VISION ZERO

WEBB LAREDO

APPENDIX F
CAPITAL PLAN

UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION

Webb County - City of Laredo Regional Mobility Authority

GATEWAY TO MEXICO

LAREDO, TEXAS

1755

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AADT	Annual Average Daily Traffic
ACS	American Community Survey
CMV	Commercial Motor Vehicle
CRIS	Crash Records Information System
DUI	Driving Under the Influence
FHWA	Federal Highway Administration
HIN	High Injury Network
KABCOU	Injury Severity Scale (Texas): **K:** Fatal injury **A:** Suspected incapacitating injury **B:** Non-incapacitated injury **C**: Possible injury **O:** Not injured **U:** Unknown
KSI	Killed or Serious Injury
KAB	Killed or Any Injury
LRS	Linear Referencing System
OSM	OpenStreetMap
TX	Texas
TxDOT	Texas Department of Transportation
VMT	Vehicle Miles Traveled
VRU	Vulnerable Road User includes Pedestrian, Bicyclists, or Motorcyclist

This Appendix includes the methodology used to prioritize the locations for implementing safety treatments and projects in the City of Laredo and Webb County for the Vision Zero Webb Laredo Safety Action Plan. This prioritization method supports decision-making regarding allocating limited funding to address the most prominent safety issues at the most needed locations and support the City and County in moving towards zero traffic fatalities and serious injuries.

After the project location prioritization, 16 top-ranked corridors were selected for detailed review. Capital projects along these 16 corridors were recommended to help the City and County implementing safety countermeasures to improve safety condition along these corridors.

Prioritization Methodology

Prioritization Framework

The table below lists the metrics for prioritization. Included are metrics in four broad categories: crash history and roadway characteristics; land use and context; equity; and public input. Including metrics in these categories gives priority to locations with higher historical crashes and road characteristics that are highly associated with crash risks at the most needed locations (e.g., near key destinations and in equity focus areas).

The feedback received from the public through the online survey and open houses is included in this prioritization framework as well. Crash data often does not tell the full story and local people's experiences are important qualitative data.

Table 1: Vision Zero Webb Laredo Safety Action Plan Project Prioritization Framework

Category	Metric	Description	Weight	Score
Crash History and Roadway Characteristics	Segment located on HIN	Overlap with or intersect with the overall HIN	20%	3 points – segment is part of HIN 1 point – segment intersects with HIN
	High-risk roadway segments	Overlaps with a high or critical tier as identified in systemic analysis	15%	5 points – critical tier 3 points – high tier
Land Use and Context	Destinations (schools and parks)	Number of destinations within 0.25 mile	10%	5 pts - >= 5 destinations 4 pts - 4 destinations 3 pts - 3 destinations 2 pts - 2 destinations 1 pts - 1 destination
	Population Density	Population density within 0.25 miles - based on proportional area overlap	10%	based on the highest quintile block group within 0.25 miles compared to other network segments 4 – 5th quintile 3 – 4th quintile 2 – 3rd quintile 1 – 2nd quintile 0 – 1st quintile
	Transit Stops	proximity (within 0.5 mile) to a transit stop	10%	3 pts – Yes 0 pts - No

Equity	Equity Focus Areas	Roadway segments that are in the identified Equity Areas	15%	3 – Highest degree of disadvantage 2 – Some degree of disadvantage 1 - Minimal degree of disadvantage
Public Input	Number of Unsafe Location Comments from the Public	The total number of comments received from the public about the roadway segment being unsafe	20%	3 – Highest density of comments / 3rd quantile 2 – Medium density of comments / 2nd quantile 1 – Lowest density of comments / 1st quantile 0 – no comments

Prioritization Results

The prioritization analysis resulted in a list of prioritized segments along the plan's High-Injury Network. The HIN accounts for a majority of all severe crashes, and thus are the focus of plan safety recommendations, but are also more likely to be near destinations, within equity areas, and the focus of public comments. Prioritizing the largest, busiest, and fastest roads will help focus projects and achieve Vision Zero within Webb County and the City of Laredo.

Prioritized segments all score equally for their location along the HIN (3 points). Within other categories, roads along the HIN score higher than non-HIN segments in every framework metric:

- Higher overall average roadway risk scores
- Higher number of factors associated with higher frequencies of severe crashes
- More destinations within 0.25 miles of the segment
- More transit stops within 0.5 miles of the segment
- More segments within Equity Focus Areas
- More public comments related to unsafe locations

The maps and tables below show how overall HIN corridors (grouped by Roadway Name, Functional Class, and Ownership) score based on the Prioritization Framework defined above. The following section identifies the highest-risk segments of each HIN corridor for further project development.

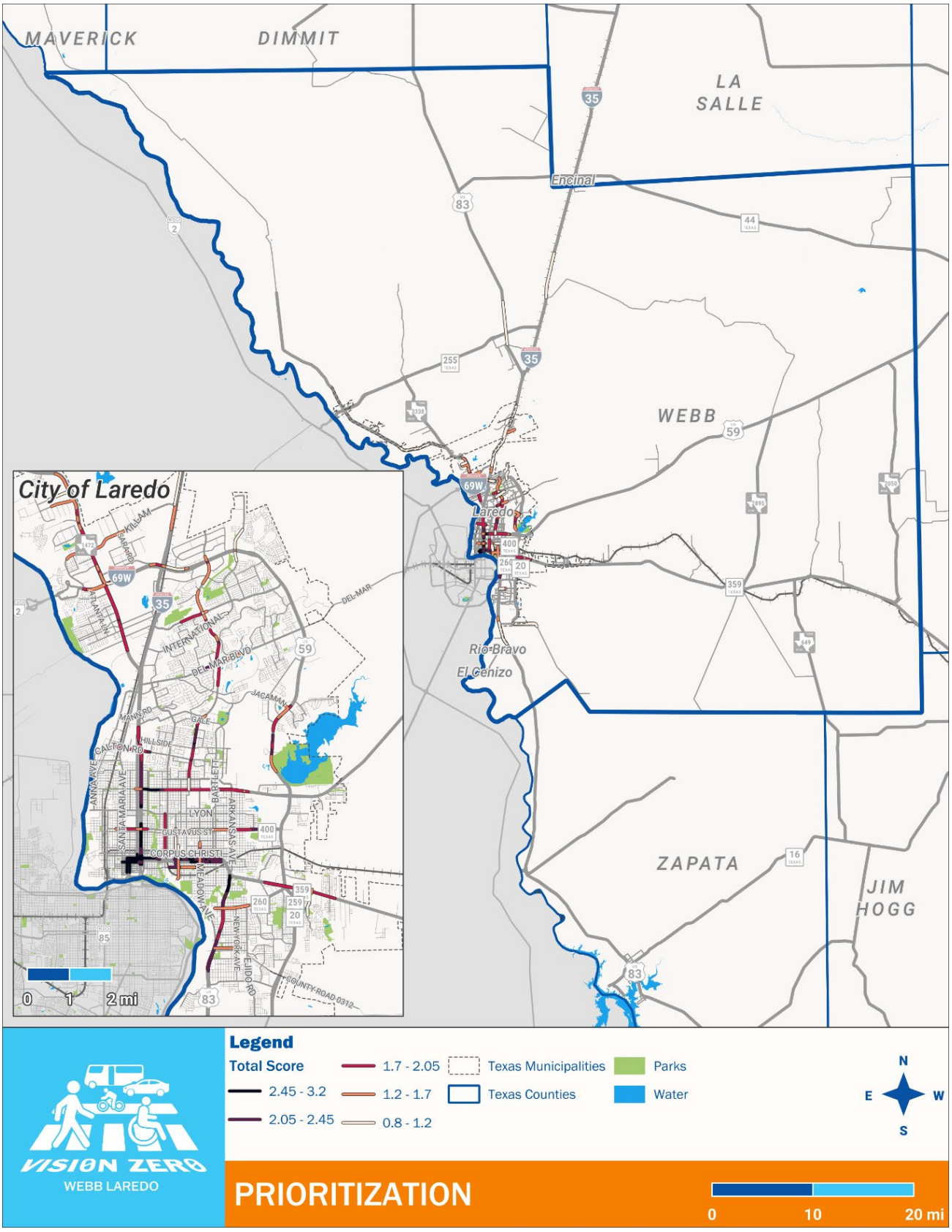

Figure 1: Prioritized HIN Segments – Webb County / Study Area

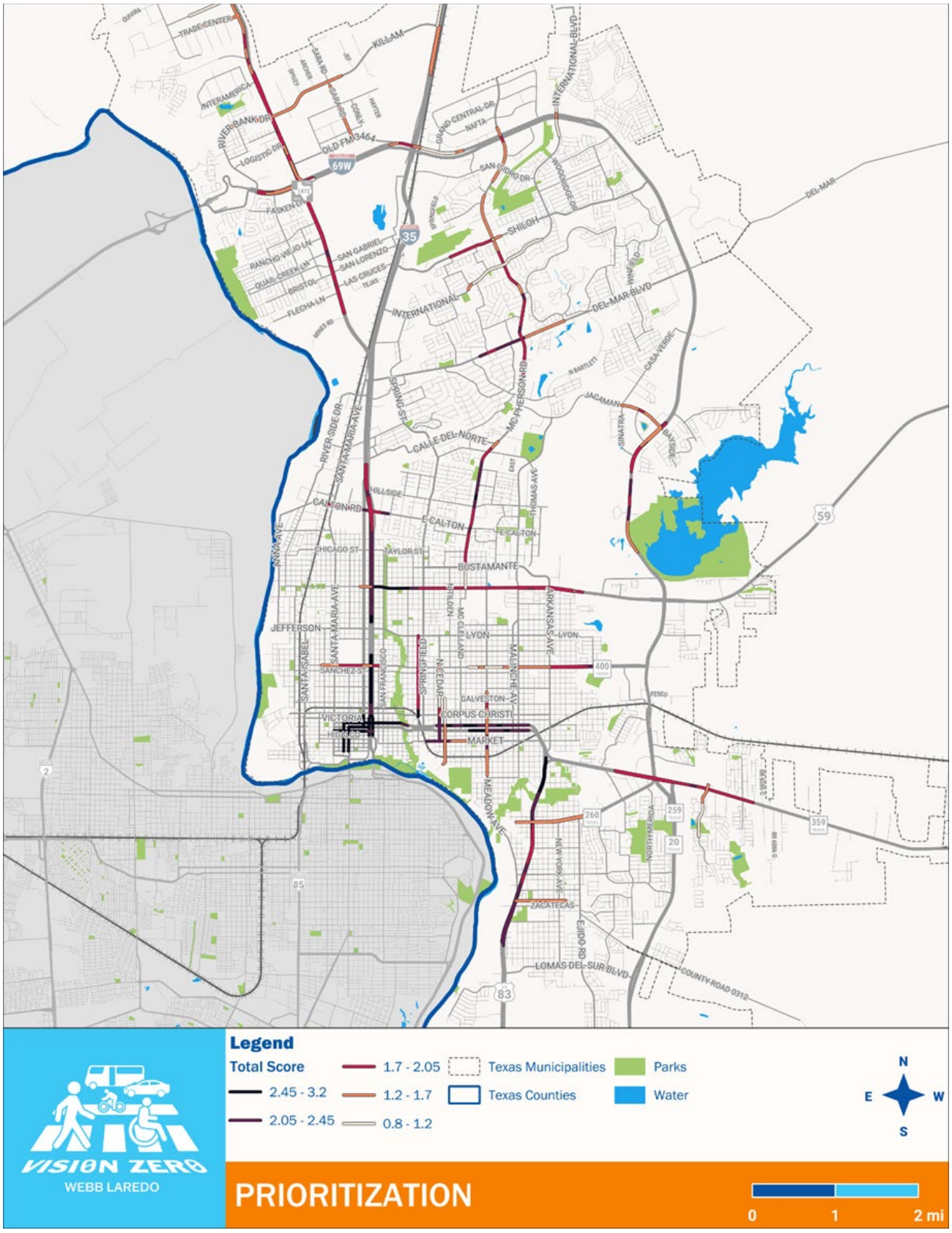

Figure 2: Prioritized HIN Segments – City of Laredo

Table 2: Prioritized HIN Corridors – HIN Segments by Roadway Corridors

Rank	Street Name	Highest Relative Risk Score	Number of Segments	Roadway Ownership
1	I-35 (IH0035)	3.20	122	State
2	I-35A (BI0035A)	3.05	15	State
3	US ROUTE 83 (US0083)	3.05	93	State
4	FARRAGUT ST	2.75	5	City
5	US ROUTE 59 BUS (BU0059Z)	2.55	35	State
6	MARCELLA AVE	2.55	10	City
7	MC PHERSON RD	2.45	50	City
8	MARKET ST	2.35	8	City
9	MINES RD (FM1472)	2.30	33	State
10	I-69W (IH0069W)	2.30	11	State
11	TX ROUTE 359 (SH0359)	2.30	10	State
12	BOB BULLOCK LOOP (US0059)	2.30	83	State
13	DEL MAR BLVD	2.20	22	City
14	CALTON RD	2.15	10	City
15	MEADOW AVE	2.15	25	City
16	JACAMAN	2.10	11	City
17	N CEDAR	2.05	12	City
18	SS0400	2.05	8	City
19	PARK ST	2.00	6	City
20	SHILOH	1.75	8	City
21	RIVER BANK DR	1.65	7	City
22	SALTILLO	1.60	6	City
23	SS0260	1.60	12	State
24	CLARK BLVD	1.55	10	City
25	KILLAM	1.55	7	City
26	SARA RD	1.55	3	City
27	LAFAYETTE	1.50	8	City
28	LOGAN	1.50	2	City
29	ROSS	1.50	10	City
30	INTERNATIONAL BLVD	1.45	2	City
31	INTERNATIONAL	1.40	11	Toll Authority
32	CARRIERS	1.25	8	City
33	TRADE CENTER	1.25	6	City
34	CONCORD HILLS BLVD	1.20	6	City
35	LA PITAMANGANA	1.20	6	City
36	SANTA MONICA	1.20	1	City
37	MANGANA HEIN RD	0.80	5	County
38	PAN AMERICAN	0.80	6	City

Table 3: Prioritized HIN Corridors – HIN Segments by Functional Class

Rank	Street Name	Highest Relative Risk Score	Number of Segments	Roadway Ownership
Interstates				
1	I-35 (IH0035)	3.2	107	State
2	I-69W (IH0069W)	2.3	22	State
Arterials				
1	I-35A (BI0035A)	3.05	15	State
2	US ROUTE 83 (US0083)	3.05	93	State
3	US ROUTE 59 BUS (BU0059Z)	2.55	35	State
4	MC PHERSON RD	2.45	50	City
5	MARKET ST	2.35	8	City
6	MINES RD (FM1472)	2.30	83	State
7	TX ROUTE 359 (SH0359)	2.30	25	State
8	BOB BULLOCK LOOP (US0059)	2.30	33	State
9	DEL MAR BLVD	2.20	11	City
10	CALTON RD	2.15	10	City
11	MEADOW AVE	2.15	10	City
12	N CEDAR	2.05	11	City
13	SS0400	2.05	12	State
14	PARK ST	2.00	2	City
15	SHILOH	1.75	8	City
16	RIVER BANK DR	1.65	7	City
17	SS0260	1.60	12	State
18	CLARK BLVD	1.55	10	City
19	KILLAM	1.55	10	City
20	INTERNATIONAL BLVD	1.45	8	Toll Authority
21	INTERNATIONAL	1.40	11	City
22	LA PITAMANGANA	1.20	6	City
Collectors				
1	FARRAGUT ST	2.75	5	City
2	MARCELLA AVE	2.55	10	City
3	JACAMAN	2.10	6	City
4	PARK ST	1.70	6	City
5	SARA RD	1.55	7	City
6	LAFAYETTE	1.50	3	City
7	CARRIERS	1.25	2	City
8	TRADE CENTER	1.25	6	City
9	CONCORD HILLS BLVD	1.20	6	City

10	I-35 (IH0035) [access roads]	0.80	15	State
11	MANGANA HEIN RD	0.80	5	County
12	PAN AMERICAN	0.80	6	City
Local				
1	LOGAN	1.50	8	City
2	ROSS	1.50	2	City
3	SALTILLO	1.60	6	City
4	SANTA MONICA	1.20	1	City

Priority Project Segments

The following table and maps identify priority project locations for the highest risk segments along each High Injury Network corridor. Each project location is defined by a segment with starting and ending location as well as any adjacent, contiguous segments that are also located on the HIN (even if contiguous segment risk scores are lower). The bolded ones are those that were selected for location-specific capital project recommendation development[1].

Table 4: Top 20 Priority Project Segment

Corridor Rank	Street Name	Segment Start (W / N)	Segment End (E / S)	Highest Segment Risk Score
1	*I-35 (IH0035)*	--	--	*3.20*
2	HOUSTON ST (I-35A BUS)	Salinas Ave	I-35	3.05
3	SALINAS AVE (I-35A BUS)	Zaragoza St	Houston St	2.75
4	CONVENT AVE (I-35A BUS)	Zaragoza St	Matamoros St	2.75
5	MATAMOROS ST (I-35A BUS)	Convent Ave	I-35	2.65
6	SAN BERNARDO AVE (I-35A BUS)	Washington St	Houston St	2.65
7	HOUSTON ST (US 83)	I-35	Monterrey Ave	3.05
8	GUADALUPE ST (US 83)	Cedar Ave	N Jarvis Ave	2.75
9	ZAPATA HWY (US 83)	SR 359	Cross St	2.55
10	CHIHUAHUA ST (US 83)	N Stone Ave	N Jarvis Ave	2.45
11	FARRAGUT ST	Santa Maria Ave	I-35	2.90
12	LLOYD BENTSEN HWY (US 59 BUS)	I-35	N Ejido Ave	2.60
13	MARCELLA AVE	Corpus Christi St	E Lyon St	2.55
14	MCPHERSON RD	E Saunders St	C. del Norte	2.60

[1] Interstate Highways (i.e., I-35 or I-69W) were not included in the capital project recommendation as the City and County do not have ownership of them. Bob Bullock Loop (US 59) wasn't included because TxDOT has already planned projects along the corridor.

15	MARKET ST	One block west of Maryland Ave	Mendiola Ave	2.35
16	MINES RD (FM1472)	I-69W	Ramps north of I-35	2.30
17	*I-69W (IH0069W)*	--	--	*2.30*
18	TX ROUTE 359 (SH0359)	Boomtown St	Floral Blvd	2.30
19	BOB BULLOCK LOOP (US0059)	Sinatra Pkwy	El Ranchito Rd	2.30
20	DEL MAR BLVD	Fenwick Street	Country Club Drive	2.20

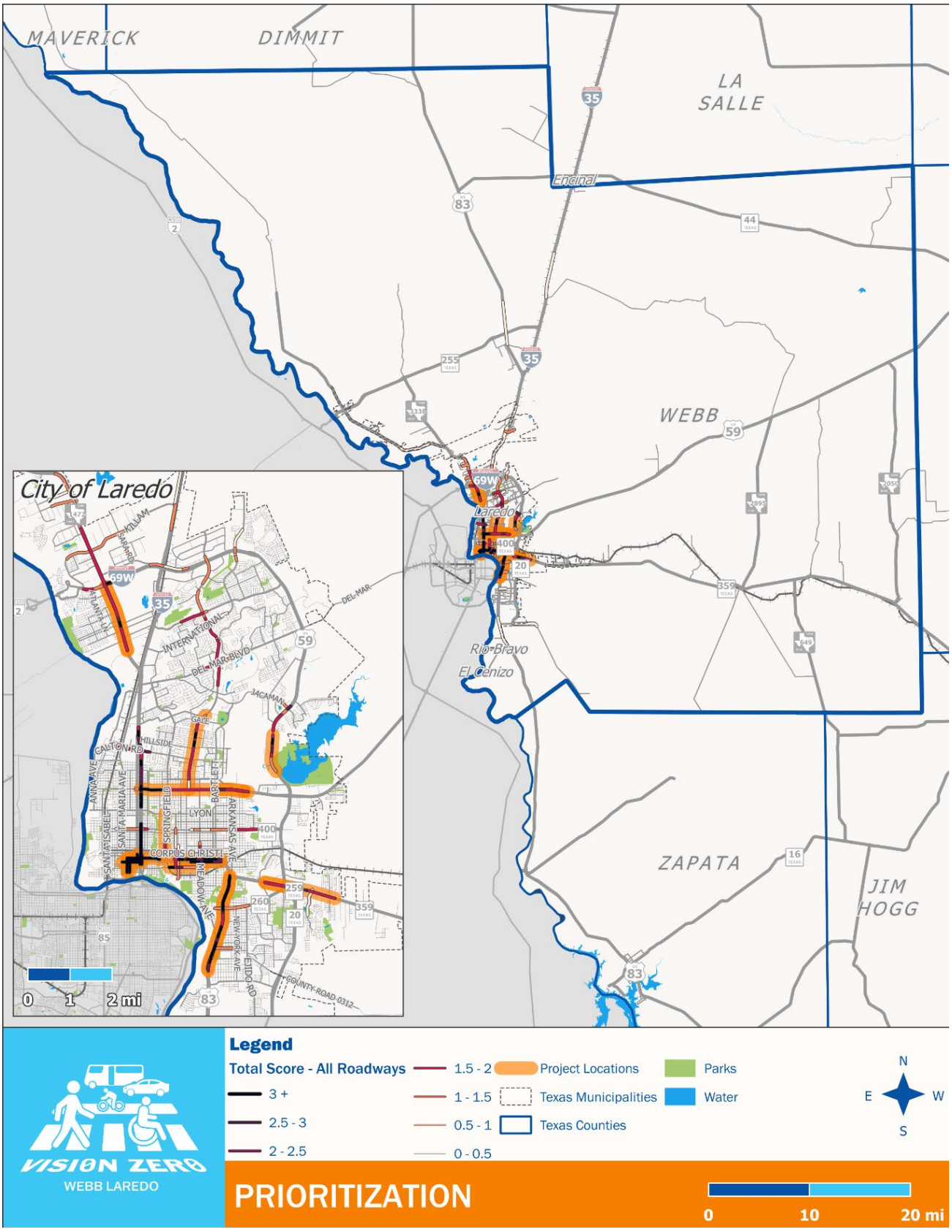

Figure 3: Prioritized Project Locations – Webb County / Study Area

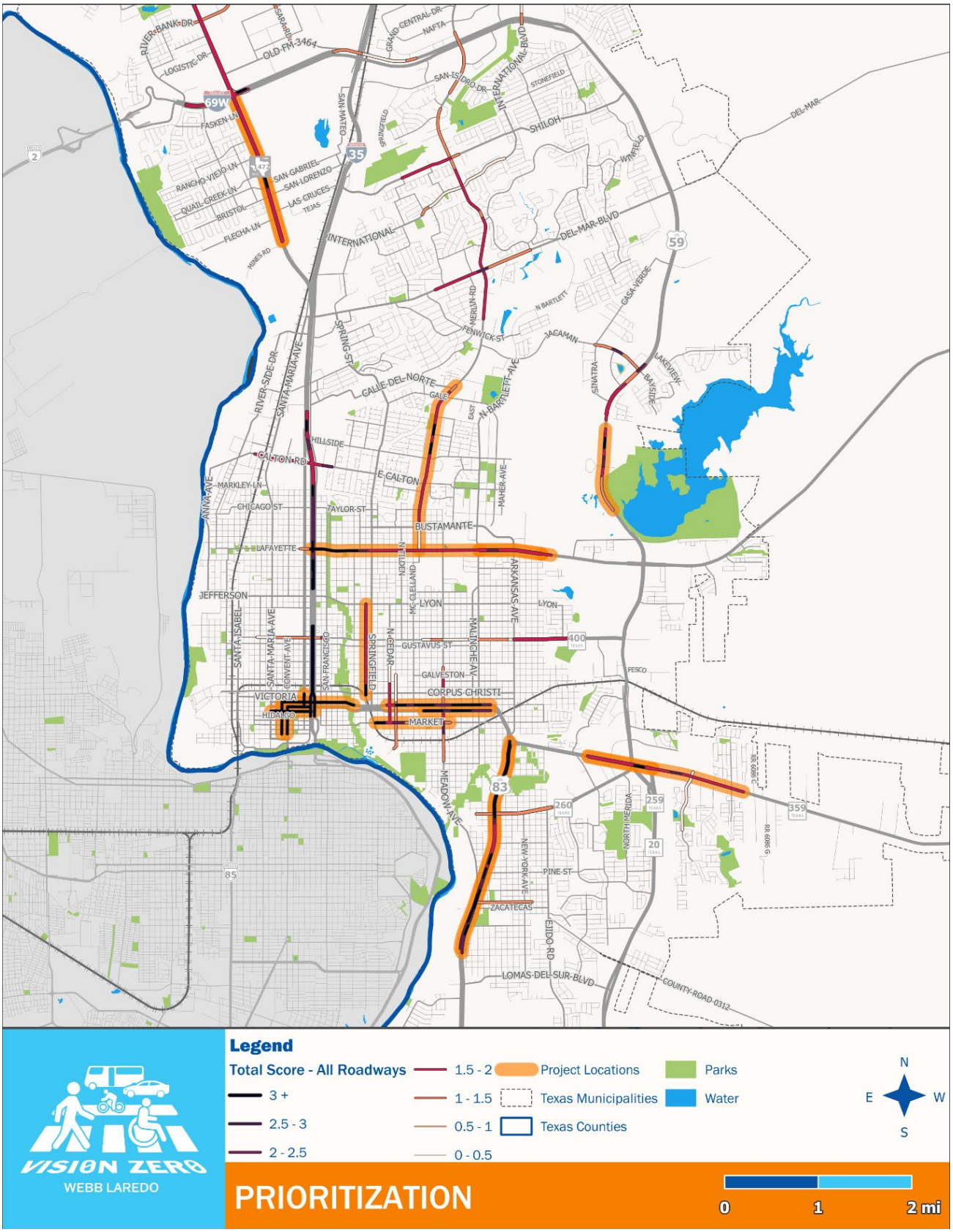

Figure 4: Prioritized Project Locations – City of Laredo

All Prioritized Roadways

The following maps highlight all roadways within the study area and City of Laredo analyzed via the Prioritization Framework outlined above. The recommended project list (outlined above) will include roadways from the designated High Injury Network, but the additional analysis will help inform systemic risk treatments and wider areas of focus beyond specific corridors.

