Prepared by:
HNTB

North Laredo-Webb County Transportation Planning Study

Final Report – March 2020

Webb County - City of Laredo Regional Mobility Authority

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Executive Summary

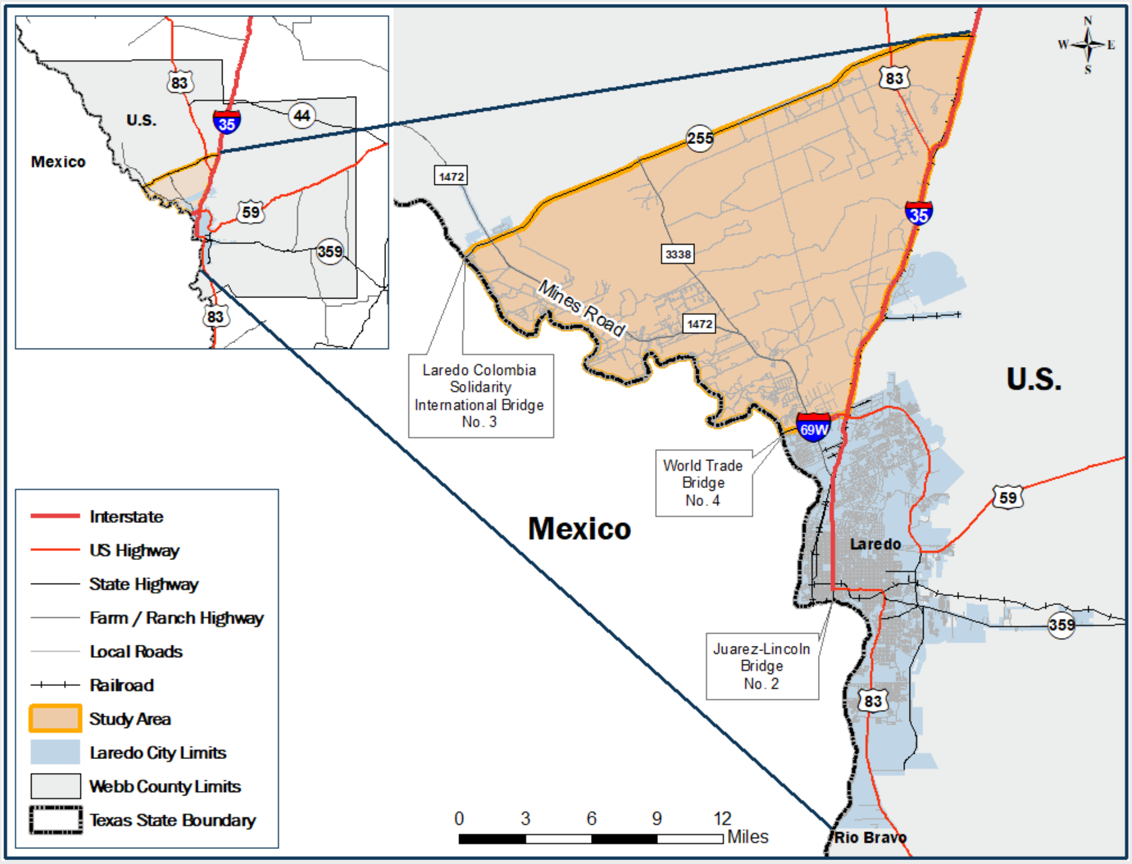
The purpose of the *North Laredo-Webb County Transportation Planning Study* is to provide a clear assessment of mobility conditions in an area northwest of the IH-35/IH-69W interchange (North Laredo), and to provide a roadmap for growing the transportation network to meet existing congestion and increasing mobility demands into the future. The Webb County-City of Laredo Regional Mobility Authority (RMA) was identified by the Laredo Metropolitan Planning Organization (MPO) Policy Committee as the appropriate entity to take the lead on this effort. The RMA's mission is to assist with the establishment of a comprehensive transportation system to directly benefit the traveling public within the region through the development of additional transportation alternatives. This mission fits the intent of this study, which is to conduct a detailed analysis of the existing transportation infrastructure of North Laredo and identify potential alternatives comprehensively.

Challenges in a Growing Region

FM 1472–Mines Road

As one of the few on-system roadways in this highly developed part of North Laredo, FM 1472 has become the busiest roadway in the region, carrying 60,000 vehicles daily, 60% of which are freight trucks due to its proximity to the World Trade Bridge commercial port-of-entry and the freight-supportive land uses that predominate the area surrounding FM 1472. This study is meant to provide a clearer understanding of how the conditions on FM 1472 might be addressed from a transportation network perspective rather than solely making improvements to FM 1472.

