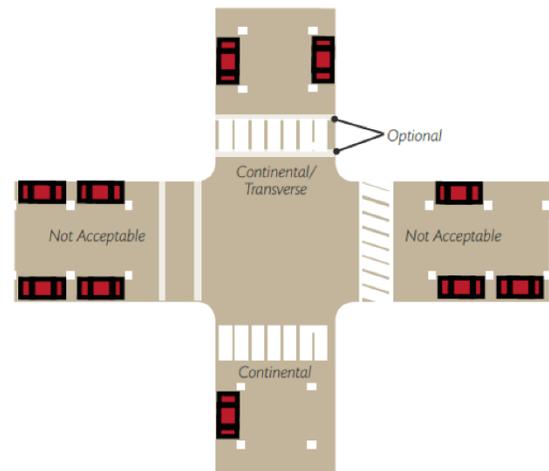
Implementation Opportunities

Median Refuge Island at Pennsylvania Rd: Remove raised median on east side of Pennsylvania Rd and create a refuge island in its place.

Enhance striping at signalized intersections: The City should proactively address striping at each of the signalized intersections (traffic signal or HAWK signal) along the corridor and utilize the continental striping design recommended in the DPM.

Restrict Right Turns on Red: This treatment is appropriate for locations with high levels of transit activity, including the ART stop at Louisiana Blvd. The fact that Louisiana Blvd does not have dedicated right turn lanes at Central Ave means that operations would be minimally affected by restricting turning movements. Further evaluation is recommended at the intersections of Wyoming Blvd and Eubank Blvd to determine if pedestrian volumes justify restrictions to vehicle travel, and should be considered in the future if dedicated transit lanes are extended east of Louisiana Blvd. Other intersections where right turns may be restricted include locations where there are issues related to sight distance, such as westbound Central Ave at Pennsylvania Rd.

Figure 22: Crosswalk Marking



Sidewalk Design

Purpose/Benefits

Sidewalks support safe pedestrian travel by providing protection from motor vehicles and help create comfortable places for people to walk. Sidewalks should be of sufficient width to allow individuals to pass in opposite directions and should be clear of obstructions such as light poles and with even surfaces to reduce risks of tripping. Sidewalks should also comply with ADA standards to allow individuals with disabilities to travel safely.

To maximize comfort levels, the design for sidewalks should include buffers comprised of a landscaped area and/or striping along the roadway edge. Buffers provide benefits for reducing travel speeds and lowering crash rates by creating a sense of enclosure and narrowing the focus of drivers. Buffers also provide protection for pedestrians by reducing the likelihood of them being struck if motorists depart the roadway and lowering the risks if pedestrians fall or move into moving traffic, especially when trying to avoid sidewalk obstructions.

Applicability to the Study Area

The DPM calls for sidewalk widths ranging from 6-10' with a landscape buffer of 6-8'. Currently, sidewalks in the study area generally range between 5-7', not accounting for obstructions. When accounting for obstructions, however, the safely passable sidewalk width in some locations may only be 3-4'. There are no buffers along the corridor.



There are also various ADA compliance issues along the corridor. The sidewalks in the study area have uneven surfaces that create potential tripping hazards, particularly at intersections and crossing driveways. Many intersections also lack detectable warning surfaces, which are required by ADA to be installed at street crossings and transitions from the sidewalk to the roadway to ensure safety for people with visual impairments.

Implementation Opportunities

This section includes both short- and long-term recommendations related to sidewalk design. While long-term reconfiguration of the corridor may include comprehensive reconstruction and redesign of the sidewalks, there are various short-term measures that could be taken to enhance pedestrian safety and comfort level. In both scenarios, the City of Albuquerque should aspire to provide as much separation between pedestrians and motorists as possible. All efforts should be made to ensure the sidewalks are ADA compliant by removing unnecessary obstructions or adding sidewalk passing areas where obstructions cannot be efficiently relocated.

Short-Term Recommendations

Striped Sidewalk Buffers: The installation of striped buffers can be achieved as part of a roadway restriping effort that narrows travel lanes and/or the center turn lane and reallocates space between the outside lane and the sidewalk. No changes would be required to the roadway geometry. Table 20 depicts the pedestrian LOS under proposed conditions.

Consolidate Driveways: Consolidating driveways can help reduce potential conflict points between motorists and pedestrians. In instances where driveways can be permanently eliminated, level sidewalks should be considered. See the Access Management section for additional discussion.