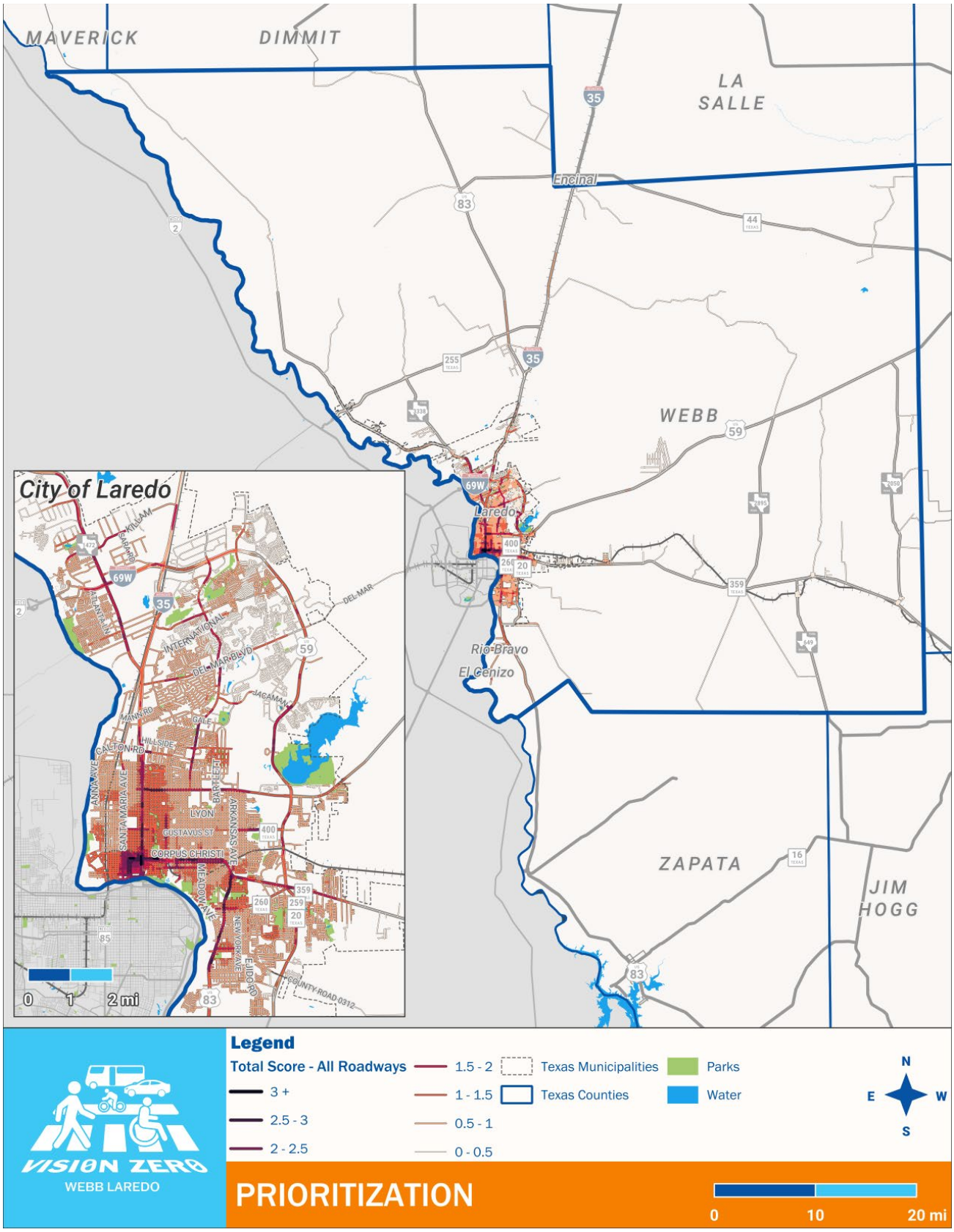

Figure 5: Scored Roadways – Webb County / Study Area

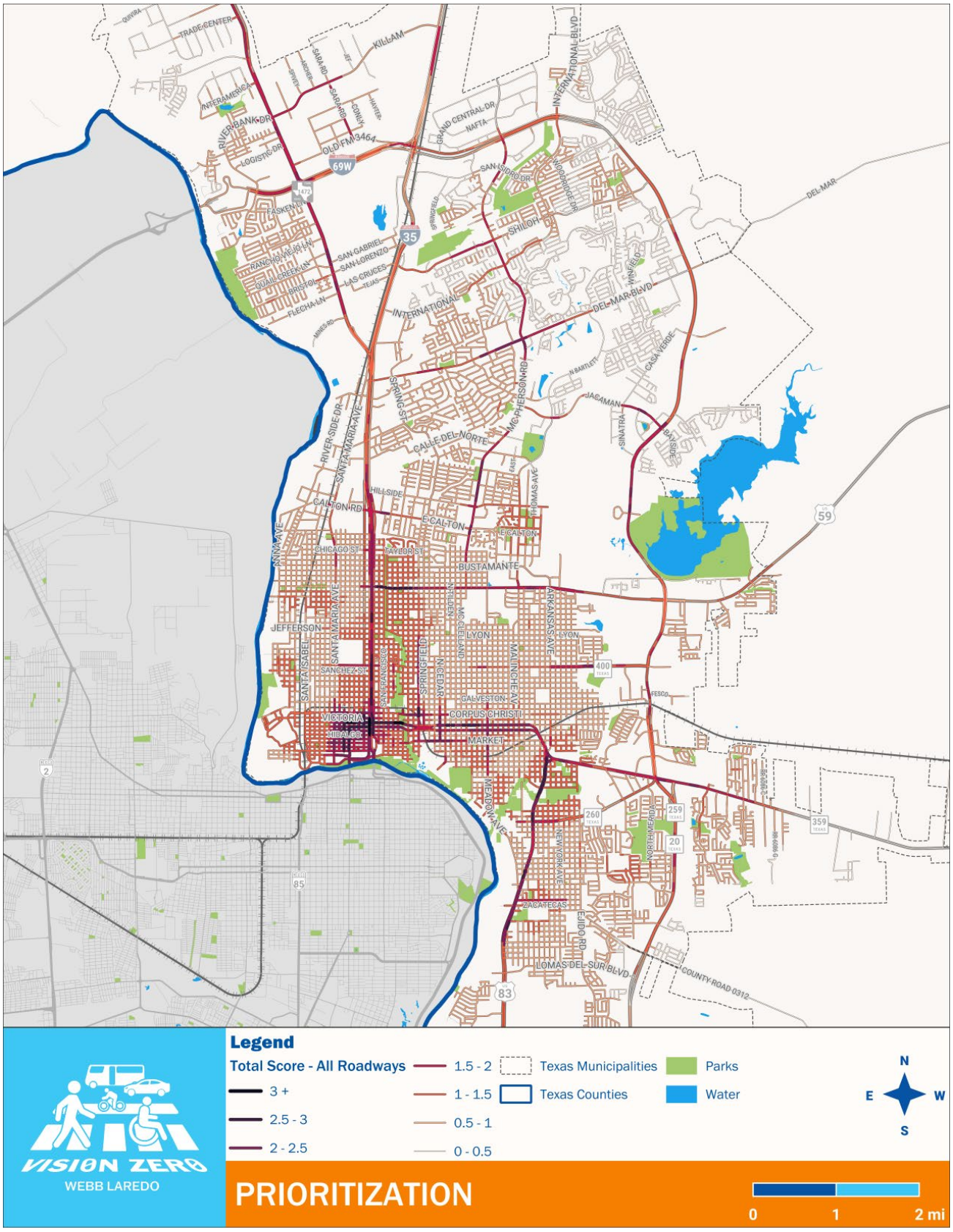

Figure 6: Scored Roadways – City of Laredo

Capital Project Recommendations

Chihuahua Street (US-83) from North Stone Avenue to North Jarvis Avenue

Context

Chihuahua Street functions as a principal arterial between North Cedar Avenue and North Jarvis Avenue. It serves as an interface between commercial areas typified by strip malls and single-family residential areas. Chihuahua Street is a one-way, two-lane street with wide shoulders between the travel lanes and the curb. The street has sidewalks running the entire length of the corridor which are positioned just behind the curb. The corridor acts as a trunk line that collects eight El Metro bus routes serving the center of the city east of Downtown. The speed limit is 40 mph for the entire length of the analyzed corridor, with a typical pavement width of 36 feet and a right-of-way width of 58 feet. The corridor has an Average Annual Daily Traffic (AADT) of 43,734.

Table 5: Chihuahua Street corridor basics

Street Name	Chihuahua Street (US-83)
Extents	North Stone Avenue to North Jarvis Avenue
Length	0.63 miles
Roadway Jurisdiction	TxDOT
Functional Class	Principal Arterial

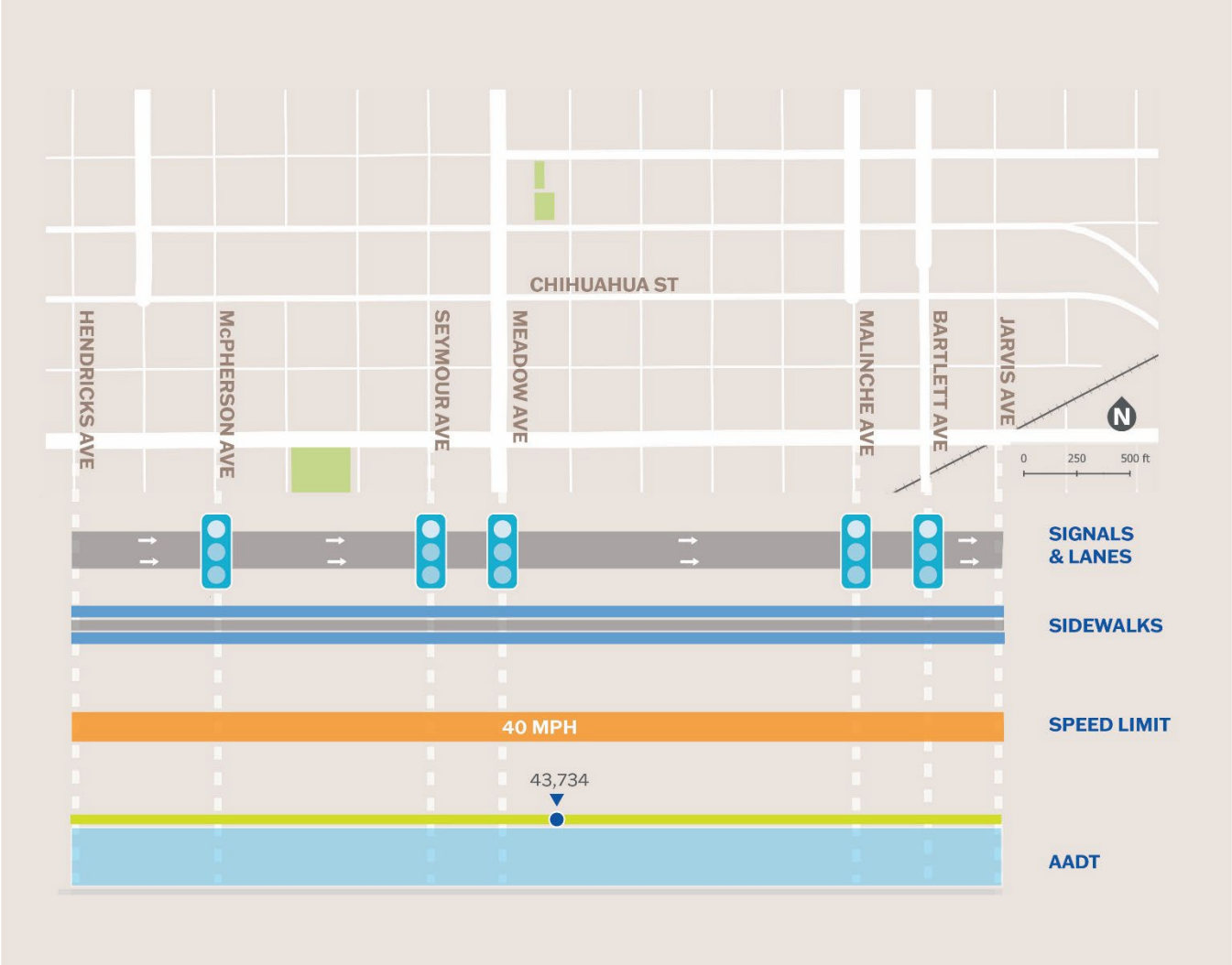

Figure 7: Chihuahua Street multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Chihuahua Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 6 shows the location types where all the crashes occurred. There were no KSI crashes reported along this corridor, but the majority of crashes were located in or near an intersection.

Table 6: Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	300	91%	2	100%	0.7%
Mid-Block	29	9%	0	0%	0.0%
Total	**329**	**100%**	**2**	**100%**	**0.6%**

Figure 8 and Table 7 show the spatial distribution of crashes in the Chihuahua Street corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place.

Figure 8: Crash map of the Chihuahua Street corridor

Table 7: Chihuahua Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Malinche	78	1	One-way signalized
Seymour	52	0	Signalized
Meadow	52	1	Signalized
Bartlett	41	0	One-way signalized
Loring	24	0	Two-way stop controlled

Table 8 shows the breakdown of crash modes in the corridor. The majority of the crashes in this corridor involved motor vehicles, including both KSI crashes. Pedestrian and motorcycle crashes did not occur disproportionately. The segment of Chihuahua Street which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Chihuahua Street corridor include:

- Overall HIN
- Motor Vehicle HIN

Table 8: Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	324	2	0.6%
Pedestrian	2	0	0.0%
Motorcycle	1	0	0.0%

Table 9 shows the top collision manners along the corridor. Most of the crashes occurred between two vehicles going in the same direction, indicating that speeding and inattentiveness may be contributing factors.

Table 9: Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Rear End	87	0
Angle - Both Going Straight	78	1
Same Direction - One Straight-One Stopped	77	1
Same Direction - One Straight-One Left Turn	22	0
Same Direction - Both Going Straight-Sideswipe	15	0

Most crashes occurred in daylight condition, as shown in Table 10. Both KSI crashes occurred at night, indicating that dark conditions increase crash severity.

Table 10 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	240	0
Dark, Lighted	83	2
Dusk	3	0
Dark, Not Lighted	2	0

Table 11 shows the breakdown of factors which contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Chihuahua Street corridor.

Table 11 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	155	1
Disregard Stop And Go Signal	20	0
Failed To Yield Right Of Way - Stop Sign	18	0
Disregard Stop Sign Or Light	17	0
Failed To Yield Right Of Way - Private Drive	11	0

Table 12 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 35 mph.

Table 12 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
35	329	522	2	3.2

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates Chihuahua Street as part of the planned bikeways and ranks it in the "Constrained Priority" prioritization tier. The following countermeasures were recommended in the TxDOT Pedestrian Safety Action Plan:

- Install Sidewalk
- Install School Zones
- Traffic Calming
- Safety and Operational Cross Section Optimization (SOXSOP)

Corridor Recommendations

Chihuahua Street acts as an interface between residential and commercial areas, but also serves to move high volumes of traffic as a primary arterial. As such, all modes must be accommodated in this corridor. The following countermeasures are recommended along the segments of this corridor:

- Install vertical separation for bike lane
- Consolidate access points
- Install additional lighting

Figure 9: Wide shoulders and numerous driveways along Chihuahua Street

Figure 10: High density of commercial and residential driveways on Chihuahua Street

Intersection Recommendations

Intersections are the sites of most crashes which occur along Chihuahua Street. Countermeasures should be implemented which increase driver awareness and control speed when entering intersections. Pedestrians and bicyclists must also be protected when crossing from the residential areas to the commercial areas by increasing their visibility to motorists. The following countermeasures are recommended:

- Implement leading pedestrian interval
- Refresh/install high-visibility crosswalks
- Improve curb ramp accessibility

Figure 11: An intersection in need of crosswalk markings and curb ramp upgrades (Meadow Avenue)

Stone Avenue, Loring Avenue, and Mendiola Avenue

Stone, Loring, and Mendiola Avenues act as local neighborhood streets and have pavement widths of approximately 33 feet at their intersections with Chihuahua Street. Curb extensions should be implemented at these intersections to shorten the distance pedestrians need to cross and to slow cars down as they enter the residential and commercial areas lining Chihuahua Street. Continental style crosswalks should also be installed to alert drivers that they are entering a pedestrian space.

Figure 12: Wide entrance to Mendiola Avenue

Buena Vista Avenue

Between Meadow Avenue and Malinche Avenue, there is a 1,600-foot stretch of Chihuahua Street which does not have an opportunity for pedestrian crossings. A pedestrian hybrid beacon should be installed at the west leg of the intersection of Buena Vista Avenue and Chihuahua Street to close the gap in the pedestrian network.

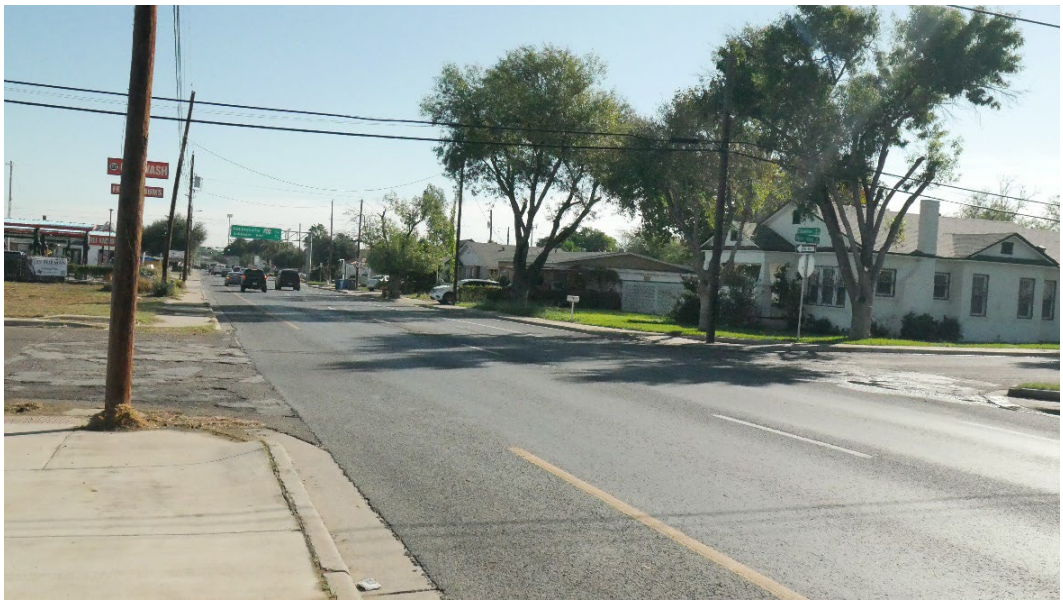

Figure 13: Intersection of Chihuahua Street and Buena Vista Avenue

Countermeasure Recommendations

Countermeasure recommendations for the Chihuahua Street corridor are summarized in Table 13 and Figure 14. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 13: Recommended countermeasures for SH 359 corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	900 LF	$22,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	4	$1,200
Medium (2-5 years)	Segment	Install additional lighting	Crosscutting	All	.65	0.63 MI	$184,000
Medium (2-5 years)	Segment	Install vertical separation for bike lane	Roadway reconfiguration	All	--	0.63 MI	$275,000
Medium (2-5 years)	Intersection	Consolidate access points	Corridor access management	All	--	5	$54,000
Medium (2-5 years)	Intersection	Reconfigure ramps to meet ADA standards	Crosswalk visibility enhancements	Pedestrian	--	14	$77,000
Medium (2-5 years)	Intersection	Install curb extension	Crosswalk visibility enhancements	All	--	12	$188,000
Long (5+ years)	Intersection	Install pedestrian hybrid beacon	Crosswalk visibility enhancements	All	.35 - .73	1	$157,000
						Total Cost	*$958,200.00*

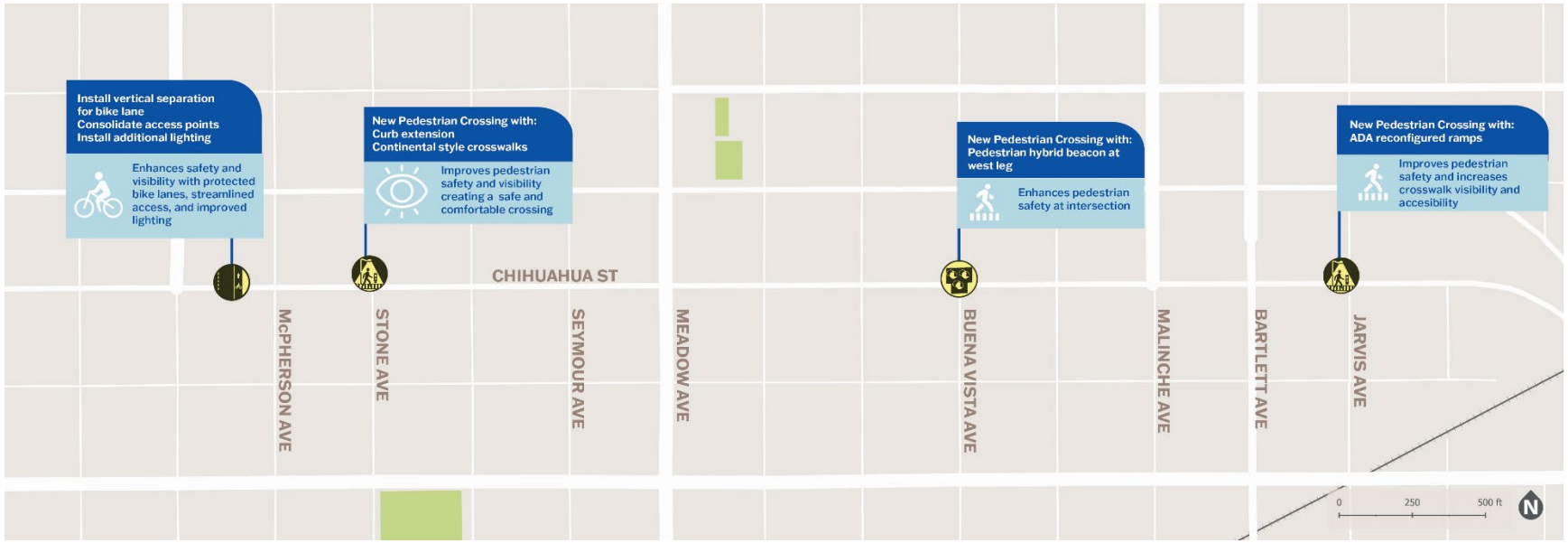

Figure 14: Countermeasure map for the Chihuahua Street corridor

Convent Avenue from Zaragoza Street to Matamoros Street

Context

Convent Avenue functions as a principal arterial between Zaragoza Street to Matamoros Street. It is lined primarily with downtown commercial uses and there is a US Customs and Border Protection port of entry at its south end. The street is a one-way, northbound route with two lanes, a painted bike lane alongside, and sidewalks running the entire length of the corridor, positioned just behind the curb. The speed limit is 30 mph for the entire length of the analyzed corridor, with a typical pavement width of 30 feet and a right-of-way width of 32 to 42 feet. The corridor has an Average Annual Daily Traffic (AADT) of 14,615.

Table 14 - Convent Avenue corridor basics

Street Name	Convent Avenue
Extents	Zaragoza Street to Matamoros Street
Length	0.30 miles
Roadway Jurisdiction	TxDOT
Functional Class	Other Principal Arterial

Figure 15 - Convent Avenue multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Convent Avenue corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 15 shows the location types where all the crashes occurred. A majority of both total crashes, including the single KSI crash in this corridor were located in or near an intersection.

Table 15 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	165	89%	1	100%	0.54%
Mid-Block	20	11%	0	0%	0.00%
Total	185	100%	1	100%	0.54%

Figure 16 and Table 16 shows the spatial distribution of crashes in the Convent Avenue corridor. It is apparent that most of the crashes occurred at intersections and the KSI crashes occurred at an intersection with signal control in place. The intersections with the most crashes were Zaragoza Street and Farragut Street. One KSI crash occurred at Matamoros Street.

Figure 16 - Crash map of the Convent Avenue corridor

Table 16 – Convent Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Zaragoza	43	0	One-way signalized
Farragut	27	0	Signalized
Hidalgo	23	0	One-way signalized
Iturbide	21	0	One-way signalized
Houston	18	0	One-way signalized

Table 17 shows the breakdown of crash modes in the corridor. The overwhelming majority of both total crashes and KSI crashes involved motor vehicles. In this corridor, the KSI crash was one only involving motor vehicles. The segment of Convent Avenue which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Convent Avenue corridor include:

- Overall HIN
- Pedestrian HIN

Table 17 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	170	1	0.6%
Pedestrian	12	0	0%
Motorcycle	2	0	0%
Bike	1	0	0%

Table 18Table 9 shows the top collision manners along the corridor. Many of the crashes occurred when two cars, traveling straight down the road drifted toward each other, resulting in a sideswipe collision. The KSI crash along this corridor occurred when two cars, each moving straight down their respective lanes, collided at an angle when one driver veered into the other's path.

Table 18 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Sideswipe	43	0
Same Direction - Both Going Straight-Rear End	32	0
Angle - Both Going Straight	28	1
One Motor Vehicle - Going Straight	26	0
Same Direction - One Straight-One Stopped	20	0

Most crashes occurred in daylight condition, as shown in Table 19. The KSI crash occurred at dusk.

Table 19 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	146	0
Dark, Lighted	34	0
Dark, Not Lighted	4	0
Dusk	1	1

Table 20 shows the breakdown of factors that contributed to crashes in the corridor. The primary factors contributing to most crashes in this corridor were failure to control speed and unsafe lane changes; however, disregarding a stop-and-go signal resulted in one KSI crash. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Convent Avenue corridor.

Table 20 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	50	0
Changed Lane When Unsafe	25	0
Backed Without Safety	16	0
Disregard Stop Sign Or Light	8	0
Followed Too Closely	6	0

Table 21 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 30 mph.

Table 21 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	185	617	1	3

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates Convent Avenue, from Zaragoza Street to Matamoros Street, as part of the planned bikeways and ranks them in the "Proactive" prioritization tier.

The TxDOT Pedestrian Safety Action Plan calls for the implementation of the following countermeasures:

- Sidewalks
- Shared-use paths
- School zones
- Traffic calming
- Safety and operational cross section optimization (SOXSOP)

Corridor Recommendations

Convent Avenue has been identified as a priority corridor for bike infrastructure in Laredo, and there is an existing painted bike lane on the street. This bike lane should be vertically separated both to protect bicyclists and to slow vehicular traffic down by providing friction along the edge of the travelled way.

Figure 17 - Bike Lane on Convent Avenue

Intersection Recommendations

The majority of crashes on Convent Avenue corridor happen at or near intersections. It is recommended that the following countermeasures be implemented at all intersections of the corridor:

- Leading Pedestrian Intervals at all intersections
- Refresh/install crosswalks and stop bars to high-visibility
- Install backplates with retroreflective borders on all signals
- Implement appropriately timed yellow change intervals
- Install curb extensions at all legs of intersections with adjacent parallel parking

Figure 18 - Intersection of Convent Avenue and Lincoln Street with no crosswalks

Figure 19 - Space for curb extension adjacent to parallel parking on Hidalgo Street

Countermeasure Recommendations

Countermeasure recommendations for the Convent Avenue corridor are summarized in Table 22 and Figure 20. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 22 - Recommended countermeasures for the Convent Avenue corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	840	$20,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	7	$2,100
Short (0-2 years)	Intersection	Install backplates with retroreflective borders	Backplates with retroreflective borders	All	.85	30	$11,000
Short (0-2 years)	Intersection	Implement appropriately timed yellow change interval	Yellow change interval	All	.86 - .92	7	$2,100
Medium (2-5 years)	Segment	Install vertically separated bike lane	Bicycle Lanes	Bike	.47	0.3 MI	$131,000
Medium (2-5 years)	Segment/Intersection	Install curb extension	Crosswalk visibility enhancements	All	--	10	$157,000
						Total Cost	*$323,200.00*

Figure 20 - Recommendations map of the Convent Avenue corridor

Del Mar Boulevard from Fenwick Street to Country Club Drive

Context

Del Mar Boulevard is a principal arterial running west to east between Fenwick Street and Country Club Drive which serves shopping centers and residential neighborhoods. United Middle School is located on the west side of the corridor and the McPherson Road intersection anchors the main commercial area which extends to the Country Club intersection on the east side of Del Mar Boulevard. The roadway has four lanes with a two-way left turn lane, and multiple driveways provide direct access to the corridor. Sidewalks are located immediately behind the curb on both sides of the roadway, extending along the entire length of the corridor with a few gaps to the east of McPherson Road. Del Mar Boulevard is served by Routes 12A and 16 of El Metro Transit. The speed limit varies from 40 mph east of McPherson Road to 30 mph west of there. The typical pavement width ranges from 50 to 56 feet, while the right-of-way width varies from 100 to 115 feet. The Average Annual Daily Traffic (AADT) for this corridor ranges from 25,519 to 29,852.

Table 23 - Del Mar Boulevard corridor basics

Street Name	Del Mar Boulevard
Extents	Fenwick Street to County Club Drive
Length	1.2 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Other Principal Arterial

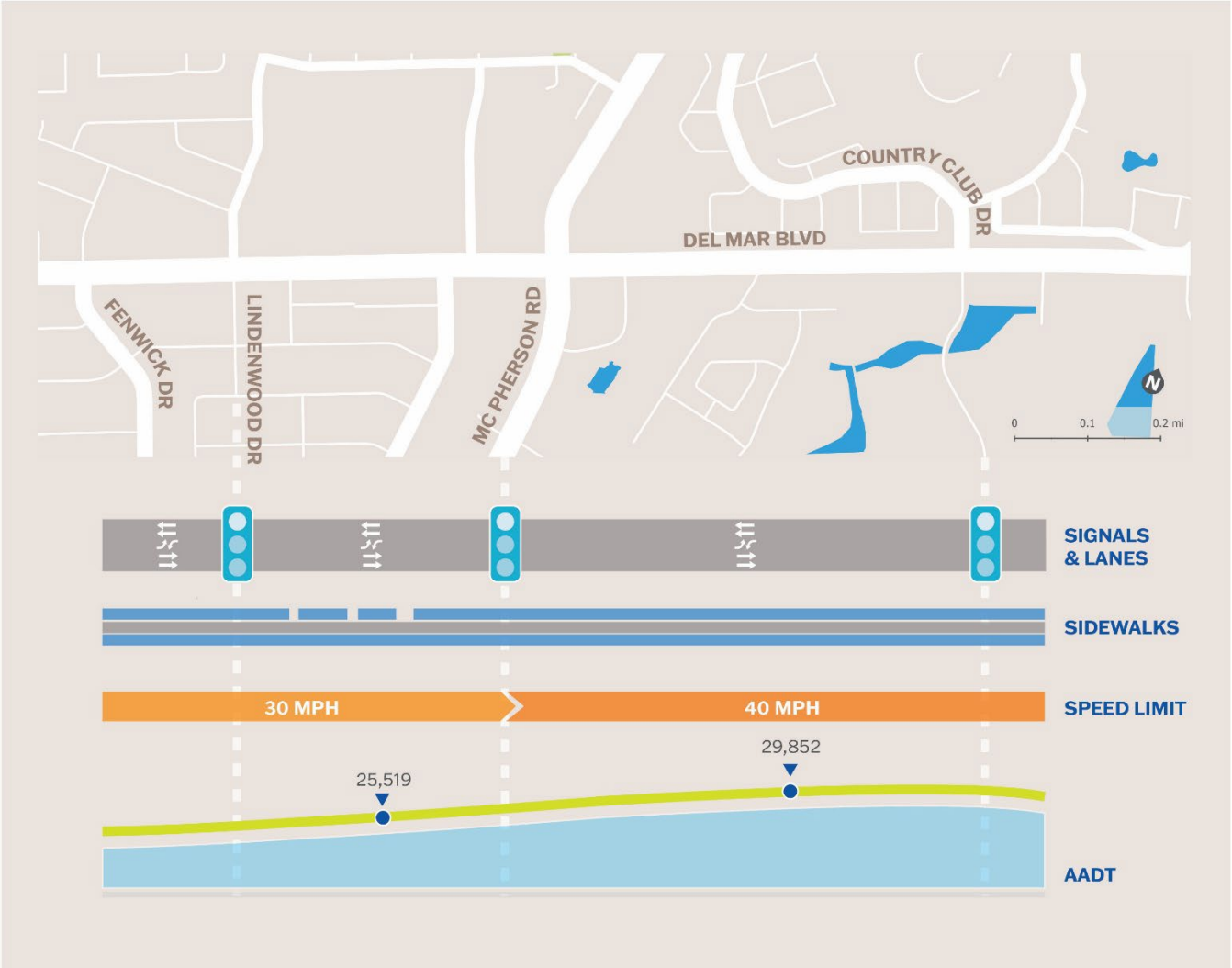

Figure 21 - Del Mar Boulevard multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Del Mar Boulevard corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 24 shows the location types where all the crashes occurred. A majority of the crashes, including the only KSI crash, were located in or near an intersection.

Table 24 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	573	84%	1	100%	0.1%
Mid-Block	107	16%	0	0%	0%
Total	680	100%	1	100%	0.1%

Figure 22 and Table 25 show the spatial distribution of crashes in the Del Mar Boulevard corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place. The McPherson Road intersection, alone, accounted for nearly two-thirds of all crashes along the Del Mar Boulevard corridor, including the only recorded KSI crash.

Figure 22 - Crash map of the Del Mar Boulevard corridor

Table 25 – Del Mar Boulevard intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
McPherson	426	1	Signalized
Country Club	62	0	Signalized
Junction Drive	47	0	Two-way stop
Rocio Dr	44	0	Two-way stop T
Eden Ln	28	0	Two-way stop

Table 26 shows the breakdown of crash modes in the corridor. The segment of Del Mar Boulevard which is being analyzed was identified as part of a high injury network (HIN). Despite having few pedestrian and bike crashes, this corridor is not overrepresented with vulnerable road user crashes compared to other locations. The HIN modes in Del Mar Boulevard corridor include:

- Overall HIN
- Motor Vehicle HIN

Table 26 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	673	1	0.1%
Pedestrian	2	0	0%

Bike	3	0	0%
Motorcycle	2	0	0%

Table 27 shows the top collision manners along the corridor. Most crashes, including the single KSI crash, were same direction, rear-end collisions. These typically occur when a following vehicle fails to maintain a safe distance from the vehicle ahead, resulting in a collision if the leading vehicle slows down or stops unexpectedly. Other top collision types included opposite-direction crashes where one vehicle goes straight while another makes a left turn, and angle crashes, which are linked to the high rate of intersection-related collisions along the corridor.