Figure A – Regional Context and Study Area



International Trade in Laredo-Webb County

The Laredo region is projected to grow by more than 160,000 people between 2010 and 2040, which is akin to adding the population of Brownsville to Laredo. This population growth has generated new travel demands on the roadway network from people commuting to work or school, or those heading to shop or socialize. This increase in travel leads to congestion, longer wait times, and slower speeds in certain areas.

In addition to this local growth, the Laredo port-of-entry is the busiest crossing along the U.S.-Mexico border with 37% of all trade between the countries coming through, or more than $228 billion in trade annually totaling 2.3 million trucks traveling north into Laredo. This translates to thousands of trucks on the local roadway network every day. The continued success of Laredo as a trade hub of state, national, and global significance will lead to the growth of freight transport through the city. This is a boon to the economy, but also brings with it planning and transportation challenges as trucks and passenger vehicles share the road.

To fully understand the presence and amount of freight truck operations within the study area, it is critical to consider how the freight drayage system operates between both sides of the border. Due to restrictions on long-haul freight operations in the United States by Mexican trucks, freight almost always crosses the border in a drayage truck. Drayage refers to a short-haul segment of the supply chain where cargo is transported from one site to another, though not the entire distance of its trip. Most of the 13 industrial areas in Laredo that drayage trucks serve are in proximity to World Trade Bridge, which is why nearly 90% of trucks crossing into Laredo use that port-of-entry. This translates to roughly 7,500 trucks daily crossing into the southern part of the study area. Annual growth in truck traffic has recently been as much as 8%. At this rate, U.S. Customs and Border Protection estimates that the World Trade Bridge could reach its daily capacity to process trucks within 10 years, meaning that additional freight traffic might be expected to cross at Colombia Solidarity or a new crossing.

For every cross-border drayage trip, between one and two non-cross-border trips take place, typically making point-to-point trips within Laredo to consolidate loads with the goal of taking fully loaded trucks back across into Mexico. To transport freight to its destination in the U.S. interior, a U.S. long-haul truck will then pick up the cargo before departing primarily up the IH-35 corridor. Because of this system, cross-border freight transportation can result in several individual truck trips in the study area such as traveling from either the World Trade or Colombia Solidarity Bridges to a warehouse or yard, traveling between warehouses or industrial areas within Laredo, and long-haul trucks bringing cargo to Laredo, then transporting cargo out into the U.S. interior. As U.S.-Mexico trade continues to grow, drayage activities will continue to increase, resulting in additional trips by freight trucks on the roadway network.

Study Approach

As a starting point, this study set a baseline with projects within the study area listed in the *Transportation Improvement Plan (TIP)*, which is a fiscally constrained capital project listing related to the Laredo MPO's federal Metropolitan Transportation Plan (MTP). The study area defined for this effort is consistent with the *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)* study (see **Figure A**), and key network improvement recommendations from this report served as a starting point for future investment prioritization considerations. Over the course of this study, potential roadway improvements began to emerge as possible solutions for addressing congestion in the study area. The *Future Thoroughfare Plan*, included as part of the *VIVA Laredo Comprehensive*

Plan, served as the ultimate future roadway framework for this study. As the study progressed, certain modifications to that plan were identified as necessary to address current and future mobility conditions, which are explained in **Section 3**.

Study Goals

The goals for this study were derived from previous goals set forth by the community through the process of developing the *2015-2040 Laredo Metropolitan Transportation Plan* (MTP) and *Viva Laredo Comprehensive Plan*, and further informed by findings from the *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)* study and feedback gathered from stakeholder engagement early in the overall study process. The goals of the North Laredo Webb County Transportation Planning Study are:

- Identify feasible projects that will help manage congestion impacts in North Laredo
- Promote safety for all users of the transportation network
- Improve overall transportation network connectivity and resiliency in North Laredo
- Coordinate implementation and planning efforts comprehensively with the international bridges, port-of-entry logistics and the freight network
- Coordinate private land development and public investments in mobility infrastructure
- Promote efficient movement of goods while reducing impacts of freight operations on neighborhoods and sensitive lands

Public and Stakeholder Involvement

Arguably one of the most important sources of input to this study, public and stakeholder involvement played a critical role in establishing study goals, vetting potential roadway network solutions and gathering feedback on priorities. The RMA Board served as the initial stakeholder on August 20, 2019 to help establish the study purpose and outline goals. Once baseline project information and potential solutions were developed further, including limited cost, right-of-way and environmental information, a series of stakeholder meetings were held to gather input. These meetings included major stakeholders such as city, county, state, and federal officials; transportation authorities, the MPO, as well as schools in the area, the business community, and emergency and medical services providers. The meetings were held September 16-18, 2019 to gain a better understanding of critical issues in the area, share initial ideas and discuss potential impacts. This series of meetings offered details about various operations and future development as well as specific knowledge about the study area.

