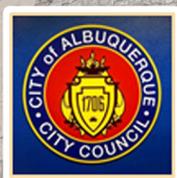


# IRVING BLVD

TRAFFIC CALMING STUDY | JANUARY 2022



Bohannon  Huston

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## INTRODUCTION

### PURPOSE AND NEED

Irving Blvd is a two-lane roadway located in northwest Albuquerque that traverses a series of residential areas and connects to major regional routes such as Unser Blvd, Golf Course Rd, and Coors Blvd. Despite its residential character, Irving Blvd has few sidewalks as well as gaps in its biking infrastructure that create a need for enhancements that support non-motorized travel along the corridor. The corridor is also subject to concerns about speeding among area residents.

The purpose of the Irving Blvd Traffic Calming Study is to recommend roadway design treatments for Irving Blvd that will slow vehicle speeds, improve traffic safety, and create more comfortable walking and biking infrastructure along the corridor. This study is part of a general initiative on the part of the City of Albuquerque to pursue Complete Streets improvements and create a greater range of transportation options beyond single-occupancy vehicle travel. Irving Blvd has also been identified as a gap in the regional bikeway network in previous planning efforts. The study was commissioned in 2021 by Councilor Cynthia Borrego and overseen by the City of Albuquerque Council Services Department.

### STUDY CONTEXT

Though currently classified as a major collector, the Irving Blvd corridor is identified as a Community Principal Arterial in the Long Range Roadway System based on previous assumptions that Irving Blvd would need to be widened to accommodate future travel demand. However, the changes in regional travel patterns in recent decades, including steady levels of traffic rather than increases in demand over time, and requests from residents to make Irving Blvd a more residential street, have made the City reassess the long-term role and function of the corridor. The current Irving Blvd study originated from requests from residents for the City to build sidewalks and implement measures to reduce speeding.

The opportunity to reconsider the desired design characteristics of Irving Blvd is supported by the fact that other corridors in the area serve a greater role in moving vehicle traffic. Parallel east-west facilities such as Paradise Blvd and McMahon Blvd serve as the primary roadways for accessing local destinations and other portions of the metropolitan area. Irving Blvd provides important connections to arterials for residents who live in adjacent neighborhoods but does not serve as a major corridor for through-traffic.

Due to the presence of alternative roadways for vehicle through-traffic and the desire for a more complete street-type roadway design, this study evaluates options and provides recommendations for a multi-modal route along Irving Blvd through calming traffic and improved bicycling and pedestrian facilities. These recommendations strive to promote safety while also allowing for efficient movement of neighborhood vehicle traffic.



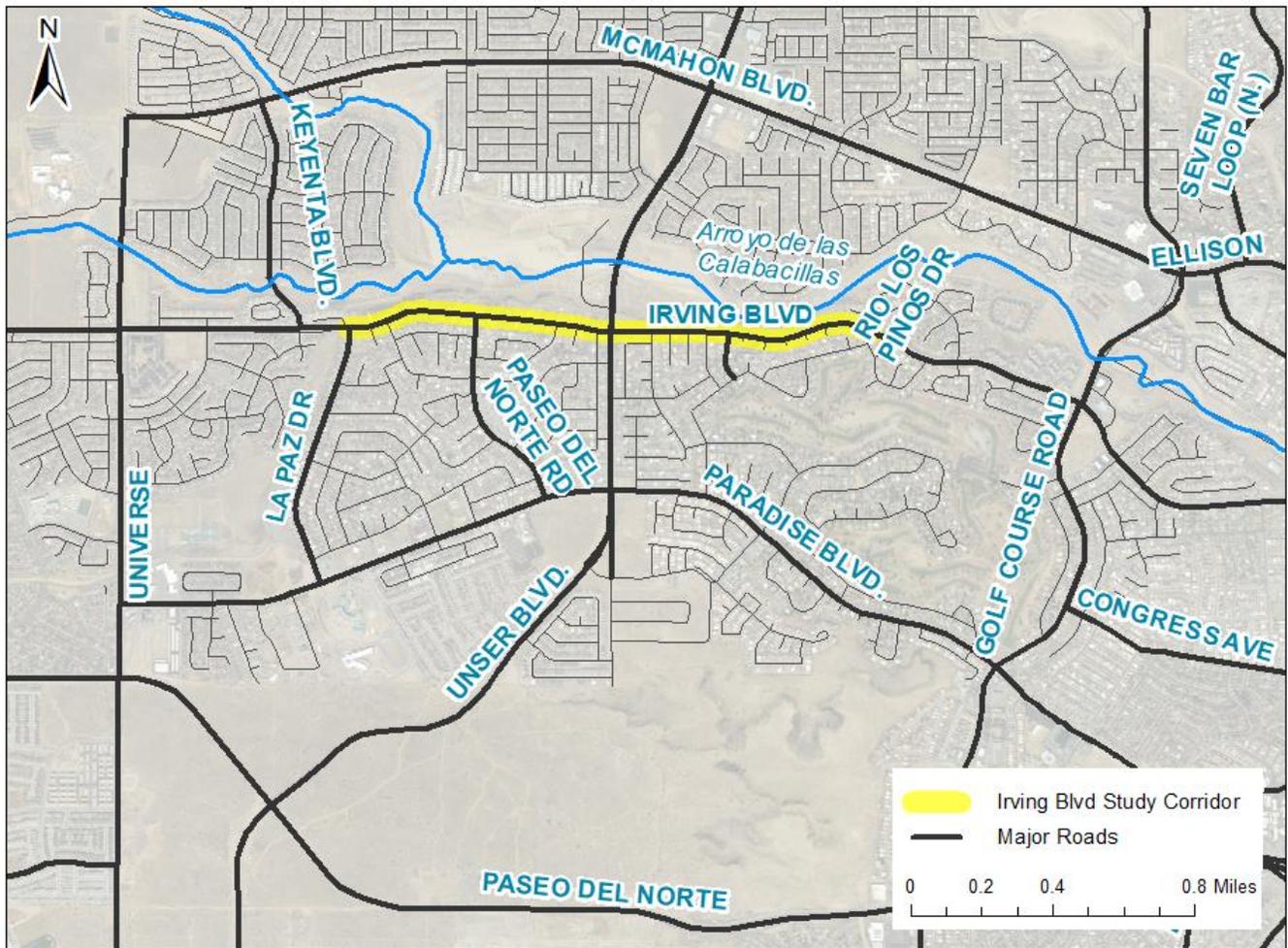
# EXISTING CONDITIONS

## STUDY AREA

The Irving Blvd study corridor is located in Northwest Albuquerque and extends from La Paz Dr on the west to Rio Los Pinos Dr on the east (see Figure 1). The study corridor is 1.5 miles long and is classified as a major collector. Irving Blvd is bisected by Unser Blvd, a regional north-south principal arterial that serves regional traffic needs and carries about 25,000-30,000 vehicles per day near Irving Blvd. The land uses surrounding the corridor are primarily single-family residential.

The study area can be generally divided into two segments: west and east of Unser Blvd. Though both segments of the corridor serve residential areas, the segments feature different roadway configurations and traffic levels and will require somewhat different strategies for improvements.

Figure 1: Irving Blvd Study Corridor and Regional Context



## ROADWAY CONFIGURATION

### WEST OF UNSER BLVD

On the west side of Unser Blvd, Irving Blvd's roadway configuration consists of one vehicle travel lane in each direction and a continuous two-way left turn lane (TWLTL). The posted speed limit is 25 mph, though the segment of Irving Blvd to the west of the study corridor is posted at 35 mph.

Narrow bike lanes run in both the eastbound and westbound directions along this segment. There are sidewalks on the south side of the street between Paseo del Norte Rd and Unser Blvd, but the existing facilities are narrow and in poor condition. Sidewalks are present on the south side of the street from Paseo del Norte Rd to Unser Blvd only; there are no sidewalks on the north side of the street. The land uses along this segment are entirely residential and homes on both the north and south sides of Irving Blvd along this segment have driveways that lead directly onto Irving Blvd.

Figure 2 shows a typical cross section on Irving Blvd between La Paz Dr and Paseo del Norte Rd and Figure 3 shows a typical cross section between Paseo del Norte Rd and Unser Blvd.

Figure 2: Typical Cross Section between La Paz Dr and Paseo del Norte Rd

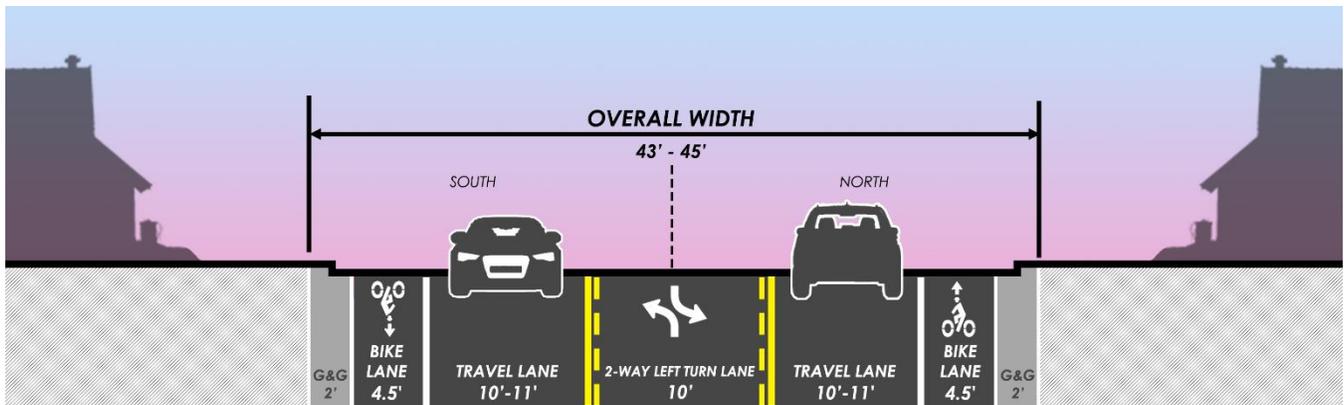
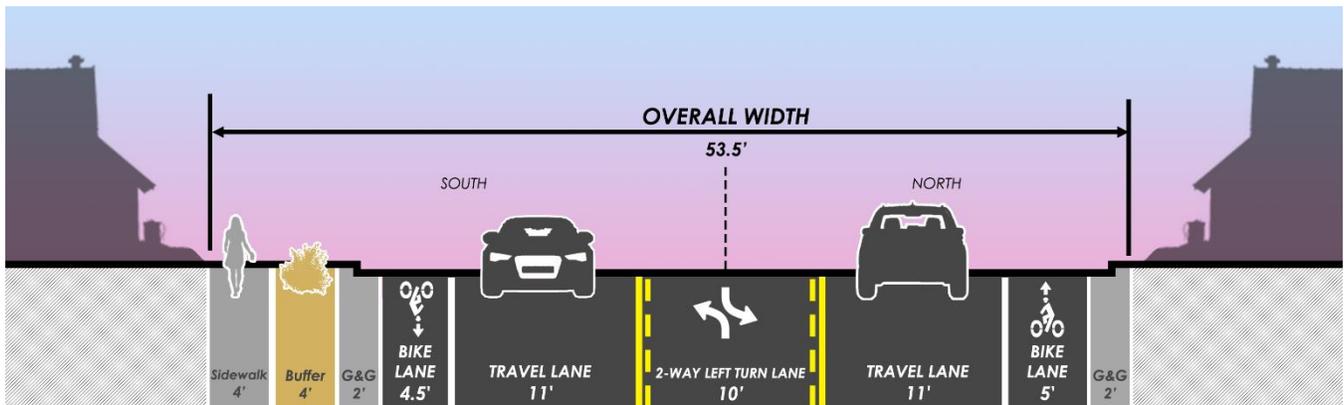


Figure 3: Typical Cross Section between Paseo del Norte Rd and Unser Blvd

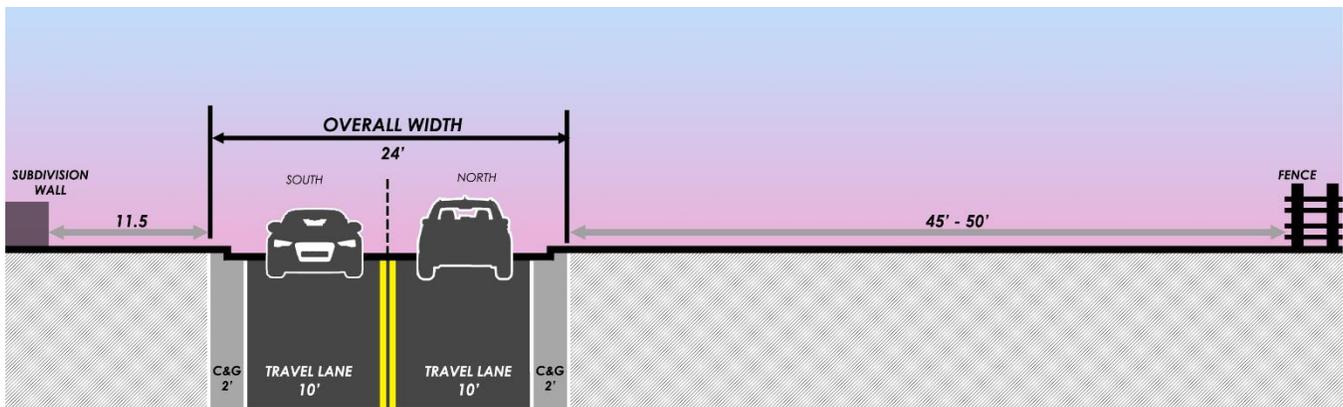


## EAST OF UNSER BLVD

East of Unser Blvd, Irving Blvd consists of one vehicle travel lane in each direction. There are no TWLTLs, bike lanes, or sidewalks along this segment. The posted speed limit is 30 mph. Figure 4 shows a typical cross section along the segment of Irving Blvd between Unser Blvd and Rio Los Pinos Dr.

Unlike the segment west of Unser Blvd, there are few driveways and curb cuts along the eastern segment of the study corridor. Though the segment is bordered by residential land uses to the south, homes face away from Irving Blvd and subdivision walls and fences line the streetscape. Residents can access their homes either via local roads or cul-de-sacs off of Irving Blvd. On the north side of the roadway, city-owned vacant land extends for about 45-50 ft to a fence line that delineates the boundary of Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) right-of-way. North of the fence line is a steep embankment that descends to the Calabacillas Arroyo.

Figure 4: Typical Cross Section, East of Unser Blvd



## INTERSECTION OF IRVING BLVD AND UNSER BLVD

Irving Blvd at the signalized intersection with Unser Blvd has a wider roadway footprint than other locations along the study corridor. Westbound travel lanes on Irving Blvd include a dedicated left turn lane, a through-traffic lane, and a right-turn slip lane with a slip lane island. Eastbound travel lanes include a through-traffic/right-turn lane and dedicated left turn lane. On Unser Blvd, there are two through-traffic lanes and a dedicated left turn lane for both northbound and southbound traffic.

While there are pedestrian push-buttons and crosswalks for each approach, there are no curb ramps or sidewalks that extend up to the push-buttons. Figure 5 provides an aerial image of the Unser/Irving intersection configuration.



IRVING BLVD TRAFFIC CALMING STUDY

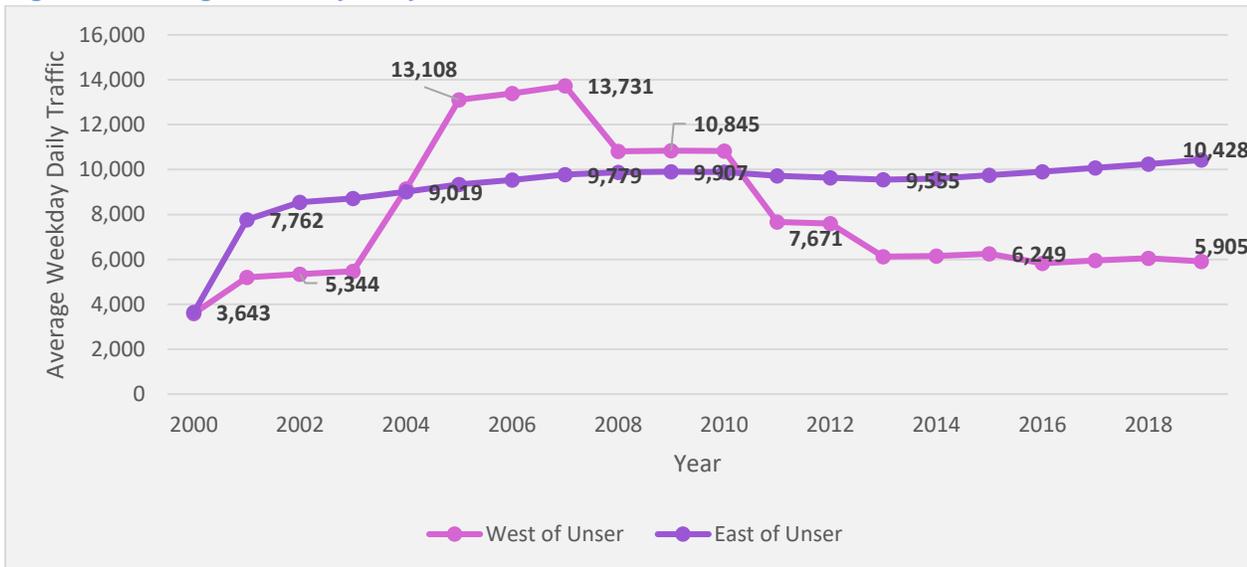
Figure 5: Unser/Irving Intersection Configuration



**AVERAGE WEEKDAY DAILY TRAFFIC**

Average weekday daily traffic (AWDT) is about 6,000 on the west side of Unser Blvd and 10,400 on the east side. Traffic volumes on the west side of Unser Blvd declined from 2007 to 2013 and have remained relatively stable since 2013. MRCOG data indicates that daily traffic volumes on the east side of Unser Blvd have been stable for the last 15 years with an average annual increase of less than one percent. Figure 6 charts AWDT from 2000 to 2019 for both segments of Irving Blvd.