Table 27 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - One Straight-One Stopped	169	1
Same Direction - Both Going Straight-Rear End	112	0
Opposite Direction - One Straight-One Left Turn	63	0
Angle - One Straight-One Left Turn	56	0
Angle - Both Going Straight	55	0

Most crashes and the single KSI crash occurred during daylight hours, as shown in Table 28.

Table 28 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	534	1
Dark, Lighted	132	0
Dusk	6	0
Dark, Not Lighted	6	0
Dawn	1	0

Table 29 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors included speeding, failure to yield the right of way at stop signs for private drives and during left turns, unsafe backing, and following too closely. Speeding was a key factor associated with the single KSI crash.

Table 29 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	241	1
Failed To Yield Right Of Way - Private Drive	69	0
Backed Without Safety	45	0
Failed To Yield Right Of Way - Turning Left	43	0
Followed Too Closely	39	0

Table 30 reports the number of crashes by the speed limit of the segment they occurred in. The segment with a 40-mph speed limit had a crash density twice as high as that with a 30-mph speed limit.

Table 30 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	292	400	0	0
40	388	825	1	2.1

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization System in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan. In the summer of 2024, a channelized right turn was added to the northwest corner of the Del Mar Boulevard and McPherson Road intersection in addition to the three other existing channelized right turns.

Corridor Recommendations

To reduce the number of rear-end and left-turn collisions along the Del Mar Boulevard corridor, steps must be taken to eliminate points of conflict along segments of the corridor. These conflicts are typically caused by drivers either slowing down within a travel lane to make a right turn into a driveway or taking a risky uncontrolled left turn from the center lane, especially when in intersection areas of influence. Countermeasure recommendations for the Del Mar Boulevard corridor include:

- Consolidating access points
- Installing a hardened center line
- Widening and filling gaps in the sidewalk from Northview Drive to Martin Road

Figure 23 - High density of commercial driveways on Del Mar Boulevard

Figure 24 - Gap in narrow sidewalk across Del Mar Boulevard from United Middle School

Intersection Recommendations

The following countermeasures should be implemented at all applicable intersections along Del Mar Boulevard:

- Implement leading pedestrian intervals at all signalized intersections
- Install or refresh high-visibility crosswalks at all signalized intersections

- Install continental style crosswalks at all stop-controlled intersections and high-volume driveways

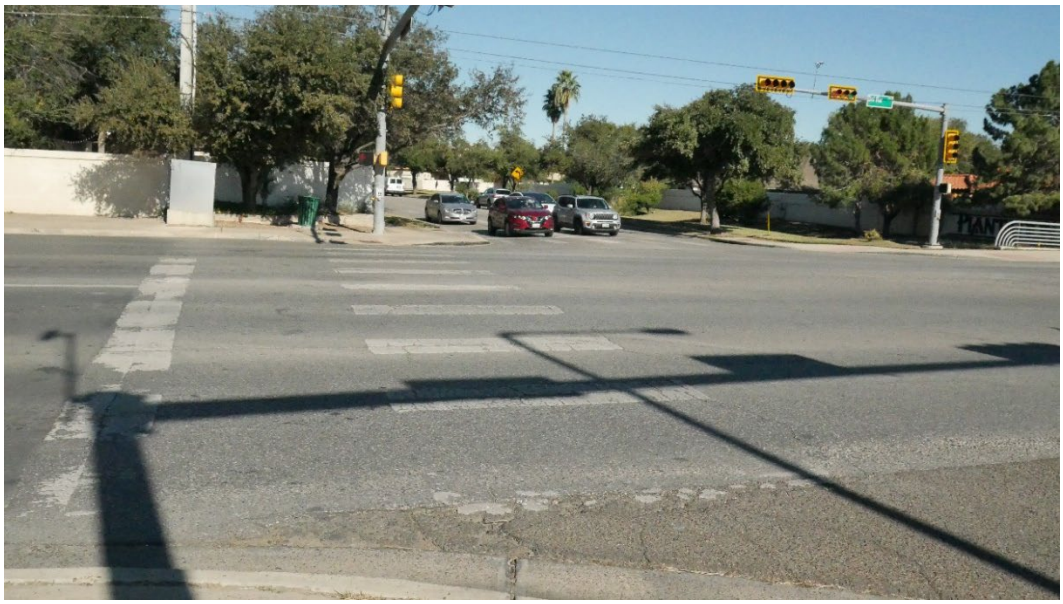

Figure 25 - Intersection of Del Mar Boulevard and Country Club Drive

Entrance to United Middle School 6th Grade Campus

- Install pedestrian hybrid beacon
- Install median pedestrian refuge

Figure 26 - Existing mid-block crossing at entrance to United Middle School 6th Grade campus

McPherson Road

The McPherson Road intersection has by far the most crashes associated with it of all the intersections along the Del Mar Boulevard corridor. Del Mar Boulevard and McPherson Road are both high traffic volume urban arterials, and their intersection anchors a large shopping center. There are many shopping center driveways in close proximity to the intersection, creating many conflict points where inattentive drivers may have difficulty judging the safety of certain maneuvers. The following countermeasures are recommended at this intersection:

- Add lane line extensions for left turns
- Stripe the acceleration lanes
- Install advanced signal warnings
- Remove permissive left/flashing yellow left phase
- Realign crosswalks with channelization island curb cuts

Figure 27 - Aerial of intersection of Del Mar Boulevard with McPherson Road

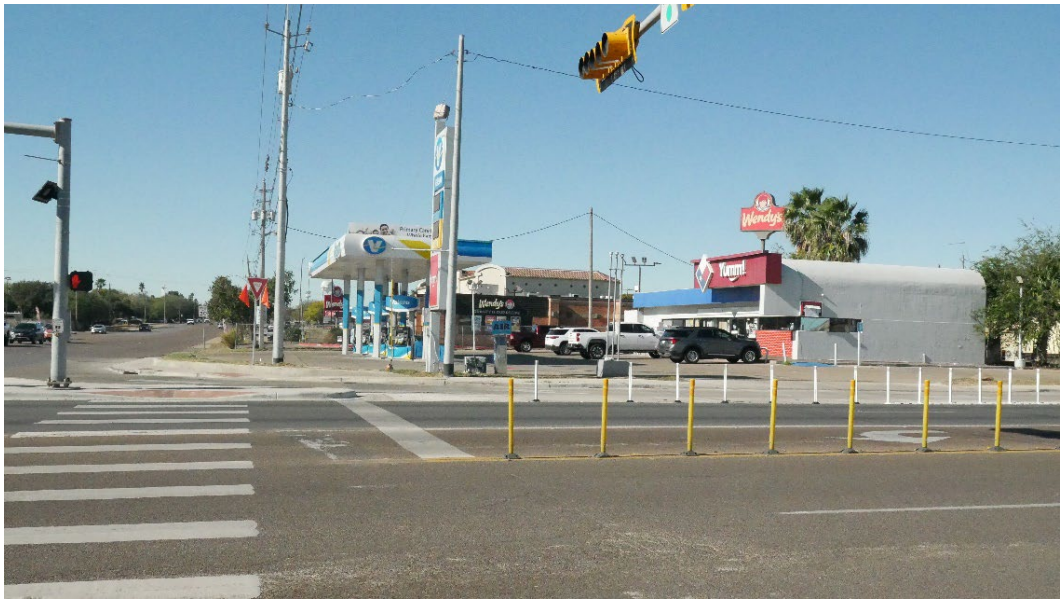

Figure 28 - Northwest corner of intersection of Del Mar Boulevard with McPherson Road

Countermeasure Recommendations

Countermeasure recommendations for the Del Mar Boulevard corridor are summarized in Table 31 and Figure 29. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 31 - Recommended countermeasures for Del Mar Boulevard corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility/continental style crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	1080LF	$26,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	3 intersections	$900
Short (0-2 years)	Intersection	Install striping for left turn lane extensions	Dedicated turn lanes at intersections	Opposite direction – left turn	--	250 LF	$90
Short (0-2 years)	Intersection	Install striping and markings for acceleration lane	Dedicated turn lanes at intersections	Same direction angle	--	1100 LF	$660
Short (0-2 years)	Intersection	Install advance signal warnings	Crosswalk visibility enhancements	All	.75	4	$620
Short (0-2 years)	Intersection	Remove permissive left turn phase	Signalization	Opposite direction – left turn	--	1	$300
Medium (2-5 years)	Segment	Consolidate access points	Corridor access management	All	--	11	$120.000
Medium (2-5 years)	Intersection	Install mid-block crossing with median pedestrian refuge	Crosswalk visibility enhancements	Pedestrian	.44	1	$6,500
Medium (2-5 years)	Intersection	Install pedestrian hybrid beacon	Crosswalk visibility enhancements	Pedestrian	.45	1	$100,000
Medium (2-5 years)	Segment	Install hardened center line	Roadway reconfiguration	All	.77	1.2 MI	$360,000
						Total Cost	**495,190**

Figure 29 - Recommendations map of the Del Mar Boulevard corridor

Farragut Street from Santa Maria Avenue to I-35

Context

Farragut Street, running west to east between Santa Maria Ave and I-35 (San Dario Ave) serves as a major collector lined with downtown commercial developments between Santa Maria Avenue and I-35. It is a two-way road with on-street parking present on one or both sides for most of the corridor. The El Metro Transit Center is located between Salinas Avenue and Juarez Ave. The speed limit is 30 mph for the entire length of the analyzed corridor. The typical pavement width of Farragut Street is 34 feet, and the typical right-of-way width is 32-61 feet. AADT along this corridor is approximately 3,000 vehicles per day.

Table 32 - Farragut Street corridor basics

Street Name	Farragut Street
Extents	Santa Maria Avenue to I-35 (San Dario Avenue)
Length	0.5 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Major Collector

Figure 30 - Farragut Street multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Farragut Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 33 shows the location types where all the crashes occurred. About 90% of the crashes, including all KSI crashes, were located in or near an intersection.

Table 33 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	105	90%	2	100%	1.7%
Mid-Block	12	10%	0	0%	0%
Total	119	100%	2	100%	1.7%

Table 34 shows the breakdown of crash modes in the corridor. The overwhelming majority of the crashes were motor vehicle crashes. However, the only two KSI crashes both involved pedestrians. The HIN modes in the Farragut Street corridor include:

- Overall HIN
- Pedestrian HIN

Table 34 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	109	0	0%
Pedestrian	9	2	22%
Bike	1	0	0%

Figure 31 shows the spatial distribution of crashes in the Farragut Street corridor. It is apparent that most of the crashes occurred at intersections. KSI crashes, which involved pedestrians, occurred on the same block as the El Metro Transit Center and Jarvis Park.

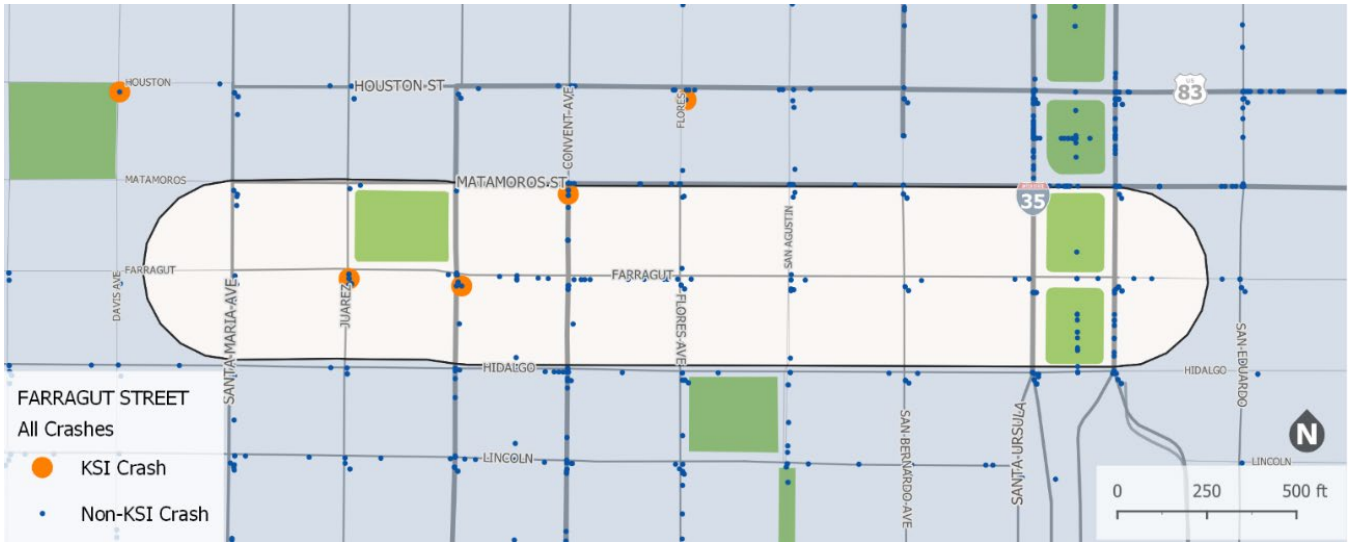

Figure 31 - Crash map of the Farragut Street corridor

Table 35 shows the intersections along Farragut Street that had the highest crash incidence. The top intersections were those which were signalized between two large urban arterials.

Table 35 - Farragut Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Convent	18	0	Signalized
Santa Ursula	18	0	Signalized
San Dario	17	0	Signalized
Salinas	17	1	Signalized
Juarez	13	1	Signalized

Table 36 shows the top collision manners along the corridor. Most crashes occurred between two motor vehicles going straight or in the same direction, which is characteristic of driver inattentiveness. The KSI crashes involved a motor vehicle turning left and hitting a pedestrian, as well as a driver failing to yield to a pedestrian.

Table 36 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Sideswipe	20	0
Angle - Both Going Straight	17	0
One Motor Vehicle - Going Straight	17	0
Same Direction - Both Going Straight-Rear End	7	0
One Motor Vehicle - Turning Left	7	1

Most crashes and both KSI crashes occurred in daylight conditions, as shown in Table 37.

Table 37 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	97	2
Dark, Lighted	21	0
Dark, Unknown Lighting	1	0

Table 38 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factor was speeding, which aligns with the trend of same-direction crashes. Additional factors included improper lane changes, unsafe backing, driver inattentiveness, and failure to yield the right of way to pedestrians. Driver inattentiveness and failure to yield the right of way to pedestrians were key factors associated with KSI crashes.

Table 38 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	23	0
Changed Lane When Unsafe	10	0
Backed Without Safety	8	0
Driver Inattention	5	1
Failed To Yield Right Of Way - To Pedestrian	4	1

Table 39 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor which was analyzed has a speed limit of 30 mph.

Table 39 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes
30	119	238	2

Planned or Completed Safety Improvements

The TxDOT Crash Analysis and Visualization System (CAVS) identified the need for an RRFB to be implemented near the Farragut Street and Juarez Avenue intersection. There are no proposed projects along the Farragut Street corridor in the Laredo Capital Improvement Plan, TxDOT Pedestrian Safety Action Plan, or TxDOT Laredo District Bicycle Plan.

Corridor Recommendations

Most crashes along the Farragut Street corridor happened in intersection areas of influence so most of the general safety countermeasure recommendations for the corridor will be for intersections. However, there is an opportunity for a mid-block crossing connecting the El Metro Transit Center pedestrian entrance to Jarvis Plaza. To protect pedestrians who may wish to cross from the transit center to the park, this crossing should feature:

- A Pedestrian Hybrid Beacon
- A high-visibility crosswalk, and
- Curb bump outs

Figure 32 - Entrance of El Metro Transit Center across from Jarvis Plaza

Intersection Recommendations

The overwhelming majority of crashes and all the KSI crashes in the Farragut Street corridor happen near intersections. It is recommended that the following countermeasures be implemented at all intersections of the corridor:

- Leading Pedestrian Intervals at all intersections
- Refresh High-Visibility crosswalks
- Curb bump outs anywhere street parking is present

Salinas Ave

At the time of review, the pedestrian signal head on the northeast corner of the intersection of Salinas Avenue and Farragut Road appeared to have been removed and the other pedestrian signals had been wrapped and not operational. Full functionality must be restored to these pedestrian signals.

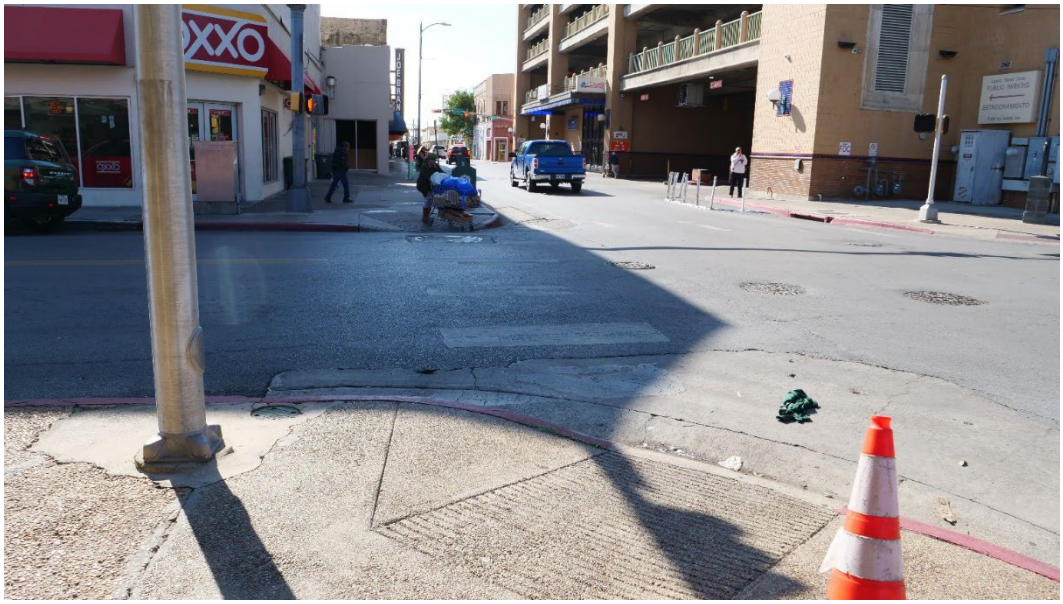

Figure 33 - A pedestrian signal appears to have been removed from the NE corner of Salinas Ave and Farragut St

Santa Ursula Avenue and San Dario Avenue

Santa Ursula Avenue and San Dario Avenue form the terminus of Interstate 35 and form the primary border crossing in Downtown Laredo and the city center of Nuevo Laredo, MX. At their intersections with Farragut Avenue, they have six lanes each, requiring pedestrians to cross 140 feet of uninterrupted asphalt. The conversion of the outermost lanes to on-street parking and installation of curb bump outs at the corners of these intersections would result in a shorter pedestrian crossing and slower vehicular traffic speeds.

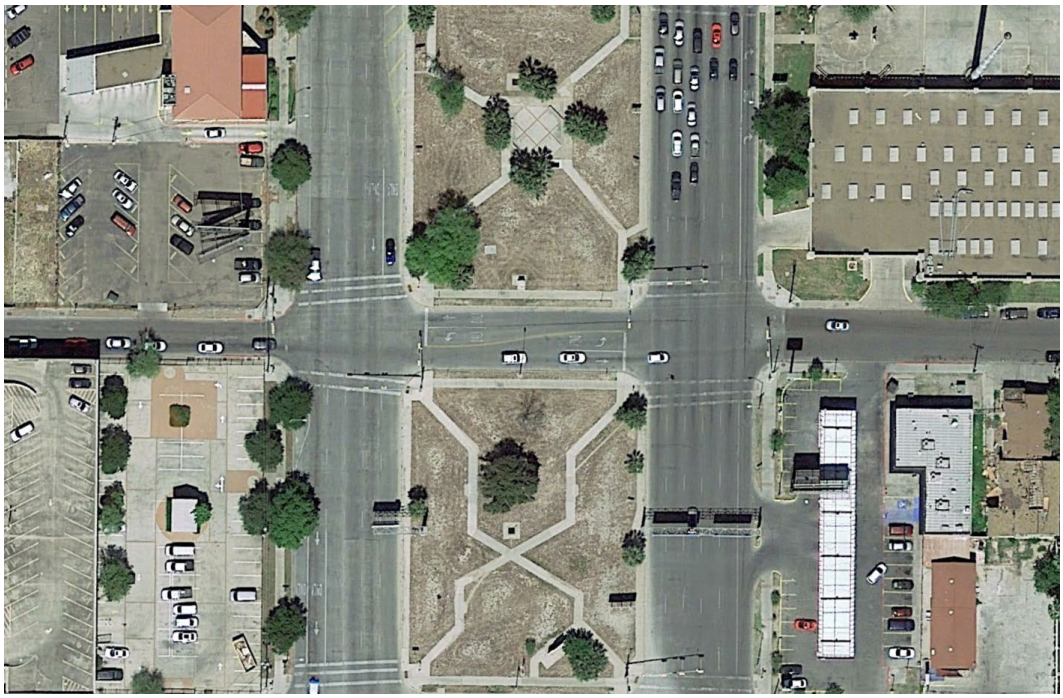

Figure 34 - Aerial image of Santa Ursula Ave (left) and San Dario Ave (right) intersections with Farragut St

Figure 35 - Intersection of Farragut St and Santa Ursula Ave

Countermeasure Recommendations

Countermeasure recommendations for the Farragut St. corridor are summarized in Table 40 and Figure 36. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 40 - Recommended countermeasures for Farragut St. corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment/Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	1080 LF	$26,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	9	$2,700
Medium (2-5 years)	Segment/Intersection	Install curb extension	Crosswalk visibility enhancements	Pedestrian	--	14	$220,000
Medium (2-5 years)	Segment/Intersection	Install pedestrian hybrid beacon	Pedestrian Hybrid Beacons	All	.45 (ped) .71 (total)	1	$160,000
Medium (2-5)	Intersection	Install median pedestrian refuge	Median pedestrian refuge	Pedestrian	.44	1	$6,500
						Total Cost	*$415,200*

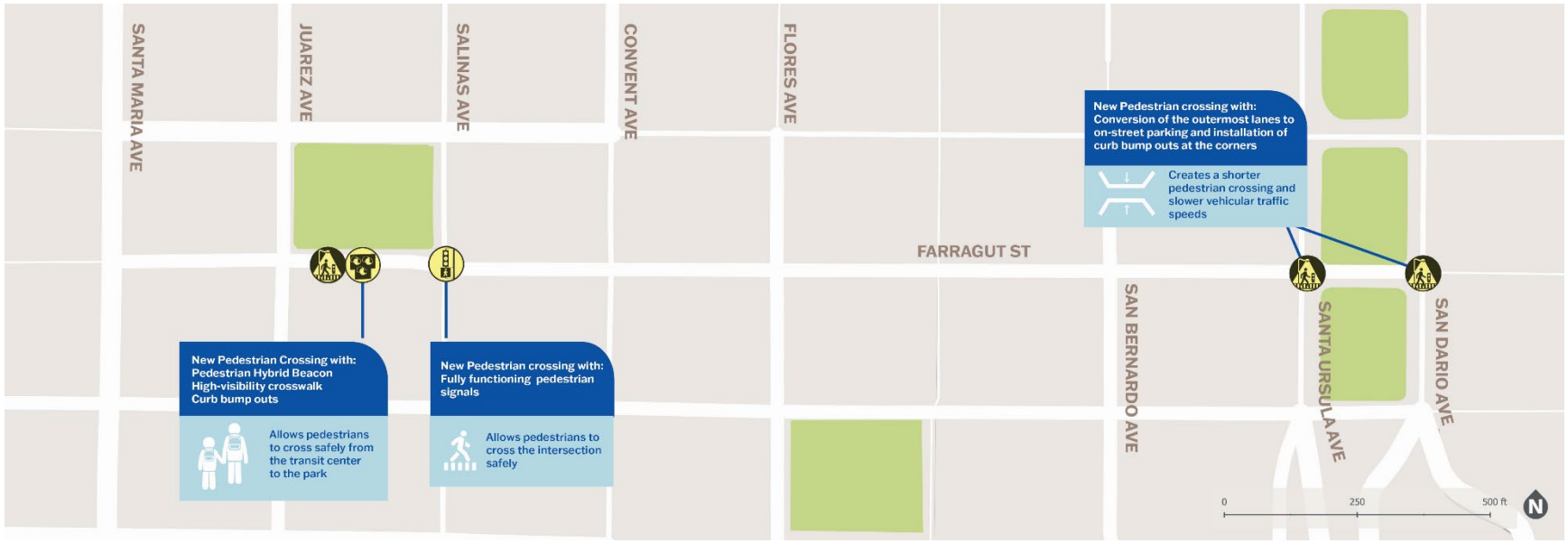

Figure 36 - Recommendations map of the Farragut Street corridor

Guadalupe Street (US-83) from North Cedar Avenue to North Jarvis Avenue

Context

Guadalupe Street functions as a principal arterial between North Cedar Avenue and North Jarvis Avenue. It is fronted primarily by commercial properties typified by strip malls. Guadalupe Street is a one-way, two-lane street with wide shoulders between the travel lanes and the curb. The street has sidewalks running the entire length of the corridor which are positioned just behind the curb. The corridor acts as a trunk line that collects eight El Metro bus routes serving the center of the city east of downtown. The speed limit is 40 mph for the entire length of the analyzed corridor, with a typical pavement width of 36 feet and a right-of-way width of 58 feet. The corridor has an Average Annual Daily Traffic (AADT) of 43,734.

Table 41 - Guadalupe Street corridor basics

Street Name	Guadalupe Street (US-83)
Extents	North Cedar Avenue to North Jarvis Avenue
Length	1.0 mile
Roadway Jurisdiction	TxDOT
Functional Class	Principal Arterial

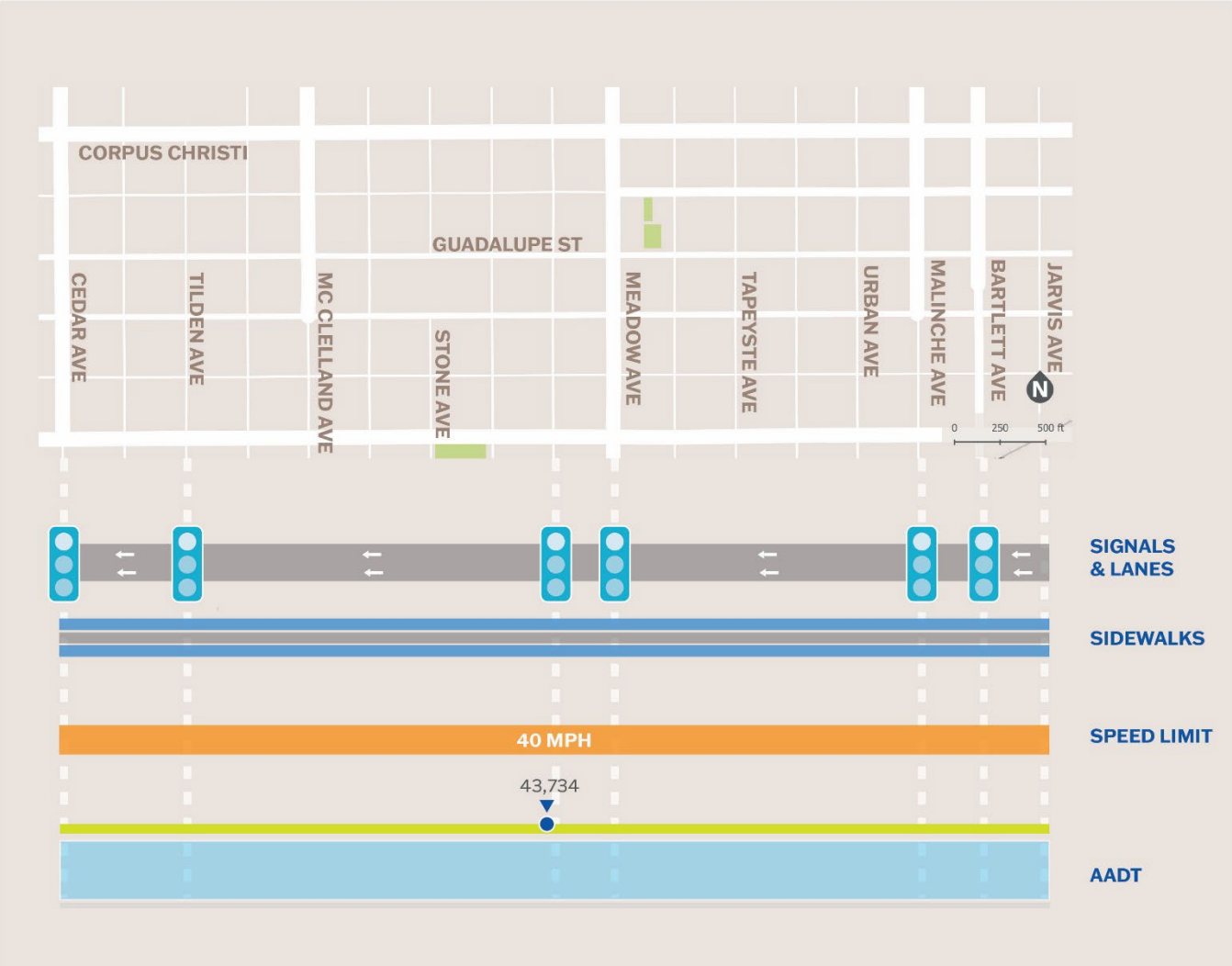

Figure 37 – Guadalupe Street multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Guadalupe Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 42 shows the location types where all the crashes occurred. There were no KSI crashes reported along this corridor, but most crashes were located in or near an intersection.

Table 42 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	502	91%	3	75%	0.6%
Mid-Block	49	9%	1	25%	2.0%
Total	551	100%	4	100%	0.7%

Figure 38 and Table 43 show the spatial distribution of crashes in the Guadalupe Street corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place. Jarvis is a two-way stop-controlled intersection and saw the most crashes in the corridor. McPherson is also a two-way stop-controlled intersection and had a KSI crash. The other intersections that saw KSI crashes were Urbahn Avenue and Cedar Avenue.