Following these meetings, updates were provided to the MPO and RMA Boards on October 21 and 22, 2019 respectively. Study goals, existing conditions, future projections, and preliminary transportation solutions were presented at a public meeting, held at Julia Bird Jones Muller Elementary School on November 6, 2019. A general presentation about the study and some of the initial findings was provided to 65 attendees, most of which were from La Bota Ranch or other neighborhoods in the study area. More detail from the public involvement can be found in **Appendix E**.

Study Recommendations

The roadway network in the area will need both new roadway connections and added roadway lane capacity. Improvements would also include a safe pedestrian environment and safe routes for cyclists to use. Special design considerations will be required to accommodate the large volume of truck traffic within the study area. In addition, alternative routes will provide area residents improved access to the highway network while allowing for minimal interaction with high truck volumes. Understanding the complex combination of needs within the study area provides necessary insights into how best to address congestion, enhance safety and plan for future growth.

To maximize safety for traffic crossing between the east and west sides of IH-35, any new intersections will need to be elevated to allow for at least 23’4” of clearance over the Union Pacific Railroad, which runs directly adjacent to the east side of IH-35. Access to IH-35 and connectivity across the interstate is essential to keep traffic flowing and maximize the number of alternative routes in the network. Any interchange proposed in this study includes a bridge structure over the mainlanes and adjacent railroad, and access to that bridge, including retaining walls, pavement, and signage. Each interchange should also provide safe passage for pedestrians and cyclists, matching the proposed cross-section for each road crossing the highway.

To satisfy the goal of promoting safety for all users of the transportation network, this study includes recommendations for providing sidewalks and bike facilities, and highlights opportunities for improved transit service into and out of the study area. Considering a setting where people are waiting for their bus, walking, or moving through the area on bike, the travel environment should be held to a much higher standard of safety and quality for all users, regardless of quantity or mode split.

Proposed Capital Projects

A comprehensive listing of the capital projects recommended in this study can be found in **Table A**. There are both individual projects and packages of multiple projects in the list. In most cases where multiple projects have been packaged, the projects are divided into phases such as a highway interchange or highway widening. In a few cases, projects have been categorized into “Pedestrian/Bike Improvement Projects.” In those cases, projects are in related packages composed primarily of improvements on different, but related roadways. In all cases where there is a package of projects, each individual project component identified has been given a letter to differentiate it from the other components.

Projects are listed by short-, mid- or long-term and include a planning-level opinion of probable construction cost. As the project becomes more defined and progresses through the project development process, there can be more certainty on what the likely total project cost will be, so over the course of developing the project, its cost estimate can be expected to change. Costs are based on each project’s intended cross-section, understanding which aspects of that section need to be built, calculating the length of the improvement, quantifying materials needed to construct the project and then calculating a cost based on unit prices from recent similar TxDOT and City of Laredo capital projects. Costs shown in this section are planning-level estimates rounded up to the nearest thousand dollars. It should be noted that the costs included in this study represent an estimate of probable costs prepared in good faith and with reasonable care. The costs of construction labor, materials, equipment, internal staffing and operations structure, or results from bidding cannot be controlled.

Looking at the costs in **Table A**, a few things stand out. First, is that projects identified as a short-term priority together cost much less than those identified as mid- and long-term. Three of the five short-term projects are also fully or partially funded, while none of the mid- and long-term projects have any funding identified. Pedestiran/Bike Improvement Projects are also much less expensive than full roadway projects primarily due to many of these being restricted to the implementation of sidewalks without substantial roadway modifications. Another notable item about the costs is that the combination of all short- and mid-term projects equals a fraction of the probable cost of converting FM 1472 to a full freeway. It is not just that these projects are less expensive, but they are indeed necessary to help manage congestion by providing alternate routes and connectivity for the ultimate build-out of FM 1472 to function properly once it comes on line.