ADA Compliance: The City of Albuquerque should remove sidewalk obstructions, where possible. Where such obstructions cannot be removed, sidewalks should be widened to provide adequate passing areas. Where access has been limited for driveways along the corridor, the sidewalk surface may be leveled.

Barriers to Prevent Unwanted Crossings. Identify areas where pedestrians are making decisions to cross at unsafe locations and install barriers that prevent crossing.

Table 20: Pedestrian LOS with Striped Buffer

Location	Level of Service (Based on 6' Sidewalks)		Level of Service (Based on 3-4' Clear Zone)^		Level of Service (Proposed Conditions) *	
Louisiana Blvd to Pennsylvania St	3.38	C	4.48 / 3.60	E / D	3.32	C
Pennsylvania St to Wyoming Blvd	3.18	C	4.64 / 3.40	E / C	3.12	C
Wyoming Blvd to Zuni Rd	3.19	C	4.66 / 3.42	E / C	3.13	C
Zuni Rd to Eubank Blvd	3.43	C	4.89 / 3.65	E / D	3.37	C

^These columns more closely resemble the existing sidewalk conditions where obstructions and uneven surfaces are present.

*The inputs are based on 6' clear sidewalk and 2' striped buffer.



Sidewalk Extension

Another option to create a greater degree of physical separation between pedestrians and motorists is to extend the sidewalks into the street. It is important to note that extending the sidewalks by even a small amount (e.g. 2-4') has drainage implications and could limit the roadway drainage capacity. Options to maintain the drainage capacity of the roadway without changing the roadway configuration include shortening the curb profile or setting the curb extension pavers at a lower plane than the curb height. Drop inlets could be moved or extended into the street. It is also possible to reshape the crown during repaving by changing the mill profile to take more pavement off the edge than the crown and using an asphalt/concrete mix that requires less depth.



Long Term Recommendations

Widen Sidewalks: Sidewalks should be reconstructed and widened as part of a comprehensive corridor reconfiguration or reconstruction project. See the discussion on road diet options for additional information. Sidewalk widths should be 6-10' and free of obstructions. Table 21 depicts the pedestrian LOS under proposed conditions.

Add Landscaping Buffers and Pedestrian Amenities: Per the DPM, landscape buffers should be provided along Major Transit Corridors such as Central Ave and should feature a width of 6-8'. The landscaping buffer should include pedestrian-scale lighting as well as shrubs and shade trees as long as sight distance is not impacted. The City may also consider amenities such as benches and water fountains, as recommended in previous planning efforts along the corridor.

Table 21: Pedestrian LOS with Widen Sidewalks and Landscape Buffers

Location	Level of Service (Based on 3-4' Clear Zone)^		Level of Service (Proposed Conditions)*	
Louisiana Blvd to Pennsylvania St	4.48 / 3.60	E / D	3.09	C
Pennsylvania St to Wyoming Blvd	4.64 / 3.40	E / C	2.89	C
Wyoming Blvd to Zuni Rd	4.66 / 3.42	E / C	2.91	C
Zuni Rd to Eubank Blvd	4.89 / 3.65	E / D	2.99	C

^These columns more closely resemble the existing sidewalk conditions where obstructions and uneven surfaces are present

*Assumes 8' sidewalk and 6' landscape buffer plus 35 MPH speed limit



Access Management

Purpose/Benefits

Access management involves a range of controls along a roadway to improve operations and reduce conflicts. A key strategy in access control is reducing the number of locations where turning movements can be made through the use of medians/center turn lanes, limiting the number of driveways along a corridor, and restricting the locations where vehicles may make left turns across oncoming traffic. Raised medians can also reduce conflicts among motorists traveling in opposite directions.

Research has found that crashes increase along roadways as the number of driveways increases, while fewer driveways that are spaced farther apart have improved safety conditions. These benefits result from the reduction in conflict points along a roadway. Center turn lanes also enhance safety by reducing the potential for rear-end collisions and may be combined with medians to provide refuge for pedestrians at both designated and undesignated crosswalks.

The frequency of site access points depends on the functional classification of the corridor and whether the roadway is located in a residential or non-residential area. In this case of this study, the DPM recommends no more than two access points per 300' of frontage for commercial site access. Per the Comprehensive Plan, there should be minimal driveways in high pedestrian activity areas to reduce conflicts between motorists and pedestrians.