Figure 6: Average Weekday Daily Traffic, 2000-2019



Source: MRCOG Traffic Counts Program



## TRAFFIC CONGESTION AND VOLUME-TO-CAPACITY RATIOS

Volume to capacity (V/C) ratios are a measure of traffic congestion that divides the number of vehicles (i.e. volume) by the roadway’s capacity (based on the number of vehicle travel lanes and its functional classification). Per MRCOG, as a 2-lane major collector, the capacity for Irving Blvd through the study area is 675 vehicles per hour per direction. A V/C ratio of 1.0 indicates that a roadway’s traffic volume is as at its designed capacity, while a score of less than one indicates that roadway is below capacity. The Mid-Region Council of Governments (MRCOG) considers a V/C ratio of 0.7 or higher to be approaching congested conditions. Table 1 shows the V/C ratios for the segment of the study corridor between La Paz Dr and Unser Blvd (west of Unser). Recent traffic counts and V/C data are not available for the segment of Irving Blvd east of Unser Blvd.

**Table 1: V/C Ratios, AM and PM Peak Hours for Segment West of Unser Blvd**

	AM Eastbound	AM Westbound	PM Eastbound	PM Westbound
<b>West of Unser Blvd</b>	0.65	0.24	0.35	0.52

Source: MRCOG Transportation Analysis and Querying Application

V/C ratios show that Irving Blvd is operating below its designed capacity during the morning and evening peak hours in both the eastbound and westbound directions. Because Irving Blvd does not experience high levels of congestion, the roadway does not need additional travel lanes to accommodate traffic. As daily traffic levels (i.e. AWDT) have remained steady over time, it is unlikely that Irving Blvd’s traffic levels will exceed capacity in the foreseeable future.

## PROJECTED TRAFFIC VOLUMES

According to the Trend Scenario of the most recent Metropolitan Transportation Plan (Connections 2040 MTP), developed by MRCOG for the Albuquerque Metropolitan Planning Area, traffic volumes along Irving Blvd through the study area are only projected to increase by a total of 1-3% between 2016 and 2040. Projected volumes therefore do not warrant an expansion of Irving Blvd; rather, long-term projections support the fact that traffic calming measures could be applied along Irving Blvd without negatively impacting regional travel patterns. See Appendix A: Travel Model Analysis for additional discussion on travel model results and potential impacts of traffic calming through the study area.

## SAFETY & CRASH DATA

There were a total of 77 crashes along the Irving Blvd study corridor from 2014 to 2018. The majority of crashes (62) occurred at or near the intersection of Unser Blvd and Irving Blvd. Of the crashes recorded during the five-year period, there were 22 injury crashes and zero fatal crashes. According to the MRCOG High Fatal and Injury Network (HFIN) map, the Irving Blvd study corridor is at or below the mean of Albuquerque roadways for fatal and serious injury crashes. See Table 2 for occurrences of crashes along the corridor by severity.

While there were no pedestrian or bicyclist-involved crashes along the study corridor, speeding and safety issues may still be an issue for residents and non-auto users of Irving Blvd. Low levels of bicyclist and pedestrian crashes do not necessarily imply that the corridor is safe for bicyclists and pedestrians. Rather, safety issues may lead to low levels of walking and biking which can be reflected in the data as low crash rates.



**IRVING BLVD TRAFFIC CALMING STUDY**

**Table 2: Total Crashes in Study Corridor, 2014-2018**

Intersection	Total Crashes	Fatal Crashes	Injury Crashes	Non-Severe Crashes	Pedestrian Involved Crashes	Bicyclist Involved Crashes
La Paz Dr	2	0	1	1	0	0
Alegria Rd	1	0	1	0	0	0
Paseo del Norte Rd	4	0	0	4	0	0
Avenida Serena Dr	1	0	0	1	0	0
Unser Blvd	62	0	16	46	0	0
Elmhurst Dr	2	0	1	1	0	0
Keeping Dr	3	0	1	2	0	0
Rio Los Pinos Dr	2	0	2	0	0	0
<b>Total</b>	<b>77</b>	<b>0</b>	<b>22</b>	<b>55</b>	<b>0</b>	<b>0</b>

Source: MRCOG

**EXISTING STRATEGIES TO MANAGE TRAFFIC SPEEDS**

Irving Blvd contains several types of signage that are be intended to slow traffic speeds. The section of the corridor west of Unser Blvd is designated the “Irving Boulevard Residential Area” with signage at La Paz Dr and near Avenida Serena Dr. This section of the corridor also has 25 mph speed limit signs, while posted speeds west of the study corridor are 35 mph. For eastbound traffic, there is a 35 mph speed limit sign near Kayenta Pl positioned about 450 ft before the residential area designation and the 25 mph speed zone.

**Figure 7: Residential Area Designation at La Paz Dr**



## IRVING BLVD TRAFFIC CALMING STUDY

Radar speed signs that provide feedback to motorists are also utilized along the corridor, with signs facing both directions of travel about 350 ft east of the intersection of Irving Blvd and Paseo del Norte Rd. These signs display driver speeds as vehicles approach the signs.

Despite signage that alerts drivers to slow down through the residential area, there are few design features or traffic controls to slow vehicle speeds. There are only two controlled intersections along the study corridor: the signalized intersection at Unser Blvd and a three-way stop-controlled intersection at Keeping Dr. The stop signs at Keeping Dr are likely due to restricted sightlines for vehicles turning onto Irving Blvd rather than for traffic calming purposes. It is important to note that the Manual of Uniform Traffic Control Devices (MUTCD) states that stop signs should not be used for speed control.

## BIKEWAYS

### EXISTING FACILITIES

Bike lanes are present along the study corridor west of Unser Blvd only. The existing bike lanes west of Unser Blvd are narrow, generally ranging in width from 3.5 ft to 4.5 ft with no buffer. The westbound bike lane begins at the intersection of Unser Blvd and continues through the length of the study corridor. The eastbound bike lane on Irving Blvd ends at Avenida Serena Dr and is replaced with an additional vehicle lane about 150 ft before the intersection with Unser Blvd.

**Figure 8: Westbound Bike Lane West of Unser Blvd, Looking East**



Bike facilities along Unser Blvd intersect with the Irving Blvd study corridor where a multi-use trail at sidewalk level runs along the northbound side of Unser Blvd. However, the trail ends just south of Irving Blvd and does not begin again until about 300 ft north of the intersection.



## IRVING BLVD TRAFFIC CALMING STUDY

Figure 9: Unser Blvd Multi-use trail, Looking South from Unser/Irving Intersection



Unser Blvd generally features bike lanes in both the northbound and southbound directions. However, north of Irving Blvd, there is a 650' gap in the northbound bike lane just after the intersection. Northbound bicyclists going straight on Unser must merge with vehicle traffic through the intersection to navigate the gap in bike facilities north of Irving Blvd. The southbound bike lane on Unser Blvd also terminates about 325 ft north of the intersection.

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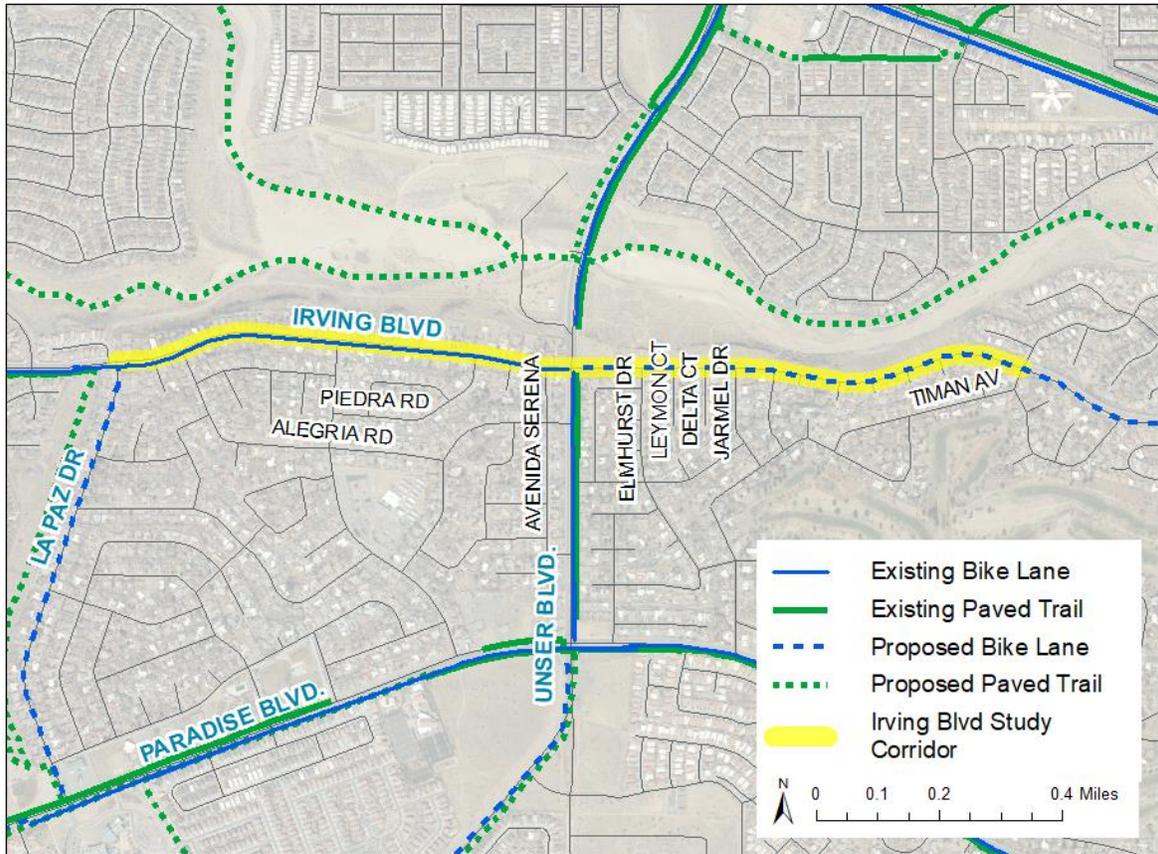
### PROPOSED BIKEWAYS

Various bikeway facilities have been proposed around the Irving Blvd study corridor. The most directly applicable of the proposed improvements, as identified in the MRCOG Long Range Bikeway Systems Map, is for bike lanes from Unser Blvd to Golf Course Rd. This corridor was also identified by the Greater Albuquerque Bicycling Advisory Committee (now the Greater Albuquerque Active Transportation Committee) in 2019 as one of the highest priority gaps in the regional bikeway network.

The City of Albuquerque Bikeways and Trails Facilities Plan (2015) proposes a paved trail in the Calabacillas Arroyo that would connect with the Calabacillas Arroyo Bike Trail to the east near Eagle Ranch Rd. West of Unser Blvd, the trail would fork north and south to follow the main Calabacillas Arroyo and the Calabacillas West Branch Arroyo (see Figure 10). The Bikeways and Trails Facility Plan also proposes a paved trail paralleling La Paz Dr which would intersect with the western end of the study corridor, and the Long Range Bikeway Systems Map includes future bike lanes on La Paz Dr.



Figure 10: Existing and Proposed Bicycle Facilities



## SIDEWALKS AND PEDESTRIAN FACILITIES

### EXISTING FACILITIES

Pedestrian facilities are generally limited on the Irving Blvd study corridor. The only location where continuous sidewalks are present is on the south side of Irving Blvd between Paseo del Norte Rd and Unser Blvd. However, sidewalks at this location are narrow (about 4 ft wide) with landscape buffers of about 4 ft. In many locations, overgrown landscaping and deteriorated pavement conditions make the sidewalk impassible (see Figure 12). Figure 11 maps the existing sidewalk locations as well as locations where City right-of-way exists to build new sidewalks without impacting residents' front yards or driveways.



IRVING BLVD TRAFFIC CALMING STUDY

Figure 11: Existing Sidewalk Locations



Figure 12: Overgrown Landscaping on Sidewalk Between Paseo del Norte NW and Unser Blvd



## AVAILABLE RIGHT-OF-WAY

While there are large gaps in the sidewalk network on the Irving Blvd study corridor, there are many locations with available right-of-way outside of the curb lines where new sidewalks could be built without impacting residences. East of Unser Blvd, there is approximately 11.5 ft on the south side of Irving Blvd between the curb and subdivision walls where a sidewalk could be built. There is also ample room for pedestrian facilities on the north side of Irving Blvd and east of Unser Blvd between the roadway and the escarpment above the Calabacillas Arroyo. Various informal walking trails are located in this space, which is part of the City of Albuquerque right-of-way.

**Figure 13: Space Between Curb and Subdivision Walls East of Unser Blvd, Looking West**



**Figure 14: Informal Trail East of Unser, Looking West**



## PEDESTRIAN CROSSINGS

The only marked pedestrian crossing along the study corridor is at the Unser Blvd intersection. The nearest pedestrian crossing location to the west of the study corridor is at Kayenta Pl, about 0.9 miles from the Unser Blvd intersection. To the east of the study corridor, the next nearest pedestrian crossing is 1.4 miles away from Unser Blvd at Golf Course Rd. None of the cross streets feature crosswalks or signage for pedestrian crossings. By contrast, the City of Albuquerque Development Process Manual (DPM) recommends signalized pedestrian crossings every ¼-mile along collectors (DPM Table 7.4.42). Pedestrian conditions are also affected by the fact that there are very few pedestrian curb cuts or truncated domes along the corridor to facilitate pedestrian crossings for those with disabilities.

While the Unser Blvd intersection is a signalized pedestrian crossing with push buttons on each corner, the lack of curb cuts and sidewalks makes the intersection unfriendly to pedestrian crossings. None of the intersection corners have curb cuts or truncated domes, and none of the corners have sidewalks that extend up to the pedestrian push buttons. See Figure 15 and Figure 16 for pedestrian conditions at the Unser Blvd intersection.

The northeast corner of the Unser Blvd intersection features a street-level cut through for pedestrians and slip island that facilitates a two-stage crossing, but the far northeast curb does not have sidewalks or curb cuts. There are continental crosswalks across Unser Blvd on both sides of the intersection, but the crosswalks across Irving Blvd are faded transverse bars without continental markings. Continental markings are the recommended crosswalk marking in the City's Development Process Manual.

**Figure 15: Unser/Irving Intersection, Southwest Corner Looking Northeast**



**Figure 16: Unser/Irving Intersection, Southeast Corner Looking South**



## TRANSIT FACILITIES

While there are no transit routes along the Irving Blvd study corridor, there are several ABQ RIDE transit routes in the vicinity. The nearest all day service is located along Golf Course Rd (Route 157 stops at Irving Blvd), while the Northwest Transit Center is located to the northeast of the study corridor at Ellison Rd and Coors Bypass Rd. Route 155 (Coors Blvd) provides service along Unser Blvd from McMahon Blvd to Southern Rd during the peak periods only. Table 3 shows the routes, frequency, and destinations of transit routes near the study corridor as of December 2021.

**Table 3: Transit Routes Near Irving Blvd Study Corridor**

Route	Major Streets	Destinations	Frequency	Distance to Closest Stop (From Unser/Irving Intersection)
<b>155: Coors Blvd</b>	Coors Blvd (Service along McMahon Blvd and Unser Blvd during peak periods only)	Northwest Transit Center, Cottonwood Mall	Weekdays: every 30 min Weekends: every 45 min	0.8 miles (stops at McMahon/Unser during AM and PM peak periods only)
<b>157: Montañó / Uptown / Kirtland</b>	Golf Course Rd, Ellison Rd, Louisiana Blvd	Northwest Transit Center, Montañó Transit Center, Uptown, KAFB	Weekday: every 30 min Weekends: every 45 min	1.6 miles
<b>92: Taylor Ranch Express</b>	Golf Course Rd, Ellison Rd	Northwest Transit Center, UNM Main Campus, CNM Main Campus	One trip per direction per day	1.6 miles

Source: ABQ RIDE

## LAND USE AND LAND OWNERSHIP

The land immediately adjacent to the Irving Blvd study corridor is used for low-density residential housing. The parcels north of Irving Blvd are within the City of Albuquerque’s jurisdiction while the parcels south of Irving Blvd are in an unincorporated area within Bernalillo County. The Calabacillas Arroyo and Swinburne Dam are located below a steep escarpment just to the north of the study corridor and are owned by AMAFCA.