Table A – Comprehensive table of recommended capital projects for North Laredo

North Laredo-Webb County Transportation Planning Study
Project List combined with Schedule accounting for Inflation

Page #	Facilities	FY19 Total Cost (2019 $)	YOE Total Cost	Opening Year	Const. Duration (Years)
				Implementation timeline provides planning tool to assess costs over time. This is *not* a final cash flow.	
	Capital Cost Inflation Factor			update as appropriate	
42	**FM 1472 - Mines Road Capacity Upgrades**	$ 18,905,000	$ 19,909,000	2022	2
43	**Milo Road Extension**	$ 14,713,000	$ 16,598,000	2024	2
44	**Hachar Parkway**	$ 55,530,000	$ 60,526,000	2023	2
45	**Pedestrian/Bike Improvement Projects I**	$ 5,610,000	$ 6,438,000	2024	1
46	**Vallecillo Road**	$ 31,471,000	$ 34,302,000	2023	2
		$ 126,229,000	**$ 137,773,000**		
47	**Aquero Boulevard**	$ 59,134,000	$ 71,462,000	2026	2
48	**Carrier Drive Extension**	$ 5,255,000	$ 6,136,000	2025	2
49	**Sara Road & Milo Road Widening**	$ 39,163,000	$ 49,846,000	2028	3
50	**Hachar Parkway Extension**	$ 79,461,000	$ 108,554,000	2032	7
51	**Pedestrian/Bike Improvement Projects II**	$ 12,239,000	$ 15,045,000	2026	1
52	**Port Drive Widening & Extension**	$ 24,742,000	$ 33,170,000	2030	4
53	**Uniroyal Drive Widening & Extension**	$ 31,315,000	$ 41,982,000	2030	4
54	**Vallecillo Road Extension**	$ 40,887,000	$ 49,411,000	2026	2
55	**FM 3338 - Las Tiendas Road Widening**	$ 45,000,000	$ 60,293,000	2029	2
56	**International Boulevard Extension**	$ 15,889,000	$ 19,873,000	2027	2
57	**McPherson Road Extension**	$ 21,096,000	$ 26,386,000	2027	2
58	**United Avenue Extension**	$ 16,799,000	$ 21,012,000	2027	2
		$ 390,980,000	**$ 503,170,000**		
59	**FM 1472 - Mines Road Widening to Freeway**	$ 772,674,000	$ 1,148,501,000	2033	4
60	**North-South Boulevard (unnamed)**	$ 137,807,000	$ 197,909,000	2032	4
61	**Trade Center Boulevard Extension**	$ 28,241,000	$ 43,447,000	2034	4
62	**Verde Boulevard Extension**	$ 70,112,000	$ 117,508,000	2036	3
63	**East-West Boulevard (unnamed)**	$ 174,827,000	$ 336,238,000	2040	3
64	**Sara Road Extension**	$ 103,068,000	$ 185,047,000	2038	3
65	**TX 255 Widening**	$ 129,388,000	$ 248,847,000	2040	3
		$ 1,416,117,000	**$ 2,277,497,000**		
	TOTAL PASSENGER FACILITY CAPITAL COST				
	Assumptions				
	Construction Cost Escalation Rate	3.5%			

Implementation Plan

Each capital project is implemented through a process of defining, planning and designing in order to get to construction. Each of these phases requires funding and resources to get to the next phase of implementation. Because there is limited funding and resources, the projects recommended in this study have been prioritized. The implementation process in **Figure B** applies to each of the projects in this study.

Each individual project schedule will be revisited and defined in more detail as part of the scoping discussions during the project initiation phase. In **Table B**, a comprehensive listing of all the projects described in **Section 4** and their respective schedules are simplified further and shown together. The colors represent different phases and they are placed in the year those activities can be generally expected to occur. The number at the end of the estimated construction timelines indicate the year the project can be expected to open for use. The short-, mid- and long-term priorities reflect the time period when a project can be expected to be completed. As illustrated in **Table B**, even if a project is characterized as mid- or even long-term, there are still several activities that must occur in the short-term to deliver the project on time.