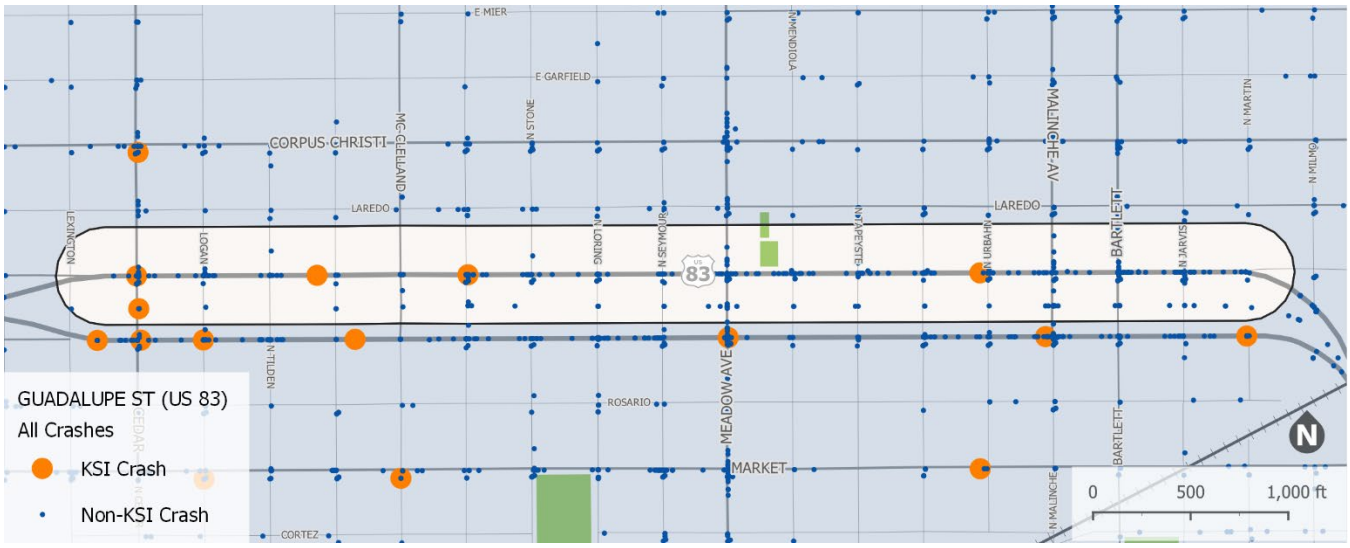

Figure 38 - Crash map of the Guadalupe Street corridor

Table 43 – Guadalupe Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Jarvis	83	0	Two-way stop controlled
Bartlett	54	0	One-way signalized
McPherson	51	1	Two-way stop controlled
Meadow	49	0	Signalized
Malinche	46	0	Two-way stop controlled

Table 44 shows the breakdown of crash modes in the corridor. The majority of the crashes in this corridor involved motor vehicles. All KSI crashes which occurred in this corridor involved only motor vehicles. The segment of Guadalupe Street which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Guadalupe Street corridor include:

- Overall HIN
- Pedestrian HIN

Table 44 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	542	4	0.7%
Pedestrian	1	0	0.0%
Bike	4	0	0.0%
Motorcycle	4	0	0.0%

Table 45 shows the top collision manners along the corridor. Most of the crashes occurred between two vehicles going in the same direction, indicating that speeding and inattentiveness may be contributing factors.

Table 45 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	128	2
Same Direction - Both Going Straight-Rear End	105	1
Same Direction - One Straight-One Stopped	103	0
Same Direction - Both Going Straight-Sideswipe	56	0
One Motor Vehicle - Going Straight	32	1

Most crashes occurred in daylight condition, as shown in Table 46. Some KSI crashes occurred in dark conditions, indicating that visibility at night may play a role in those crashes.

Table 46 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	447	2
Dark, Lighted	95	1
Dark, Not Lighted	4	1
Dawn	3	0
Dusk	2	0

Table 47 shows the breakdown of factors which contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed and failing to yield the right-of-way at stop signs. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Guadalupe Street corridor.

Table 47 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	194	1
Failed To Yield Right Of Way - Stop Sign	65	1
Backed Without Safety	41	0
Changed Lane When Unsafe	40	0
Disregard Stop Sign Or Light	22	1

Table 48 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 40 mph.

Table 48 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
40	551	551	4	4

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates Guadalupe Street as part of the planned bikeways and ranks them in the "Constrained Priority" prioritization tier. The following countermeasures were recommended in the TxDOT Pedestrian Safety Action Plan:

- Install Sidewalk
- Install School Zones
- Traffic Calming
- Safety and Operational Cross Section Optimization (SOXSOP)

Corridor Recommendations

Guadalupe Street acts as a commercial spine with shops and businesses lining both sides of the street, but it also serves to move high volumes of traffic as a primary arterial. Most crashes in the corridor were caused by speeding or driver inattentiveness and the high number of crashes which occurred in the dark indicate that visibility at night needs to be improved. The existing paved shoulder provides drivers with large margins for error and encourages them to drive too quickly. The following countermeasures are recommended along this corridor:

- Install vertical separation for bike lane
- Consolidate access points
- Install additional lighting

Figure 39 - High density of driveways

Figure 40 - Wide shoulders on Guadalupe Street

Intersection Recommendations

Intersections are the sites of most crashes which occur along Chihuahua Street. Countermeasures should be implemented which increase driver awareness and control speed when entering intersections. Pedestrians and bicyclists must also be protected when crossing from the residential areas to the commercial areas by increasing their visibility to motorists. The following countermeasures are recommended:

- Implement leading pedestrian intervals

- Refresh/install high-visibility crosswalks
- Improve curb ramp accessibility
- Install curb extensions across side streets at all non-signalized intersections

Figure 41 – Typical signalized Intersection on Guadalupe Street (Meadow Avenue)

Figure 42 - Typical unsignalized intersection on Guadalupe Street (Mendiola Avenue)

McPherson Avenue

Between Seymour Avenue and Tilden Avenue, there is a 2,000-foot stretch of Guadalupe Street which does not have an opportunity for pedestrian crossings. The intersection of Guadalupe Street and McPherson Avenue should be fully signalized to close the gap in the pedestrian network and match the signal on the Chihuahua Street and McPherson Avenue intersection to the south.

Figure 43 - Intersection of Guadalupe Street and McPherson Avenue looking south

Buena Vista Avenue

Between Meadow Avenue and Malinche Avenue, there is a 1,600-foot stretch of Guadalupe Street which does not have an opportunity for pedestrian crossings. A pedestrian hybrid beacon should be installed at the east leg of the intersection of Buena Vista Avenue and Guadalupe Street to close the gap in the pedestrian network.

Figure 44 - Intersection of Guadalupe Street and Buena Vista Avenue

Jarvis Avenue

Jarvis Avenue has the most crashes of any intersection along this segment of Guadalupe Street and is the first intersection encountered by motorists who are coming from a higher speed segment of US 83. Steps

must be taken to adequately transition drivers from US 83 to Guadalupe Street. Countermeasures recommendations include:

- Intersection control beacon to alert through traffic to the intersection
- Intersection advance warning sign

Figure 45 - Approach to North Jarvis Street intersection

Countermeasure Recommendations

Countermeasure recommendations for the Guadalupe Street corridor are summarized in Table 49 and Figure 46. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 49 - Recommended countermeasures for Guadalupe Street corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	1680	$41,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	6	$1,800
Short (0-2 years)	Intersection	Install advance intersection warning signs	Systemic application of multiple low-cost countermeasures at stop-controlled intersections	All	.75	2	$310
Medium (2-5 years)	Segment	Install additional lighting	Crosscutting	All	.65	1.0 MI	$292,000
Medium (2-5 years)	Segment	Install vertical separation for bike lane	Roadway reconfiguration	All	--	1.0 MI	$437,000
Medium (2-5 years)	Intersection	Consolidate access points	Corridor access management	All	--	12	$131,000
Medium (2-5 years)	Intersection	Reconfigure ramps to meet ADA standards	Crosswalk visibility enhancements	Pedestrian	--	24	$132,000
Medium (2-5 years)	Intersection	Install curb extension	Crosswalk visibility enhancements	All	--	34	$532,000
Long (5+ years)	Intersection	Install pedestrian hybrid beacon	Crosswalk visibility enhancements	All	.45	1	$157,000
Long (5+ years)	Intersection	Implement full signalization	Signalization	All	.35 - .73	1	$259,000
Long (5+ years)	Intersection	Install intersection control beacon	Signalization	All	.90	1	$157,000
						Total Cost	*$2,140,110.00*

Figure 46 - Countermeasures map of the Guadalupe Street corridor

Houston Street (US 83 and 35A) from Salinas Avenue to Monterrey Avenue

Context

Houston Street functions as a Principal arterial running west to east between Salinas Avenue to Monterrey Avenue. It features primarily institutional and downtown commercial properties along the west side of the corridor and a mix of residential and automotive commercial areas on the east. The street has two lanes with parking on both sides, and sidewalks located immediately behind the curb which extend the full length of the corridor. Houston Street is a key El Metro Transit route, with 18 routes running on it. The speed limit is 30 mph for the entire length of the analyzed corridor, with a typical pavement width of 39 feet and a right-of-way width of 55 feet. The corridor has an Average Annual Daily Traffic (AADT) of 43,734.

Table 50 - Houston Street corridor basics

Street Name	Houston Street
Extents	Salinas Avenue to Monterrey Avenue
Length	0.77 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Principal Arterial

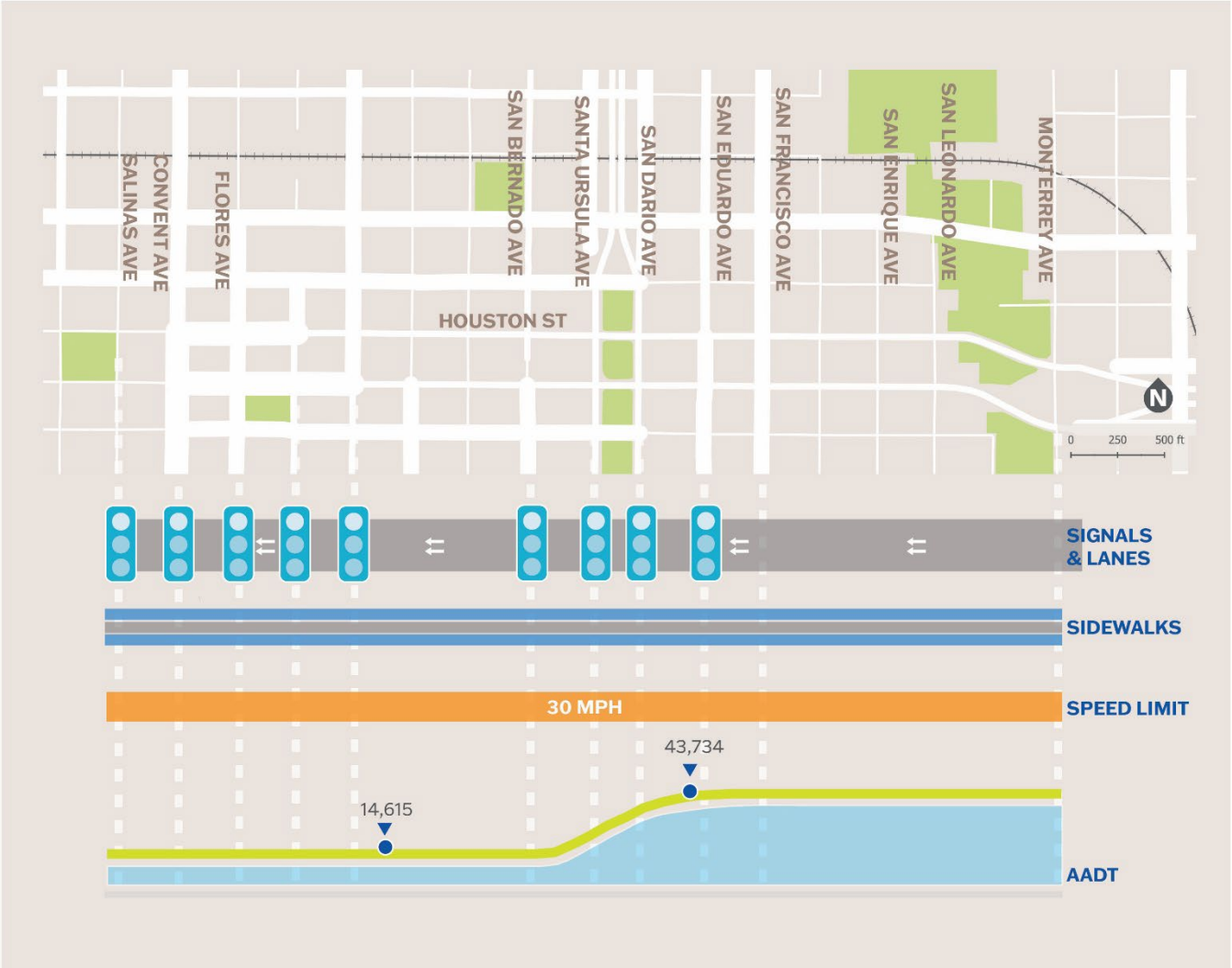

Figure 47 – Houston Street multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Houston Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 51 shows the location types where all the crashes occurred. A majority of both total crashes and KSI crashes were located in or near an intersection.

Table 51 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	568	97%	3	75%	0.5%
Mid-Block	18	3%	1	25%	0.2%
Total	586	100%	4	100%	0.7%

Figure 48 and Table 52 show the spatial distribution of crashes in the Houston Street corridor. The top intersections were Santa Ursula and San Dario, which serve to transition Interstate 35 from a freeway to an urban arterial and border crossing. Two KSI crashes occurred at these intersections. Two more KSI crashes took place at the intersections with Monterrey Avenue and Flores Avenue.

Figure 48 - Crash map of the Houston Street corridor

Table 52 – Houston Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Santa Ursula	154	0	One-way Signalized
San Dario	96	0	One-way Signalized
San Eduardo	93	0	One-way Signalized
San Francisco	27	1	One-way stop
San Leonardo	21	1	One-way stop

Table 53 shows the breakdown of crash modes in the corridor. The overwhelming majority of both total crashes and KSI crashes involved motor vehicles. However, pedestrian crashes were more likely to result in a death or serious injury. The segment of Houston Street which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Houston Street corridor include:

- Overall HIN
- Motor Vehicle HIN

Table 53 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	581	3	0.5%
Pedestrian	3	1	33.3%
Motorcycle	2	0	0%

Table 54 shows the top collision manners along the corridor. Most crashes, including two of the KSI crashes, were angle crashes. One KSI crash occurred which involved one motor vehicle going straight and another occurred when one motor vehicle was turning left.

Table 54 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	210	2
Same Direction - Both Going Straight-Rear End	97	0
Same Direction - Both Going Straight-Sideswipe	77	0
Same Direction - One Straight-One Stopped	77	0
One Motor Vehicle - Going Straight	49	1

Most crashes occurred in daylight condition, as shown in Table 55. However, there is a disproportionate number of KSI crashes which occurred in dark and lighted conditions, indicating that lighting may be insufficient in this corridor.

Table 55 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	445	1
Dark, Lighted	115	3
Dark, Not Lighted	12	0
Dusk	7	0
Dawn	5	0

Table 56 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights, which also led to one KSI crash each. Failing to yield the right of way at stop signs and to pedestrians resulted in 2 KSI crashes. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Houston Street corridor.

Table 56 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	180	1
Disregard Stop Sign Or Light And Stop And Go Signal	131	1
Changed Lane When Unsafe	54	0
Failed To Yield Right Of Way - Stop Sign, To Pedestrian	15	2
Driver Inattention	14	0

Table 57 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 30 mph.

Table 57 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	582	761	4	5

Table 58 shows the intersections along Houston Street that had the highest crash incidence. The top intersections were Santa Ursula and San Dario, which serve to transition Interstate 35 from a freeway to an urban arterial and border crossing. Two KSI crashes occurred at these intersections. Two more KSI crashes took place at the intersections with Monterrey Avenue and Flores Avenue.

Table 58 – Houston Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes
Santa Ursula	154	0
San Dario	96	0
San Eduardo	93	0
San Francisco	27	1
San Leonardo	21	1

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates sections of Houston Street, from Salinas Ave to Santa Ursula Avenue, as part of the planned bikeways and ranks them in the "Proactive" prioritization tier. The section from Santa Ursula Avenue to Monterrey Avenue is listed as "Opportunistic" in the prioritization tier The TxDOT Pedestrian Safety Action Plan calls for the implementation of the following countermeasures:

- Sidewalks
- Shared-use paths
- School zones
- Traffic calming
- Safety and operational cross section optimization (SOXSOP)

Corridor Recommendations

Along the entire subject segment of Houston Street, there is enough space to accommodate two travel lanes and two parallel parking lanes. Seeing as Houston Street has been identified as an opportunity corridor in the TxDOT Laredo Bike Plan, this extra width should be leveraged to install a curb separated bicycle lane, which will narrow the pavement and cause more friction to drivers, who will therefore be encouraged to maintain safer speeds, as well as protect pedestrians and cyclists.

Figure 49 - Wide roadway cross section typical of the Houston Street corridor

Intersection Recommendations

Most crashes along the Houston Street corridor occur in or near intersections, so it is important that improvements be made at each intersection to improve their safety. The following countermeasures are recommended for all applicable intersections along the corridor:

- Install and refresh high-visibility crosswalks at all signalized intersections
- Install curb extensions at all intersections where there is adjacent parallel parking
- Implement leading pedestrian intervals at all signalized intersections
- Install pedestrian signal heads addressing all legs of signalized intersections

Figure 50 - Intersection of Houston Street and San Agustin Avenue with no pedestrian facilities on western leg

San Eduardo Avenue

Advance signal warnings should be implemented before the San Eduardo Avenue because it is the first signal after a stretch of intersections without signalization.

Figure 51 - Approach to San Eduardo Avenue

San Leonardo Avenue

A pedestrian hybrid beacon and advance pedestrian warning should be installed in advance of the San Leonardo Avenue to serve Houston Park and the Zacate Creek linear park.

Figure 52 - Intersection of Houston Street and San Leonardo Avenue facing Houston Park

Countermeasure Recommendations

Countermeasure recommendations for the Houston Street corridor are summarized in Table 59 and Figure 53. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 59 - Recommended countermeasures for the Houston Street corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment/Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	1320 LF	$32,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	8	$2,400
Short (0-2 years)	Intersection	Advance signal warning	Crosswalk visibility enhancements	All	.75	2	$310
Medium (2-5 years)	Segment	Install vertically separated bike lane	Bicycle Lanes	Bike	.47	.77 MI	$337,000
Medium (2-5 years)	Segment/Intersection	Install curb extension	Crosswalk visibility enhancements	Pedestrian	--	23	$360,000
Medium (2-5 years)	Segment/Intersection	Install pedestrian hybrid beacon	Pedestrian Hybrid Beacons	All	.45 (ped) .71 (total)	1	$160,000
Medium (2-5)	Intersection	Install pedestrian signal head	Crosswalk visibility enhancements	Pedestrian	--	12	$29,000
						Total Cost	*$920,710.00*

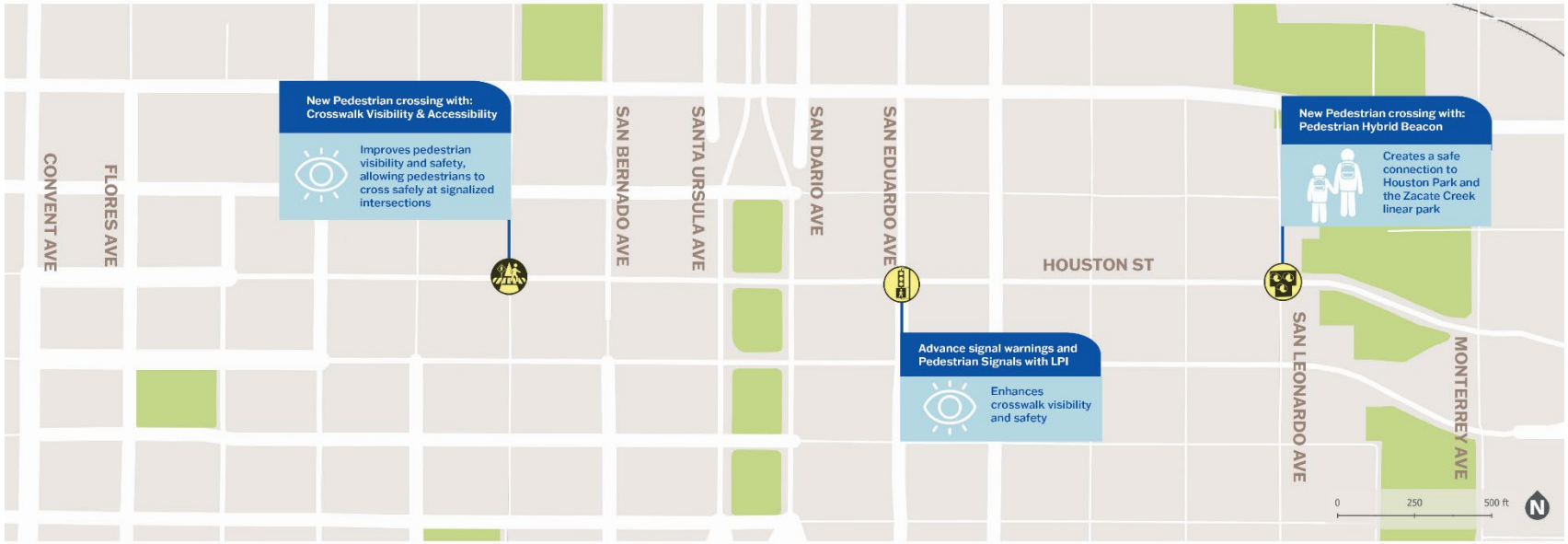

Figure 53 - Recommendations map of the Houston Street corridor

Lloyd Bentsen Highway (US 59 Bus) from I-35 to N Ejido Avenue

Context

Lloyd Bentsen Highway, running west to east between I-35 and N Ejido Avenue, functions as a principal arterial and is lined with residential properties as well as large and medium commercial developments. The Laredo Medical Center is also located on this corridor. The roadway consists of four lanes with a two-way left turn lane. There is a continuous hardened center line east of Buena Vista Avenue, and sidewalks are present at the back of curb on both sides of the roadway for the entire length of the corridor. Lloyd Bentsen Highway is served by Routes 6, 3, 2, and 8A of El Metro Transit. The speed limit varies from 35 mph east of Arkansas Avenue to 45 mph west of there. The typical pavement width ranges from 58 to 62 feet, while the right-of-way width varies from 70 to 120 feet. The Average Annual Daily Traffic (AADT) for this corridor ranges from 29,660 to 33,609.

Table 60 - Lloyd Bentsen Highway corridor basics

Street Name	Lloyd Bentsen Highway (US 59 Bus)
Extents	I-35 to N Ejido Avenue
Length	3.1 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Other Principal Arterial

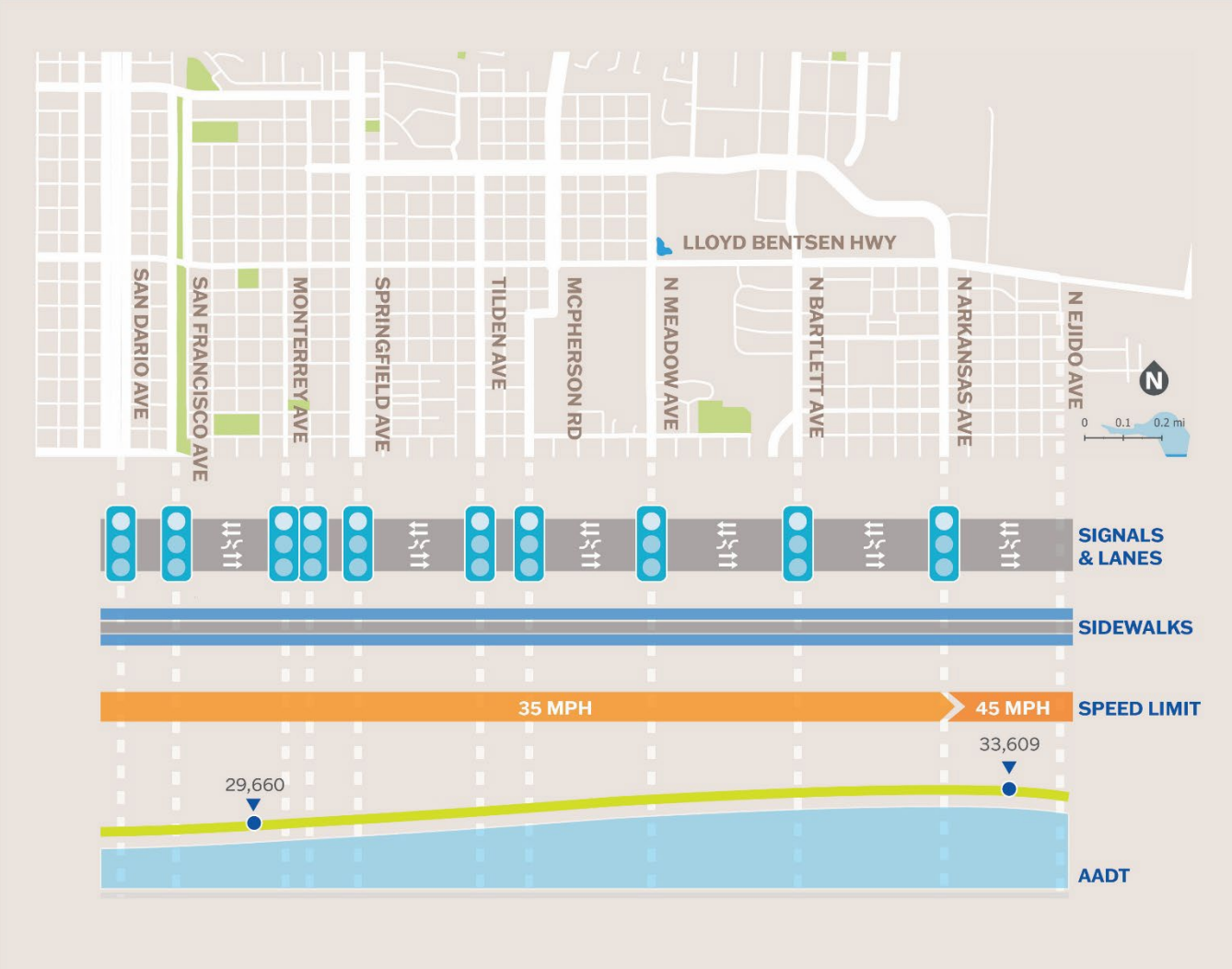

Figure 54 - Lloyd Bentsen Highway multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Lloyd Bentsen Highway corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 61 shows the location types where all the crashes occurred. A majority of the crashes were located in or near an intersection.

Table 61 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	947	78%	7	50%	0.6%
Mid-Block	265	22%	7	50%	0.6%
Total	1,212	100%	14	100%	1.2%

Figure 55 and Table 62 show the spatial distribution of crashes in the Lloyd Bentsen Highway corridor. It is apparent that most of the crashes occurred at intersections and most KSI crashes occurred at intersections with side streets, which are less likely to be signalized. The top intersections were those which were signalized between two large urban arterials. Most of the KSI crashes recorded in the Lloyd Bentsen Highway corridor occurred at the intersection with Bartlett Avenue.

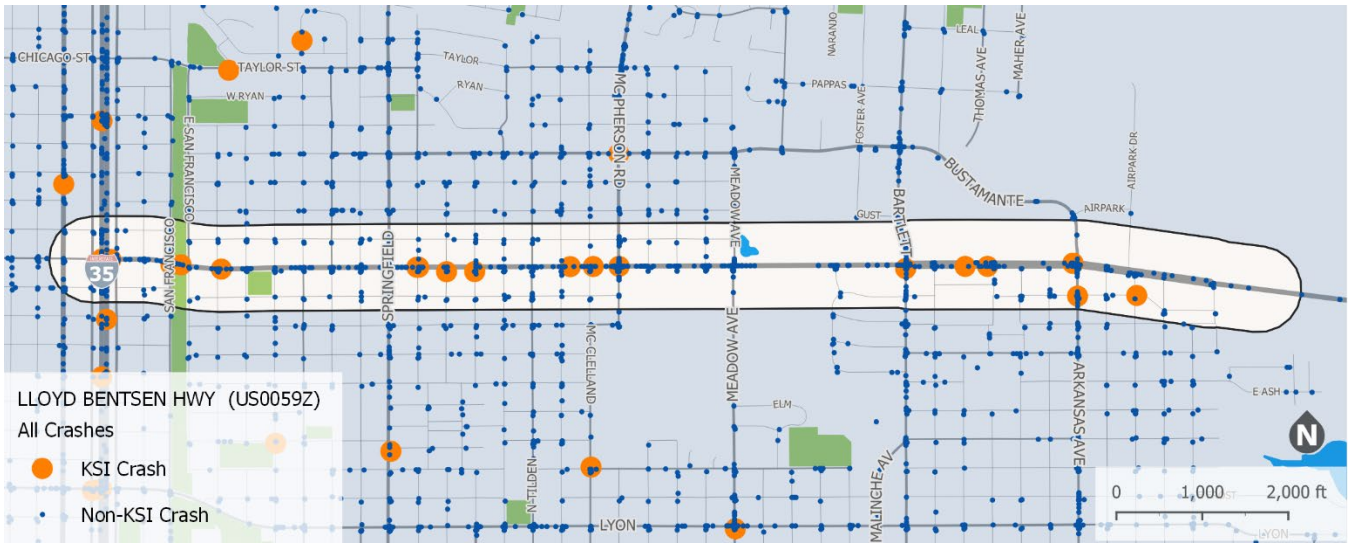

Figure 55 - Crash map of the Lloyd Bentsen Highway corridor

Table 62 – Lloyd Bentsen Highway intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Bartlett	146	1	Signalized
Milmo	99	2	Signalized
McPherson	99	2	Signalized
Arkansas	95	2	Signalized
San Francisco	66	2	Signalized

Table 63 shows the breakdown of crash modes in the corridor. The overwhelming majority of the crashes were motor vehicle crashes. There were 14 KSI crashes reported in the corridor of which 6 were vulnerable road users. The segment of Lloyd Bentsen Highway which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Lloyd Bentsen Highway corridor include:

- Overall HIN
- Pedestrian HIN
- Motorcycle HIN

Table 63 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	1,173	8	0.7%

Pedestrian	21	4	19%
Bike	6	0	0%
Motorcycle	12	2	16.7%

Table 64 shows the top collision manners along the corridor. Most crashes were same-direction crashes, which typically occur when a following vehicle does not maintain a safe distance from the vehicle ahead, resulting in a collision when the leading vehicle slows down or stops unexpectedly. Additionally, the most common KSI collision manner was a single vehicle going straight and hitting a pedestrian or a fixed object.