East of Unser Blvd, there is a strip of land immediately north of Irving Blvd owned by the City of Albuquerque that is categorized as Parks and Open Space. At present, there is about 45 ft of space between the roadway footprint and a fence line marking the AMAFCA right-of-way boundary.

West of Unser Blvd, the City right-of-way on the north and south sides of Irving Blvd extends outside of the current roadway footprint; front yards and driveways are built and landscaped into this City right-of-way (see Figure 17 and Figure 18). Further survey research is needed to determine the exact property lines, and there is some disagreement from residents about the location of the City’s right-of-way. However, the City estimates that its right-of-way extends about 20 ft north and about 6 ft south of the current roadway footprint.



IRVING BLVD TRAFFIC CALMING STUDY

Figure 17: Parcel Boundaries between La Paz Dr and Paseo del Norte Rd



Figure 18: Parcel Boundaries between Paseo del Norte Rd and Unser Blvd



## POLICY CONSIDERATIONS

The application of traffic calming measures and enhanced bicycle and pedestrian infrastructure are supported by various City and regional plans and policies. Among these are the Complete Streets Ordinance, updated in 2019, which calls for the City to create a “completed and connected network for all transportation users,” and the Vision Zero policy which aspires to eliminate traffic fatalities along City roads. The incorporation of active transportation infrastructure is also consistent with the goals and recommendations of the Connections 2040 Metropolitan Transportation Plan, developed by MRCOG and adopted in 2020. In particular, the Connections 2040 MTP emphasizes closing gaps in the bikeways and pedestrian networks to create additional transportation options and enhance user safety.

## POTENTIAL FOR ROAD DIET EAST OF STUDY AREA

In addition to proposed bikeways along the extent of the study area in the Long Range Bikeway System, the segment of Irving Blvd to the east of the study corridor has been identified by MRCOG as a potential road diet candidate, based on an assessment of where more travel lanes are present than are needed to meet current traffic levels. Irving Blvd west of Golf Course Rd carries just over 10,000 vehicles per day across four lanes of traffic (two lanes in each direction plus a wide median). MRCOG asserts that the roadways with less than 20,000 vehicles per day could function with just one travel lane in each direction plus a TWLTL. A road diet could be achieved through restriping and the introduction of buffered bike lanes in place of the outside travel lanes on either side of the roadway. These bike lanes would connect to proposed bikeways through the Irving Blvd Traffic Calming Study focus area.

The segment of Irving Blvd east of Rio Los Pinos Dr is also noteworthy for the median landscaping that is currently in design. The current median varies in width from 30-40 ft.

## STREET DESIGN CHARACTERISTICS

The DPM recommends design features and facility widths for roadways based on the Centers and Corridors designations from the City of Albuquerque Comprehensive Plan. Table 4 shows the DPM recommended street element dimensions for roadways like Irving Blvd that are classified as a major collector outside of a center. At present, Irving Blvd does not feature the street elements desired for a major collector. Note that it may not be feasible to include all street elements at the suggested widths due to right-of-way constraints. Additionally, as a designated residential area, it may be appropriate to post speeds below 30 mph in the Irving Blvd study corridor.

**Table 4: DPM Street Element Widths, Major Collector Outside Center**

Street Element	Suggested Width
Design Speed	30-35 MPH
Sidewalk Width	6 ft
Landscape/Buffer Zone	5-6 ft
Bike Lane Width	5-6 ft
Bike Buffer Width	0-3 ft
Travel Lane Width	10-11 ft

Source: City of Albuquerque Development Process Manual Table 7.2.29



## NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

Though the City of Albuquerque maintains a Neighborhood Traffic Management Program (NTMP), the initiative focuses on traffic calming measures for local roads, including the use of speed humps. However, as a major collector road, Irving Blvd is not eligible for speed humps or other treatments that are intended for low-volume neighborhood streets.

This study seeks to apply traffic calming techniques that are appropriate for collectors, which may be different than the traffic calming treatments outlined in the NTMP. As a school route, traffic calming treatments west of Unser Blvd will also need to be designed to accommodate school buses.

## ALTERNATIVES AND TRAFFIC CALMING OPTIONS

The following section describes alternatives and recommendations for street design and traffic calming along the Irving Blvd study corridor. These alternatives were developed collectively by City staff and the consulting team and were vetted during the public outreach process. The recommendation alternatives are based on public feedback and the design options that best address the purpose and need of the Irving Blvd Traffic Calming Study.

The **Roadway Alternatives and Recommendations** section provides two sets of alternatives: one set for the corridor segment *west of Unser Blvd* and one set for the corridor segment *east of Unser Blvd*. Different alternatives are presented for each corridor segment due to their variations in existing roadway configurations and available right-of-way.

The **Unser Blvd Intersection** section recommends changes to the design and geometry of the intersection to slow traffic and improve connections for sidewalks and bicycle facilities.

In the **Traffic Calming Features** section, traffic calming design options are presented for both segments of the corridor (west and east of Unser Blvd). Traffic calming measures are meant to be complementary to the design alternatives and may require changes to roadway alignments where treatments such as mini-roundabouts or diverters change the motorist's travel path.



## ROADWAY ALTERNATIVES AND RECOMMENDATIONS

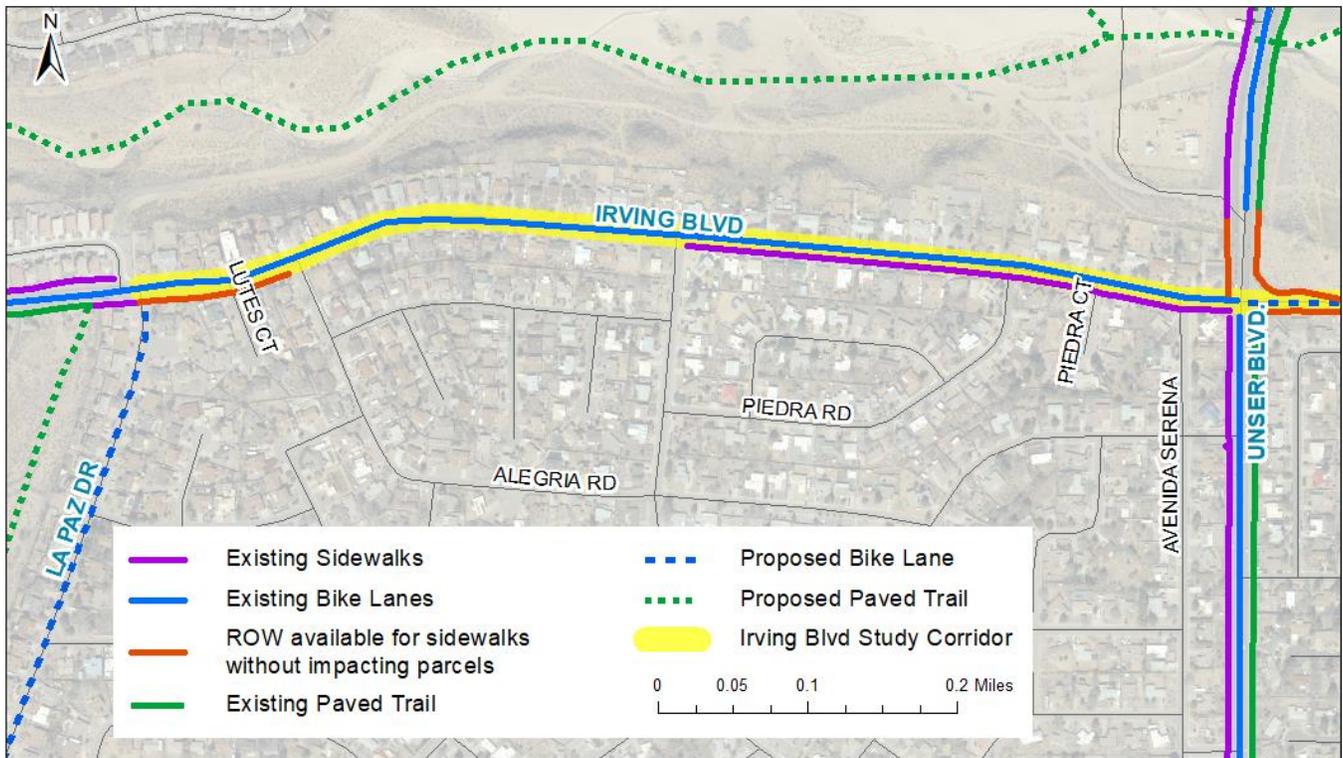
### WEST OF UNSER BLVD

The corridor segment west of Unser Blvd (from La Paz Dr to Unser Blvd) is a residential area with low-density housing on the north and south sides of the street. The segment has one vehicle travel lane in each direction with a center two-way left turn lane (TWLTL). There are narrow bike lanes in both directions. While most of the segment does not have sidewalk, the section between Paseo del Norte Rd and Unser Blvd has sidewalk on the south side of the street. Figure 19 maps the location of sidewalk and bicycle facilities west of Unser Blvd.

This study presents two cross section alternatives for the both the area with existing sidewalk and the area without sidewalk:

- **Alternative 1** narrows the roadway by removing the TWLTL and building sidewalk into the existing roadway footprint
- **Alternative 2** keeps the TWLTL and builds sidewalks outside of the roadway footprint (i.e. behind the existing roadway curbline)

Figure 19: Pedestrian and Bicycle Facilities West of Unser Blvd

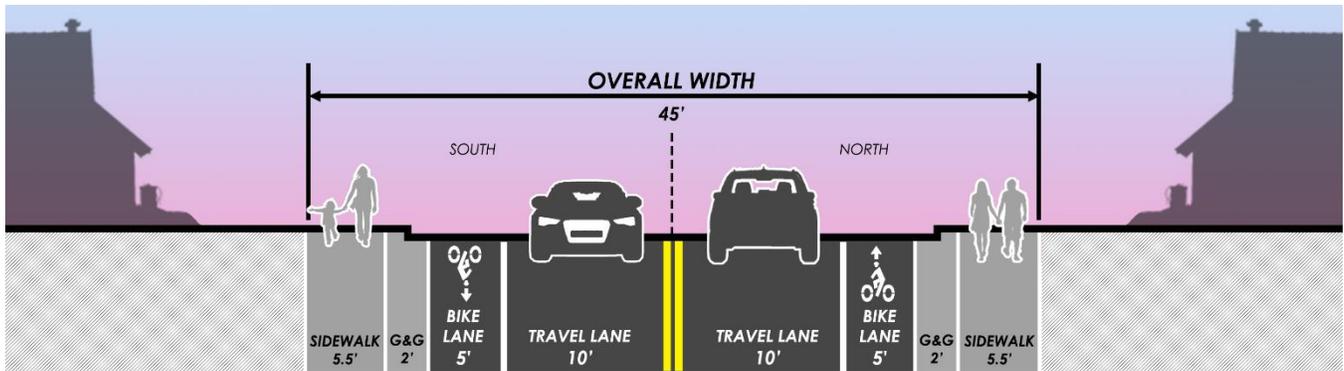


**WEST OF UNSER BLVD – ALTERNATIVE 1: NARROW THE ROADWAY**

Alternative 1 features the installation of sidewalks on both the north and south sides of the street to the inside of the existing curb line. Alternative 1 would also remove the two-way left turn lane and reallocate space to widen the existing bike lanes; this type of roadway narrowing should also create a traffic-calming effect. There are two distinct cross sections for Alternative 1, as the segment between Paseo del Norte Rd and Unser Blvd has existing sidewalks while the rest of the corridor does not.

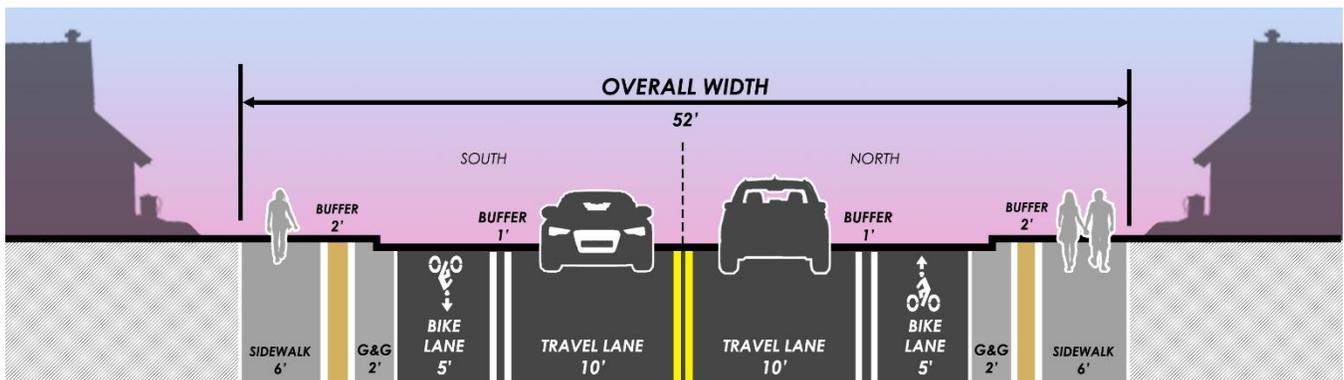
**La Paz Dr to Paseo del Norte Rd:** Figure 20 depicts the proposed cross section for a typical section between La Paz Dr and Paseo del Norte Rd, which does not have sidewalks. The proposed cross section would create 5.5 ft-wide sidewalks without landscaped buffers and would widen the bike lanes from 4.5 ft to 5 ft; the general purpose travel lanes would be narrowed to 10 ft and the TWLTL would be removed. In order to build sidewalks into the existing roadway footprint, this alternative would require relocating the curb and gutter and associated stormwater drainage facilities.

**Figure 20: Alternative 1, between La Paz Dr and Paseo del Norte Rd**



**Paseo del Norte Rd to Unser Blvd:** Figure 21 shows the proposed cross section for the segment between Paseo del Norte Rd and Unser Blvd, which has sidewalks on the south side of the road. The proposed cross section keeps the sidewalk, landscaped buffer, and curb and gutter location in the same location on the south side of the road. Because the sidewalk is narrower than PROWAG requirements and is in poor condition, the sidewalk should be rebuilt and widened to 6 ft with a 2 ft buffer. On the north side, a 6 ft-wide sidewalk and 2 ft-wide buffer would be built into the existing roadway footprint; curb and gutter on the north side of the street would need to be relocated. Because this segment of the corridor would not require additional space for building sidewalk on the south side of the road, there is sufficient room for small bike lane and sidewalk buffers.

**Figure 21: Alternative 1, between Paseo del Norte Rd and Unser Blvd**



## WEST OF UNSER – ALTERNATIVE 2: BUILD SIDEWALKS OUTSIDE THE ROADWAY

Like the previous alternative, Alternative 2 would add sidewalks and wider bike lanes to the segment of Irving Blvd west of Unser Blvd. However, instead of eliminating the turn lane and building sidewalks into the existing roadway footprint, Alternative 2 would leave the turn lane in place and build sidewalks outside the existing curb lines. Although the adjacent space outside of the existing roadway footprint lies within the City’s right-of-way, residents currently use this space for landscaping and driveways.

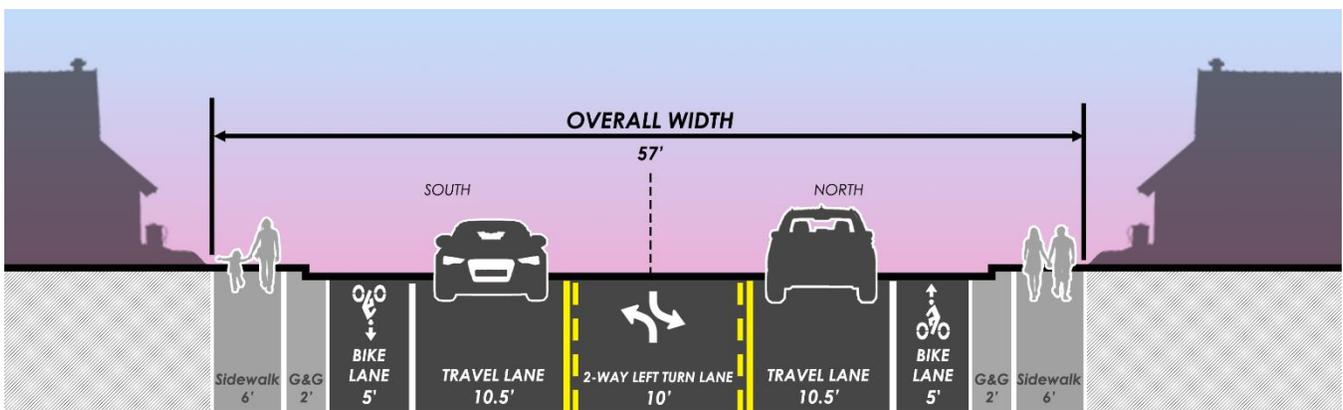
Figure 22 provides an example of the approximate sidewalk location if sidewalks were built outside the roadway footprint. Note that the City’s right-of-way extends further into existing yards than the six feet required for sidewalk construction.