Figure B – Typical capital project development process

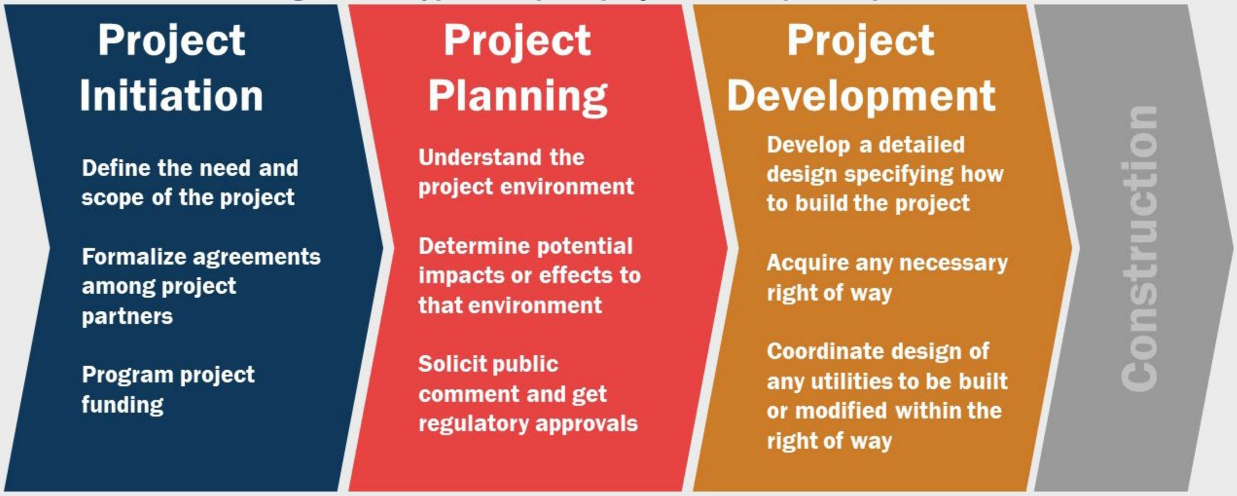


Table B – Comprehensive table of estimated project schedules

Estimated Schedules for Recommended Projects

Page #	Project	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
42	FM 1472 - Mines Road Capacity Upgrades			22																		
43	Milo Road Extension					24																
44	Hachar Parkway				23																	
45	Pedestrian/Bike Improvement Projects I					24																
46	Vallecillo Road				23																	
47	Aquero Boulevard							26														
48	Carrier Drive Extension						25															
49	Sara Road & Milo Road Widening									28												
50	Hachar Parkway Extension									28		30		32								
51	Pedestrian/Bike Improvement Projects II							26														
52	Port Drive Widening & Extension									28		30										
53	Uniroyal Drive Widening & Extension									28		30										
54	Vallecillo Road Extension							26														
55	FM 3338 - Las Tiendas Road Widening										29											
56	International Boulevard Extension								27													
57	McPherson Road Extension								27													
58	United Avenue Extension								27													
59	FM 1472 - Mines Road Widening to Freeway														33							
60	North-South Boulevard (unnamed)											30		32								
61	Trade Center Boulevard Extension													32		34						
62	Verde Boulevard Extension																	36				
63	East-West Boulevard (unnamed																					40
64	Sara Road Extension																			38		
65	TX 255 Widening																					40

* Project component recommended as long-term

Initiation | Planning | Development | Construction

Next 24 Months

There are many moving parts to any implementation plan. This plan is primarily focused on projects in North Laredo-Webb County and other considerations may need to be part of the plan moving forward. A brief list of next steps is provided below, outlining key points in this process that should be met over the next 24 months:

- Identify key partners and determine commitments to the first five years of this plan
- Determine how to formalize partnerships for funding projects in the plan
- Finalize funding for Vallecillo Road and Hachar Parkway
- Determine how to formalize partnerships for data collection and sharing
- Determine approach for Travel Demand Model Update and Data Collection Plan
- Identify funding for first set of Pedestrian/Bike Improvements and Milo Road Extension
- Identify Project Development funds for Aquero Boulevard and Carrier Drive extensions
- Identify funds for investment in Travel Demand Model update
- Proceed with Plans, Specifications & Estimate (PS&E) on Vallecillo Rd. and Hachar Pkwy.
- Begin environmental process and schematic design on Milo, Aquero and Carrier
- Finalize funding for Milo, Aquero, Carrier and first set of Pedestrian/Bike projects

Queue of freight trucks headed southbound on FM 1472 waiting to turn left onto Killam Industrial Boulevard.

1 Study Background

This section provides an introduction to this study including its purpose, the goals and a description of the study area. The methodology and schedule of this study is described as well as a series of related capital projects already being considered in or adjacent to the study area.

Transportation Planning Study Introduction

The *North Laredo-Webb County Transportation Planning Study* (study) is an effort to gain a better understanding of the mobility issues in an area northwest of the IH-35/IH-69W interchange and identify ways to reduce congestion and improve safety for the traveling public. Originally intended to be a planning and environmental linkages (PEL) study specific to expanding FM 1472–Mines Road into a freeway, local leaders decided it would be best to first take a step back and look at the area around FM 1472 more comprehensively. As the only way to get in and out of the area via IH-69W, FM 1472 has become the busiest roadway in the region, carrying 60,000 vehicles daily, 60% of which are freight trucks[1] due to its proximity to the World Trade Bridge commercial port-of-entry and the freight-supportive land uses that predominate the area surrounding FM 1472.