Table 64 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Rear End	247	0
Same Direction - One Straight-One Stopped	233	0
Angle - Both Going Straight	163	3
Same Direction - Both Going Straight-Sideswipe	112	1
Opposite Direction - One Straight-One Left Turn	81	3
One Motor Vehicle - Going Straight	72	7

Most crashes occurred in daylight conditions and a disproportionate number of the KSI crashes occurred in dark and lighted conditions, as shown in Table 65.

Table 65 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	917	4
Dark, Lighted	253	9
Dark, Not Lighted	19	1
Dawn	11	0
Dusk	9	0

Table 66 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors were speeding, loss of vehicle control, and failure to yield the right of way at stop signs or when making left turns. Failure to yield the right of way at stop signs and during left turns, speeding, and disregarding stop signs and traffic lights were key factors associated with KSI crashes. In addition to these, inattentiveness-related factors contributed to 5 other KSI crashes. Three KSI crashes in the report had unknown contributing factors.

Table 66 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	444	2
Failed To Yield Right Of Way - Stop Sign/ Turning Left	163	2
Changed Lane When Unsafe	89	0
Backed Without Safety	81	0
Disregard Stop And Go Signal/Traffic Light	71	2

Table 67 reports the number of crashes by the speed limit of the segment they occurred in. The segment with a 35-mph speed limit had the highest proportion of both total crashes and KSI crashes.

Table 67 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
35	1065	430	13	5.2
45	147	234	1	1.6

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan. The TxDOT Pedestrian Safety Action Plan identifies several potential countermeasures in the Lloyd Bentsen Highway Corridor, including installing:

- sidewalks
- school zones
- shared-use paths
- raised median
- Rectangular Rapid Flashing Beacons (RRFBs), and
- Lighting

The TxDOT Laredo District Bicycle Plan classifies this segment of Lloyd Bentsen Highway as having medium-to-high bicycle need fand categorizes the segment from I-35 to Springfield Avenue as having “high priority” on the prioritization tier.

Corridor Recommendations

The primary contributing factors to crashes in the Lloyd Bentsen Highway corridor are speed and driver inattentiveness. As such, countermeasures should be focused on speed management and increasing pedestrian visibility. Half of all KSI crashes occur along segments of the street, and a disproportionate number of them occurred during dark and lighted conditions. Recommended countermeasures for segments of the Lloyd Bentsen Highway corridor include the following:

- Driveway consolidation and access management for commercial properties
- Implement a raised median or continue the hardened center line which currently exists between Buena Vista Avenue and Ejido Avenue
- Evaluating streetlights for adequate luminosity in areas where KSI crashes occurred at night

Figure 56 - High density of commercial access points and low density of pedestrian crossing opportunities

Intersection Recommendations

Most crashes and half of all KSI crashes in the Lloyd Bentsen Highway corridor occurred at intersections. There are also many unsignalized intersections for local residential streets. General intersection recommendations for the Lloyd Bentsen Highway corridor include:

- Refreshing or installing high-visibility crosswalks at signalized intersections
- Implementing Leading Pedestrian Intervals
- Installing continental crosswalk markings across all unsignalized side streets
- Update ramps to meet ADA standards
- Curb extensions for unsignalized residential side streets to shorten crossing distance and slow turning cars down
- Provide pedestrian crossing opportunities at most every 800 feet with a mid-block pedestrian hybrid beacon or full intersection signalization
- Additionally, transit stops should be adjusted to be closer to pedestrian crossings

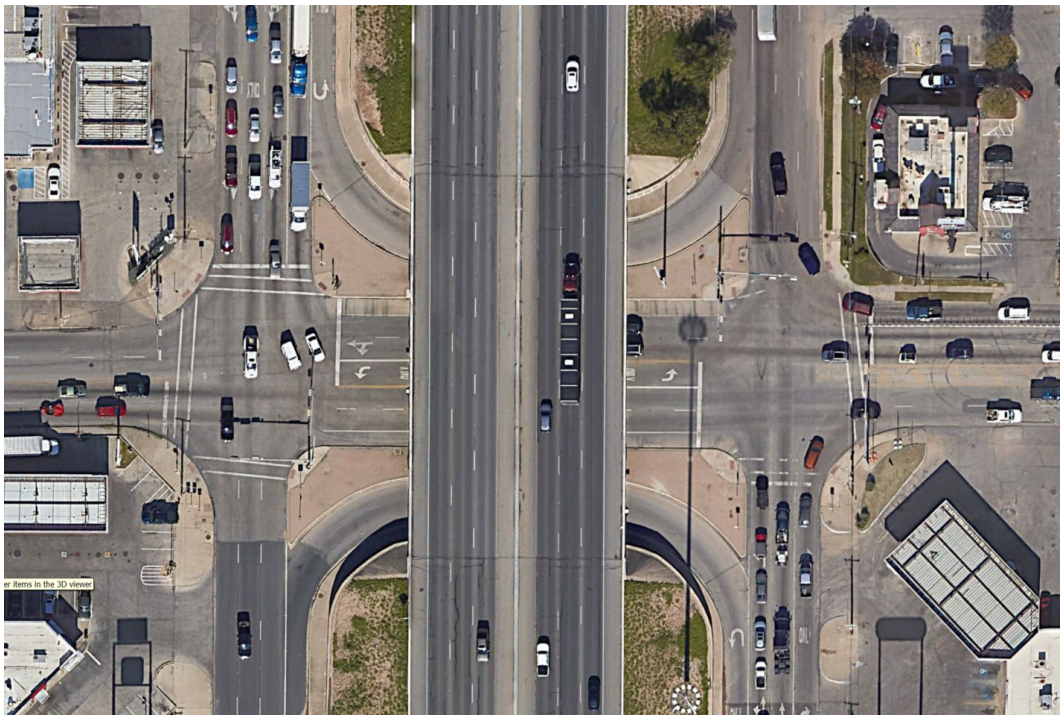

Figure 57 – Aerial view of interchange between Interstate 35 and Lloyd Bentsen Highway

Figure 58 - Intersection of Lloyd Bentsen Highway and Bartlett Avenue

Buena Vista Avenue

Buena Vista Avenue serves as an entrance to the Laredo Medical Center. Pedestrians are required to cross 100' of pavement, including a right-turn slip lane, and the lanes are misaligned from the lanes of Buena Vista Avenue across Lloyd Bentsen Highway. The intersection should be reconfigured to shorten the distance pedestrians are required to cross reduce vehicle speeds and driver confusion through the following countermeasures:

- Eliminate slip lane
- Advance median to provide pedestrian refuge

Figure 59 - Intersection of Lloyd Bentsen Highway and Buena Vista Avenue

Countermeasure Recommendations

Countermeasure recommendations for the Lloyd Bentsen Highway corridor are summarized in Table 68 and Figure 60. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 68 - Recommended countermeasures for Lloyd Bentsen Highway corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment	Reevaluate street light luminosity	Lighting	All	--	As part of regular maintenance	$0
Short (0-2 years)	Intersection	Install/refresh high-visibility/continental style crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	6000LF	$144,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	12 intersections	$3,600
Medium (2-5 years)	Segment	Consolidate access points	Corridor access management	All	--	25 driveways closed	$271,000
Medium (2-5 years)	Intersection	Removal or modification of right-turn channelization islands	Crosswalk visibility enhancements	Right turn Merging unsafely Pedestrian	--	1	$695,000
Medium (2-5 years)	Intersection	Reconfigure ramps to meet ADA	Crosswalk visibility enhancements	Pedestrian	--	10 ramps	$55,000
Medium (2-5 years)	Intersection	Install mid-block crossing with median pedestrian refuge	Crosswalk visibility enhancements	Pedestrian	.44	2	$13,000
Long (5+ years)	Segment	Convert TWLTL to raised median	Roadway reconfiguration	All	.77	1.4 MI	$3,863,000
Long (5+ years)	Intersection	Implement full signalization at intersection	Signalization	All	.35 - .73	1	$258,000
						Total Cost	**5,302,600**

Figure 60 - Recommendations map of the Lloyd Bentsen Highway corridor

Marcella Avenue from Corpus Christi Street to East Lyon Street

Context

Marcella Avenue, running south to north between Corpus Christi St and East Lyon Street functions as a major collector lined with residences, small businesses, and a middle school. Marcella Avenue is a two-lane, two-way road with consistent sidewalks from Corpus Christi Street to Gustavus Street and intermittent sidewalks north of Gustavus Street. There is an El Metro Transit bus stop for Routes 4 and 10 at the Marcella Avenue and Corpus Christi Street intersection, and Route 4 runs parallel to Marcella Avenue on Springfield Avenue. The speed limit along the entire length of the analyzed corridor is 30 mph, apart from the Memorial Middle School zone, where the speed limit is reduced to 20 mph during school drop off and pickup times. The typical pavement width is 28 feet north of Clark Boulevard and 36 feet south of Clark Boulevard, while the right-of-way width is 55 feet. The Average Annual Daily Traffic (AADT) for this corridor is 2,079 vehicles per day.

Table 69 - Marcella Avenue corridor basics

Street Name	Marcella Avenue
Extents	Corpus Christi Street to East Lyon Street
Length	1 mile
Roadway Jurisdiction	City of Laredo
Functional Class	Major Collector

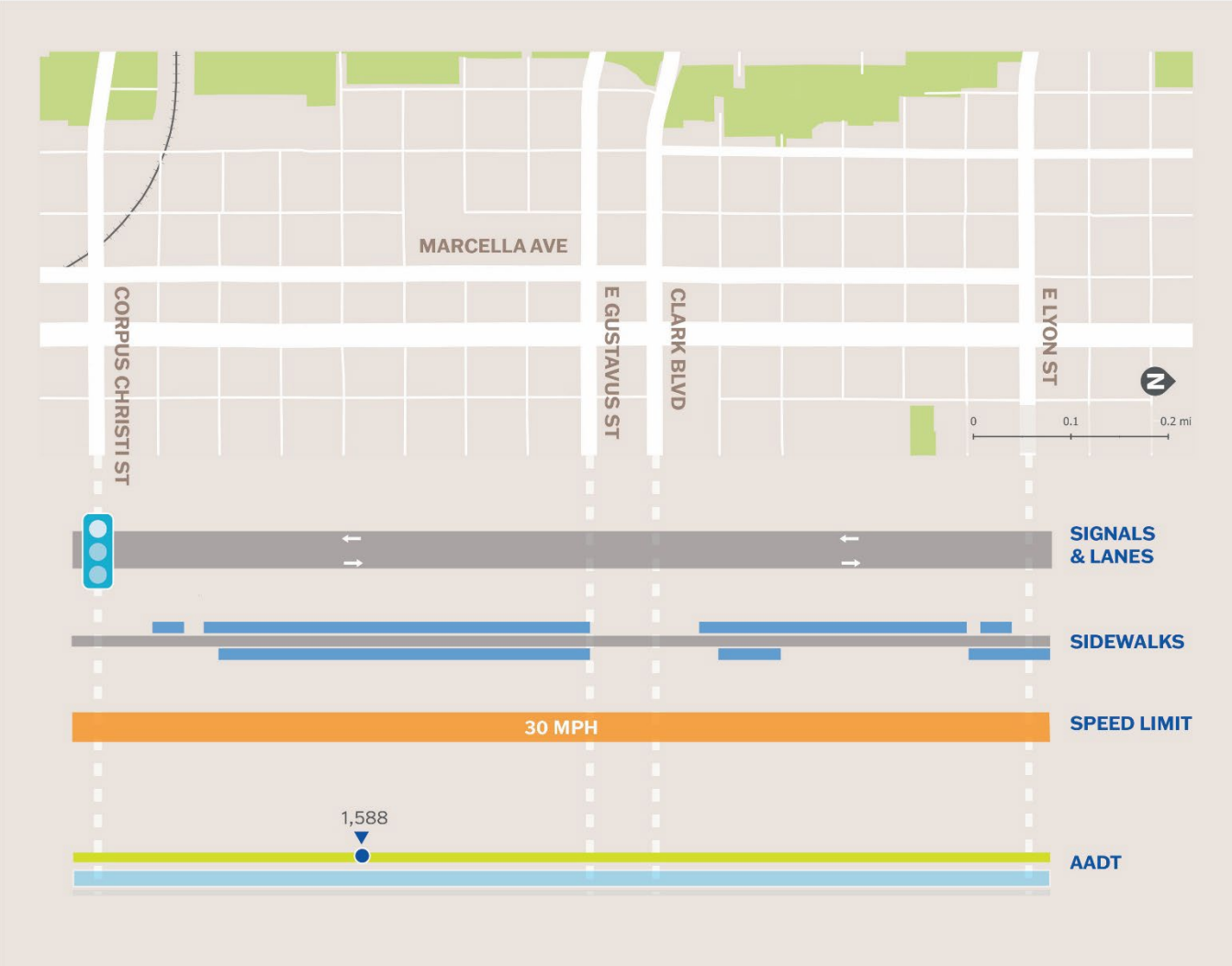

Figure 61 - Marcella Avenue multimodal roadway features

Crash History (2018 to 2022)

A crash data analysis was performed for the Marcella Avenue corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 70 shows the location types where all the crashes occurred. A majority of the crashes were located in or near an intersection, including the one KSI crash that occurred in this corridor.

Table 70 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	71	96%	1	100%	1.4%
Mid-Block	3	4%	0	0%	0%
Total	74	100%	1	100%	1.4%

Figure 62 shows the spatial distribution of crashes in the Marcella Avenue corridor. It is apparent that most of the crashes occurred at intersections. The KSI crash shown on Gustavus Street was not included in this

corridor analysis. Gustavus Street and Clark Boulevard had the most crashes and are both characterized by stop control on Marcella Avenue with continuous flow of traffic on the cross streets. The only KSI crash recorded on the Marcella Avenue corridor occurred at the intersection with Clark Boulevard.

Figure 62 -Crash map of the Marcella Avenue corridor

Table 71 – Marcella Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Gustavus	18	0	Four-way stop
Clark	15	1	Two-way stop
Corpus Christi	9	0	Signalized
Lane	7	0	Two-way stop
Lyon	6	0	Two-way stop

Table 72 shows the breakdown of crash modes in the corridor. The majority of the crashes were motor vehicle crashes, with pedestrian crashes making up the balance. There was only 1 KSI crash reported in the corridor, which involved a motor vehicle. The segment of Marcella Avenue which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Marcella Avenue corridor include:

- Overall HIN
- Pedestrian HIN

Table 72 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	70	1	1.4%
Pedestrian	4	0	0%

Table 73 shows the top collision manners along the corridor. Most crashes occurred when two drivers were going in the same direction, indicating a prevalence of driver inattention or inability to control speed. Additionally, the only KSI crash involved a rear end collision.

Table 73 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	26	0
One Motor Vehicle - Going Straight	14	0
Same Direction - Both Going Straight-Rear End	7	1
One Motor Vehicle - Backing	6	0
Same Direction - Both Going Straight-Sideswipe	5	0

Most crashes occurred in daylight conditions and a KSI crash occurred in dark but lighted conditions, as shown in Table 74.

Table 74 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	59	0
Dark, Lighted	13	1
Dark, Not Lighted	2	0

Table 75 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors were failure to yield the right of way at stop signs and failure to control speed, which contributed to 17 crashes each. Additional factors included unsafe backing, disregarding stop signs or traffic lights, and driver inattention. Driver inattentiveness was the key factor associated with the only KSI crash.

Table 75 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Yield Right Of Way - Stop Sign	17	0
Failed To Control Speed	17	0
Backed Without Safety	7	0
Disregard Stop Sign Or Light	6	0
Driver Inattention	6	1

Table 76 reports the number of crashes by the speed limit of the segment they occurred in.

Table 76 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	74	74	1	1

Planned or Completed Safety Improvements

The TxDOT Crash Analysis and Visualization product for this corridor proposed several safety improvements at the Gustavus Street intersection. These include the installation of a Pedestrian Hybrid Beacon (PHB), Rectangular Rapid Flashing Beacons (RRFB), and safety lighting.

Corridor Recommendations

Marcella Avenue is a primarily residential street with some commercial uses interspersed and with Memorial Middle School anchoring the neighborhood. As such, active transportation modes such as walking and biking should be encouraged and protected while drivers should be encouraged to drive slowly. In mid-block segments of Marcella Avenue, this can be achieved through countermeasures such as:

- Filling sidewalk gaps throughout the corridor
- Installing speed humps every block south of Clark Boulevard

Figure 63 - Example of sidewalk gaps on Marcella Avenue between Clark Boulevard and O'Kane Street

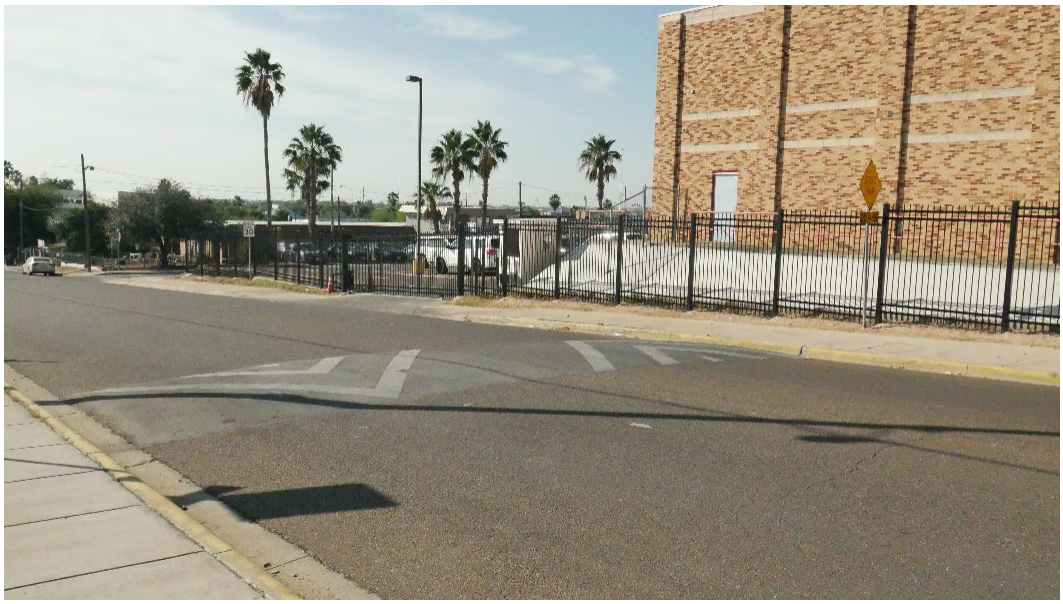

Figure 64 - Existing speed humps on Marcella Avenue adjacent to Memorial Middle School

Intersection Recommendations

In the Marcella Avenue corridor, crashes happen primarily in intersections that are stop controlled along one street but not the other due to inattentiveness or failure to yield the right of way. Some countermeasures that can be implemented along the entire corridor to reduce these types of crashes include:

- Installing curb extensions at all side streets south of Clark Boulevard
- Installing/refreshing high-visibility crosswalks at signalized intersections, all-way stops, and major road crossings
- Neighborhood traffic circles at all intersections between O'Kane Street and Kearney Street
- Advance stop and signal warning signs

Figure 65 - Intersection of Marcella Avenue and Clark Boulevard

Corpus Christi Street

The Corpus Christi Street intersection is the only one along the studied segment of Marcella Avenue that is signalized. To improve safety at this intersection, the following countermeasures are recommended:

- Install pedestrian signalization
- Install ADA curb ramps on all corners

Figure 66 - Intersection of Marcella Avenue and Corpus Christi Street

Fremont Street

The Fremont Street intersection serves the main entrance to Memorial Middle School and should be made safer for students who are walking to school. Recommended countermeasures include:

- Installing raised crosswalks
- Installing a pedestrian hybrid beacon

Figure 67 - Intersection of Marcella Avenue and Fremont Street

Gustavus Street

The Gustavus Street intersection experiences the most crashes of all the intersections along the corridor and is adjacent to Memorial Middle School. Many of the crashes in the intersection were due to drivers not yielding the right of way at the stop signs facing Marcella Avenue. It is recommended that the intersection be fully signalized to address driver inattention and to provide pedestrians with dedicated times to cross the street.

Figure 68 - Intersection of Marcella Avenue and Gustavus Street

Countermeasure Recommendations

Countermeasure recommendations for the Marcella Avenue corridor are summarized in Table 77 and Figure 69. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 77 - Recommended countermeasures for Marcella Avenue corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Medium (2-5 years)	Segment	Close sidewalk gaps	Walkways	Pedestrian	.35	0.9 MI	$243,000
Medium (2-5 years)	Segment	Speed humps	Speed management	All	.6	7	$8,200
Short (0-2 years)	Intersection	Install/refresh high-visibility/continental style crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	360 LF	$8,700
Medium (2-5 years)	Intersection	Install/upgrade pedestrian curb ramps	Crosswalk visibility enhancements	Pedestrian	--	14	$77,000
Medium (2-5 years)	Intersection	Pedestrian Hybrid Beacon	Crosswalk visibility enhancements	Pedestrian	.45	2	$313,000
Long (2-5 years)	Intersection	Implement full signalization at intersection	Signalization	All	.35 - .73	1	$260,000
Medium (2-5 years)	Intersection	Implement pedestrian signalization	Crosswalk visibility enhancements	Pedestrian	--	1	$19,000
Medium (2-5 years)	Intersection	Install raised crosswalk	Crosswalk visibility enhancements	All	.70	3	$47,000
Medium (2-5 years)	Intersection	Curb extensions	Crosswalk visibility enhancements	All	--	34	$54,000
Short (0-2 years)	Intersection	Advance stop and signal warnings	Crosswalk visibility enhancements	All	.75	10	$1,550
Medium (2-5 years)	Intersection	Neighborhood Traffic Circles	Roundabouts	All	.18	5	$25,000
						Total	$1,056,450.00

Figure 69 - Recommendations map of the Marcella Avenue corridor

Market Street from Maryland Avenue to Mendiola Avenue

Context

Market Street, running west to east between Maryland Avenue to Mendiola Avenue is a minor arterial fronted by small commercial uses and residences. Market Street is a two-way, two-lane street with left turn lanes provided only at the intersections between North Loring Avenue and North Mendiola Avenue, located on the east end of the corridor. Market Street is served by Route 9 of El Metro Transit. The speed limit along the entire length of the analyzed corridor is 30 mph, apart from the Heights Elementary School zone, where the speed limit is reduced to 20 mph during school drop off and pickup times. The typical pavement width of Market Street is 39 feet, and the typical right-of-way width is 55 feet. AADT along this corridor is 5,856.

Table 78 - Market Street corridor basics

Street Name	Market Street
Extents	Maryland Avenue to Mendiola Avenue
Length	0.8 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Minor Arterial

Figure 70 - Market Street multimodal roadway features

Crash History (2018 to 2022)

A crash data analysis was performed for the Market Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 79 shows the location types where all the crashes occurred. A majority of the crashes, including all KSI crashes, were located in or near an intersection.

Table 79 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	167	91%	2	100%	1.1%
Mid-Block	17	9%	0	0%	0%
Total	184	100%	2	100%	1.1%

Figure 71 and Table 80 shows the spatial distribution of crashes in the Market Street corridor. Most of the crashes, including both KSI crashes, occurred at intersections. Among the top intersections, only the Meadow Avenue intersection is signalized, while all others are non-signalized. Notably, the two KSI crashes occurred at the Logan and McClelland intersections, both of which are non-signalized.

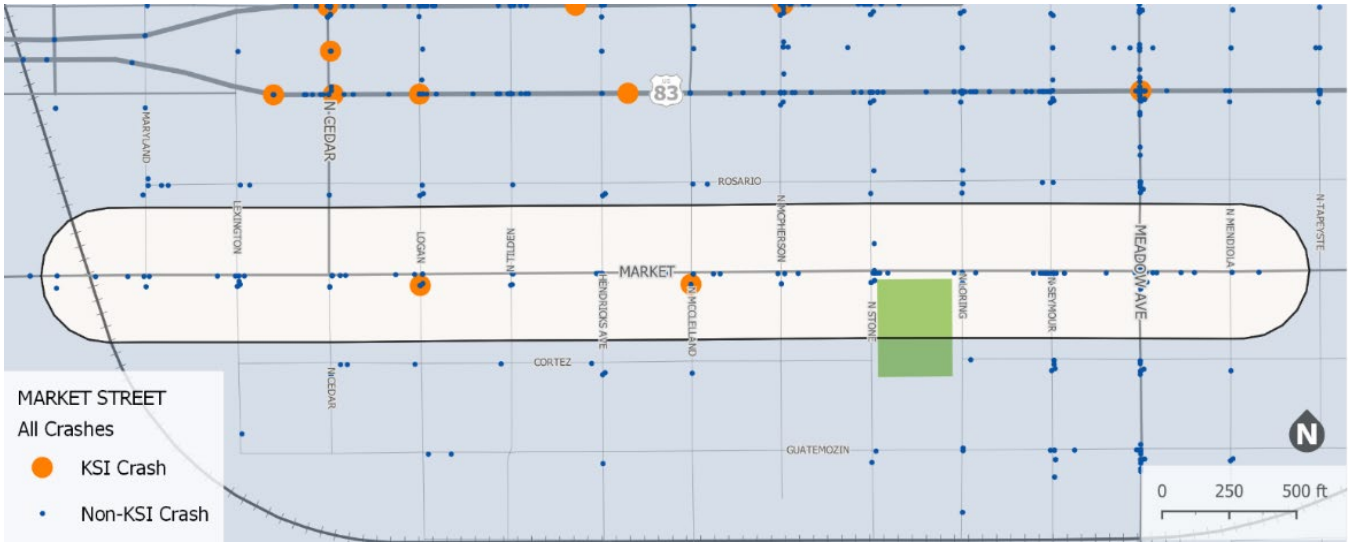

Figure 71 - Crash map of the Market Street corridor

Table 80 – Market Street intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Meadow Ave	58	0	Signalized
Seymour	18	0	Signalized
Hendricks	17	0	Two-way stop
Cedar	15	0	Two-way stop
Stone	16	0	Two-way stop

Table 81 shows the breakdown of crash modes in the corridor. The majority of the crashes were motor vehicle crashes. One of the KSI crashes involved a bicyclist. The segment of Market Street which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in the Market Street corridor include:

- Overall HIN
- Pedestrian HIN

Table 81 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	180	1	0.6%
Pedestrian	1	0	0%

Bike	2	1	50%
Motorcycle	1	0	0%

Table 82 shows the top collision manners along the corridor. Most of the crashes were angle crashes which occurred when both vehicles were going straight, this collision manner also includes one of the KSI crashes. The other KSI crash did not have a manner ascribed to it. In addition to angle crashes, crashes which involved one motor vehicle hitting a pedestrian or a fixed object and same-direction crashes accounted for a significant number of incidents and indicate that driver inattentiveness is a major factor in crashes along this corridor.

Table 82 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	51	1
One Motor Vehicle - Going Straight	29	0
Same Direction - One Straight-One Stopped	29	0
Same Direction - Both Going Straight-Rear End	27	0
Angle - One Straight-One Left Turn	7	0

Most crashes occurred in daylight conditions but both of the KSI crashes occurred in dark conditions, as shown in Table 83.

Table 83 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	131	0
Dark, Lighted	39	1
Dark, Not Lighted	8	1
Dusk	4	0
Dawn	2	0

Table 84 shows the breakdown of the factors that contributed to crashes in the corridor. The primary contributing factor was speeding. Additional factors included disregarding or failing to yield the right of way at stop signs or traffic lights, unsafe backing, and driver inattentiveness.

Table 84 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	69	0
Failed To Yield Right Of Way - Stop Sign	32	1
Disregard Stop Sign Or Light	12	0
Backed Without Safety	8	0
Failed To Drive In Single Lane	5	0

Table 85 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor which was analyzed has a speed limit of 30 mph.

Table 85 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes
30	184	230	2

Planned or Completed Safety Improvements

Multiple improvements were recommended by the TxDOT Crash Analysis and Visualization product for the McClelland intersection in this corridor. These recommendations include:

- Installing LED flashers at stop signs
- Replacing overhead flashing beacons
- Implementing U-turn restrictions

There were no future projects identified in the Laredo Capital Improvements Plan, nor were there any recommendations included in the TxDOT Pedestrian Safety Action Plan or Bike Plan.