Raised medians are also an effective tool for limiting access and turning movements. Turn bays may be used in combination with medians where access to local roads or sites is desired. Center turn lanes do not manage access but reduce the risk of rear-end collisions by ensuring that turning vehicles out of the general-purpose lanes.

Applicability to Study Area

Raised medians with turn bays are present for nearly all local roads and many driveways and site access points from Louisiana Blvd to Wyoming Blvd and from General Hodges St to Moon St. As a result, the access management benefits of these medians are limited. In some locations, medians are used as informal refuge islands at unmarked crosswalks. Other portions of the corridor feature two-way center turn lanes, which do not manage access but reduce the risk of rear-end collisions by ensuring that turning vehicles are out of the general-purpose travel lanes.

There are over 100 curb cuts located within the project area that are utilized today. Approximately 35% of these curb cuts are in violation of the location criteria established in the DPM, either because they are too close together or because they do not meet the requirements related to minimum distances from intersections. Other driveways and access points are technically available but have been obstructed with a gate to prevent vehicular access.

Implementation opportunities

Remove Excess Driveways/Curb Cuts: The City of Albuquerque should remove unnecessary driveways, including locations that are in violation of DPM standards (see Figure 24 through Figure

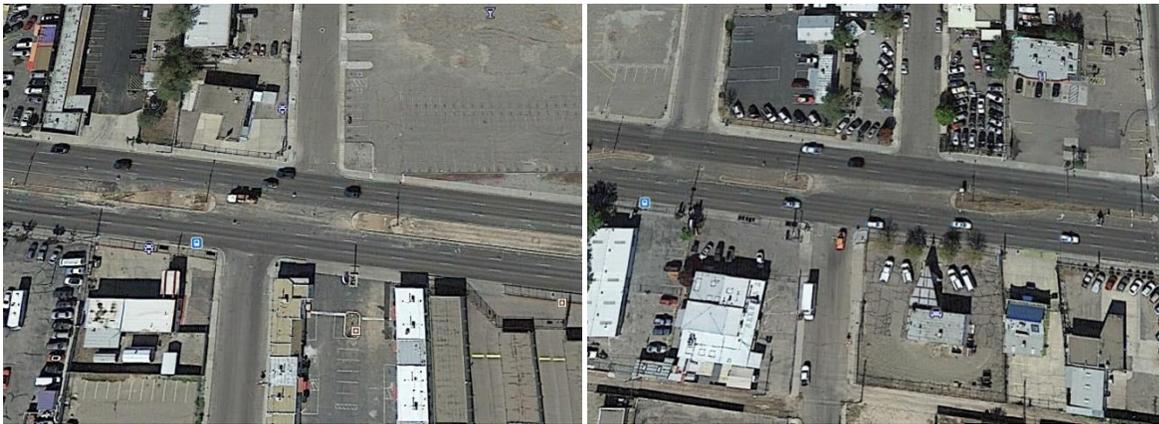


27). Consolidating access points would reduce turning movements and limit conflicts between pedestrians and motorists. The criteria used to determine if a curb cut could be removed include:

- Multiple access points with appropriate internal circulation within the site parking area(s)
- Violations of DPM standards, including distance from intersection or between driveways

Close Gaps in Median Islands: The intersections of Central Ave with San Pablo St and Dallas St feature off-set intersections and open median cuts where vehicles traveling in opposite directions and making left turns could come into conflict in the median/center turn lane area. Closing these medians would reduce potential conflicts, though the medians would limit access to the local roads to right-in, right-out intersections only. Provisions would need to be made to allow U-turns at downstream traffic signals. The closure of the median at San Pablo St is proposed as part of the HAWK signal.

Figure 23: Open Median Cuts at San Pablo St and Dallas St



Evaluate Raised Medians in Place of Two-way Center Turn Lanes (*Conditional Recommendation*): Construction of medians in place of two-way center turn lanes should be considered for Central Ave east of Wyoming Blvd if a comprehensive reconfiguration of the project is *not* pursued in the near term.