The Laredo Metropolitan Planning Organization (MPO) Policy Committee made the decision to fund this study and partner with the Webb County-City of Laredo Regional Mobility Authority (RMA) and the Texas Department of Transportation (TxDOT) Laredo District to conduct the study. This is meant to provide a clearer understanding of how the conditions on FM 1472 might be addressed from a transportation network perspective rather than solely making improvements to FM 1472. The MPO Policy Committee, composed of a mix of elected officials from the City of Laredo and Webb County as well as the TxDOT Laredo administration, were looking for big ideas and a broader perspective on how to address current and future congestion in the area.

The RMA was identified as the appropriate entity to take the lead on this effort. The RMA's mission is to assist with the establishment of a comprehensive transportation system to directly benefit the traveling public within the region through the development of additional transportation alternatives. This mission fits the intent of this study, which is to take a step back and identify potential area-wide alternatives.

Organization of the Report

This study report is split into five sections followed by six appendices, which are described below:

1. **Study Background** – Describes the study area, goals, methodology and related projects.
2. **Identifying Needs** – Discusses network and project-level needs and the physical conditions of the study area including data on truck presence and ports-of-entry.
3. **Exploring Solutions** – Discusses mobility solutions in broad terms concerning functionality of recommended improvements.
4. **Defining Projects** – Includes description of project development process and detailed descriptions of each proposed project including cost estimates and proposed phasing.
5. **Implementation Plan** – Describes project schedules, program schedule and what needs to be done in the first five years of implementation.

   Appendices – There are six appendices that each provide more detail on the work that fed into the recommendations found in this report. Appendices include: A) Studies Done to Date; B) Existing and Future Conditions; C) Traffic Analysis; D) Environmental Constraints; E) Public & Stakeholder Involvement; and, F) Cost Estimates.

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[1] *Traffic Analysis for Highway Design Forecast*. TxDOT Traffic Analysis Section, February 2015

Regional Context and Study Area

Laredo is located in South Texas in the western part of Webb County on the Rio Grande River along the border between the United States and Nuevo Laredo, Tamaulipas, Mexico. In addition, Laredo is located about 150 miles southwest of San Antonio and 135 miles west of Corpus Christi and is the county seat and largest city in Webb County. The Laredo MPO area that includes Rio Bravo, located to the south of Laredo, and parts of Webb County contained approximately 276,656 people in 2013 and is expected to grow rapidly to approximately 408,178 people by the year 2040. The adjacent city of Nuevo Laredo, Mexico, has a population of over 384,000.[2]

Laredo is approximately 102 square miles in size and is located on the southern end of the IH-35 corridor. The location along the I-35 corridor, adjacency to Mexico, four international bridges, and one railway bridge makes the city very accessible for international trade with Mexico. As a result, it is the largest inland port in the United States. The Laredo Customs district is the third-busiest U.S Customs district and reached a total of $228 billion in trade over a 12-month period over 2018-2019, making commercial vehicle traffic a vital component for trade through the region and among its highest traffic and economic generators.[3] The employment in the Laredo MPO area is growing at a fast pace and is expected to grow by more than 50 percent by 2040. The number of jobs in the city was estimated to be approximately 106,000 in 2013 and is estimated to grow to approximately 178,000 jobs in 2040, an addition of over 70,000 jobs.[4]

The study area for this analysis covers the northernmost part of Laredo and an adjacent part of western Webb County, bounded by the Rio Grande, SH 225, IH-35, and IH-69W. **Figure 1** shows the study area, outlined in orange. The boundaries of the study area were defined as:

- Northern boundary – SH 255 from the Rio Grande to IH-35
- Eastern boundary – IH-35 from SH 255 to I-69W
- Southern boundary – IH-69W from IH-35 to the Rio Grande
- Eastern boundary – Rio Grande from IH-69W to SH 255

Several other related industrial areas are located along IH-35 with expansion of additional developments on the east side of IH-35 expected to come on line in the near future. While this is technically outside this study area, there are synergies between the activities occurring in both areas. Over the course of this study, this was considered, and recommendations were also made for those areas outside the study limits.