Corridor Recommendations

The analyzed segment of Market Street has a consistent width of 39 feet while having only two lanes of traffic for its majority. Wide lanes provide little friction for drivers, who will feel more comfortable going a faster speed as a result, putting pedestrians and bikers at risk. Some of this extra width can be converted to bike and pedestrian facilities to improve comfort for those outside of their vehicles. The following countermeasures are recommended for the mid-block segments of this corridor:

- Separated bike lanes
- Wider sidewalks
- Improved, pedestrian scale lighting

Figure 72 - Example of excessive width of Market Street in residential segment

Intersection Recommendations

More than 90% of all crashes occurred at an intersection. Most of the intersections along this corridor are unsignalized and provide no markings delineating space for people outside of cars. Hights Elementary and the George Pappas Tennis Center attract pedestrians in the community, and ample infrastructure should be installed to make crossing Market Street safer. Recommended countermeasures include:

- Refresh intersection striping
- Curb bump-outs at all side streets
- LPIs at all signalized intersections

Figure 73 - Typical intersection in residential segment of Market Street

Meadow Avenue

Along with Seymour Avenue, Meadow Avenue is a focal point for traffic crossing Market Street. Seymour Avenue appears to have received some improvements recently, and similar improvements should be implemented at Meadow Avenue, such as:

- Reflective backplates on Meadow Ave signals
- Pedestrian signalizations

Figure 74 - Intersection of Market Street and Meadow Avenue

McPherson Avenue

The McPherson Avenue intersection leads to the Heights Elementary School entrance and should be treated as a focal point for especially vulnerable pedestrian traffic. The following recommendations should be implemented to protect children walking to and from school:

- Pedestrian Hybrid Beacon
- Raised crossings
- Advanced stop signage

Figure 75 - Intersection of McPherson Avenue and Market Street

Cedar Avenue

Cedar Avenue is located at the interface between residential and commercial areas of the neighborhood. As such, it should provide a safe and comfortable crossing option for people outside of cars and signal a change in neighborhood context to drivers. The following countermeasures should be implemented here:

- Pedestrian Hybrid Beacon
- High visibility crosswalk

Figure 76 - Intersection of Market Street and Cedar Avenue

Countermeasure Recommendations

Countermeasure recommendations for the Market Street corridor are summarized in Table 86 and Figure 77. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 86 - Countermeasure recommendations for the Market Street corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment	Separated bike lanes	Pedestrian/Bicyclist	All	.70	0.8 miles	$350,000
Short (0-2 years)	Segment	Install pedestrian scale lighting	Crosscutting	All	.65	0.8 miles	$234,000
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	800 LF	$20,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	2 intersections	$600
Short (0-2 years)	Intersection	Backplates with retroreflective borders	Backplates with retroreflective borders	All	.85	8 signals	$2,700
Short (0-2 years)	Intersection	Advanced stop signage	Crosswalk visibility enhancements	All	.75	2 signs	$310
Medium (2-5 years)	Segment	Install continuous, wide sidewalks	Walkways	All	.35	1.6 miles	$700,000
Medium (2-5 years)	Intersection	Pedestrian signalization	Crosswalk visibility enhancements	Pedestrian	--	8 signal heads	$19,000
Medium (2-5 years)	Intersection	Raised crosswalk	Crosswalk visibility enhancements	All	.64	160 LF	$246, 000
Medium (2-5 years)	Intersection	Pedestrian hybrid beacon	Pedestrian hybrid beacon	Pedestrian	.45	1	$157,000
						Total Cost	$1,729,610

Figure 77 - Recommendations map of the Market Street corridor

Matamoros Street (IH-35 BUS) from Convent Avenue to Santa Ursula Avenue (IH-35)

Context

Matamoros Street functions as a principal arterial between Convent Avenue and IH-35. It is fronted primarily by commercial properties, especially bank branches. Matamoros Street is a two-way, two-lane city street with continuous sidewalks situated immediately behind the curb on either side. The speed limit is 30 mph. The street has typical pavement width of 28 feet and a right-of-way of approximately 38 feet. The corridor has an Average Annual Daily Traffic (AADT) of 14,615.

Table 87 - Matamoros Street corridor basics

Street Name	Matamoros Street (US-83)
Extents	Convent Avenue to Santa Ursula Avenue (IH-35)
Length	0.25 miles
Roadway Jurisdiction	TxDOT
Functional Class	Other Principal Arterial

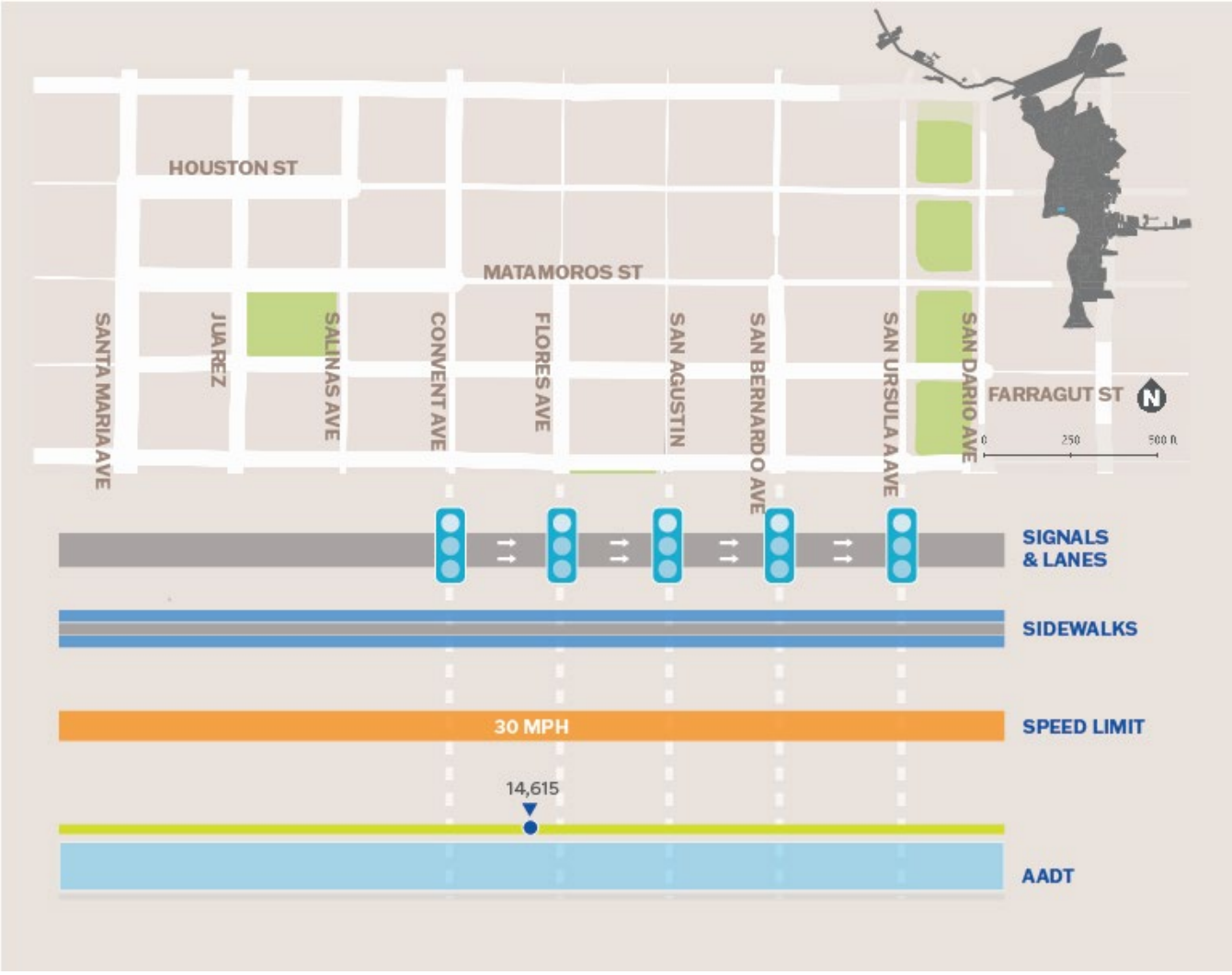

Figure 78 – Matamoros Street multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Matamoros Street corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 88 shows the location types where all the crashes occurred. A majority of both total crashes and KSI crashes were located in or near an intersection.

Table 88 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	132	95%	1	100%	0.8%
Mid-Block	7	5%	0	0%	0.0%
Total	139	100%	1	100%	0.7%

Figure 79 and Table 89 show the spatial distribution of crashes in the Matamoros Street corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place. The intersections with the most crashes were Santa Ursula Avenue and Convent Avenue. One KSI crash took place at the intersection with Convent Avenue.

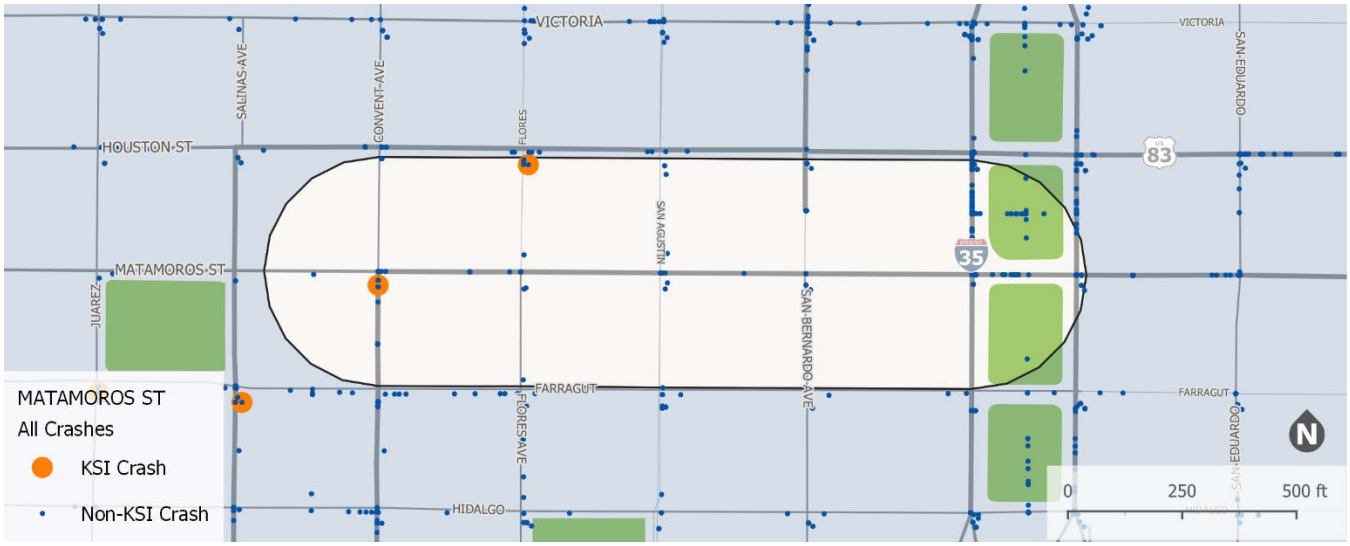

Figure 79 - Crash map of the Matamoros Street corridor

Table 89 – Convent Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Santa Ursula	60	0	One-way signalized
Convent	34	1	One-way signalized
Flores	12	0	One-way signalized
San Bernardo	12	0	Signalized
San Agustin	9	0	One-way signalized

Table 90 shows the breakdown of crash modes in the corridor. The overwhelming majority of both total crashes and KSI crashes involved motor vehicles. At this location, motor vehicles are more likely to result in a death or serious injury. The segment of Matamoros Street which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in Matamoros Street corridor include:

- Overall HIN
- Pedestrian HIN

Table 90 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	138	1	0.72%
Motorcycle	1	0	0%

Table 91 shows the top collision manners along the corridor. Many of the crashes, including the KSI crash, occurred when two cars, each moving straight down their respective lanes, collided at an angle when one driver veered slightly into the other's path.

Table 91 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	41	1
Same Direction - Both Going Straight-Rear End	26	0
Same Direction - One Straight-One Stopped	16	0
Same Direction - Both Going Straight-Sideswipe	14	0
Same Direction - Both Left Turn	12	0

Most crashes occurred in daylight condition, as shown in Table 92.

Table 92 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	102	0
Dark, Lighted	31	0
Dark, Not Lighted	4	0
Dusk	2	1

Table 93 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights, which also led to one KSI crash. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Matamoros Street corridor.

Table 93 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	30	0

Disregard Stop Sign Or Light And Stop And Go Signal	20	1
Changed Lane When Unsafe	15	0
Disregard Turn Marks At Intersection	9	0
Backed Without Safety	8	0

Table 94 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 30 mph.

Table 94 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	139	556	1	4

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates Matamoros Street from Convent Avenue to I-35 as a planned bikeway and ranks it in the "Proactive" prioritization tier. No improvements were recommended by the TxDOT Pedestrian Safety Action Plan.

Corridor Recommendations

Matamoros Street has been identified as a corridor to proactively implement bicycle infrastructure in the TxDOT Laredo Bike Plan, and there is enough pavement width to install a bicycle lane, which will narrow the pavement and cause more friction to drivers, who will therefore be encouraged to maintain safer speeds, as well as protect pedestrians and cyclists.

Figure 80 - Typical width of Matamoros Street

Intersection Recommendations

Most crashes along the Matamoros Street corridor occur in or near intersections, so it is important that improvements be made at each intersection to improve their safety. The following countermeasures are recommended for all applicable intersections along the corridor:

- Install and refresh high-visibility crosswalks at all signalized intersections
- Implement leading pedestrian intervals at all signalized intersections
- Install ADA compliant curb ramps

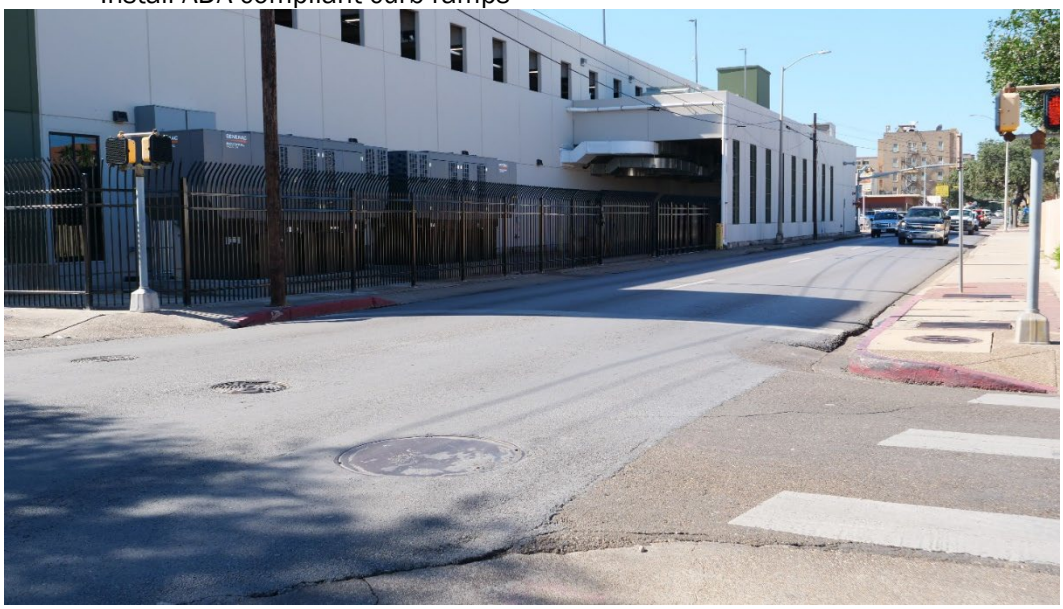

Figure 81 - Intersection of Matamoros Street and San Agustin Avenue

San Bernardo Avenue

San Bernardo Avenue is a two-lane street with 36 feet of pavement width. Curb extensions should be implemented here to slow turning cars down and shorten the distance required to cross for pedestrians.

Figure 82 - Intersection of San Bernardo Avenue and Matamoros Street

Santa Ursula Avenue

Santa Ursula Avenue serves as the terminus of IH-35 and has a wide cross section of four through lanes, a left turn lane, and a wide shoulder on the right side of the road. It also does not have a crosswalk on the north leg of the intersection. Countermeasure recommendations for the Santa Ursula Avenue intersection with Matamoros Street are:

- Install pedestrian signal heads addressing all legs of the intersection
- Install curb extensions in the left turn lane and shoulder of Santa Ursula Avenue and shift traffic accordingly

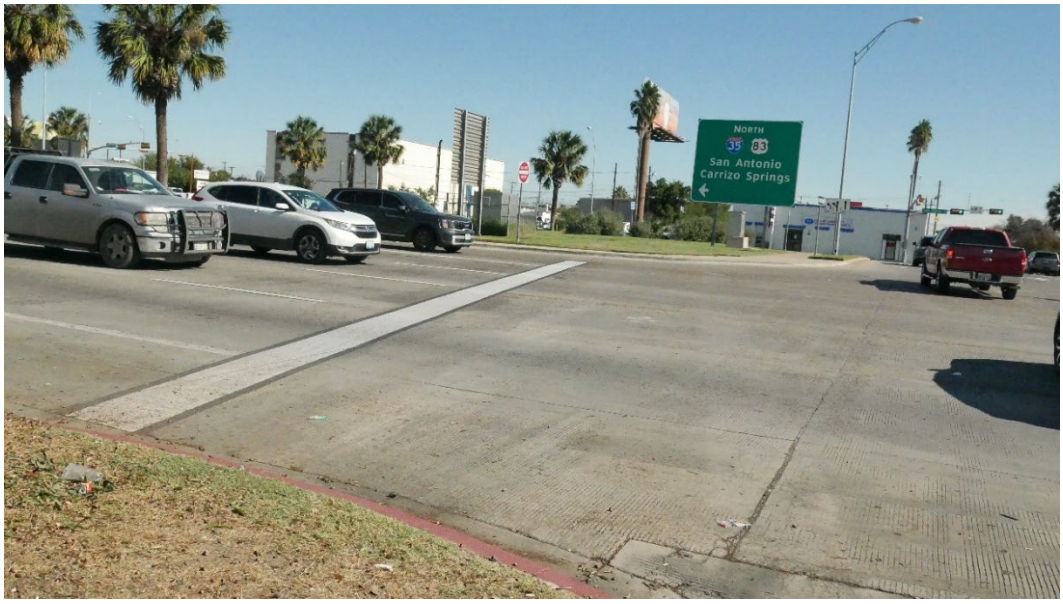

Figure 83 - Intersection of Santa Ursula Avenue and Matamoros Street

Countermeasure Recommendations

Countermeasure recommendations for the Matamoros Street corridor are summarized in Table 95 and Figure 84. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 95 - Recommended countermeasures for the Matamoros Street corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment/Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	660 LF	$16,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	5	$1,500
Medium (2-5 years)	Segment	Install buffered bike lane	Bicycle Lanes	Bike	.47	.25 MI	$110,000
Medium (2-5 years)	Intersection	Install curb extension	Crosswalk visibility enhancements	Pedestrian	--	8	$125,000
Medium (2-5 years)	Intersection	Reconfigure curb ramps to meet ADA standards	Crosswalk visibility enhancements	Pedestrian	--	12	$66,000
Medium (2-5 years)	Intersection	Install pedestrian signal head	Crosswalk visibility enhancements	Pedestrian	--	4	$10,000
						Total Cost	*$328,500.00*

Figure 84 - Recommendations map of the Matamoros Street Corridor

McPherson Road from East Saunders Street to Calle del Norte

Context

McPherson Road, running south to north between E Saunders St and Calle del Norte, is an urban principal arterial fronted by commercial uses such as strip malls, gas stations, restaurants, and auto mechanics. McPherson Road has four lanes with a two-way left turn lane for the entire length of the corridor from East Saunders Road to Calle del Norte, a stretch of 1.8 miles. The speed limit is 30 mph from East Saunders Road to East Calton Road and 40 mph from East Calton Road to Calle del Norte. The typical pavement width of McPherson Road is 82 feet and the right-of-way varies from 80 to 120 feet. AADT along this corridor varies from 12,000 in the south to 25,000 in the north, as shown in Figure 85.

Table 96 - McPherson Road corridor basics

Street Name	McPherson Road
Extents	East Saunders Street to Calle del Norte
Length	1.8 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Principal Arterial

Figure 85 - McPherson Road multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the McPherson Road corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 97 shows the location types where all the crashes occurred. A majority of the crashes were located in or near an intersection.

Table 97 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	477	68.8%	4	67%	0.8%
Mid-Block	216	31.2%	2	33%	.9%
Total	693	100%	6	100%	.9%

Figure 8: Crash map of the Chihuahua Street corridor

Figure 86 and Table 98 shows the spatial distribution of crashes in the McPherson Road corridor. It is apparent that most of the crashes, including most of the KSI crashes, occurred at intersections. The top intersections were those which were signalized between two large urban arterials. Other intersections where KSI Crashes have occurred include Taylor Street, Oklahoma Street, and Wyoming Street, each of which had one crash occur.

Figure 86 - Crash map of the McPherson Road corridor

Table 98 - McPherson Road intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Hillside	98	0	Signalized
Gale	76	1	Signalized
Calton	71	1	Signalized
Calle Del Norte	51	0	Signalized
Bustamante	41	1	Signalized

Table 99 shows the breakdown of crash modes in the corridor. The overwhelming majority of the crashes were motor vehicle crashes. A disproportionate amount of KSI crashes were for vulnerable road users. The segment of McPherson Road which is being analyzed was identified as part of a high injury network (HIN). The HIN mode in the McPherson Road corridor include:

- Overall HIN
- Motor Vehicle HIN (Saunders Rd to Alta Vista Dr)
- Bicycle HIN (Alta Vista Drive to Calle del Norte)

Table 99 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Bicycle	4	1	25%
Motorcycle	3	1	33%
Motor Vehicle	678	2	0.3%
Pedestrian	8	2	25%

Table 100 shows the top collision manners along the corridor. Most crashes occurred between two motor vehicles going straight or in the same direction, including all KSI crashes. This is characteristic of drivers being inattentive and not controlling their speed well.

Table 100 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - One Straight-One Stopped	159	1
Same Direction - Both Going Straight-Rear End	116	0
Angle - Both Going Straight	76	0
Opposite Direction - One Straight-One Left Turn	63	2
Same Direction - Both Going Straight-Sideswipe	51	0
Angle - One Straight-One Left Turn	46	0
One Motor Vehicle - Going Straight	37	3

Most crashes occurred in daylight conditions, as shown in Table 101.

Table 101 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	542	5
Dark, Lighted	124	1
Dark, Not Lighted	16	0
Dusk	6	0
Dawn	4	0
Dark, Unknown Lighting	1	0

The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Chihuahua Street corridor. Table 102 shows the breakdown of factors that contributed to crashes in the corridor. The top contributing factor was a failure to control speed, which correlates with the trend of same direction crashes. The factors of private drives and backing without safety are characteristic of an urban arterial with high driveway density, creating more conflict areas at access points.

Table 102 - Crash contributing factor[2]

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	285	1
Failed To Yield Right Of Way - Private Drive	63	0
Backed Without Safety	46	0

[2] Other KSI crash contributing factors include “PEDESTRIAN FAILED TO YIELD THE RIGHT OF WAY” (1) and “ILL (EXPLAINED IN NARRATIVE)” (1). Two KSI crash contributing factors were not reported.

Failed To Yield Right Of Way - Turning Left	44	0
Changed Lane When Unsafe	40	0

Table 103 reports the number of crashes by the speed limit of the segment they occurred in. Both the total crash density and KSI crash density were higher in the 40 mph segments than in the 30 mph segments.

Table 103 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	108	154	1	1.4
40	585	532	5	4.5

Planned or Completed Safety Improvements

Multiple improvements were recommended by the TxDOT Crash Analysis and Visualization product for the McClelland intersection in this corridor. These recommendations include:

- Restricted Crossing U-Turn at East Calton Road
- Install RRFB near Oklahoma St
- Install RRFB near Gale St intersection

Full signalization of the intersection at Alta Vista Drive is included in the 2025-2029 Capital Improvement Plan for Laredo which has been adopted. There were no recommendations included in the TxDOT Pedestrian Safety Action Plan or Bike Plan.

Corridor Recommendations

The primary contributing factor to crashes in the McPherson Road corridor is speed. As such, countermeasures should be focused on speed management and increasing attentiveness. Recommended countermeasures include the following:

- Reevaluate speed limits along the corridor
- Install dynamic speed feedback signs to reduce speeding
- Convert the center two-way left turn lane (TWLTL) to a raised median
- Consolidate and minimize access points to reduce the occurrence of rear end, private drive, and backing collisions

Figure 87 - Businesses with parking lots backing onto McPherson Road

Figure 88 - High density of commercial driveways

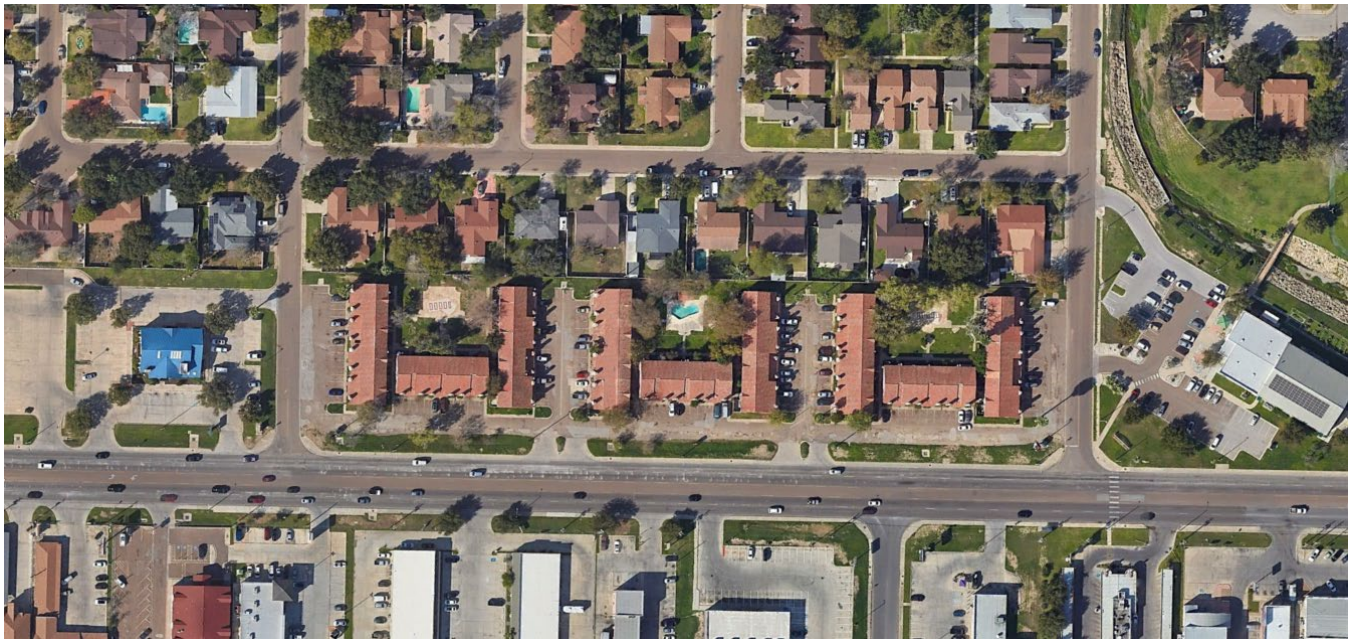

Figure 89 - High density of residential driveways

Intersection Recommendations

Nearly three quarters of all crashes and two thirds of KSI crashes in the McPherson Road corridor occur at intersections. It is recommended that the following countermeasures be implemented at all intersections on the McPherson Road corridor:

- Install or refresh high-visibility crosswalks
- Implement Leading Pedestrian Intervals at all signalized intersections
- Install high-visibility crosswalks and advance stop bars on the minor leg of all stop control intersections and high-volume driveways

Figure 90 - Intersection of McPherson Road and East Saunders Road

East Calton Road

The East Calton Road intersection has faded high-visibility crosswalk markings and right-turn channelization, making for an uncomfortable pedestrian experience. The following countermeasures are recommended for the East Calton Road intersection:

- Refresh crosswalk striping.
- Install pedestrian refuges at the median of each leg of the intersection to minimize pedestrians' time spent in the travel lanes.
- Remove or modify right-turn channelization islands to increase pedestrian visibility for turning vehicles.
- Install advance yield pavement markings before crosswalks in the channelized right turn lane.

Figure 91 - Intersection of McPherson Road and East Calton Road

Figure 92 - Aerial view of the intersection of McPherson Road and East Calton Road

Gale Road

Gale Road and McPherson Road cross each other at a skewed angle. In its current configuration, the pedestrian crossings of the north and south legs of the intersection are not orthogonal to McPherson Road, making for a long distance needed to cross. The following countermeasures are recommended for the Gale Road intersection:

- Reconfigure the intersection to provide a pedestrian refuge when crossing McPherson.
- Bring the crossings to right angles to minimize time spent by pedestrians in the travel lanes.

Figure 93 - Intersection of McPherson Road and Gale Street

Figure 94 - Aerial view of McPherson Road and Gale Street

Wyoming Street

A high-visibility crosswalk and pedestrian refuge island were installed at the Wyoming Street intersection before 2015 and the pedestrian refuge was removed around 2018 prior to a KSI bicycle crash that occurred at this intersection. The crosswalk connects Blas Castaneda Park and the Hillside Terrace neighborhood –

which has no direct roadway connection to McPherson but does have a pedestrian connection by way of the park – to Newman Elementary School and the Alta Vista neighborhood. The spacing between the Hillside Road and Gale Street signalized intersections is nearly two thirds of a mile. It is recommended the Wyoming Street intersection be fully signalized, including pedestrian signals with leading pedestrian intervals.

Figure 95 - High-visibility crosswalk at Wyoming Street

Countermeasure Recommendations

Countermeasure recommendations for the McPherson Road corridor are summarized in Table 104 and Figure 96. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 104 - Recommended countermeasures for McPherson Road corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment	Reevaluate speed limits to be appropriate for corridor	Appropriate speed limit for all users	All	VARIES	1.1 MI	$1,700
Short (0-2 years)	Segment	Install dynamic speed feedback signage	Appropriate speed limit for all users	All	.95	2 signs	$9,000
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	2040 LF	$50,000
Short (0-2 years)	Intersection	Install advance signal, stop, or yield signs	Crosswalk visibility enhancements	Pedestrian	.75	16 signs	$2,500
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	8 intersections	$2,400
Medium (2-5 years)	Segment	Consolidate access points	Corridor access management	Right turn Head-on left turn	--	10 driveways closed	$110,000
Medium (2-5 years)	Intersection	Removal or modification of right-turn channelization islands	Crosswalk visibility enhancements	Right turn Merging unsafely Pedestrian	--	1 project	$700,000
Medium (2-5 years)	Intersection	Reconfigure ramps and crosswalks for perpendicular pedestrian crossings	Crosswalk visibility enhancements	Pedestrian		16	$88,000

Medium (2-5 years)	Intersection	Install median pedestrian refuge	Median pedestrian refuge	Pedestrian	.44	16	$103,000
Long (5+ years)	Segment	Convert TWLTL to raised median	Roadway reconfiguration	All	.77	1.8 MI	$5,000,000
Long 5+ years)	Intersection	Implement full signalization at intersection	Signalization	All		1	$260,000
						Total Cost	**$6,326,600**

Figure 96 - Recommendations map of the McPherson Road corridor

Mines Road (FM 1472) from I-35W to Bob Bullock Loop

Context

Mines Road (FM 1472), running north to south from I-35 W to Bob Bullock Loop, is a principal arterial which serves a mix of inland port facilities and residential areas in northwest Laredo. Access to these residences and facilities, which generate high volumes of truck traffic, is handled by at-grade signalized intersections. It is a 6-lane divided highway with a raised median for most of its length. El Metro Route 17 runs along Mines Road and serves the residences to the west of the corridor. The speed limit is 45 mph from I-35W to Big Bend Boulevard and 50 mph from Big Bend Boulevard to Bob Bullock Loop. The typical pavement width of Mines Road is 104 feet north of North America Road and 88 feet south of North America Road, and the typical right-of-way width is 188 to 216 feet. AADT along this corridor varies from 28,634 to 45,646.