**Figure 22: Sidewalk Location Between Paseo del Norte Rd and Unser Blvd, Building Outside Existing Roadway**



**La Paz Dr to Paseo del Norte Rd:** Under Alternative 2, the cross section for the segment between La Paz Dr and Paseo del Norte Rd would feature 6 ft sidewalks on the north and south sides of the street (see Figure 23). This alternative would also narrow the vehicle travel lanes and re-allocate the space to widen the bike lanes to 5 ft.

**Figure 23: Alternative 2, between La Paz Dr and Paseo del Norte Rd**



**Paseo del Norte Rd to Unser Blvd:** Under Alternative 2, the segment between Paseo del Norte Rd and Unser Blvd would feature new 6 ft sidewalks on the north side of the street and widen the existing sidewalk on the south



IRVING BLVD TRAFFIC CALMING STUDY

side of the street (which already has sidewalks). This alternative could also re-allocate space from the vehicle travel lanes to the bicycle lanes during future a repaving/restriping effort (see Figure 24).

Figure 24: Alternative 2, between Paseo del Norte Rd and Unser Blvd

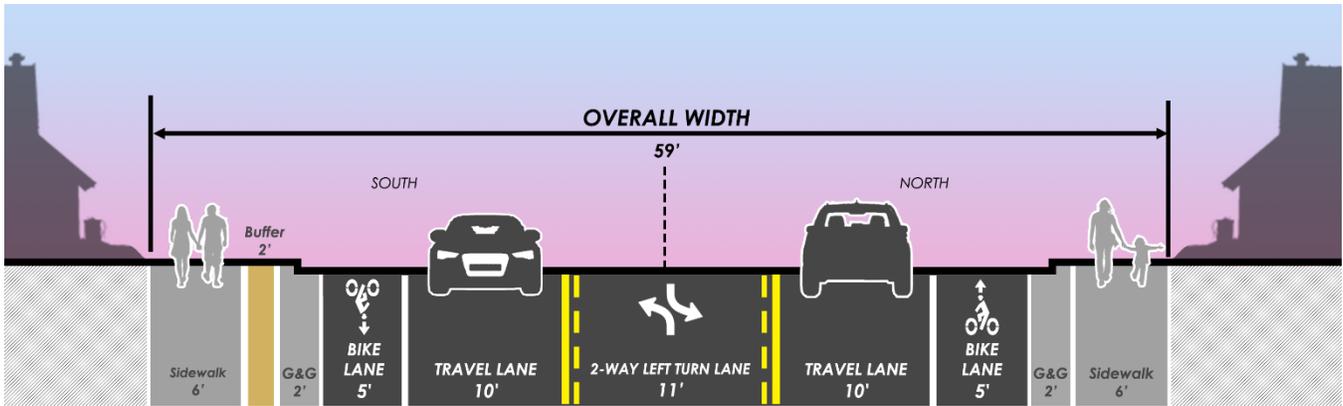


Table 5: Comparison of Alternatives, West of Unser Blvd

Location	Center Turn Lane	Sidewalk Type and Width	Bike Lane Type and Width	Travel Lane Width
Existing Conditions	Yes	4', No sidewalk in most locations	4-4.5', no buffer	10' - 11'
West of Unser Blvd – Alternative 1	No	5.5' - 6' sidewalk, Inside roadway footprint	5', 1' buffer in some locations	10'
West of Unser Blvd – Alternative 2	Yes	6' sidewalk, Outside roadway footprint	5', no buffer	10'



## DISCUSSION

There are two key distinctions between the two alternatives west of Unser Blvd: the removal of the two-way left-turn lane and the placement of the sidewalk inside or outside of the existing roadway footprint.

**Removing the Two-Way Left-Turn Lane:** Removing the turn lane (Alternative 1) would have a large advantage in traffic calming because it would narrow the space allocated for vehicles, which causes drivers to slow down and pay more attention to their surroundings. As TWLTL are generally used for commercial areas to permit access to businesses, removing the turn lane may improve the residential character of the neighborhood. Removing the turn lane also discourages vehicles from using the center lane to make illegal passing movements. However, removing the TWLTL may have a small impact on traffic operations. Drivers making left turns into side streets or driveways would need to wait for a gap in traffic, causing vehicles behind them to wait as well. While this could cause some vehicular delay, it would also have a traffic calming effect on drivers behind the turning vehicle. Removing the turn lane is unlikely to cause significant slow-downs because of the segment’s low traffic levels (see Table 1). Further, traffic along the segment follows directional commuting patterns, with higher levels of traffic heading eastbound in the morning and westbound in the afternoon. Directional traffic patterns create even more gaps in traffic for vehicles in the primary direction of travel. For example, a vehicle heading west in the afternoon would not need to wait long for an opportunity to turn left, as most of the other vehicles on the road are traveling in the same direction.

**Sidewalk Placement:** Alternatives west of Unser Blvd differ on whether sidewalks would be built into or outside the roadway footprint. Because Alternative 1 removes the TWLTL, there would be enough space in the existing roadway footprint for sidewalks to be built into the roadway. However, under Alternative 2, which keeps the TWLTL, sidewalks would need to be built outside of the roadway footprint. While the City does have sufficient right-of-way to build sidewalks in this location without acquiring new property, residents currently use the space for landscaping and driveways. Residents also expressed concerns with this solution at the project’s public meeting (see Appendix B), and the City would need to acquire and review property plat and surveying records to ensure that the sidewalk is built on the City’s right-of-way. While Alternative 1 would not impact residents’ front yards, building sidewalks into the roadway would increase construction costs as it would require relocating the curb and stormwater drainage facilities.

Table 6 compares both alternatives and assesses their benefits and drawbacks. The table also provides an assessment of the impacts and benefits of each consideration.

**Table 6: Alternatives Comparison West of Unser Blvd**

Consideration		Alternative 1: Narrow the Roadway	Alternative 2: Build Outside the Roadway	Impact / Benefit
Pros	Traffic calming effect due to narrower roadway	X		High
	Installation of sidewalks	X	X	High
	Widening of bike lanes	X	X	High
Cons	Requires building into existing yards/driveways		X	High
	Relocation of the curb and gutter	X		Medium
	Site access and ability for vehicles to make protected left-turns	X		Low
	Requires additional survey and platting research		X	Low



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**RECOMMENDATION: WEST OF UNSER BLVD**

**Alternative 1**, which removes the TWLTL and builds sidewalks into the existing roadway footprint, is the recommended alternative for the segment of Irving Blvd west of Unser Blvd (see Figure 20 and Figure 21). Alternative 1 would have a larger traffic calming impact by narrowing the roadway footprint while also minimizing the disruption to residential properties. While removing the turn lane may have a small impact on traffic operations, the delay caused to vehicles would be minimal and is greatly outweighed by the traffic-calming benefits it provides. Although relocating the curb and gutter adds to the cost of the project, Alternative 1 also reduces the need and associated costs for additional survey research. Overall, Alternative 1 would have the most significant impact on traffic speeds while allowing residents to keep their existing front yard configurations. Additional analysis will be needed to inform the design, particularly with respect to the intersection of Irving Blvd and Unser Blvd.

**Figure 25: Renderings of Sidewalk Improvements under Alternative 1**



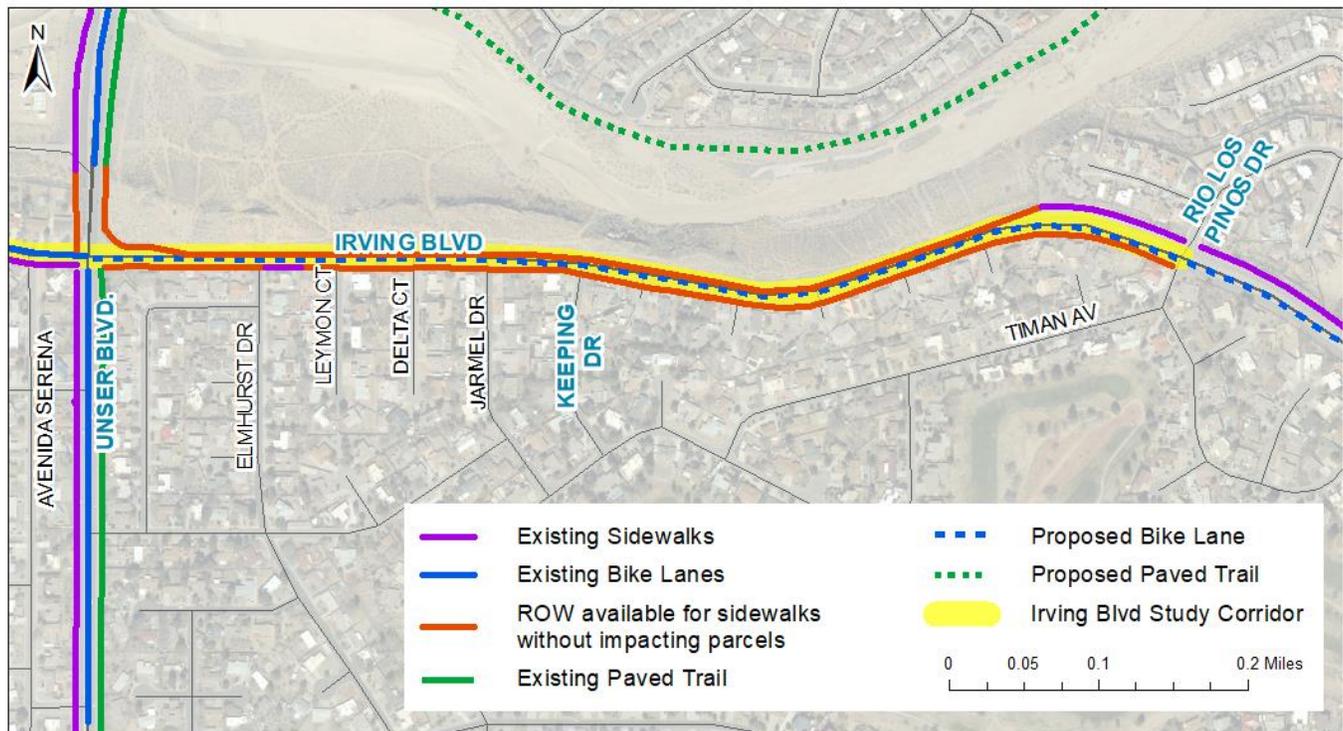
## EAST OF UNSER BLVD

The segment of Irving Blvd from Unser Blvd to Rio Los Pinos Dr features a narrow roadway footprint with one vehicle travel lane in each direction. Unlike the segment west of Unser Blvd, this segment does not have a two-way left-turn lane or bike lanes. While there are no continuous sidewalks on either side of the road, there is a short segment of deteriorated sidewalk on the south side of the road between Elmhurst Dr and Leymon Ct and an informal dirt trail on the north side of the road. Figure 26 maps the pedestrian and bicycle facilities east of Unser Blvd.

While this segment of the corridor does not currently have adequate facilities for bicyclists or pedestrians, it is less constrained than the section to the west of Unser Blvd. The north side of the street does not abut residences and borders the Calabacillas Arroyo, providing the City with ample right-of-way (i.e. about 45-50 ft) to expand the roadway footprint and install multi-modal facilities. Residences on the south side of the street face away from Irving Blvd and are accessed via parallel side streets. High subdivision walls separate Irving Blvd from residents' backyards, and there is a 11-12 ft strip unused space between the curb and the subdivision walls which can be utilized for sidewalks.

- **Alternative 1:** Standard Sidewalks with Landscape Buffers
- **Alternative 2:** Sidewalk and Multi-use Trail
- **Alternative 3:** Sidewalk, Multi-use Trail, and Bike Lanes

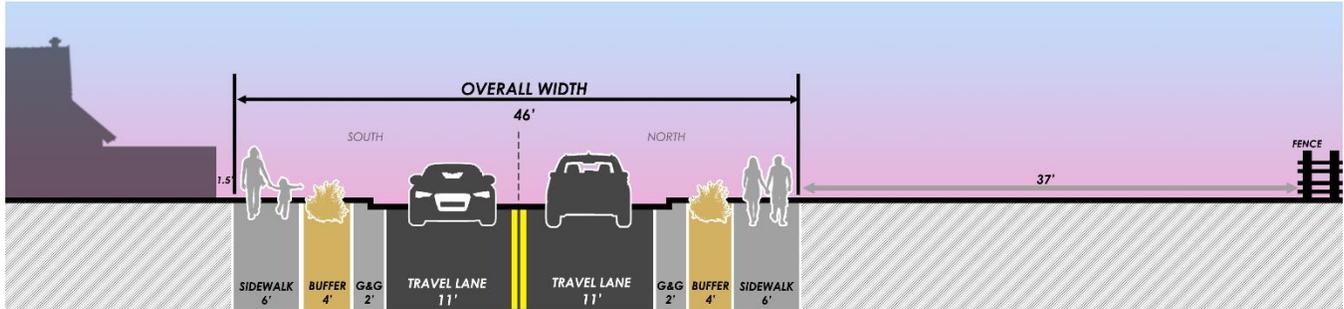
Figure 26: Pedestrian and Bicycle Facilities East of Unser Blvd



### ALTERNATIVE 1: STANDARD SIDEWALKS WITH LANDSCAPED BUFFERS

Alternative 1 would add 6 ft sidewalks and 4 ft landscaped buffers to both sides of the street outside of the existing curb lines (see Figure 27). This alternative would keep the curb and gutter locations the same on both sides of the street, pending any changes to support traffic calming measures.

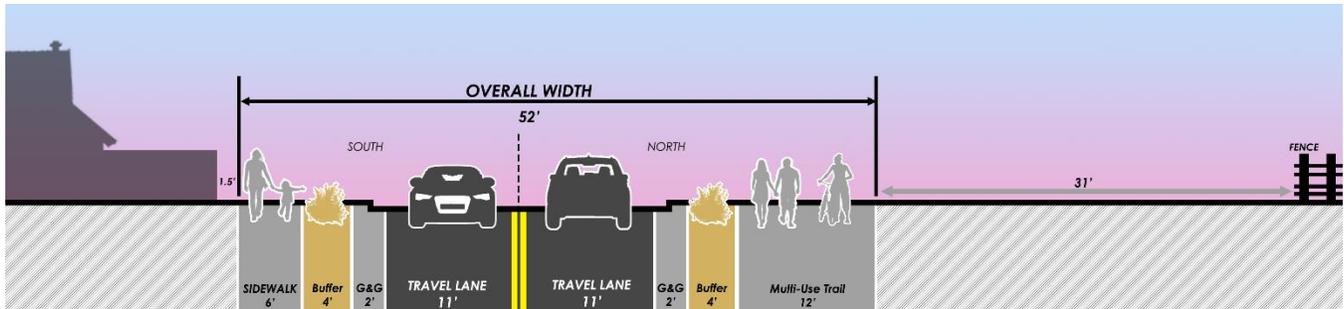
Figure 27: Alternative 1, East of Unser Blvd



### ALTERNATIVE 2: SIDEWALK AND MULTI-USE TRAIL

Like the first alternative, Alternative 2 would add a 6 ft sidewalk and 4 ft landscaped buffer to the *south side* of the street. However, instead of a sidewalk on the *north side* of the street, Alternative 2 adds a 12 ft multi-use trail with a 4 ft landscaped buffer (see Figure 28) that could be used by both bicyclists and pedestrians. This alternative would also keep the curb and gutter locations in the same position on both sides of the street, pending the use of traffic calming measures.

Figure 28: Alternative 2, East of Unser Blvd



### ALTERNATIVE 3: SIDEWALK, MULTI-USE TRAIL, AND BIKE LANES

Alternative 3 includes a 6 ft sidewalk with 4 ft landscaped buffer on the *south side* of Irving Blvd and a 12 ft multi-use trail with 4 ft landscaped buffer on the *north side*. Alternative 3 also widens the roadway footprint to the north to add 6 ft bike lanes with buffers on each side of the street (see Figure 29). This alternative would require relocating the curb on the north side of the roadway. However, the north side of the road does not have visible gutters or drainage facilities, which could simplify the relocation of northside curb.

The inclusion of both a multi-use trail for pedestrians and active transportation users and a dedicated bike lane is intended to minimize conflicts among pedestrians and fast cyclists, including e-bike users. If budget allows, the trail could include amenities such as landscaping, benches, and wayfinding signage. See Figure 30 for a rendering of the set of potential improvements associated with Alternative 3, including the multi-use trail and user amenities.