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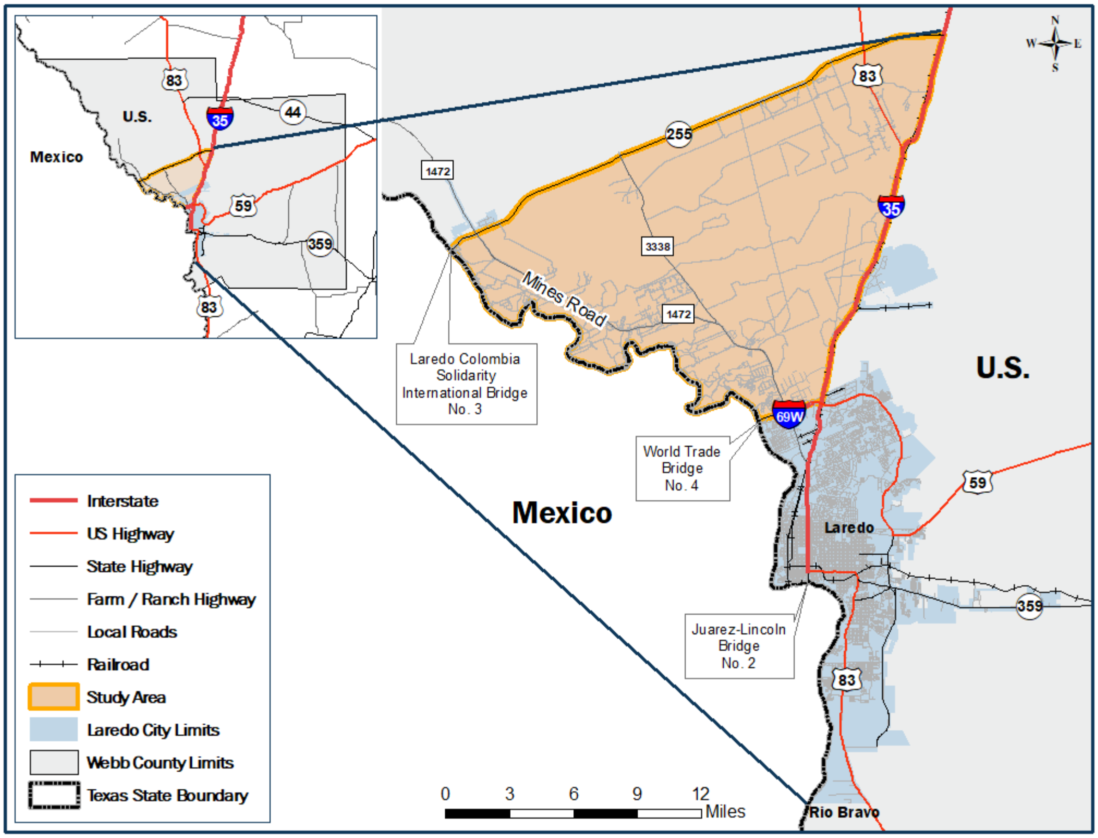
[2] *Laredo Metropolitan Transportation Plan (2015-2040)*. Laredo MPO, 2015 http://www.laredompo.org/mtp.html

[3] Bureau of Transportation Statistics, TransBorder Freight Data. https://www.bts.gov/transborder, accessed December 2019.

[4] *Laredo Metropolitan Transportation Plan (2015-2040).*

Figure 1 – Regional Context and Study Area



Framework of this Study

Purpose and Goals

The purpose of the *North Laredo-Webb County Transportation Planning Study* is to provide a clear assessment of mobility conditions in North Laredo and to provide a roadmap for growing the transportation network to meet increasing mobility and safety demands into the future. Mobility within the study area is limited and primarily characterized by freight truck operations. To best determine what and how to assess mobility conditions in this environment, this study is guided by a set of established goals that provide a framework for the assessment and subsequent recommendations for mobility improvements in the area.

The goals for this study were derived from previous goals set forth by the community through the process of developing the *2015-2040 Laredo Metropolitan Transportation Plan* (MTP) and *Viva Laredo Comprehensive Plan*, and further informed by findings from the *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)* study and feedback gathered from stakeholder engagement early in the overall study process.

Upon completing a series of assessments related to the mobility conditions within the study area, several possible solutions were explored that translate into defined capital projects, which have been organized as an implementation plan in **Section 5**. Solutions recommended as part of the implementation plan were expected to be feasible, manage congestion, promote safety for all, consider and remain sensitive to other interests in the area, including neighborhoods and environmental resources, and contribute to promoting overall mobility in this part of Laredo and Webb County.

Study goals are stated in **bold** and each described in further detail below:

Identify feasible projects that will help manage congestion impacts in North Laredo
Perhaps the most pervasive need throughout the North Laredo-Webb County study area is to address roadway congestion. The causes and types of congestion in the study area are quite unique and therefore require solutions that accommodate large truck volumes. Any solutions that end up in the implementation plan must be feasible (i.e. reasonable cost and acceptable impacts).