Figure 24: Driveways along Central Ave from Louisiana Blvd to Pennsylvania Rd



Figure 25: Driveways along Central Ave from Pennsylvania Rd to Wyoming Blvd



Figure 26: Driveways along Central Ave from Wyoming Blvd to Moon St

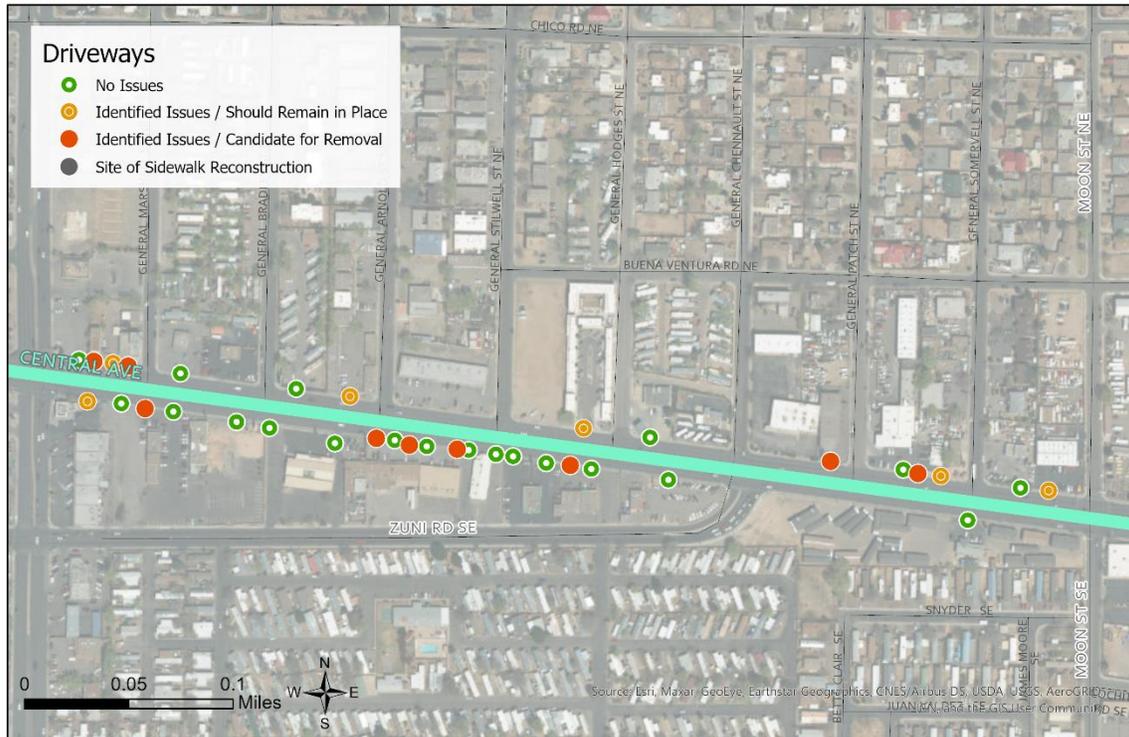


Figure 27: Driveways along Central Ave from Moon St to Eubank Blvd



Summary of Recommendations

This study identifies three tiers of recommendations based on feasibility and overall need. **Tier 1** represents a suite of recommendations that could be undertaken in the near-term and that specifically address existing conditions and design issues along the corridor. Depending on the success of those strategies, a set additional measures (**Tier 2**) may be applied, including a temporary road diet using additional striping. The long-term recommendation for the corridor (**Tier 3**) is a permanent road diet in which the roadway is reconfigured.

Tier 1: Near-term Measures

The study recommends that a set of primary recommendations be implemented long Central Ave in the near term. These recommendations were selected because of their high level of feasibility for implementation; the recommendations are also complementary and may have cumulative safety benefits. Impacts over time should be monitored and additional improvements may be considered pending funding availability.

Near-term recommendations (presented in order of priority)

1. **HAWK signals** – Introduce additional crossing locations to reduce the distances between signalized crossings, provide traffic calming benefits, and address locations with design issues and where severe crashes have occurred
2. **Lane narrowing** – Reduce the width of travel lanes to lower vehicle speeds and reallocate space for a striped buffer between motorists and pedestrians
3. **Lighting improvements** – Provide greater visibility for pedestrians at night with pedestrian-scale lighting between Louisiana Blvd and Wisconsin St.
4. **Intersection and crosswalk improvements** – Refresh striping at crosswalks to make pedestrian crossing areas more visible. The City may also consider median fencing along turn bays.
5. **Sidewalk improvements** – Remove obstructions and provide level sidewalks to increase pedestrian comfort level and reduce the need for pedestrians to enter into the roadway

Tier 2: Conditional Measures

Tier 2 involves a series of conditional measures that could be applied along the corridor depending on the success of the short-term improvements. These include a temporary road diet and the use of median barriers along the corridor. The use of a temporary measure is considered a conditional recommendation in that the step could be bypassed if the City decided to pursue a permanent road diet in the near-term rather than the long-term.