Figure 29: Alternative 3, East of Unser Blvd

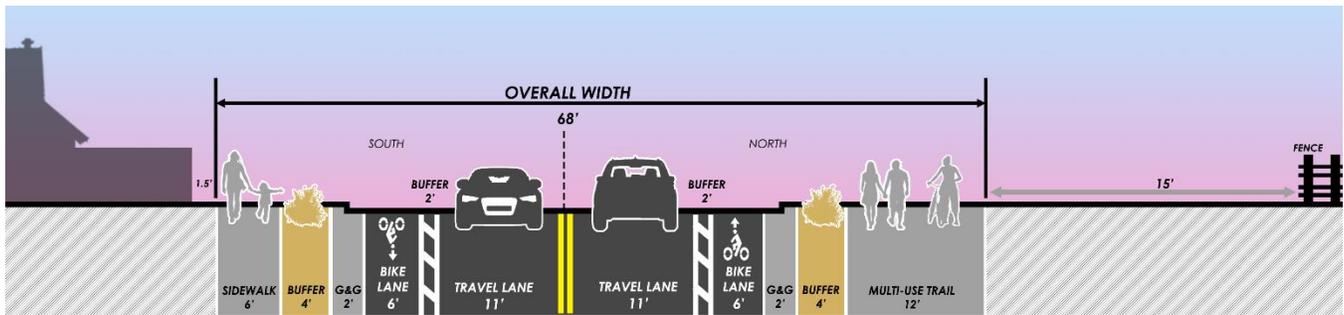


Figure 30: Proposed Multi-Use Trail East of Unser Blvd



## DISCUSSION

Factors to consider in selecting an alternative for street design on the section of the study corridor east of Unser Blvd include connectivity, separation of uses, and cost.

**Connectivity:** Alternatives for multi-modal facilities east of Unser Blvd have varying impacts on the bikeway and trail connectivity in the area. Building a multi-use trail rather than a standard sidewalk would increase the connectivity of the area’s trail network by linking to the multi-use trail along Unser Blvd. A multi-use trail on Irving Blvd could also connect to a future trail in the Calabacillas Arroyo.

Adding bike lanes (Alternative 3) would also increase the connectivity of the regional bikeway network. Bike lanes already exist on the western segment of the study corridor, and the segment east of the study corridor is a proposed location for future bike lanes. Building bike lanes on all portions of Irving Blvd would create consistent bikeway infrastructure and reduce the need for bicyclists to cross the street to access the multi-use trail.

All of the alternatives should be paired with frequent pedestrian crossings to create connectivity (see the Traffic Calming Features section for more information). If a multi-use trail were built, crossings would be even more critical so that pedestrians could access the facility from the neighborhoods to the south of Irving Blvd.

**Separation of Uses:** Alternative 3, which builds a multi-use trail and bike lanes, would have a high degree of separation among vehicles, bicyclists, and pedestrians, which would increase the comfort and convenience for all modes of travel. Rather than sharing space with pedestrians, fast bicyclists and electric bicycle users could use the on-street bike lanes, which would minimize conflicts along the trail.



## IRVING BLVD TRAFFIC CALMING STUDY

**Cost:** Because Alternative 3 requires relocating the curb on the north side of Irving, it is the most expensive option. However, as there are no gutters or drainage facilities along this segment, new gutters and drainage facilities may need to be built for all of the alternatives. Alternative 2 (which builds a multi-use trail instead of a sidewalk), would be slightly more expensive than building standard sidewalks alone (Alternative 1). It is important to note that traffic calming measures may require curb lines on the north side of the corridor to be relocated regardless of the selected alternative.

Table 7 compares the alternatives along key considerations, including an assessment of the impact of each factor.

**Table 7: Alternatives Comparison East of Unser Blvd**

Consideration		Alternative 1: Standard Sidewalks	Alternative 2: Multi-Use Trail	Alternative 3: Multi- Use Trail with Bike Lanes	Impact / Benefits
Pros	Adds pedestrian facilities	X	X	X	High
	Adds bicycle facilities		X	X	High
	Separates bicycle and pedestrian travel			X	Medium
	Improves multi-modal connectivity		X	X	High
	Possibility for landscaping and amenities		X	X	Medium
Cons	Relocates curb			X	Medium
	Higher Cost			X	Medium

### RECOMMENDATION: EAST OF UNSER BLVD

**Primary Recommendation:** If budget allows, **Alternative 3** is the recommended solution because it provides the most benefits for multi-modal connectivity and pedestrian/bicyclist comfort. A multi-use trail has clear benefits over a standard sidewalk, especially considering the prevalence of other existing and planned multi-use trails in the area. A multi-use trail on Irving Blvd would expand the network of off-street trail facilities in the vicinity, providing both opportunities for active transportation and recreational benefits for neighborhood residents. Alternative 3 also builds on-street bike lanes, which are often preferred by confident bicyclists and electric bicycle users as it separates them from slower-moving pedestrians. Removing faster bicyclists from the trail also creates a more comfortable trail experience for disabled users, children, and dog-walkers, among others.

While Alternative 3 is the most expensive option, the lack of drainage facilities on the north side of Irving Blvd creates an opportunity for adding bike lanes to the roadway without dramatically increasing project costs. Alternative 3 is also the option most conducive to traffic calming such as mini-roundabouts as on-street bike lanes create additional space for the placement of mini-roundabouts at intersections (bike lanes would terminate at approaches to mini-roundabouts and bicyclists would share the roadway with motorists).

**Constrained Budget Option:** If budget constraints limit the ability to relocate the curb, **Alternative 2** should be implemented. If Alternative 2 is built, the trail should be located at least 20 ft north of the roadway so that bike lanes could be added at a later time without the need to relocate the trail.



## UNSER BLVD INTERSECTION

### EXISTING CONDITIONS

The signalized intersection of Irving Blvd and Unser Blvd is the only pedestrian crossing along the study corridor. Unser Blvd is a principal arterial with higher traffic volumes and speed limits than Irving Blvd. Table 8 describes the roadway data for each approach of the Unser Blvd intersection.

**Table 8: Unser Blvd Intersection Roadway Data**

Street Name	Intersection Approach	Number of Lanes at Intersection	AWDT (2019)	Speed Limit
Unser Blvd	North	5	29,900	40
Unser Blvd	South	5	25,600	40
Irving Blvd	West	3	5,900	25
Irving Blvd	East	4	10,400	30

While the intersection does have crosswalk markings and pedestrian pushbuttons, there are no curb ramps or sidewalks that extend up to the pushbuttons. There is also a gap in the multi-use trail and bike lanes on Unser Blvd at the intersection. Figure 31 shows the current intersection configuration.

**Figure 31: Existing Unser Blvd Intersection Configuration**



## RECOMMENDATIONS FOR INTERSECTION OF UNSER BLVD AND IRVING BLVD

Changes to the intersection's design and geometry would help connect the bicycle and pedestrian facilities and create a more comfortable environment for multi-modal travelers. Sidewalks should be extended up to the intersection and curb cuts with truncated domes installed to comply with PROWAG requirements. The multi-use trail on Unser Blvd should also be extended up to the intersection with curb cuts to facilitate bicycle crossings.

Removing the slip lane on the northeast corner of the intersection would slow right-turning traffic and create space for the bike lane on Unser Blvd to continue past the intersection. Figure 32 shows the recommended intersection design which removes the slip lane.

Figure 32: Proposed Intersection Changes, Unser Blvd



In the recommended configuration, the southeast corner of the slip lane would be converted into a dedicated right-turn lane. The remainder of the slip lane would be used as a landscaped buffer for the proposed multi-use trail on Irving Blvd. The northbound merge lane on Unser Blvd would be converted into a buffered bicycle lane, which would connect with an existing bicycle lane on Unser Blvd north of the intersection. The rendering in Figure 33 depicts how the merge lane could be converted into a buffered bike lane.

Figure 33: Buffered Bike Lane Rendering, Unser Blvd



## TRAFFIC CALMING FEATURES

### GENERAL ASSUMPTIONS AND CONSIDERATIONS

This section identifies traffic calming techniques that are appropriate for a collector roadway and that could be applied in conjunction with the recommended changes to the roadway cross section. Speed humps and speed tables were not considered as these interventions are more appropriate for local roads and would impede traffic flow, school bus operations, and emergency vehicles on Irving Blvd.

### OPPORTUNITIES AND CONSTRAINTS

#### WEST OF UNSER BLVD

Opportunities for installing traffic calming treatments between La Paz Dr and Unser Blvd are constrained by available right-of-way. The available space for traffic calming features also varies depending on which alternative is selected. This analysis assumes that the recommended alternative (i.e. Alternative 1) is selected, which builds sidewalks into the existing roadway footprint and removes the TWLTL. Alternative 1 already incorporates traffic calming principles by narrowing the roadway through removal of the TWLTL and narrowing vehicle lanes to 10 ft. Adding bike lanes and sidewalks may also have the effect of slowing vehicle speeds and creating a more residential character for the street.

Primary options for this portion of the corridor include mini-roundabouts and pavement markings. Due to the constrained right-of-way, treatments that require additional paved surface area, such as median diverters, neckdowns, chokers, or chicanes, are not feasible for this segment.

#### EAST OF UNSER BLVD

The corridor segment east of Unser Blvd presents a variety of opportunities for hard-scaped traffic calming treatments because the right-of-way is less constrained. However, the treatments likely to have the greatest impact would require moving the curb lines on the north side of the street. The specific traffic calming treatments proposed for this segment of Irving Blvd include mini-roundabouts and median diverters.

### PROPOSED TECHNIQUES

#### MINI-ROUNDAOBOUTS

##### DEFINITION

Mini-roundabouts are traffic control devices that manage the flow of traffic at uncontrolled intersections and reduce motor vehicle speeds while allowing motorists and bicyclists to proceed through an intersection without stopping. Mini-roundabouts have been shown to reduce speeds by 4 to 13 mph. Mini-roundabouts have a smaller footprint than typical roundabouts and have a traversable center island over which buses and emergency vehicles can pass. Mini-roundabouts also provide safer pedestrian crossing areas because vehicle travel speeds are lower near the roundabout. See Figure 34 for an example of a mini-roundabout similar to those proposed in this study.

Mini-roundabouts can be designed to integrate pedestrian crossings. A limitation of mini-roundabouts is that most designs merge bike lanes with vehicle travel lanes. Ramps may be provided from bike lanes to sidewalks to allow bicyclists to traverse intersections with mini-roundabouts at sidewalk level.



Figure 34: Mini-Roundabout Example, Silver Ave Near the University of New Mexico



### RECOMMENDED LOCATIONS

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This study recommends that mini-roundabouts be installed at the intersections of La Paz Dr, Paseo del Norte Rd, Keeping Dr, and one cul-de-sacs between Keeping Dr and Rio Los Pinos Dr.

**La Paz Dr:** A mini-roundabout at La Paz Dr would help slow traffic in the transition zone to the Irving Blvd Residential Area, where speeds limits drop from 35 mph to 25 mph and the road narrows. As the segment of Irving Blvd west of the study corridor has four vehicle travel lanes, there is ample right-of-way to install a mini-roundabout at La Paz Dr. The design of the mini-roundabout requires further engineering analysis and may require an oval shape to accommodate access to and from Pyrenees Ct.

**Paseo del Norte Rd:** Paseo del Norte Rd is about 1,900 ft from both La Paz Dr and Unser Blvd, positioning it directly between two pedestrian crossings if a mini-roundabout were constructed on La Paz Dr.

**Keeping Dr:** The intersection of Keeping Dr and Irving Blvd currently has an all-way stop, likely due to limited sight lines at the intersection. A mini-roundabout could replace the stop sign at Keeping Dr, although this design would require expanding the roadway footprint.

**Unnamed Cul-de-sac:** A final mini-roundabout is recommended for the cul-de-sac located about 830 ft east of Keeping Dr and 1,350 west of Rio Los Pinos Dr. This intersection serves a small number of homes but features a wide paved surface area and large curb returns that encourage speeding through the area. Because of the wide roadway footprint at the cul-de-sacs along Irving Blvd, the road would likely not need to be widened to build mini-roundabouts at these locations.

### INTEGRATION OF PEDESTRIAN CROSSINGS

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If a multi-use trail is built on the north side of Irving Blvd, pedestrian crossings should be built to connect the trail to the neighborhoods south of Irving Blvd. There are currently no pedestrian crossings between Unser Blvd and Golf Course Rd, although the DPM recommends signalized pedestrian crossings every ¼ mile along collectors.

If pedestrian crossings were designated at mini-roundabout locations on Keeping Dr and the suggested cul-de-sac, crossings would be spaced just under ¼ mile apart and about ¼ mile from the Unser Blvd intersection. Mid-block pedestrian crossings could also be constructed at the median diverters (see below) by providing cut-throughs which would serve as refuge islands.



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## MEDIAN DIVERTERS

### DEFINITION

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Median diverters are raised medians that force motorists to change their path of travel. By providing “friction” and visually narrowing the roadway, median diverters can slow traffic by up to 11 mph. These treatments also protect vehicles from head-on collisions and create opportunities for pedestrian refuge islands. Figure 35 is an example of the type of median diverter that could be implemented on Irving Blvd.

Figure 35: Raised Median Example



Source: City of Beaverton

### RECOMMENDED LOCATIONS

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This study proposes four locations along the segment of Irving Blvd east of Unser Blvd where median diverters could be applied to achieve traffic calming effects without blocking access to local roads or driveways (see Figure 39). While median diverters have many benefits, the existing roadway footprint is not wide enough to install them without widening the roadway. Under Alternative 3, the roadway is widened to the north to install bicycle lanes, which creates an opportunity for the implementation of median diverters at the same time.

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## PAVEMENT MARKINGS

### DEFINITION

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Pavement markings are intended to provide visual cues to motorists to reduce their speed and can be designed in a variety of ways, as illustrated in Figure 36 and Figure 37. *Transverse pavement markings* can slow vehicle speeds by 2 to 5 mph by drawing drivers’ attention to the roadway and creating an illusion of speed. Some transverse pavement marking designs also provide a subtle bump when driven over. *Enhanced pavement markings* that display the speed limit on the roadway can reduce vehicle speeds by 1 to 3 mph. While pavement markings have the benefit of not affecting emergency vehicle or school bus operations, they are less effective than hard-scaped traffic calming interventions and may only have a short-term effect on slowing vehicle speeds.



## IRVING BLVD TRAFFIC CALMING STUDY

Figure 36: Transverse Markings with Speed Bars



Source: Iowa State University

Figure 37: Enhanced Pavement Markings



Source: FHWA

### POTENTIAL LOCATIONS

Speed messages and transverse pavement markings could be installed on the **eastbound lane to the east of La Paz Dr** where the speed limit transitions from 35 mph to 25 mph on the western edge of the study corridor. As eastbound traffic also travels downhill, this area is an ideal location for additional traffic calming treatments. Pavement markings could also be installed just **west of Unser Blvd on the westbound lane** to facilitate the transition to the Irving Blvd Residential Area.

### CURB EXTENSIONS

#### DEFINITION

Providing curb extensions can reduce crossing distances for pedestrians, slow turning vehicle speeds by tightening the curb return radii, and calm traffic by visually narrowing the roadway. Curb extensions also create additional space in the pedestrian realm for landscaping or other amenities. Figure 38 is an example of a curb extension on a local street that does not narrow the roadway width of the main street:

Figure 38: Curb Extension on Side Streets



Source: FHWA



POTENTIAL LOCATIONS

Curb extensions provide another possibility for traffic calming at intersections with local roads along the western segment of the study corridor. While there may not be enough space in the roadway to extend the curbs onto Irving Blvd without impacting bike lane widths, there is enough space to extend the curbs into the roadway footprint of intersecting streets. Potential locations include Avenida Serena, Piedra Ct, Piedra Rd, Paseo del Norte, Alegria Rd, Lutes Ct, and La Paz Dr. For some locations, right-of-way may be too constrained to provide curb extensions on both sides of an intersecting street. In these locations, curb extensions could be constructed on only one side of the intersection to slow right-turning vehicles.

SUMMARY OF TRAFFIC CALMING RECOMMENDATIONS

Figure 39 and Figure 40 depict the recommended traffic calming treatments along the segments west and east of Unser Blvd respectively. To support the changes to the physical design of the roadway, this study recommends reducing the posted speed limit to the east of Unser Blvd from 30 MPH to 25 MPH.