Table 105 - Mines Road corridor basics

Street Name	Mines Road (FM 1472)
Extents	I-35W to Bob Bullock Loop
Length	2.2 miles
Roadway Jurisdiction	TxDOT
Functional Class	Principal Arterial

Figure 97 - Mines Road multimodal roadway features

Crash History (2018 to 2022)

A crash data analysis was performed for the Mines Road corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 106 shows the location types where all the crashes occurred. A majority of the crashes were located in or near an intersection, and 1.2% of all crashes resulted in a death or serious injury.

Table 106 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	398	68%	3	43%	0.51%
Mid-Block	186	32%	4	57%	0.68%
Total	584	100%	7	100%	1.20%

Table 107 and Figure 98 show the spatial distribution of crashes in the Mines Road corridor. The intersections with the most frequent crashes were those which served large industrial parks and had high truck traffic. Lowry Road was the intersection with the most KSI crashes, with two.

Figure 98 - Crash map of the Mines Road corridor

Table 107 - Mines Rd intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Las Cruces	73	0	Restricted crossing left
Flecha	69	1	Signalized
Rancho Viejo	66	0	Signalized
Bristol	63	1	Signalized
Fasken	60	0	Signalized T

Table 108 shows the breakdown of crash modes in the corridor. The overwhelming majority of the crashes were motor vehicle crashes. Most of the KSI crashes involved vulnerable road users. The segment of Mines Road which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in the Mines Road corridor include:

- Overall HIN
- Pedestrian HIN
- Motor Vehicle HIN
- Commercial Vehicle HIN

Table 108 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI

Motor Vehicle	575	3	0.5%
Pedestrian	4	2	50%
Motorcycle	4	2	50%
Bicycle	1	0	0%

Table 109 shows the top collision manners along the corridor. The most frequent crash manners were those between two motor vehicles going straight or in the same direction. This is characteristic of driver inattentiveness. The most frequent KSI crash manner was one vehicle going straight and hitting a fixed object or a pedestrian. The remaining two KSI crashes occurred when one motor vehicle was backing and hit a pedestrian and between two motor vehicles going straight and colliding at an angle.

Table 109 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Rear End	142	1
Same Direction - One Straight-One Stopped	136	1
Same Direction - Both Going Straight-Sideswipe	84	0
Opposite Direction - One Straight-One Left Turn	48	0
One Motor Vehicle - Going Straight	45	3

Most crashes occurred in daylight conditions, as shown in Table 110. Three KSI crashes occurred in dark conditions, indicating a potential need for upgraded lighting in the corridor.

Table 110 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	440	4
Dark, Lighted	115	2
Dark, Not Lighted	14	1
Dawn	8	0
Dusk	5	0

The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Chihuahua Street corridor. Table 111 shows the breakdown of factors that contributed to crashes in the corridor. The top contributing factor for both total crashes and KSI crashes was a failure to control speed, which correlates with the prevalence of same direction crashes. Other KSI crash contributing factors include a pedestrian failing to yield the right of way.

Table 111 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	264	4
Changed Lane When Unsafe	63	0
Backed Without Safety	28	0

Failed To Yield Right Of Way - Turning Left	26	1
Followed Too Closely	15	0

Table 112 reports the number of crashes by the speed limit of the segment they occurred in. There was a higher density of crashes in the segment of Mines Road with a posted speed of 45 mph.

Table 112 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mile)	KSI Crashes	KSI Crash Density (crashes/mile)
45	484	281	7	4.0
50	93	194	0	0

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor. The TxDOT Laredo District Bicycle Plan identifies the entire corridor as having high need for bicycle facilities and is categorized as a corridor where opportunistic implementation of bicycle facilities is encouraged. The TxDOT Pedestrian Safety Action Plan recommends implementation of sidewalks, shared use paths, and school zones in this corridor.

Corridor Recommendations

Wide grass buffers along both sides of Mines Road provide ample opportunities for the implementation of better bike and pedestrian infrastructure, which is called for in both the TxDOT Pedestrian Safety Action Plan and the TXDOT Laredo District Bike Plan. Within the roadway, steps must be taken to control driver speed and raise attentiveness. The following countermeasures are recommended for mid-block segments of the Mines Road corridor:

- Implement shared-use path
- Consolidate accesses
- Reevaluate street light luminosity

Figure 99 - High density of driveways between Rancho Viejo Drive and Quail Creek Road

Figure 100 - Wide grass buffer behind sidewalk north of Big Bend Boulevard

Intersection Recommendations

Most of the crashes along the Mines Road corridor occur at intersections and many are between two vehicles going the same direction. With large gaps between some of the signalized intersections in this corridor, speeding and inattentiveness must be mitigated. The following countermeasures are recommended for all intersections in this corridor:

- Refresh/install high-visibility crosswalks
- Implement leading pedestrian intervals
- Implement pedestrian signalization across all legs of every intersection
- Install signage for traffic signal advanced warnings

Figure 101 - Intersection of Mines Road with Bristol Road and San Lorenzo Drive

Additionally, there are unsignalized T-intersections, such as Las Cruces Drive and San Gabriel Drive which are slightly offset from signalized T-intersections and which handle channelized left turn movements in the median. These intersections should be signalized to protect left turns and should be coordinated with the upstream intersection.

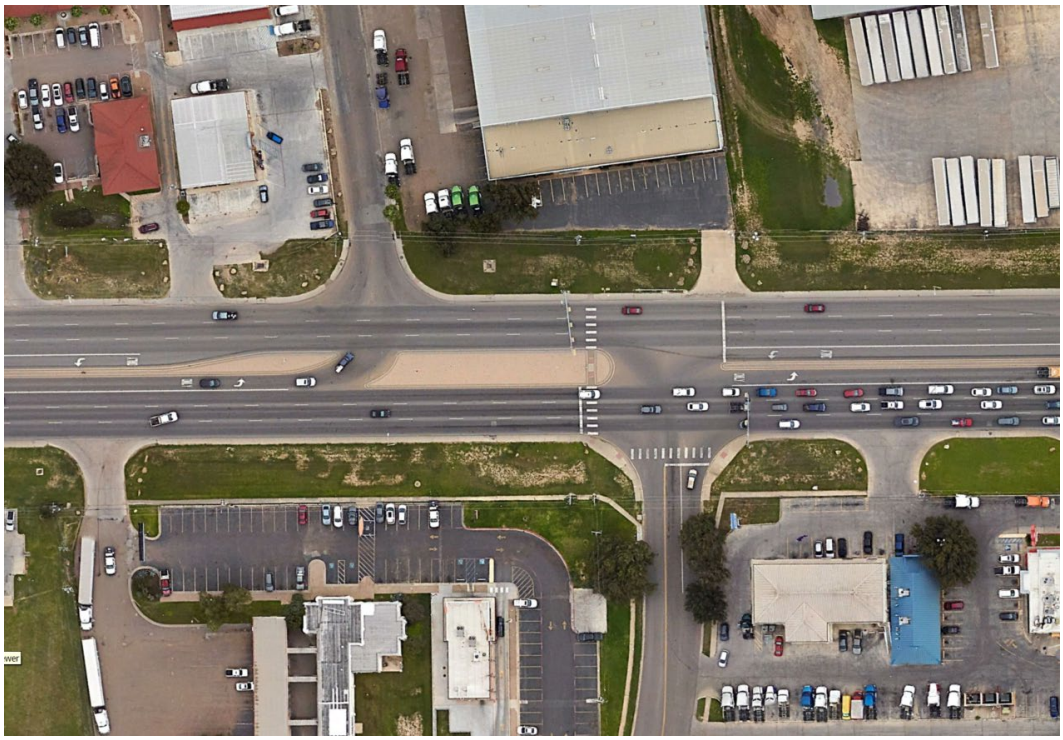

Figure 102 - Mines Road intersections with Lowry Road (right, unsignalized) and San Gabriel Drive (left, unsignalized)

Figure 103 - View from left turn lane serving Las Cruces Drive looking at the Flecha Lane intersection

Countermeasure Recommendations

Countermeasure recommendations for the Mines Road corridor are summarized in Table 113. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 113 - Recommended countermeasures for McPherson Road corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	2400 LF	$58,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	6 intersections	$1,800
Short (0-2 years)	Intersection	Advanced signal warning signage	Crosswalk visibility enhancements	All	.75	10 approaches	$1,600
Medium (2-5 years)	Intersection	Install pedestrian signalization across all intersection approaches	Crosswalk visibility enhancements	Pedestrian	--	10 pedestrian signal heads	$24,000
Medium (2-5 years)	Segment	Consolidate access points	Corridor access management	All	--	10 access closures	$109,000
Long (5+ years)	Segment	Install shared-use path	Walkways/Bicycle Lanes	All	.35	2.2 MI	$1,892,550
Long (5+ years)	Intersection	Implement full signalization at left-turn lane	Signalization	All	--	2	$313,000
						Total Cost	*$2,399,950.00*

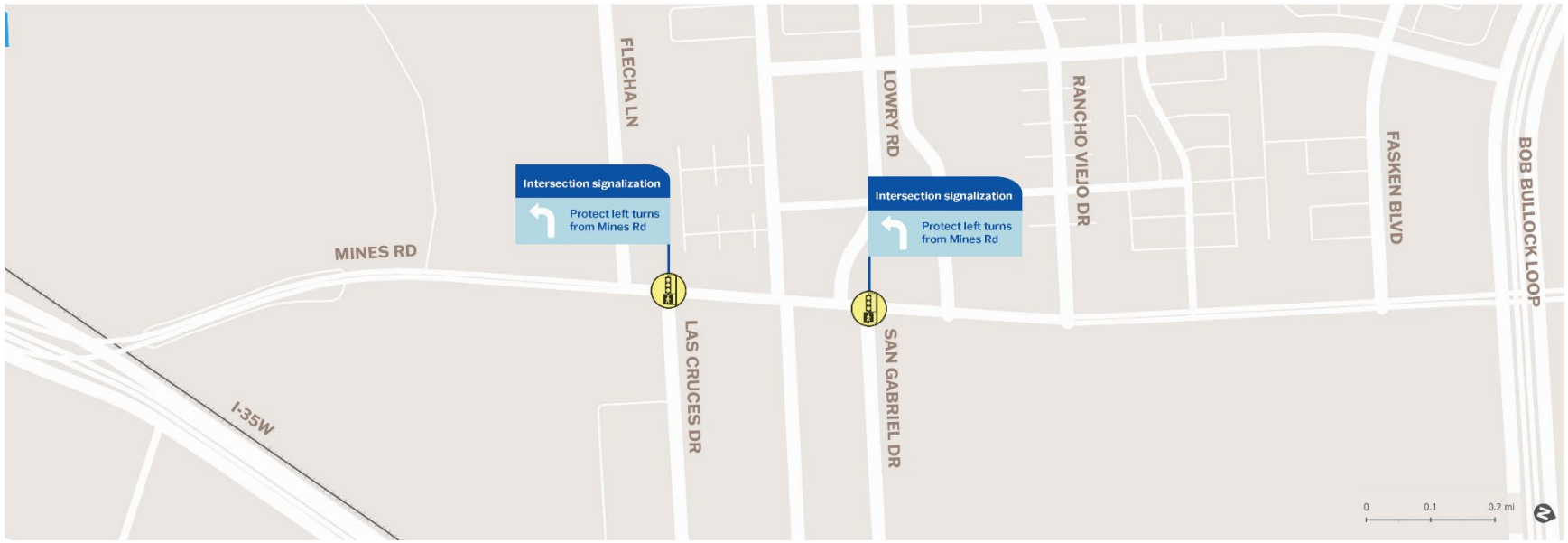

Figure 104 - Mines Road recommended countermeasures

Salinas Avenue from Zaragoza Street to Houston Street

Context

Salinas Avenue, running south to north from Zaragoza Street to Houston Street, is an urban principal arterial fronted by city center commercial uses. Salinas Avenue is a one-way city street with two lanes north of Farragut Street and one travel lane south of Farragut Street. It has street parking on both sides for the majority of the corridor length. Salinas Avenue handles all bus traffic accessing the El Metro Transit Center, which has an entrance off of Salinas Avenue just south of Farragut Street. The speed limit is 30 mph for the entire length of the analyzed corridor, as shown in Figure 105.

The typical pavement width of Salinas Ave is 28 to 40 feet and the typical right-of-way width is 55 feet. AADT along this corridor is 14,600, as shown in Figure 105.

Table 114 - Salinas Avenue corridor basics

Street Name	Salinas Avenue
Extents	Zaragoza Street to Houston Street
Length	.34 miles
Roadway Jurisdiction	City of Laredo
Functional Class	Principal Arterial

Figure 105 – Salinas Avenue multimodal roadway features

Crash History (2018 to 2022)

A crash data analysis was performed for the Salinas Avenue corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 115 shows the location types where all the crashes occurred. A majority of the crashes were located in or near an intersection.

Table 115 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	78	88%	1	100%	1.1%
Mid-Block	11	12%	0	0%	0%
Total	89	100%	1	100%	1.1%

Figure 106 and Table 116 show the spatial distribution of crashes in the Salinas Avenue corridor. It is apparent that most of the crashes, including the KSI crash, occurred at intersections. Many of the crashes

occurred as a result of drivers trying to pass other cars near this intersection where parked cars reduce the width of the traveled way from two lanes to one. The only KSI crash recorded in the Salinas Avenue corridor occurred at the intersection with Farragut Street.

Figure 106 - Crash map of the Salinas Avenue corridor

Table 116 - Salinas Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Lincoln	27	0	One-way signalized
Farragut	15	1	Signalized
Zaragoza	11	0	One-way signalized
Iturbide	9	0	One-way signalized
Matamoros	8	0	One-way signalized

Table 117 shows the breakdown of crash modes in the corridor. The overwhelming majority of the crashes were motor vehicle crashes. The only KSI crash reported in the corridor involved a pedestrian. The segment of Salinas Avenue which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in the Salinas Avenue corridor include:

- Overall HIN
- Pedestrian HIN

Table 117 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	82	0	0%
Pedestrian	5	1	20%
Motorcycle	2	0	0%

Table 118 shows the top collision manners along the corridor. Most crashes occurred between two motor vehicles going straight or in the same direction. This is characteristic of driver inattentiveness. The KSI crash involved a motor vehicle turning left and hitting a pedestrian.

Table 118 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - Both Going Straight-Sideswipe	20	0
Angle - Both Going Straight	17	0
One Motor Vehicle - Going Straight	17	0
Same Direction - Both Going Straight-Rear End	7	0
One Motor Vehicle - Turning Left	7	1

Most crashes occurred in daylight conditions, as shown in Table 119.

Table 119 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	65	1
Dark, Lighted	22	0
Dark, Not Lighted	2	0
Dusk	1	0

The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Chihuahua Street corridor. Table 120 shows the breakdown of factors that contributed to crashes in the corridor. The top contributing factor was a failure to control speed, which correlates with the trend of same direction crashes. Other contributing factors such as changing lanes when unsafe and disregarding a stop sign or light is indicative of driver inattentiveness.

Table 120 - Crash contributing factor[3]

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	13	0
Changed Lane When Unsafe	8	0
Improper Start From A Stopped, Standing, Or Parked Position	6	0
Failed To Pass To Right Safely	5	0
Disregard Stop Sign Or Light	4	0

Table 121 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor which was analyzed has a speed limit of 30 mph.

[3] The sole KSI crash reported in this corridor was ascribed to “DRIVER INATTENTION.”

Table 121 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes
30	90	2.9	1

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor. The TxDOT Laredo District Bicycle Plan identifies this segment of Salinas Avenue as having Proactive Prioritization for future bike projects.

Corridor Recommendations

Salinas Avenue has been identified as a priority corridor for future bike infrastructure in Laredo, and there is a parallel bike lane with an opposite direction of travel on Convent Avenue. A vertically separated bike lane should be installed throughout the Salinas Avenue corridor to complete the one-way bike lane couplet. The bike lane feature will also serve to better delineate the travelled way where, at present, it is ambiguous as to whether there are one or two vehicular travel lanes in this corridor.

Figure 107 - Salinas Avenue with parking on both sides of street

Intersection Recommendations

In this section of Salinas Avenue, intersections are spaced close together creating many conflict points. Buildings are spaced close together as well as close to the roadway causing sight distance issues around corners, so it is important that signals be visible and legible, and that pedestrians' presence is made known

when crossing. Hardscape elements can be designed to slow cars down at intersections and increase attentiveness. The following countermeasures are recommended at all intersections, where applicable:

- Curb extensions at all intersections
- Signal backplates with retroreflective borders
- ADA ramps
- Install or refresh high-visibility crosswalks
- Implement leading pedestrian intervals

Figure 108 - Salinas Avenue intersection with Farragut Street

Figure 109 - Intersection of Salinas Avenue and Matamoros Street looking at Jarvis Plaza

Countermeasure Recommendations

Countermeasure recommendations for the Salinas Avenue corridor are summarized in Table 122 and Figure 110. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 122 - Recommended countermeasures for Salinas Avenue corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Segment/Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	960 LF	$30,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	8	$2,400
Medium (2-5 years)	Segment/Intersection	Install curb extension	Crosswalk visibility enhancements	Pedestrian	--	32	$500,000
Medium (2-5 years)	Segment	Install bike lane with vertical separation	Bicycle Lane	All	.47	.3 MI	$132,000
Short (0-2 years)	Intersection	Install backplates with retroreflective borders	Backplates with retroreflective borders	All	.85	32	$11,000
						Total Cost	*$675,400*

Figure 110 - Recommendations map of the Salinas Avenue corridor

San Bernardo Avenue from Washington Street to Houston Street

Context

San Bernardo Avenue functions as a principal arterial between Washington Street and Houston Street. It is fronted primarily by commercial properties and Bruni Plaza is situated at its north end. San Bernardo Avenue is a two-way, two-lane street which has sidewalks running the entire length of the corridor which are positioned just behind the curb or with a small grass buffer between. The corridor is served by Routes 2A and 2B of El Metro Transit. The speed limit is 30 mph for the entire length of the analyzed corridor, with a typical pavement width of 38 feet and a right-of-way width of 56 to 71 feet. The corridor has an Average Annual Daily Traffic (AADT) of 11,705.

Table 123 - San Bernardo Avenue corridor basics

Street Name	San Bernardo Avenue
Extents	Washington Street to Houston Street
Length	0.10 miles
Roadway Jurisdiction	TxDOT
Functional Class	Other Principal Arterial

Figure 111 – San Bernardo Avenue multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the San Bernardo Avenue corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 124 shows the location types where all the crashes occurred. There were no KSI crashes reported along this corridor, but the majority of crashes were located in or near an intersection.

Table 124 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	75	88%	0	0%	0.00%
Mid-Block	10	12%	0	0%	0.00%
Total	85	100%	0	0%	0.00%

Figure 112 and Table 125 show the spatial distribution of crashes in the San Bernardo Avenue corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place. Washington Street and Victoria Street had a similar amount of crash incidences.

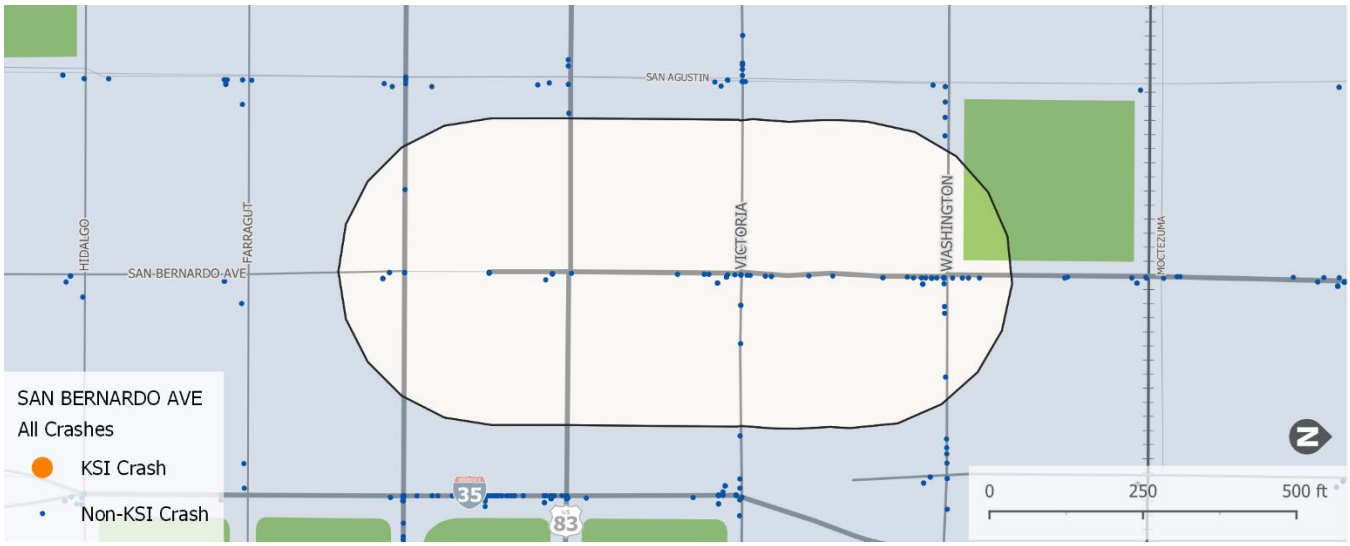

Figure 112 - Crash map of the San Bernardo Avenue corridor

Table 125 – Convent Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Washington	39	0	Signalized
Victoria	37	0	Signalized
Houston	9	0	Signalized

Table 126 shows the breakdown of crash modes in the corridor. The majority of the crashes in this corridor involved motor vehicles. The segment of San Bernardo Avenue which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in San Bernardo Avenue corridor include:

- Overall HIN
- Pedestrian HIN

Table 126 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	82	0	0.0%
Pedestrian	2	0	0.0%
Bike	1	0	0.0%

Table 127 shows the top collision manners along the corridor. Most of the crashes occurred between two vehicles going in the same direction, indicating that speeding and inattentiveness may be contributing factors.

Table 127 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Angle - Both Going Straight	28	0
Same Direction - Both Going Straight-Rear End	12	0
Same Direction - Both Going Straight-Sideswipe	10	0
Same Direction - One Straight-One Stopped	10	0
One Motor Vehicle - Going Straight	7	0

Most crashes occurred in daylight condition, as shown in Table 128.

Table 128 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	68	0
Dark, Lighted	15	0
Dusk	1	0
Dark, Not Lighted	1	0

The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the Chihuahua Street corridor. Table 129 shows the breakdown of factors which contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed and disregarding stop signs or lights. This indicates that increasing driver attentiveness at intersections is critical to increasing safety along the San Bernardo Avenue corridor.

Table 129 - Crash collision manner

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	18	0
Disregard Stop Sign Or Light	11	0
Changed Lane When Unsafe	9	0
Disregard Stop And Go Signal	8	0
Backed Without Safety	7	0

Table 130 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor has a posted speed limit of 30 mph.

Table 130 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
30	85	850	0	0

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan designates San Bernardo Avenue as part of the planned bikeways and ranks them in the "High Priority" prioritization tier. The following countermeasures were recommended in the TxDOT Pedestrian Safety Action Plan:

- Install Sidewalk
- Install School Zones
- Traffic Calming
- Safety and Operational Cross Section Optimization (SOXSOP)

Corridor Recommendations

Washington street is a short corridor, but it has been identified as a high priority bicycle corridor and there is sufficient width available on both sides of the street to implement buffered bike lanes. With vertical separation, these bike lanes will designate space in the right-of-way to cyclists, protect pedestrians on the sidewalk, and provide friction to motorists, encouraging them to operate at safer speeds and pay more attention.

Figure 113 - View of San Bernardo Avenue showing wide pavement section

Intersection Recommendations

The intersections along San Bernardo Avenue feature several wide cross streets which encourage cars to go fast and require pedestrians to cross wide sections of traffic. Some intersection legs do not have crosswalks even when pedestrian signal heads are present. The following countermeasures are recommended at all intersections in this corridor:

- Implement leading pedestrian intervals (LPIs)
- Install/refresh high-visibility crosswalks

Figure 114 - Two legs of intersection of San Bernardo Avenue and Victoria Street do not have crosswalks

Washington Street

Washington Street is a one-way street with two wide lanes. Its intersection with San Bernardo Avenue has the most crashes of the analyzed corridor. To slow traffic down, increase driver awareness, and shorten the roadway width that pedestrians need to cross, curb extensions should be installed on either sides of both of the Washington Street legs of the intersection.

Figure 115 - Intersection of San Bernardo Avenue and Washington Street

Countermeasure Recommendations

Countermeasure recommendations for the San Bernardo Avenue corridor are summarized in Table 131 and Figure 116. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs. All assumptions are detailed in the Countermeasures Toolkit.

Table 131 - Recommended countermeasures for San Bernardo Avenue corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	400 LF	$10,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	3	$900
Medium (2-5 years)	Intersection	Install curb extension	Crosswalk visibility enhancements	Pedestrian	--	4	$63,000
Medium (2-5 years)	Segment	Install bike lane with vertical separation	Bicycle Lane	All	.47	.1 MI	$44,000
						Total Cost	*$117,900.00*

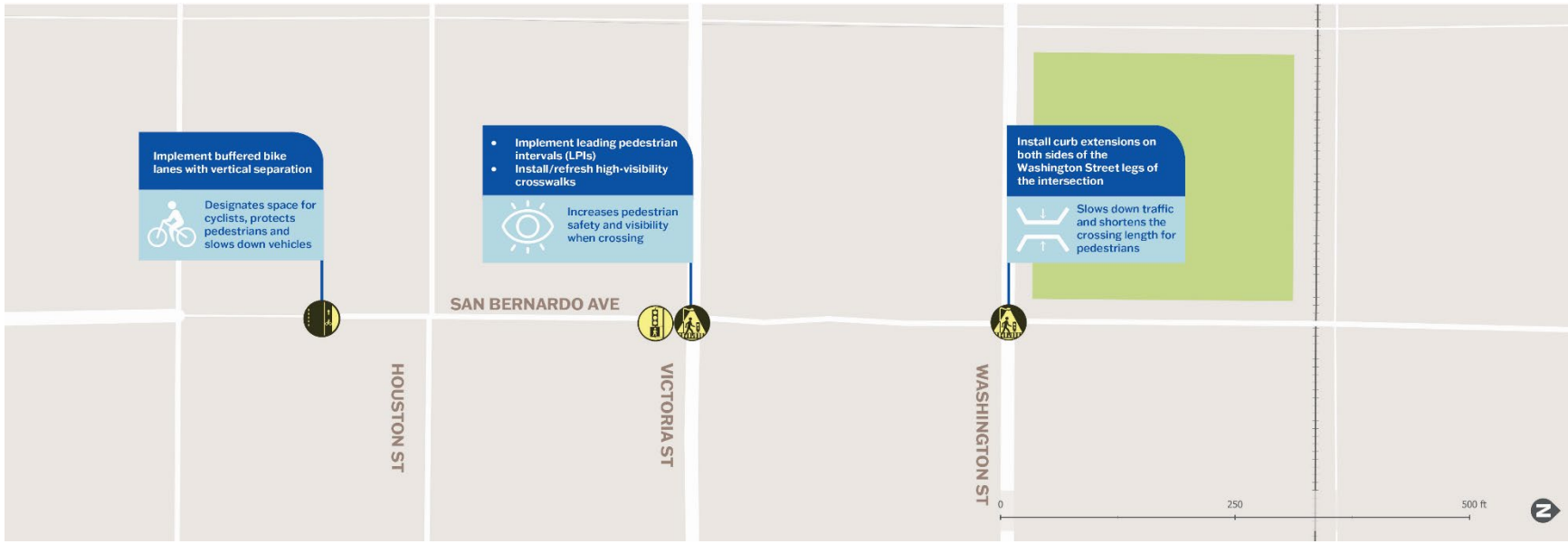

Figure 116 - Recommendations map of the San Bernardo Avenue corridor

State Highway 359 (SH 359) from Boomtown Road to Floral Boulevard

Context

SH 359, running west to east between Boomtown Road and Floral Boulevard, is a principal arterial fronted by commercial and light industrial uses. SH 359 is a two-way, four-lane road with a raised median starting on the westernmost limits and terminating at the intersection of the on-ramp for the Bob Bullock loop, a two-way left turn lane continues from there to the east, terminating at Ranch Road, and the remaining eastern limits of the study area has a hardened centerline. This corridor is served by Route 19 of El Metro Transit. The speed limit along a majority of the analyzed corridor is 45 mph, and the eastern end of the corridor (between Larga Vista Road and Floral Boulevard) has a speed limit of 55 mph. The typical pavement width of SH 359 is 76 feet, and the typical right-of-way width is 120 feet. AADT along this corridor ranges from 23,684 to 32,873.

Table 132 - State Highway 359 corridor basics

Street Name	State Highway 359
Extents	Boomtown Road to Floral Boulevard
Length	1.8 miles
Roadway Jurisdiction	TxDOT
Functional Class	Principal Arterial

Figure 117 - SH 359 multimodal roadway features

Crash History (2018 to 2022)

A crash data analysis was performed for the SH359 corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 133 shows the location types where all the crashes occurred. A majority of the total crashes and all of the KSI crashes were located in or near an intersection.

Table 133 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	494	77%	7	100%	1.1%
Mid-Block	145	23%	0	0%	0%
Total	639	100%	7	100%	1.1%

Figure 118 shows the spatial distribution of crashes in the SH 359 corridor. Most of the crashes, including the KSI crashes, occurred at intersections. The interchange between Bob Bullock Loop and SH 359 had

more than twice as many crashes as the next intersection. The single intersection with the most KSI crashes was that with Concord Hills Boulevard.