The **temporary road diet** would utilize striping to convert the outside driving lane into a buffered bike lane. Dashed green paint is recommended at driveway entrances to alert motorists and bicyclists of upcoming conflict points. Other delineators such as raised beds may be utilized along portions of the corridor with fewer driveways, while flex posts could be used at intersections to require drivers to stay out of the bike lane and take turns more slowly.



This study recommends that a road diet be accompanied with **access management and driveway closures to driveways** to reduce conflict points. The City may consider immediate outreach to businesses to see if any would be willing to pursue temporary driveway closures through cones or planters to reduce access points.

The use of **median fencing barriers** is a conditional measure that may be reevaluated for implementation depending on the success of the Tier 1 recommendations and pending a concerted outreach effort to businesses and residents in the region. Though such barriers are generally effective in reducing pedestrian-related crashes – and severe crashes in particular – they can significantly reduce access for pedestrians and motorists.

Tier 3: Long-Term Recommendation

Ultimately, this study recommends a **road diet** as the most effective strategy for addressing safety issues along the corridor. However, this study recognizes the challenges of applying a road diet on a principal arterial and recognizes that its implementation may not be feasible without additional community outreach to understand impacts to the business community.

This study acknowledges the challenges and expenses associated with such a reconfiguration of the corridor, including managing access and modifications to the curb lines, with likely impacts to drainage infrastructure along the corridor. A road diet could be undertaken in phases from Louisiana Blvd to the east since Central Ave transition to two lanes in each direction at Louisiana Blvd. A cost estimate for a permanent road diet is not provided as the design is not known at this time.

Table 22: Recommendations Summary Table

Design Factor(s)	Location	Recommendation	Timeframe	Cost
Access Management	Corridor-wide	Close unnecessary driveways	Short to Medium-Term	(see Sidewalk Design)
Access Management	East of Wyoming Blvd	<i>Conditional strategy:</i> Replace two-way center turn lane with raised median and turn bays if major reconfiguration is not pursued	Short to Medium-Term	To be determined
Intersection / Pedestrian Crossing Design	Signalized Intersections	Install median barriers at intersection turn bays to direct pedestrian travel to signalized crossings	Short-Term	
Intersection / Pedestrian Crossing Design	Corridor	<i>Conditional strategy:</i> Median barriers along corridor to direct pedestrian travel to signalized crossings (further evaluation needed)	Short-Term	\$900,000 - \$1 million
Intersection / Pedestrian Crossing Design	Pennsylvania Rd	Convert raised median in crosswalk to median refuge	Short-Term	Nominal



Design Factor(s)	Location	Recommendation	Timeframe	Cost
Intersection / Pedestrian Crossing Design	Louisiana Blvd	Restrict right turns on red lights	Short-Term	Nominal
Intersection / Pedestrian Crossing Design	Signalized Intersections	Enhance striping ; convert crosswalk striping to continental/ladder design	Short-Term	\$15,000
Pedestrian Crossing Frequency	Central Ave & San Pablo St	HAWK signal ; close median cut	Short-Term	\$350,000-500,000
Pedestrian Crossing Frequency	Central Ave & Conchas St	HAWK signal ; close median cut	Short-Term	\$350,000-500,000
Reduce Vehicle Speeds	Corridor-wide	Narrow travel lanes through re-striping and create striped buffer between outside lane and sidewalk	Short-Term	\$190,000
Reduce Vehicle Speeds	Corridor-wide	<i>Conditional: Temporary road diet</i> through restriping	Short to Medium-Term	\$275,000
Reduce Vehicle Speeds / Sidewalk Design	Corridor-wide	Reconfigure roadway through a road diet or by extending ART lanes; widen sidewalks and add landscaping buffers	Long-Term	High cost; to be determined
Sidewalk Design	Corridor-wide	Rebuild sidewalks where driveways were closed to create level surfaces	Short to Medium-Term	\$4,300 per site
Sidewalk Design	Corridor-wide	ADA compliance : address obstructions and other ADA issues at intersections	Short to Medium-Term	Low cost; varies by location
Street Lighting	Corridor-wide	Add pedestrian-scale lighting ; Louisiana Blvd to Wisconsin St	Short to Medium-Term	\$1,000,000