Figure 39: Recommended Traffic Calming Features West of Unser Blvd

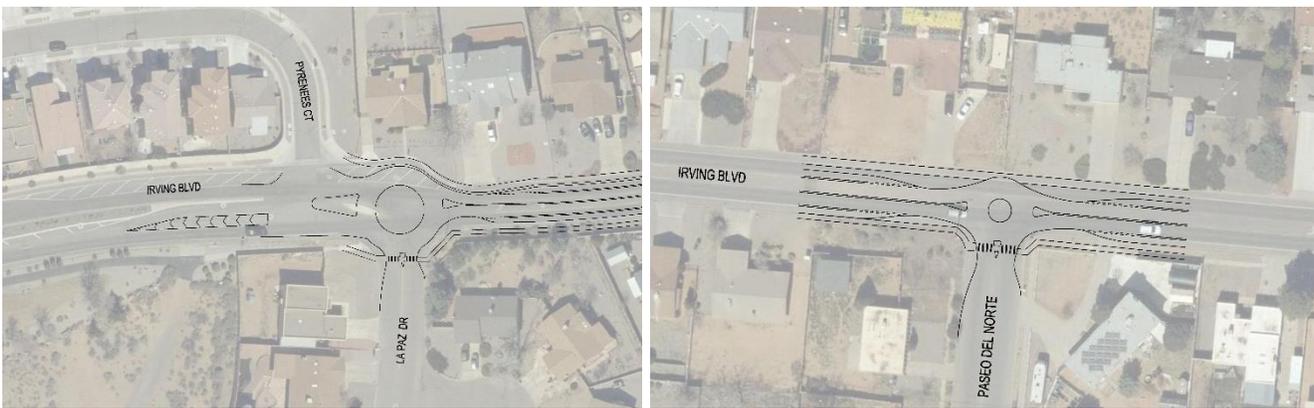
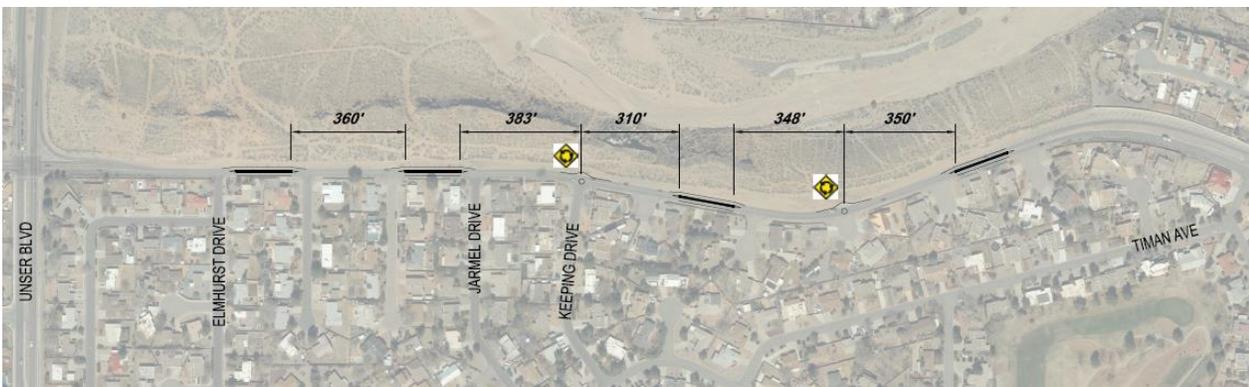


Figure 40: Recommended Traffic Calming Features East of Unser Blvd



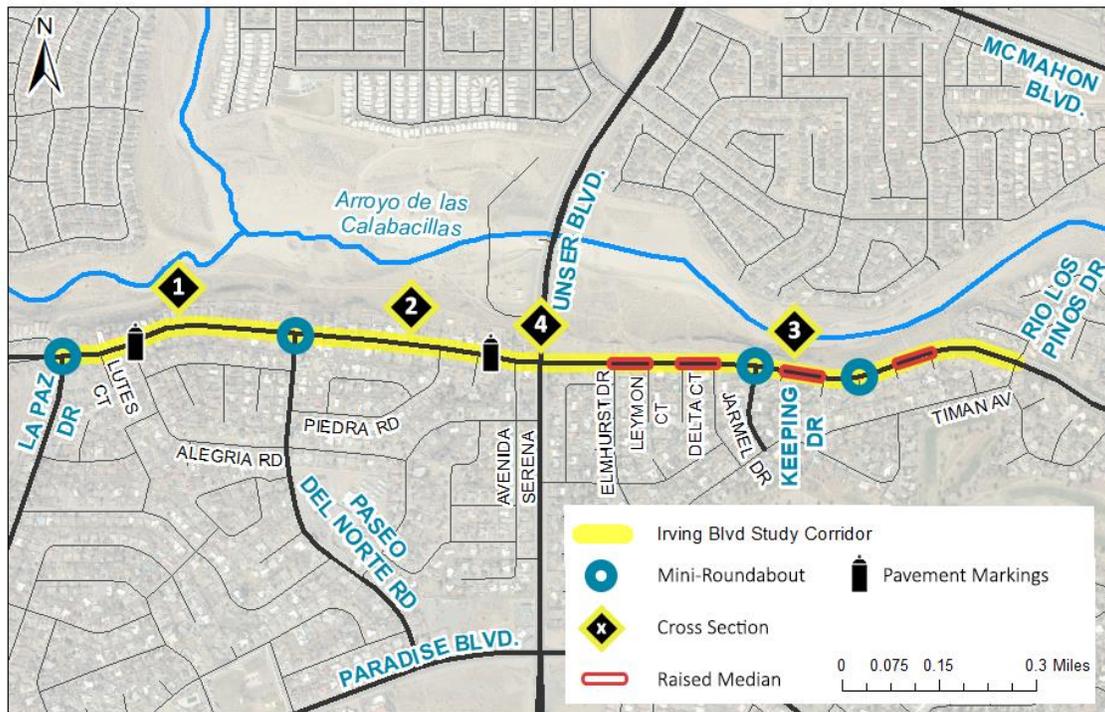
## SUMMARY OF RECOMMENDATIONS

The Irving Blvd study corridor can be re-designed to slow traffic and create cohesive multi-modal networks by reconfiguring the corridor's cross sections, altering the Unser Blvd intersection, and adding traffic calming features. This study recommends removing the two-way left-turn lane and building sidewalk into the roadway on the western portion of the study corridor and constructing a new multi-use trail and bike lanes on the eastern portion of the study corridor. This report further recommends reconfiguring the Unser Blvd intersection by removing the slip lane and extending sidewalk and bicycle infrastructure through the intersection.

Traffic calming features such as mini-roundabouts, raised medians/diverters, curb extensions, and pavement markings would further calm traffic and contribute to the residential character of the neighborhood. Figure 41 depicts the locations of recommended improvements along the study corridor, while Figure 42, Figure 43, and Figure 44 demonstrate the recommended cross sections along the study corridor. Ultimately, these sets of design recommendations can collectively contribute to a safer and more comfortable environment for walking, biking, playing, and living along the study corridor.

To complement the traffic calming features, the posted speed limit along Irving Blvd to the east of Unser Blvd should be reduced from 30 mph to 25 mph. Finally, the Long Range Roadway Network should be updated to reflect the status of Irving Blvd as a major collector. Complementary improvements, such as a road diet and on-street bike lanes along Irving Blvd to the east of the study area should be considered.

Figure 41: Recommendations Summary Map



- 1** Add sidewalks inside existing curb lines; remove TWLTL
- 2** Add sidewalks on north side inside existing curb line; replace and widen sidewalk on south side; remove TWLTL
- 3** Add on-street bike lanes in both directions and multi-use trail on north side
- 4** Improve pedestrian and trail connections; remove west-to-northbound slip lane



IRVING BLVD TRAFFIC CALMING STUDY

Figure 42: Recommended Cross Section (1), between La Paz Dr and Paseo del Norte Rd

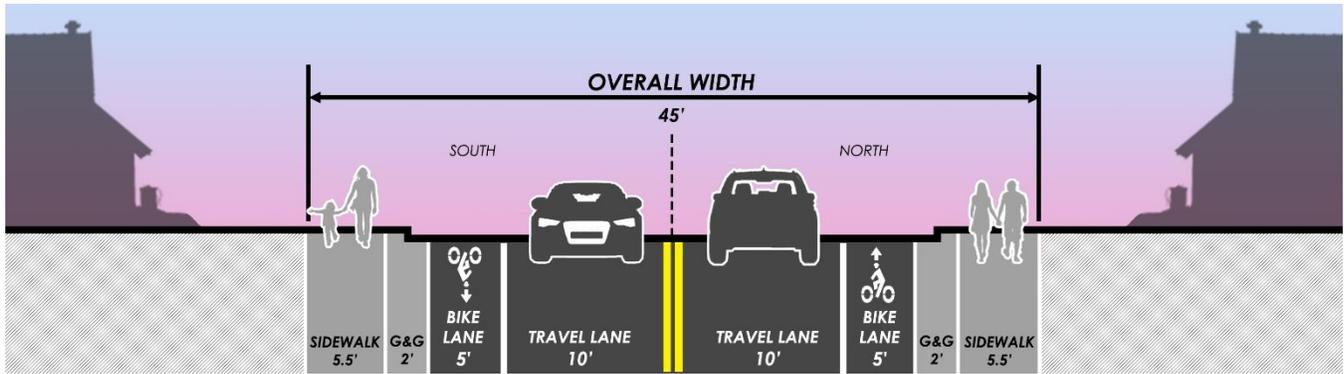


Figure 43: Recommended Cross Section (2), Between Paseo del Norte Rd and Unser Blvd

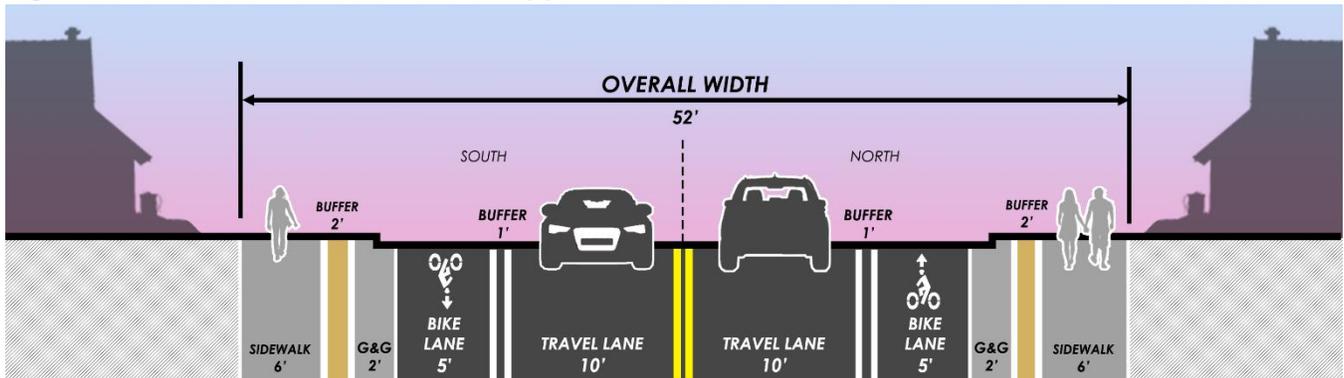


Figure 44: Recommended Cross Section (3), East of Unser Blvd

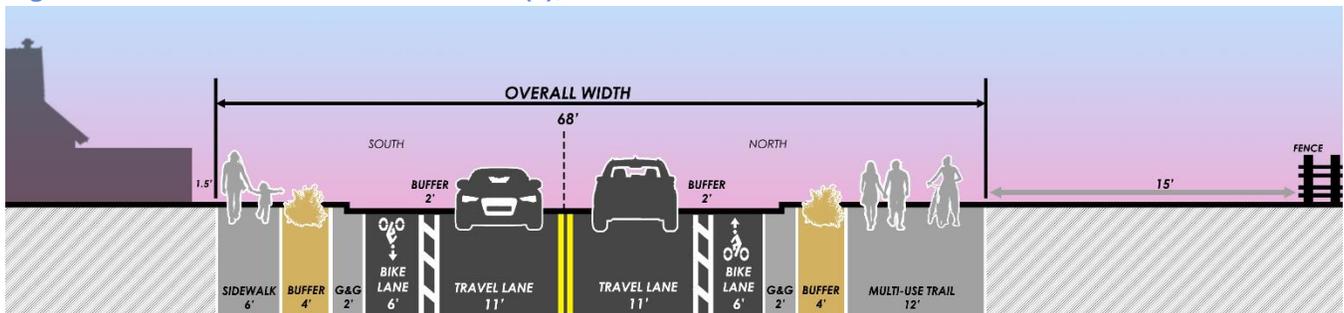


Figure 45: Unser Blvd Intersection Recommended Configuration



## COST ESTIMATES

Table 9 contains cost estimates for the recommended improvements along Irving Blvd between La Paz Dr and Rio Los Pinos Ave. The cost estimates are organized geographically as improvements could be completed in phases on either side of Unser Blvd. The cost associated with traffic calming features and bicycle and pedestrian facilities are shown separately for each section of the corridor. Landscaping to the east of Unser Blvd is included in the “roadway components” line item. All existing sidewalks are assumed to be reconstructed to meet PROWAG requirements.

These cost estimates are intended to be used for planning and budgeting purposes; more refined cost estimates may be developed during the final design process. The cost estimates were developed using Based on City of Albuquerque unit bid prices and include an inflationary factor of 25% to account for the rising costs of construction in 2021. See Appendix C for detailed cost estimates.

**Table 9: Cost Estimates for Recommended Improvements along Irving Blvd**

Location	Component	Cost
<b>East of Unser Blvd</b>	Roadway Improvements	\$546,518.61
	Multi-Use Trail	\$168,020.00
	Traffic Calming	\$471,969.00
<b>West of Unser Blvd</b>	Roadway Improvements	\$676,124.11
	Traffic Calming	\$200,528.00
<b>Unser Blvd Intersection</b>		\$199,467.50
<b>Subtotal</b>		<b>\$2,262,627.22</b>
<b>Inflation (25%)</b>		\$565,656.81
<b>Mobilization (5%)</b>		\$141,414.20
<b>Total</b>		<b>\$2,969,698.23</b>



## APPENDIX A: TRAVEL MODEL ANALYSIS

While traffic calming can enhance safety and livability along a street, changes to roadway operations can displace trips onto other corridors and affect regional travel patterns. To provide a sense of the impacts of proposed traffic calming measures along Irving Blvd, the Project Team worked with MRCOG to quantify potential changes in vehicle travel across Northwest Albuquerque using an existing conditions scenario and two future scenarios in the regional travel demand model.

### Scenarios Utilized in MRCOG Travel Demand Model for the Irving Blvd Traffic Calming Study

1. Base Year – A modeled representation of existing conditions for the year 2016.
2. 2040 Trend Scenario – Projected future conditions across the Albuquerque region based on projected population and employment growth and a continuation of existing plan, policies, and travel patterns. This scenario forms the basis for the Connections 2040 Metropolitan Transportation Plan for the Albuquerque Metropolitan Planning Area.
3. 2040 “No Access” Scenario – An alternative to the 2040 Trend Scenario in which Irving Blvd to the east of Unser Blvd is removed from the 2040 Trend Scenario and cannot be navigated by private vehicle. All other characteristics of the 2040 Trend Scenario are unchanged.

This section documents the results of the travel model analysis and compares current and projected travel along the Irving Blvd corridor. The 2040 Trend Scenario considers potential travel along Irving Blvd as part of the long-range socioeconomic growth scenario for the Albuquerque region developed as part of the Connections 2040 Metropolitan Transportation Plan. The “No Access” Scenario, which assumes that the segment of Irving Blvd to the immediate east of Unser Blvd is removed from the network, in effect quantifies the regional impacts if traffic calming along Irving Blvd were so successful that zero motorists used Irving Blvd for through trips. This scenario could therefore be considered a highly aggressive estimate of the impact of traffic calming and likely significantly overstates the number of trips that would be displaced.

### EXISTING CONDITIONS VERSUS THE TREND SCENARIO

Table 10 summarizes the current and projected daily traffic along Irving Blvd by segment, per the MRCOG regional travel demand model. According to the 2040 Trend Scenario, traffic volumes are likely to grow by only nominal amounts along Irving Blvd. By contrast, the traffic volume along the segment to the west of Unser Blvd is projected to decrease over time, likely as the result of widening projects on parallel roadways that make alternative routes more efficient.

It is important to note that the travel demand model simulates existing conditions and that the traffic volume for individual roadways may differ from observed traffic counts. In the case of the segment of Irving Blvd west of Unser Blvd, the estimated daily traffic volume is higher than the observed data, per the MRCOG Traffic Counts Program. The critical takeaway from the travel demand model is that traffic levels along Irving Blvd are not expected to increase in the coming decades under the regional growth scenario.



## IRVING BLVD TRAFFIC CALMING STUDY

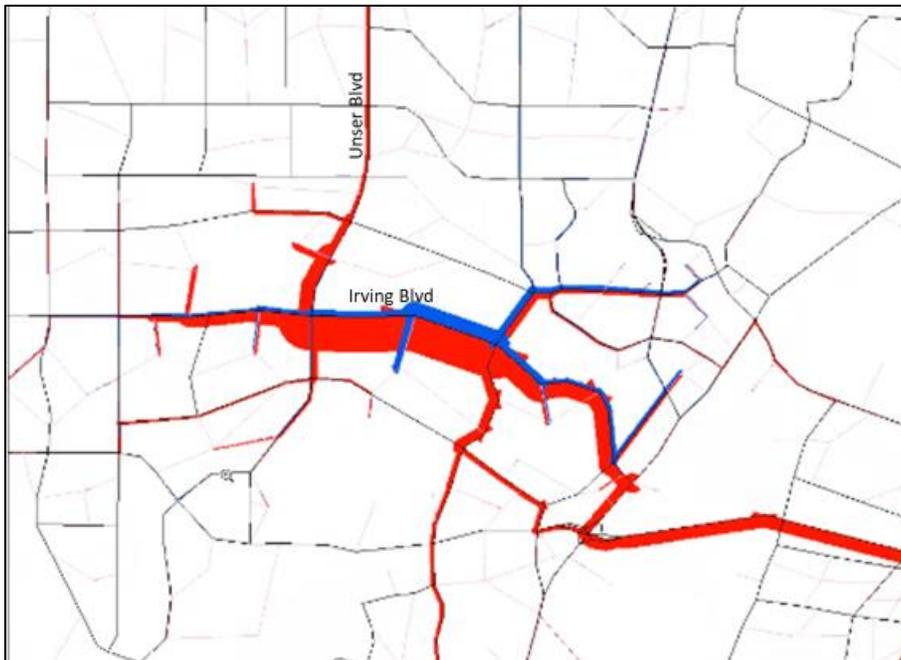
Table 10: Current and Projected Daily Traffic along Irving Blvd

Segment	Base Year (2016)	Daily Trips (2040 Trend)	Percent Difference
Rio de Los Pinos Dr to Golf Course Rd	14,828	14,874	0.3%
Unser Blvd to Rio de Los Pinos Dr	9,919	10,243	3.3%
West of Unser Blvd	16,642	13,763	-17.3%

### SELECT LINK ANALYSIS

An important component in the model evaluation process is to understand where trips along Irving Blvd are coming from. Figure 46 depicts a “select link analysis” in which the line thickness corresponds to the magnitude of trips during the AM peak period along the segment of Irving Blvd immediately east of Unser Blvd. (In the graphic, blue indicates westbound trips and red indicates eastbound trips.) Overall, trips along Irving Blvd to the east of Unser Blvd are generated from three main areas: the neighborhood immediately south of Irving Blvd, the residential areas along Irving Blvd west of Unser Blvd, and trips along Unser Blvd southbound originating from the residential areas to the north of the study area. Westbound trips in the AM peak period generally originate from the Cottonwood Mall area and travel to residential areas along Irving Blvd.