Figure 118 - Crash map of the SH 359 corridor

Table 134 – SH 359 intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Bob Bullock	180	1	Signalized Interchange
Cuatro Vientos	86	2	Signalized T
Concord Hills Blvd	69	3	Signalized
Boomtown	59	0	Signalized T
Dorell	25	0	Signalized T

Table 135 shows the breakdown of crash modes in the corridor. The majority of the crashes were motor vehicle crashes. There were seven reported KSI crashes, three of which involved vulnerable road users. The segment of SH 359 which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in the SH 359 corridor include:

- Overall HIN
- Pedestrian HIN
- Motor Vehicle HIN

Table 135 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	626	4	0.6%
Pedestrian	4	2	33.3%
Bike	1	0	0%
Motorcycle	5	1	16.7%

Table 136 shows the top collision manners along the corridor. Characteristic of 4-lane arterials, most of the crashes occurred between two vehicles travelling in the same direction, indicating that speeding and/or inattentiveness contribute to many of them. There are also many crashes where one vehicle is going straight and the other is making a left turn, which is a common occurrence on roads with two-way left turn lanes. Four KSI crashes resulted from one motor vehicle going straight, in two cases involving pedestrians and in the two others involving a fixed object.

Table 136 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - One Straight-One Stopped	171	0
Same Direction - Both Going Straight-Rear End	132	2
Same Direction - Both Going Straight-Sideswipe	61	0
One Motor Vehicle - Going Straight	56	4
Opposite Direction - One Straight-One Left Turn	44	1

Most crashes occurred in daylight conditions and Most of the KSI crashed occurred in dark conditions, as shown in Table 137. This indicates that street lighting may be insufficient along the corridor.

Table 137 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	459	2
Dark, Lighted	135	3
Dark, Not Lighted	42	2
Dusk	2	0
Dawn	1	0

Table 138 shows the breakdown of the factors that contributed to crashes in the corridor. The primary contributing factor was speeding. In addition to the four KSI crashes shown in the table, one KSI crash was the result of a pedestrian failing to yield the right of way to a vehicle.

Table 138 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	277	4
Changed Lane When Unsafe	38	0
Failed To Yield Right Of Way - Turning Left	29	0
Failed To Yield Right Of Way - Private Drive	27	0
Backed Without Safety	23	0

Table 139 reports the number of crashes by the speed limit of the segment they occurred in. The entire corridor which was analyzed has a speed limit of 30 mph.

Table 139 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes
45	588	346	7
55	44	440	0

Planned or Completed Safety Improvements

The TxDOT Crash Analysis and Visualization System did not generate any recommendations along the SH 359 corridor and there are no planned projects for the corridor in the 2025-2029 Laredo Capital Improvement Plan. This segment of SH359 has been identified as having a bikeable shoulder by the TxDOT Laredo District Bicycle Plan. It is classified as having High Bicycle Need and is in the Opportunistic Prioritization Tier of bike projects.

The TxDOT Pedestrian Safety Action Plan recommended the following countermeasures along the studied segment of SH 359:

- Install sidewalk
- Install shared-use path
- Install school zones
- Install/upgrade lighting

Corridor Recommendations

Most crashes in the SH 359 corridor were caused by speeding or driver inattentiveness, and measures should be taken to reduce those types of crashes. The high number of crashes which occurred in the dark also indicated that visibility at night needs to be improved. A majority of the road in this segment has a paved shoulder between the edge of the outer lane and the curb, which provides drivers with large margins for error and encourages them to drive too quickly. The following countermeasures should be applied along mid-block segments of the corridor:

- Install additional corridor lighting
- Provide continuous sidewalks
- Raised median where there is none currently
- Install vertical separation to convert existing paved shoulder into protected bike lane

Figure 119: SH359 Corridor

Intersection Recommendations

All intersections should be updated to increase pedestrian visibility when crossing. Additionally, drivers should be made aware of changing conditions such as at the approach to a traffic signal. General recommendations for the intersections along this segment of SH 359 include:

- Implement Leading Pedestrian Intervals (LPIs)
- Install/refresh high-visibility crosswalks
- Install signage for traffic signal advance warning

Boomtown Street

The laundromat entrance across SH 359 from Boomtown Street is not aligned with the south leg of this intersection and does not have a traffic signal facing it. The entrance should be closed in order to avoid confusion.

Figure 120 - Driveway within SH 359 and Boomtown Street intersection

Bob Bullock Loop

The interchange between Bob Bullock Loop and SH 359 where access ramps are located to the north and the southern leg changes names to Jaime Zapata Memorial Highway presents a wide area of asphalt for pedestrians to cross. Existing right turn channelizations are achieved with striping, but no hardscape. Installing raised truck-mountable concrete aprons at these slip lanes will encourage drivers to slow down when taking right turns and provide pedestrians with a refuge as they cross the road.

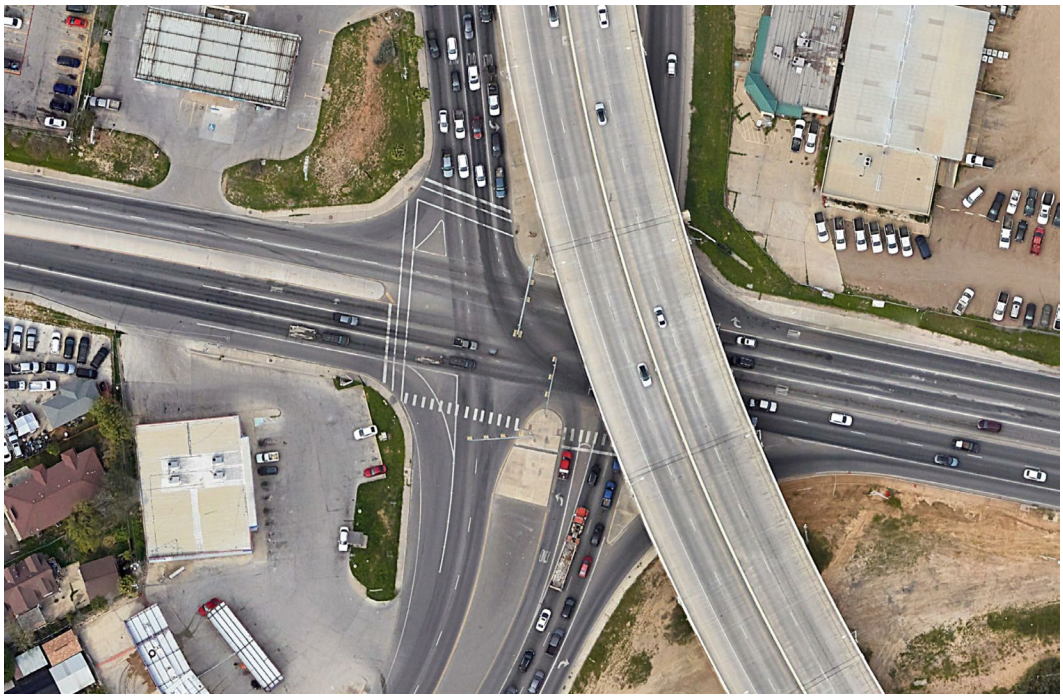

Figure 121 - Aerial view of interchange between Bob Bullock Loop and SH 359

Cuatro Vientos Boulevard

Existing medians provide opportunities to install pedestrian refuges on the west and south legs of the Cuatro Vientos Boulevard intersection. This will complement the existing upgraded sidewalks that pass through the area and cause drivers to take turns more slowly and safely.

Figure 122 - Aerial view of the intersection of SH 359 and Cuatro Vientos Boulevard

Concord Hills Boulevard/Santa Monica Drive

Concord Hills Boulevard had the most KSI crashes associated with pedestrians than any other intersection in the corridor. Pedestrian visibility may be improved by extending the existing medians on the side street approaches to provide pedestrian refuges.

Figure 123 - Intersection of Concord Hills Boulevard and SH 359

Ranch Road/Royal Oaks Street

The intersection of Royal Oaks Street and SH 359 should be fully signalized to provide a crossing opportunity to pedestrians accessing the commercial, industrial, and residential developments which are in close proximity.

Figure 124 - Intersection of SH 359 and Royal Oaks Street

Countermeasure Recommendations

Countermeasure recommendations for the SH 359 corridor are summarized in Table 140 and Figure 125. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs.

Table 140 - Recommended countermeasures for SH 359 corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	2,400 LF	$56,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	5 intersections	$1,500
Short (0-2 years)	Intersection	Advanced signal warning signage	Crosswalk visibility enhancements	All	.75	10 approaches	$1,600
Medium (2-5 years)	Segment	Install additional lighting	Crosscutting	All	.65	1.8 MI	$525,000
Medium (2-5 years)	Segment	Install vertical separation for bike lane	Roadway reconfiguration	All	--	3.6 MI	$1,573,000
Medium (2-5 years)	Intersection	Slip lane/median pedestrian refuge	Crosswalk visibility enhancements	All	.44	8	$52,000
Medium (2-5 years)	Intersection	Consolidate access points	Corridor access management	All	--	1	$11,000
Long (5+ years)	Segment	Install continuous sidewalks	Pedestrian/Bicyclist	All	.35	1.2 MI	$524,000
Long (5+ years)	Segment	Convert TWLTL to raised median	Roadway reconfiguration	All	.77	0.6 MI	$1,656,000
Long (5+ years)	Intersection	Implement full signalization at intersection	Signalization	All	.35 - .73	1	$258,000
						Total Cost	*$4,658,100.00*

Figure 125 - Recommendations map of the SH 359 corridor

Zapata Highway (US-83) from Cross Street to SR 359

Context

Zapata Highway functions as a principal arterial between Cross Street to SR 359. It is fronted primarily by highway commercial properties. From Cross Street to Zacatecas Street, Zapata Highway is a divided highway with two lanes in either direction and a 64-foot grass median. From Zacatecas Street to the SH 359 interchange, the road is a four-lane undivided highway with a concrete median giving way to left-turn lanes and a hardened centerline. The speed limit is 45 mph from Cross Street to Zacatecas Street and 35 mph from Zacatecas to the SH 359 interchange. South of Zacatecas Street, the highway has typical pavement width of 40 feet on either side of the grass median and a right-of-way width of approximately 230 feet. North of Zacatecas Street, the pavement width is approximately 82 feet with a right-of-way of approximately 120 feet. The corridor has an Average Annual Daily Traffic (AADT) of 38,818 south of SR 260 and 43,794 north of there.

Table 141 - Zapata Highway corridor basics

Street Name	Zapata Highway (US-83)
Extents	Cross Street to SR 359
Length	2.2 miles
Roadway Jurisdiction	TxDOT
Functional Class	Other Principal Arterial

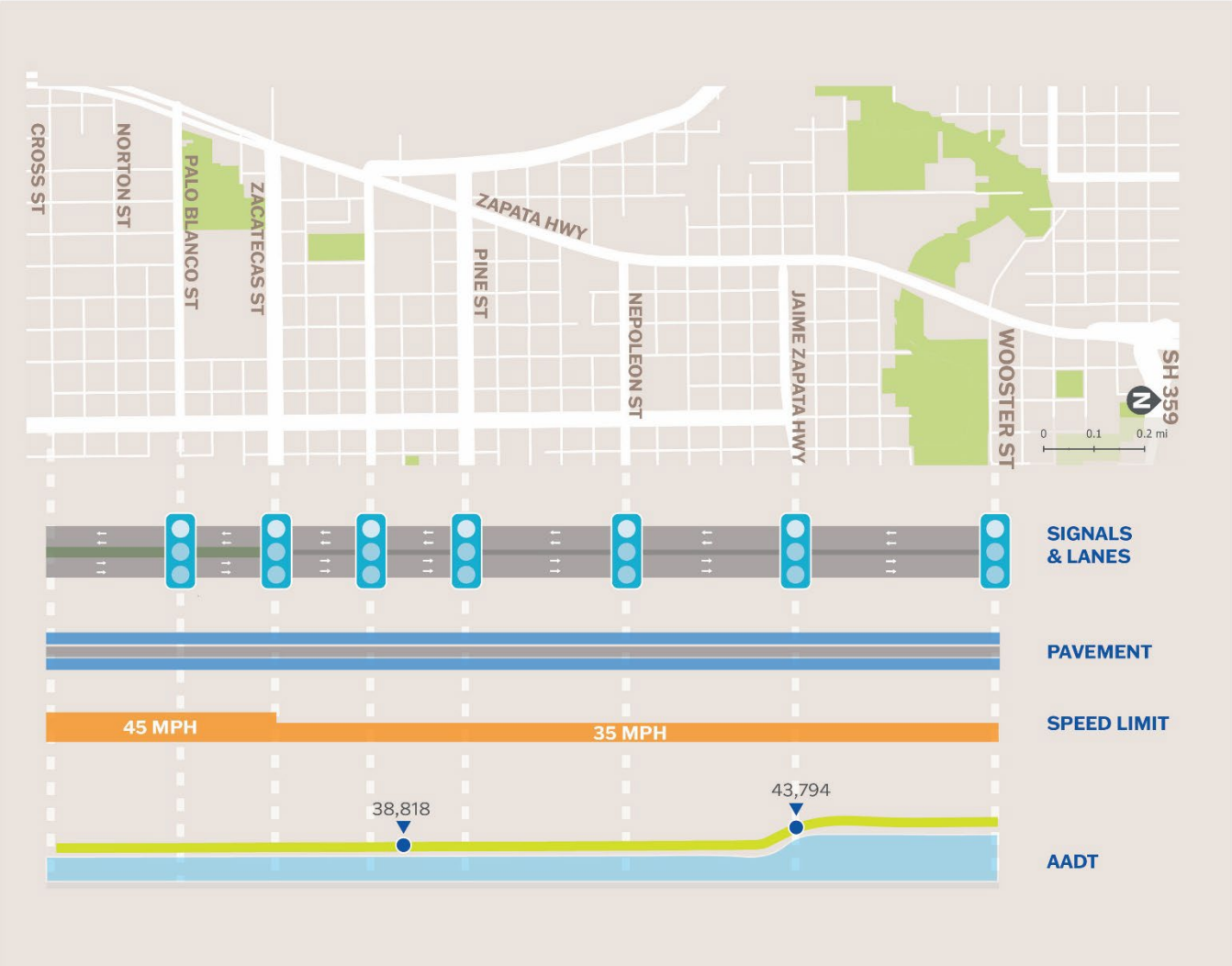

Figure 126 – Zapata Highway multimodal features

Crash History (2018 to 2022)

A crash data analysis was performed for the Zapata Highway corridor to understand the contributing factors to crashes in the corridor and identify focus areas for countermeasures. Table 142Table 6 shows the location types where all the crashes occurred. A majority of both total crashes and KSI crashes were located in or near an intersection.

Table 142 - Crash location (Intersection vs Mid-Block)

Crash Location	Total Crashes	% of Total	KSI Crashes	% of KSI Crashes	% of Crashes Resulted in KSI
Intersection	777	73%	12	75%	1.5%
Mid-Block	287	27%	4	25%	1.4%
Total	1064	100%	16	100%	1.5%

Figure 127 and Table 143 show the spatial distribution of crashes in the Zapata Highway corridor. It is apparent that most of the crashes occurred at intersections and KSI crashes occurred at intersections with signal control in place. The intersections with the most crashes were Jaime Zapata Memorial Highway, which also had the most KSI crashes, and Zacatecas Street. A majority of KSI crashes occurred near unsignalized intersections where left turns are prohibited by a hardened centerline, except for the Diaz Street intersection, which allows unsignalized left turns.

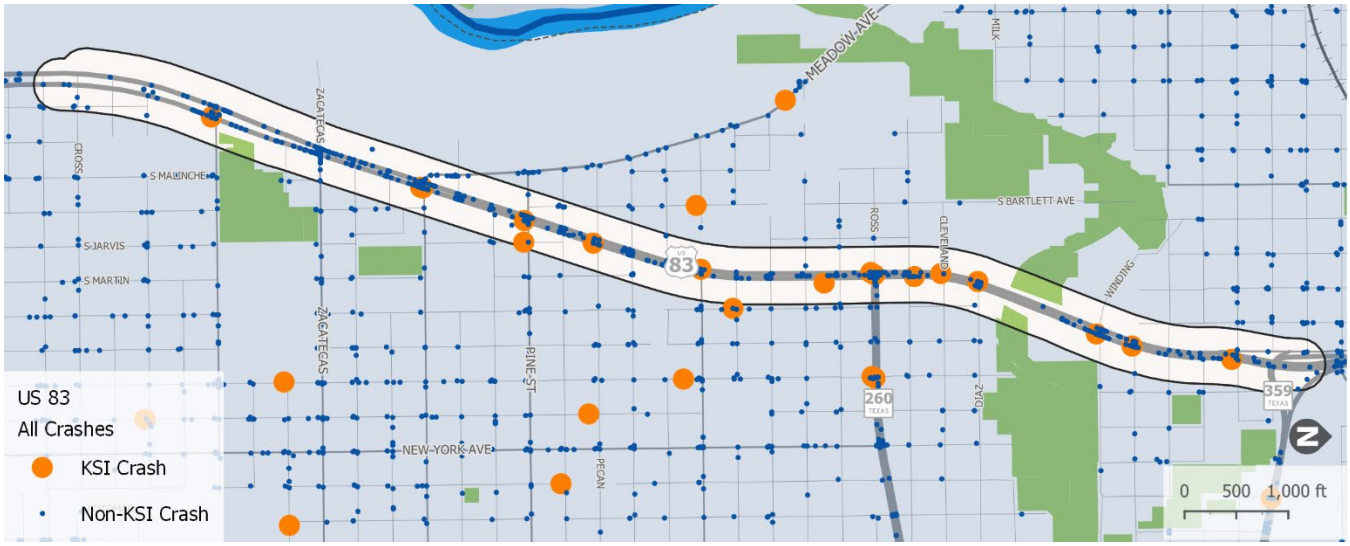

Figure 127 - Crash map of the Zapata Highway corridor

Table 143 – Convent Avenue intersections with highest crash incidence

Intersection	Total Crashes	KSI Crashes	Intersection Type
Jaime Zapata Memorial	206	3	Signalized
Zacatecas	131	0	Signalized
San Luis	125	2	Signalized
Palo Blanco	77	1	Signalized
Pine	68	1	Signalized

Table 144 shows the breakdown of crash modes in the corridor. The overwhelming majority of both total crashes and KSI crashes involved motor vehicles. Although motor vehicle crashes account for most of the KSI crashes in the Zapata Highway corridor, motorcycle crashes are more likely to result in a death or serious injury. The segment of Zapata Highway which is being analyzed was identified as part of a high injury network (HIN). The HIN modes in the Zapata Highway corridor include:

- Overall HIN
- Pedestrian HIN
- Motorcycle HIN
- Motor Vehicle HIN

Table 144 - Crash mode

Mode	Total Crashes	KSI Crashes	% of crashes resulted in KSI
Motor Vehicle	1036	12	1.2%
Pedestrian	18	1	5.6%
Motorcycle	7	3	42.9%
Bicycle	3	0	0.0%

Table 145 shows the top collision manners along the corridor. The most common crash manner was when one car crashed into the back of another car while stopped or traveling in the same direction. The most common KSI crash manner was when one car turned left into the path of another car and collided with it.

Table 145 - Crash collision manner

Crash Collision Manner	Total Crashes	KSI Crashes
Same Direction - One Straight-One Stopped	272	1
Same Direction - Both Going Straight-Rear End	215	2
Opposite Direction - One Straight-One Left Turn	146	6
Same Direction - Both Going Straight-Sideswipe	112	0
One Motor Vehicle - Going Straight	86	4

Most crashes occurred in daylight condition, as shown in Table 146. A higher proportion of KSI crashes occurred at night than in the daylight, indicating that dark conditions contribute to the severity of crashes.

Table 146 - Lighting conditions at crash site

Lighting Condition	Total Crashes	KSI Crashes
Daylight	758	9
Dark, Lighted	276	7
Dark, Not Lighted	19	0
Dusk	6	0
Dark, Unknown Lighting	3	0
Dawn	2	0

Table 147 shows the breakdown of factors that contributed to crashes in the corridor. The primary contributing factors to crashes included failing to control speed, which also led to six KSI crashes. This indicates that increasing driver attentiveness is critical to increasing safety along the Zapata Highway corridor. Failing to yield the right of way while turning left is the second most common crash contributing factor and shows that more opportunities to turn left safely must be provided.

Table 147 - Crash contributing factor

Crash Contributing Factor	Total Crashes	KSI Crashes
Failed To Control Speed	446	6
Failed To Yield Right Of Way - Turning Left	100	4
Changed Lane When Unsafe	87	0

Followed Too Closely	64	0
Backed Without Safety	43	6

Table 148 reports the number of crashes by the speed limit of the segment they occurred in. There is a higher crash density in the segment of the corridor with a speed limit of 35 mph than in the 45-mph segment. This is most likely due to the higher density of driveways and access points in the 35-mph segment. KSI crashes are also disproportionately higher in the 35-mph segment.

Table 148 - Speed limit at crash site

Speed Limit (mph)	Total Crashes	Total Crash Density (crashes/mi)	KSI Crashes	KSI Crash Density (crashes/mi)
35	919	540	15	8.8
45	145	290	1	2.0

Planned or Completed Safety Improvements

No improvements were recommended by the TxDOT Crash Analysis and Visualization product in this corridor, and none were identified in the 2025-2029 City of Laredo Capital Improvements Plan.

The Laredo District Bike Plan identifies Zapata Highway as an existing bikeway with a bikeable shoulder and designates it as having high bicycle need. Construction of an improved bikeway is planned and is ranked in the proactive and opportunistic prioritization tiers.

Several improvements were recommended for Zapata Highway in the TxDOT Pedestrian Safety Action Plan, including:

- Installing sidewalk
- Installing a shared use path
- Installing school zones
- Installing/upgrading lighting
- Traffic calming
- Conducting a speed limit study

Corridor Recommendations

Most crashes in the Zapata Highway corridor were caused by speeding or driver inattentiveness, and measures should be taken to reduce those types of crashes. The high number of crashes which occurred in the dark also indicated that visibility at night needs to be improved. A majority of the road in this segment has a paved shoulder between the edge of the outer lane and the curb, which provides drivers with large margins for error and encourages them to drive too quickly. The following countermeasures should be applied along mid-block segments of the corridor:

- Install additional corridor lighting
- Install vertical separation to convert existing paved shoulder into protected bike lane
- Consolidate access points

Figure 128 - Typical segment of Zapata Highway

Intersection Recommendations

Most of the crashes in the Zapata Highway corridor occurred at intersections. Six of the KSI crashes that occurred were a result of drivers failing to yield the right-of-way when turning left. There are also several instances of KSI crashes resulting from cars failing to control their speed and running into cars slowing or stopped at an intersection.

- Implement leading pedestrian intervals at all signalized intersections
- Eliminate permissive left (flashing yellow) and implement longer green arrow at all intersections
- Install/refresh high-visibility crosswalks at all signalized intersections
- Install continental style intersections at all unsignalized cross streets
- Install pedestrian signal heads at signalized intersections where they don't currently exist
- Upgrade curb ramps to meet ADA standards

Figure 129 - Typical signalized intersection on Zapata Highway (Meadow Avenue)

Figure 130 - Typical side street intersection on Zapata Highway (San Salvador Street)

Diaz Street and Boulanger Street

These streets have a traffic volume of less than 1000 vehicles per day that does not warrant the current breaks in the median that serve them today. The median should be closed, and drivers should make U-turns at the closest signalized intersections.

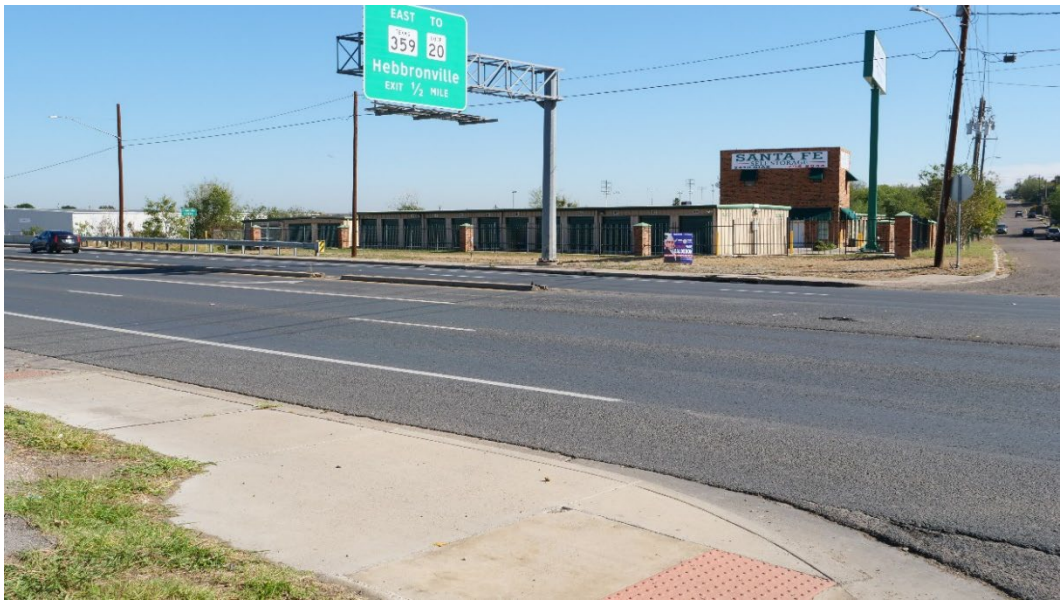

Figure 131 - Median break for Diaz Street on Zapata Highway

Mercer Street, Wooster Street, Jaime Zapata Memorial Highway, and Palo Blanco Street

Mercer Street, Wooster Street, Jaime Zapata Memorial Highway, and Palo Blanco Street all have long approaches leading up to them where drivers are more likely to speed and be caught off guard by these signalized intersections. Advance warning signs should be installed to alert drivers to the potential need to stop at traffic signals. There should be a warning sign on either side of the southern approach to Palo Blanco Street.

Figure 132 - Southern approach to Wooster Street on Zapata Highway

Countermeasure Recommendations

Countermeasure recommendations for the Convent Avenue corridor are summarized in Table 149 and Figure 133. Costs are based on TxDOT Bid Averages in fall of 2024 and project cost estimates from the 2025-2029 Laredo Capital Improvement Plan (CIP). Construction, engineering, and contingency are included in these costs.

Table 149 - Recommended countermeasures for the Houston Street corridor

Time Frame	Location	Recommendation	Countermeasure Type	Crash Type	CMF	Quantity	Cost
Short (0-2 years)	Intersection	Install/refresh high-visibility crosswalks	Crosswalk visibility enhancements	Pedestrian	.60	3100 LF	$75,000
Short (0-2 years)	Intersection	Implement leading pedestrian intervals	Crosswalk visibility enhancements	Pedestrian	.87	9	$2,700
Short (0-2 years)	Intersection	Eliminate permissive left (flashing left arrow)	Signalization	All	--	9	$2,700
Short (0-2 years)	Intersection	Advanced signal warning signage	Crosswalk visibility enhancements	All	.75	5	$780
Medium (2-5 years)	Intersection	Install pedestrian signalization across all intersection approaches	Crosswalk visibility enhancements	Pedestrian	--	16	$38,000
Medium (2-5 years)	Intersection	Upgrade curb ramps to ADA standards	Crosswalk visibility enhancements	Pedestrian	--	30	$164,000
Medium (2-5 years)	Segment	Consolidate access points	Corridor access management	All	--	17	$185,000
Medium (2-5 years	Segment	Install buffered bike lanes	Bicycle Lanes	All	.47	4.4 mi	$1,750,000
Long (5+ years)	Intersection	Close unsignalized left turns (install hard median)	Corridor access management	All	.77	0.27 MI	$745,000
						Total Cost	*$2,963,180.00*

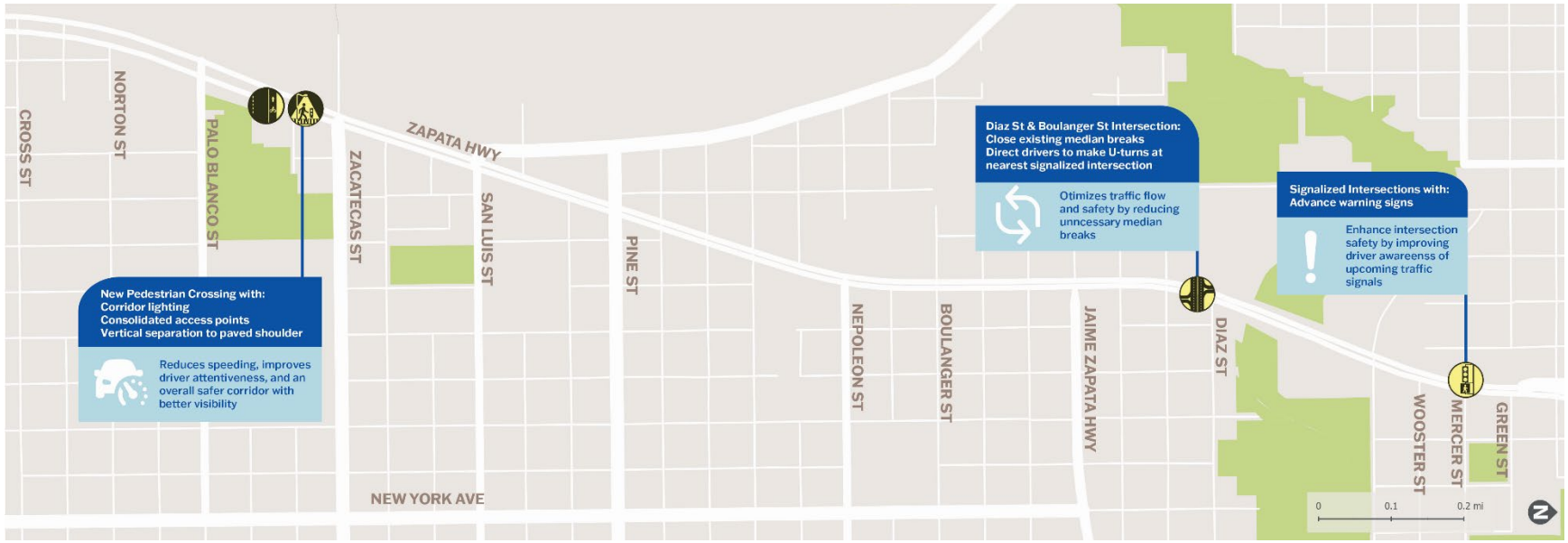

Figure 133 - Countermeasures map for the Zapata Highway corridor