Figure 46: Select Link Analysis Depicting Projected Source of Trips along Irving Blvd in 2040 AM Peak Period



## COMPARISON OF FUTURE SCENARIOS

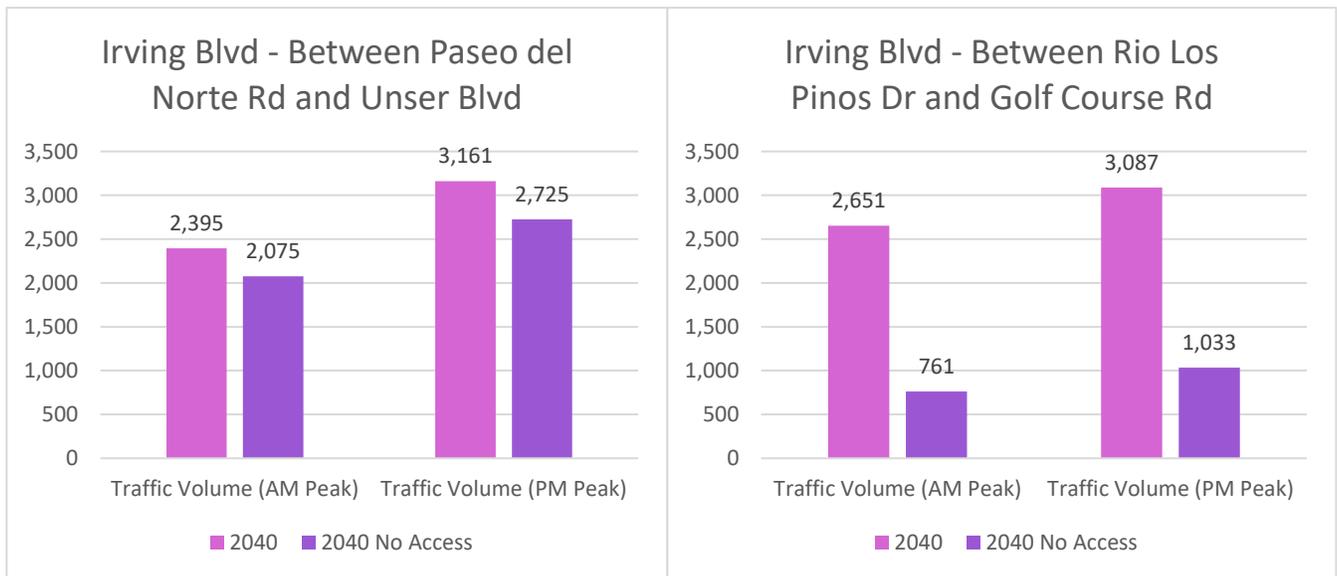
A comparison can be made between the 2040 Trend Scenario and the 2040 No Access Scenario to quantify the potential impacts of traffic calming along Irving Blvd and the displacement of trips onto other roadways. Overall, about two-thirds of the trips along Irving Blvd are through trips and one-third are related to access to residential areas. Table 11 and Figure 47 summarize the projected changes to travel along Irving Blvd at the daily level and during the peak periods for each future scenario, while Figure 48 depicts the changes in peak period travel across the regional roadway network.

Unsurprisingly, removing the segment of Irving Blvd to the west of Unser Blvd – as in the case of the No Access Scenario – dramatically reduces the traffic volume along other portions of Irving Blvd as through trips along the corridor are no longer possible. Rather, impacts can be observed on parallel roadways. As shown in Figure 47, the No Access Scenario results in the displacement of trips from Irving Blvd to McMahan Blvd and Paradise Blvd, which both experience an increase in travel in the AM and PM peak periods. However, the magnitude of increase on these parallel facilities is relatively modest (i.e. 10% or less increase in total trips on each corridor during the peak periods), indicating that disruptions to travel along Irving Blvd can be absorbed by alternative roadways.

**Table 11: Projected Daily Traffic along Irving Blvd for "Trend" and "No Access" Scenarios**

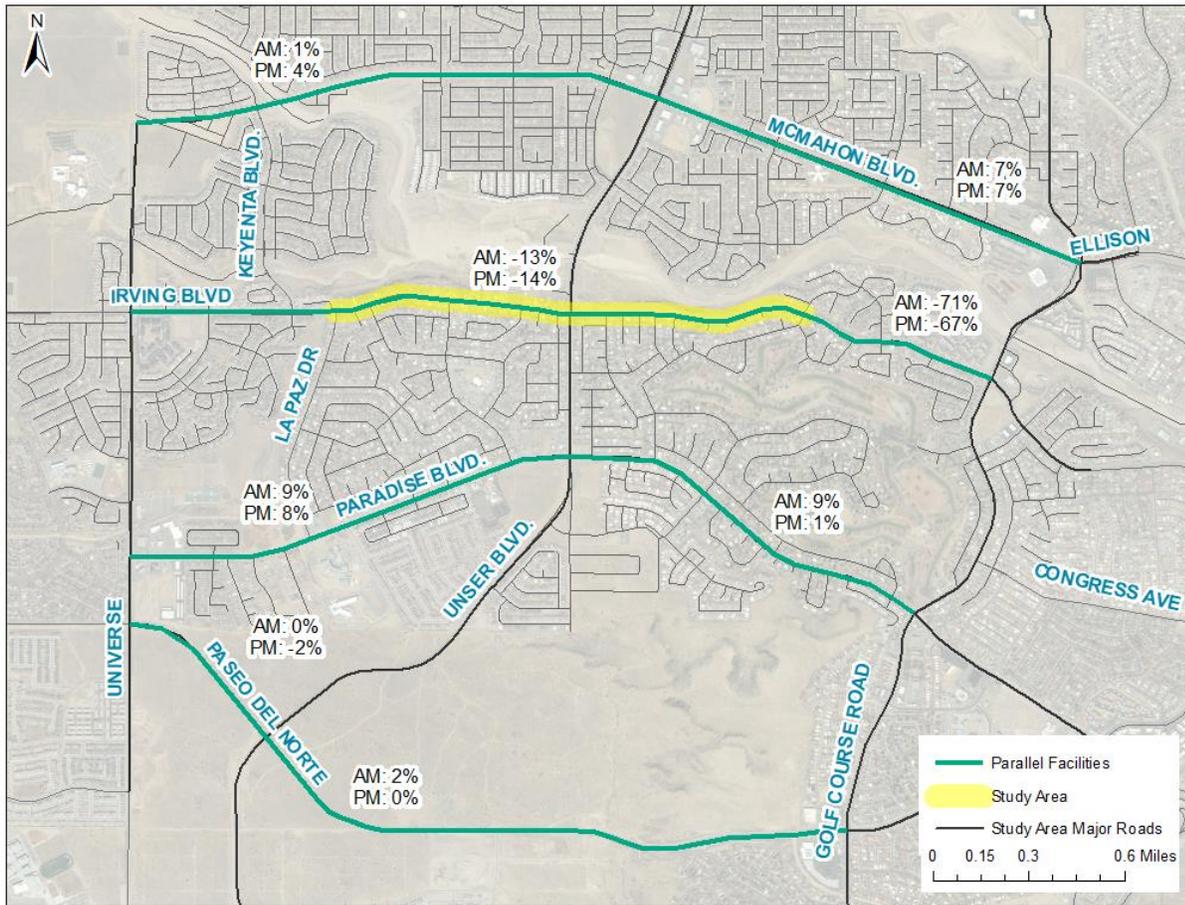
Segment	Daily Trips – 2040 Trend	Daily Trips – 2040 No Access	Total Difference	Percent Difference
Rio de Los Pinos Dr to Golf Course Rd	14,874	4,657	10,217	-68.7%
Unser Blvd to Rio de Los Pinos Dr	10,243	0	10,243	-100.0%
West of Unser Blvd	13,763	11,699	2,064	-15.0%

**Figure 47: Peak Period Traffic Volumes along Irving Blvd for "Trend" and "No Access" Scenarios**



IRVING BLVD TRAFFIC CALMING STUDY

Figure 48: Change in Traffic Volume in No Access Scenario Compared to 2040 Trend Scenario



Although a significant number of trips are displaced from Irving Blvd to other corridors under the No Access Scenario, there are no meaningful changes in overall levels of driving, as shown in the total vehicle miles traveled (VMT) and vehicle hours traveled (VHT) for the northwest Albuquerque area. As shown in Table 12, total distance and hours traveled actually decrease across Northwest Albuquerque during the peak periods under the No Access Scenario, indicating that alternative routes to Irving Blvd may actually be more efficient for area motorists and that there are unlikely to be major impacts to regional traffic operations as a result of traffic calming along Irving Blvd.

Table 12: Summary Statistics for 2040 Trend and No Access Scenarios for Northwest Albuquerque

	2040 Trend	No Access	Difference
<b>VMT - Daily</b>	1,878,571	1,878,905	0.02%
<b>VHT - Daily</b>	88,280	87,850	-0.49%
<b>VMT - AM Peak</b>	358,136	353,046	-1.42%
<b>VHT - AM Peak</b>	20,140	19,746	-1.96%
<b>VMT - PM Peak</b>	459,244	453,478	-1.26%
<b>VHT - PM Peak</b>	27,560	26,725	-3.03%



## APPENDIX B: PUBLIC INPUT

### PUBLIC MEETING #1 SUMMARY

A public meeting on the Irving Blvd Traffic Calming Study was held the evening of October 12, 2021 via Zoom. Four members of the public and seven project team members from the City of Albuquerque and Bohannon Huston Inc. attended. Councilor Cynthia Borrego was present at the opening of the meeting to provide welcoming remarks.

### AGENDA

The agenda for the meeting included the following topics:

- Presentation of existing conditions, cross-section alternatives, and traffic calming alternatives for the corridor segment east of Unser Blvd
- Discussion of alternatives east of Unser Blvd
- Presentation of existing conditions and alternatives for the corridor segment west of Unser Blvd
- Discussion of alternatives west of Unser Blvd

### PUBLIC FEEDBACK

#### ***East of Unser Blvd***

Topics discussed during the meeting for the corridor segment east of Unser Blvd included sidewalks and multi-use trails, traffic circles and median diverters, and vehicular access to Irving Blvd.

- Residents expressed support for a multi-use path on the north side of Irving Blvd and sidewalks along the entire study corridor.
- Residents supported the addition of mini-roundabouts. Attendees were hopeful that mini-roundabouts would create better access for vehicles entering Irving Blvd from cul-de-sacs.
- Residents supported median diverters to calm traffic and maintain vehicular access to side streets.

#### ***West of Unser Blvd***

Topics discussed during the meeting for the corridor segment west of Unser Blvd included traffic calming designs and the location of City right-of-way.

- Residents expressed concerns about speeding along the corridor and supported the traffic calming designs that were presented. One resident stated that traffic calming features are more important than pedestrian enhancements on the corridor.
- Residents expressed concerns about Alternative 1, which would build sidewalks in the space that residents currently use for landscaping and driveways. There was disagreement from residents about the location of the City's right-of-way, which extends past the current roadway footprint.
  - One participant asked if the City would be allowed to build sidewalk on the seven-foot utility easement adjacent to the roadway. Staff answered that the utility easement does allow for building sidewalks.
  - Meeting attendees also asked whether property owners would be compensated if sidewalks were built outside the roadway footprint. Staff answered that if the City built sidewalks outside the roadway footprint on the City's right-of-way, they could not legally compensate property owners or replace landscaping.



## IRVING BLVD TRAFFIC CALMING STUDY

- Residents supported the idea of mini-roundabouts along this segment, especially at La Paz Dr/Pyrenees Ct and Paseo del Norte Rd.
- Residents discussed the possibility of speed bumps/humps along the study corridor. However, because the corridor is an emergency response route, speed bumps would not comply with City EMS policies.

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### PUBLIC MEETING #2 SUMMARY

A second public meeting was held the evening of January 24, 2022 via Zoom to present the final study recommendations. Nine members of the public and eight staff members from the Department of Municipal Development, Council Services, and Bohannon Huston Inc. were present.

### AGENDA

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The agenda for the meeting included the following:

- Presentation of existing conditions, alternatives that were considered during the study, and recommended alternatives
- Open comment and discussion period

### PUBLIC FEEDBACK

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During the public comment period, residents discussed the removal of the center turn lane and sidewalk placement, traffic calming east of Unser Blvd, features of the proposed multi-use trail, roadway classification, and previous outreach and planning efforts. Staff emphasized that funding needs to be identified and final engineering design would occur prior to implementation.

#### **Center Turn Lane Removal and Sidewalk Placement**

Residents discussed concerns about removing the center turn lane and whether the sidewalk should be constructed inside or outside the existing curb lines.

- One resident who lives on Irving Blvd west of Unser Blvd did not support the removal of the center turn lane because of concerns about the increased difficulty of backing his trailer into his driveway. Another resident stated that there is right-of-way to build sidewalk outside of the existing curb lines, which would allow residents to keep the center turn lane.
  - Staff responded that feedback from previous outreach had pushed back against the idea of building sidewalks outside the curb lines, and recommendations were developed based on that feedback.
- Another resident stated that drivers currently use the turn lane to pass drivers backing out of driveways, which creates a safety issue. The resident expressed concerns that removing the turn lane would encourage these drivers to pass in the oncoming traffic lane. The resident also stated that she would prefer to prioritize people trying to get out of their driveways over people walking for exercise.
  - Another resident agreed and stated that it is difficult to turn into driveways because of people trying to pass in the center turn lane and that beautifying the neighborhood is not as important as safety.
  - Staff responded that the alternatives represented a trade-off between removing the center turn lane and building sidewalk into front yards.
  - Staff also responded by citing cases in Albuquerque where the center turn lane was removed and crashes and speeds decreased. Studies on the effects of removing the turn lane found that there was not a significant increase in delay for people backing out of their driveways and that drivers did not pass other vehicles in the oncoming traffic lane.



***Traffic Calming East of Unser Blvd***

Residents expressed support for the designs and traffic calming features east of Unser Blvd.

- One resident who lives on the east side Unser Blvd supported the traffic calming designs. Other residents he has talked to also support the designs. Some houses have curb cuts along Irving Blvd that provide access to their back yards. He asked a question about whether median diverters would block access to these curb cuts.
  - Staff answered that median diverters were specifically placed in locations that would not block access to curb cuts or cul-de-sacs.

***Proposed Multi-use Trail***

Residents discussed the types of amenities they would like to see along the proposed multi-use trail.

- One resident would like an improved fence at the Calabacillas Arroyo. The current fence is weak, and ATVs can pass through and drive in the arroyo.
  - Staff indicated that fencing and amenities can be considered as part of the final design process.
- Another resident did not think that benches and bike lanes would be used, as similar amenities on Paradise Blvd are not well-utilized.

***Roadway Classification***

Residents asked questions about the roadway classification and whether large vehicles would be allowed to travel along Irving Blvd.

- One resident asked whether the roadway classification would be changed and whether the speed limit would be reduced.
  - Staff answered that the project team did look at whether the roadway classification should be changed from collector to local road. However, local roads do not qualify for federal funding, which would make the project difficult to implement. As Irving Blvd is an emergency services and school bus route, collector is the appropriate classification.
  - Staff responded to the question about speed limits by stating that traffic calming designs will be more effective at reducing speeds than changing the posted speed limit. However, a 25-mph posted speed would be appropriate for a collector along a residential street.
- A resident also expressed concerns about the potential for crashes involving large fuel trucks. The resident stated that reducing speed limits and diverting trucks to other routes would help prevent crashes.
  - Residents discussed whether it would be effective to put weight restrictions on the roadway. Staff responded that signs could be put up, but they would likely not be enforced.

***Previous Outreach and Planning Efforts***

Residents and staff discussed the previous outreach and planning efforts regarding traffic calming on Irving Blvd.

- One resident discussed a previous door-to-door survey of residents. As a result of the survey, a traffic calming resolution was passed through City Council during Councilor Lewis' previous term. However, the resident also stated that several new people have moved into the neighborhood since then.
- Another resident was concerned that residents who live on the west side of Irving Blvd may not have been notified about the public meetings. He was concerned people who do not live along the study corridor may have had an outsized influence on the planning process.
  - Staff responded that residents have been contacted via the neighborhood association, email lists from previous outreach efforts, and through the City Council website.



**ADDITIONAL PUBLIC FEEDBACK**

Staff also collected comments after the first public meeting. Table 13 describes the additional comments collected via email and phone. Public comments were accepted from the time of the first public meeting through December 31, 2021.

**Table 13: Additional Public Comments**

Comment Summary	Submission Format
Resident discussed the alternatives for the segment east of Unser Blvd with neighbors. The alternatives that build a multi-use path were the most popular. Most neighbors also supported building sidewalks on the south side of the street.	Email
Resident stated that speeding vehicles have crashed into their fence on Irving Blvd several times. The commenter thought that the right-of-way issue should be thoroughly reviewed before an alternative is selected. Due to concerns about traffic congestion, the commenter would rather add pedestrian improvements to the existing slip lane island on the northeast corner of the Unser Blvd intersection than remove the slip lane. The commenter supported Alternative 1 west of Unser Blvd because of concerns about increasing traffic congestion and rear end collisions if the turn lane is removed. Finally, the commenter expressed support for traffic calming in general, and specifically supported a mini-roundabout at Paseo del Norte Rd.	Email
Resident expressed support for the designs presented in the public meeting, particularly for the segment east of Unser Blvd. The commenter was concerned that the project won't move forward and wanted to ensure that the project team coordinates with other projects in the area, including the Bernalillo County sound wall study on Unser Blvd.	Phone
Resident expressed support for sidewalks, bike lanes, walking paths, and mini-roundabouts. The commenter stated that their house and safety wall have been hit multiple times by speeding vehicles.	Email



# APPENDIX C: DETAILED COST ESTIMATES

## ESTIMATE OF PROBABLE COST: WEST OF UNSER BLVD

ESTIMATE OF PROBABLE COST - WEST OF UNSER

Bid Item No.	Item ID No.	Item Description	Est. Qty.	Unit	Unit Price	Amount
<b>Roadway</b>						
1	4.010	Construction Staking, Compl.	1	LS	\$ 10,000.00	\$ 10,000.00
2	6.010	Construction Project Sign per Contract Special Provisions, CIP	3	EA	\$ 650.00	\$ 1,950.00
3	19.010	Construction traffic Control & Barricading, compl.	1	LS	\$ 10,000.00	\$ 10,000.00
4	201.010	Site Clearing & Grubbing, Compl.	2.5	AC	\$ 1,500.00	\$ 3,750.00
5	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	5,700	SY	\$ 2.00	\$ 11,400.00
6	302.010	6" Thick Aggregate Base Course, cip.	5,700	SY	\$ 7.00	\$ 39,900.00
7	340.010	Sidewalk, 4" Thick, Portland Cement Concrete, cip.	5,700	SY	\$ 40.00	\$ 228,000.00
8	340.025	Wheelchair Access Ramp, 4" PCC, Std. Curb., cip. SD 2418	250	SY	\$ 50.00	\$ 12,500.00
9	340.050	Standard Curb & Gutter, cip.	4,100	LF	\$ 20.50	\$ 84,050.00
10	340.110	Header Curb, incl. subgrade, cip.	200	LF	\$ 20.00	\$ 4,000.00
11	340.XXX	ADA Tactile Warning Device, cip.	110	SF	\$ 30.00	\$ 3,300.00
12	343.080	Existing Curb & gutter or Valley Gutter, PC Concrete, remove and dispose, compl.	4,100	LF	\$ 4.50	\$ 18,450.00
13	343.085	Existing Sidewalk, 4" PC Concrete, remove & dispose	1,200	SY	\$ 10.00	\$ 12,000.00
14	441.001	ReflectORIZED Plastic Pavement Markings, 4" width, cip.	24,000	LF	\$ 1.00	\$ 24,000.00
15	441.005	ReflectORIZED Plastic Pavement Markings, 24" Width, cip.	50	LF	\$ 3.00	\$ 150.00
16	441.011	ReflectORIZED Plastic Arrow, Left, cip	14	EA	\$ 152.00	\$ 2,128.00
16	441.031	ReflectORIZED Plastic Symbol, Bicycle, cip.	10	EA	\$ 240.00	\$ 2,400.00
17	443.101	Removal of Pavement Stripe, any width, painted or plastic, compl.	24,000	LF	\$ 1.00	\$ 24,000.00
18	443.102	Removal of Pavement Arrow, Symbol or Word, painted or plastic, compl.	14	EA	\$ 55.00	\$ 770.00
19	1005.00X	Landscaping, compl.	1	EA	\$ 150,000.00	\$ 150,000.00
20	1012.01	Seeding, Class "A", Native, cip.	1	AC	\$ 150.00	\$ 150.00
21	1015.01X	Gravel Mulch, 2", including filter fabric, cip.	3,021	SY	\$ 11.00	\$ 33,226.11
<b>SUBTOTAL</b>						<b>\$ 676,124.11</b>



**IRVING BLVD TRAFFIC CALMING STUDY**

Bid Item No.	Item ID No.	Item Description	Est. Qty.	Unit	Unit Price	Amount
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**Traffic Control**

**Roundabouts**

22	19.010	Construction traffic Control & Barricading, compl.	1	LS	\$ 60,000.00	\$ 60,000.00
23	340.060	Curb & Gutter, Median, cip.	350	LF	\$ 20.00	\$ 7,000.00
24	340.300	4" Median Pavement, incl. subgrade compaction, cip.	150	SY	\$ 40.50	\$ 6,075.00
25	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	1,400	SY	\$ 2.00	\$ 2,800.00
26	302.010	6" Thick Aggregate Base Course, cip.	1,400	SY	\$ 7.00	\$ 9,800.00
27	336.022	Asphalt Concrete, 2 inch thick, superpave, cip.	7,000	SY	\$ 10.00	\$ 70,000.00
28	343.020	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	450	SY	\$ 8.50	\$ 3,825.00
29	441.001	Reflectorized Plastic Pavement Markings, 4" width, cip.	6,000	LF	\$ 1.00	\$ 6,000.00
29	450.001	Aluminum Panel Sign, cip	1,080	SF	\$ 24.00	\$ 25,920.00
30	450.010	Square Tube Steel Posts & Base Posts for Aluminum Panel Sign, cip	720	LF	\$ 12.65	\$ 9,108.00
<b>SUBTOTAL</b>						<b>\$ 200,528.00</b>

					<b>Subtotal of Bid Items</b>	<b>\$ 876,652.11</b>
						<b>\$ 219,163.03</b>
		<b>25% INFLATION FROM 2020</b>				
	621.4.1	Mobilization (not to exceed 5% of above Subtotal)	1	LS	\$ 43,832.61	\$ 43,832.61
<b>BASE TOTAL</b>						<b>\$ 1,139,647.74</b>



**IRVING BLVD TRAFFIC CALMING STUDY**

**ESTIMATE OF PROBABLE COST: EAST OF UNSER BLVD**

ESTIMATE OF PROBABLE COST - EAST OF UNSER

Bid Item No.	Item ID No.	Item Description	Est. Qty.	Unit	Unit Price	Amount
<b>Roadway</b>						
1	4.010	Construction Staking, Compl.	1	LS	\$ 25,000.00	\$ 25,000.00
2	6.010	Construction Project Sign per Contract Special Provisions, CIP	3	EA	\$ 650.00	\$ 1,950.00
3	19.010	Construction traffic Control & Barricading, compl.	1	LS	\$ 20,000.00	\$ 20,000.00
4	201.010	Site Clearing & Grubbing, Compl.	2.5	AC	\$ 1,500.00	\$ 3,750.00
5	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	4,338	SY	\$ 2.00	\$ 8,676.00
6	302.010	6" Thick Aggregate Base Course, cip.	4,338	SY	\$ 7.00	\$ 30,366.00
7	336.010	Prime Coat, emulsified asphalt, cip.	4,338	SY	\$ 0.50	\$ 2,169.00
8	336.022	Asphalt Concrete, 2 inch thick, superpave, cip.	8,676	SY	\$ 10.00	\$ 86,760.00
9	336.120	Tack Coat, cationic emulsified asphalt, cip.	4,338	SY	\$ 0.50	\$ 2,169.00
10	340.010	Sidewalk, 4" Thick, Portland Cement Concrete, cip.	2,164	SY	\$ 40.00	\$ 86,560.00
11	340.025	Wheelchair Access Ramp, 4" PCC, Std. Curb., cip. SD 2418	225	SY	\$ 50.00	\$ 11,250.00
12	340.050	Standard Curb & Gutter, cip.	3,245	LF	\$ 20.50	\$ 66,522.50
13	340.110	Header Curb, incl. subgrade, cip.	200	LF	\$ 20.00	\$ 4,000.00
14	340.XXX	ADA Tactile Warning Device, cip.	110	SF	\$ 30.00	\$ 3,300.00
15	343.070	Existing Curb, Asphalt Concrete, R&D, compl.	3,240	LF	\$ 4.50	\$ 14,580.00
16	343.085	Existing Sidewalk, 4" PC Concrete, remove & dispose	50	SY	\$ 10.00	\$ 500.00
17	440.001	ReflectORIZED Painted Marking, cip	170	LF	\$ 1.00	\$ 170.00
18	441.001	ReflectORIZED Plastic Pavement Markings, 4" width, cip.	19,500	LF	\$ 1.00	\$ 19,500.00
19	441.005	ReflectORIZED Plastic Pavement Markings, 24" Width, cip.	290	LF	\$ 3.00	\$ 870.00
20	441.031	ReflectORIZED Plastic Symbol, Bicycle, cip.	8	EA	\$ 240.00	\$ 1,920.00
21	443.101	Removal of Pavement Stripe, any width, painted or plastic, compl.	6,500	LF	\$ 1.00	\$ 6,500.00
22	443.102	Removal of Pavement Arrow, Symbol or Word, painted or plastic, compl.	2	EA	\$ 55.00	\$ 110.00
23	920.420	Existing Manhole Frame & Cover, adjust to pavement grade where adjustment of concrete or block barrel is required, cip.	7	EA	\$ 720.00	\$ 5,040.00
24	1005.00X	Landscaping, compl.	1	EA	\$ 110,000.00	\$ 110,000.00
25	1012.01	Seeding, Class "A", Native, cip.	1	AC	\$ 1,630.00	\$ 1,630.00
26	1015.01X	Gravel Mulch, 2", including filter fabric, cip.	3,021	SY	\$ 11.00	\$ 33,226.11
<b>SUBTOTAL</b>						<b>\$ 546,518.61</b>



**IRVING BLVD TRAFFIC CALMING STUDY**

Bid Item No.	Item ID No.	Item Description	Est. Qty.	Unit	Unit Price	Amount
<b>Multi-use Path</b>						
27	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	3,741	SY	\$ 2.00	\$ 7,481.78
28	302.010	6" Thick Aggregate Base Course, cip.	3,741	SY	\$ 7.00	\$ 26,186.22
29	336.010	Prime Coat, emulsified asphalt, cip.	3,741	SY	\$ 0.50	\$ 1,870.44
30	336.064	Bike Trail Asphalt Concrete, Type C, 3" thick, cip.	3,741	SY	\$ 13.00	\$ 48,631.56
31	421.006	Service Riser (lighting)	1	EA	\$ 2,500.00	\$ 2,500.00
32	421.011	Meter Pedestal (Signal), cip.	1	EA	\$ 8,500.00	\$ 8,500.00
33	421.016	Service Connection (lighting), cip	1	EA	\$ 1,000.00	\$ 1,000.00
34	421.023	Lighting Control Cabinet, two circuit, metered, cip	1	EA	\$ 3,600.00	\$ 3,600.00
35	422.050	Ornamental Pole & Luminaire Combo, cip	15	EA	\$ 3,600.00	\$ 54,000.00
36	423.020	Luminaire Foundation for Luminaire Height of 40' or less, cip	15	EA	\$ 950.00	\$ 14,250.00
SUBTOTAL						<b>\$ 168,020.00</b>
<b>Traffic Control</b>						
<b>Roundabouts</b>						
37	19.010	Construction traffic Control & Barricading, compl.	1	LS	\$ 50,000.00	\$ 50,000.00
38	340.060	Curb & Gutter, Median, cip.	700	LF	\$ 20.00	\$ 14,000.00
39	340.300	4" Median Pavement, incl. subgrade compaction, cip.	300	SY	\$ 40.50	\$ 12,150.00
40	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	6,750	SY	\$ 2.00	\$ 13,500.00
41	302.010	6" Thick Aggregate Base Course, cip.	6,750	SY	\$ 7.00	\$ 47,250.00
42	336.022	Asphalt Concrete, 2 inch thick, superpave, cip.	20,250	SY	\$ 10.00	\$ 202,500.00
43	343.020	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	450	SY	\$ 8.50	\$ 3,825.00
43	450.001	Aluminum Panel Sign, cip	648	SF	\$ 24.00	\$ 15,552.00
44	450.010	Square Tube Steel Posts & Base Posts for Aluminum Panel Sign, cip	1,080	LF	\$ 12.65	\$ 13,662.00
SUBTOTAL						<b>\$ 372,439.00</b>



**IRVING BLVD TRAFFIC CALMING STUDY**

Bid Item No.	Item ID No.	Item Description	Est. Qty.	Unit	Unit Price	Amount
<b>Raised Medians/Diverters</b>						
44	19.010	Construction traffic Control & Barricading, compl.	1	LS	\$ 35,000.00	\$ 35,000.00
45	340.050	Standard Curb & Gutter, cip.	1,460	LF	\$ 20.50	\$ 29,930.00
46	340.300	4" Median Pavement, incl. subgrade compaction, cip.	400	SY	\$ 40.50	\$ 16,200.00
47	441.001	ReflectORIZED Plastic Pavement Markings, 4" width, cip.	1,000	LF	\$ 1.00	\$ 1,000.00
48	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	600	SY	\$ 2.00	\$ 1,200.00
49	302.010	6" Thick Aggregate Base Course, cip.	600	SY	\$ 7.00	\$ 4,200.00
50	336.022	Asphalt Concrete, 2 inch thick, superpave, cip.	1,200	SY	\$ 10.00	\$ 12,000.00
SUBTOTAL						\$ 99,530.00
<b>Unser/Irving Intersection</b>						
51	340.050	Standard Curb & Gutter, cip.	385	LF	\$ 20.50	\$ 7,892.50
52	340.300	4" Median Pavement, incl. subgrade compaction, cip.	350	SY	\$ 40.50	\$ 14,175.00
53	343.070	Existing Curb, Asphalt Concrete, R&D, compl.	320	LF	\$ 4.50	\$ 1,440.00
54	301.02X	Subgrade Prep. 8" at 95% compaction, cip.	210	SY	\$ 2.00	\$ 420.00
55	302.010	6" Thick Aggregate Base Course, cip.	210	SY	\$ 7.00	\$ 1,470.00
56	336.022	Asphalt Concrete, 2 inch thick, superpave, cip.	420	SY	\$ 10.00	\$ 4,200.00
57	340.010	Sidewalk, 4" Thick, Portland Cement Concrete, cip.	25	SY	\$ 40.00	\$ 1,000.00
58	340.025	Wheelchair Access Ramp, 4" PCC, Std. Curb., cip. SD 2418	10	SY	\$ 50.00	\$ 500.00
57	343.030	Existing Pavement, Asphalt Concrete, more than 4" thick, sawcut, remove & dispose, compl.	320	SY	\$ 12.00	\$ 3,840.00
58	422.XXX	Traffic Signal Modifications	1	EA	\$ 150,000.00	\$ 150,000.00
59	441.001	ReflectORIZED Plastic Pavement Markings, 4" width, cip.	2,405	LF	\$ 1.00	\$ 2,405.00
60	441.005	ReflectORIZED Plastic Pavement Markings, 24" Width, cip.	25	LF	\$ 3.00	\$ 75.00
61	441.031	ReflectORIZED Plastic Symbol, Bicycle, cip.	3	EA	\$ 240.00	\$ 720.00
62	443.101	Removal of Pavement Stripe, any width, painted or plastic, compl.	2,200	LF	\$ 1.00	\$ 2,200.00
63	443.102	Removal of Pavement Arrow, Symbol or Word, painted or plastic, compl.	6	EA	\$ 55.00	\$ 330.00
64	1015.01X	Gravel Mulch, 2", including filter fabric, cip.	800	SY	\$ 11.00	\$ 8,800.00
SUBTOTAL						\$ 199,467.50
<b>Subtotal of Bid Items</b>						\$ 1,385,975.11
<b>25% INFLATION FROM 2020</b>						\$ 346,493.78
	621.4.1	Mobilization (not to exceed 5% of above Subtotal)	1	LS	\$ 69,298.76	\$ 69,298.76
<b>BASE TOTAL</b>						\$ 1,801,767.64