Promote safety for all users of the transportation network
The most common vehicles on major public roadways in North Laredo are freight trucks. This requires larger scale infrastructure than typical roads in order to improve how congestion can be managed. While this is important to the economy, there are families living in neighborhoods, children being transported to school, and employees using the bus and walking or riding their bike for portions of their trips. When developing solutions, they must always promote safety for all users of the transportation network.

Improve overall transportation network connectivity and resiliency in North Laredo
Development in the study area began slowly off of FM 1472 just north of Milo Road just before construction of the World Trade Bridge. As both sides of Mines Road continued to flourish, the road network in the study area was extended only as needed for the next development. Alternatively, individual transportation improvements must be looked at from a network perspective. To better manage congestion and promote safety for all users, the roadway network should have alternative routes and complete connections to provide options and increase mobility.

Coordinate implementation and planning efforts comprehensively with the international bridges, port-of-entry logistics and the freight network
World Trade Bridge is a commercial port-of-entry providing an exclusive border crossing for cross-border freight truck operations. Its location provides direct access to IH-69W and IH-35. Land uses north of IH-69W along FM 1472 primarily support the cross-border freight truck operation, placing thousands of trucks on the public road network each day. Mobility challenges and solutions in the area are tied together and should be coordinated.

Coordinate private land development and public investments in mobility infrastructure
Taking a network approach to planning roadway infrastructure projects requires identifying strategic improvements, prioritizing them, and putting them in the queue for funding and implementation. As the road network grows, property adjacent to the road becomes available for development. Likewise, a better-connected road network benefits all users in the system. Private land development and public investment should be coordinated in terms of when it will occur and how much space should be reserved to meet current and future mobility needs.

Promote efficient movement of goods while reducing impacts of freight operations on neighborhoods and sensitive lands
While there is a high emphasis on finding transportation solutions that address freight traffic congestion, they should also address the impact freight traffic has on surrounding neighborhoods and undeveloped areas. As solutions to the challenge of managing congestion are considered, they should not advance at the expense of residents living in the area or by compromising the integrity of natural resources.

Study Methodology

Individual capital projects are the primary components of any capital improvement plan and are often described and discussed in terms of project-specific costs, impacts and benefits. Too often, roadway infrastructure improvements are considered in a way that addresses an immediate localized need rather than a more global network need. In considering potential solutions to congestion within the North Laredo-Webb County study area, potential outcomes should be evaluated at both the network and project-level.

Congestion in the study area is not solely occurring due to the failure of a single roadway or intersection, but by presuming that a unique set of different types of daily freight truck operations can work normally on a conventional roadway network with limited connectivity and limited comprehensive traffic management of the system. To address congestion in this environment, solutions must be considered on a network-level, which can be translated down into a series of strategic individual projects.

Projects are also considered for implementation in the short-term, mid-term and long-term. Potential short- and mid-term projects were identified as those that might have an immediate impact as soon as they can be funded and delivered, while long-term projects provide a framework that development of earlier projects should include in their planning and schematic phases. As short- and mid-term projects are implemented, market demands and long-term priorities may change and should be revisited.

While the scope of this study is primarily concerned with addressing congestion within the study area, the fact is, that other supportive freight logistics and operations infrastructure is beginning to develop along IH-35 up as far as mile-marker 13. Similarly, El Metro bus service into the study area may be able to improve should new transit infrastructure be implemented just outside of the study area boundary. Though this study is focused on a specific geographic boundary, project and land development conditions adjacent to the study area will have direct implications on mobility conditions within the study area. Over the course of executing this study, attributes and potential roadway projects outside the study area have been identified as relevant and therefore included in this discussion.

Table 1 – North Laredo-Webb County Transportation Planning Study Schedule

Building on Previous Work

The Laredo community has engaged in some critical community planning efforts over the previous five years that played an instrumental role by not only identifying the need to directly address mobility challenges in the study area, but by providing a comprehensive framework for how Laredo would like to grow. This study uses the first three studies listed below [*] as its starting point along with supporting information from a series of other studies also listed:

- Laredo Metropolitan Transportation Plan (2015-2040)*
- Long-Range Strategies to Improve Traffic Conditions on FM1472 (Mines Road)*
- VIVA Laredo – City of Laredo Comprehensive Plan*
- Laredo Trade Numbers – 2018
- El Metro Transit Development Plan
- Characterizing Drayage Activities and Emissions in the Laredo-Nuevo Laredo Airshed

As a starting point, this study set a baseline with projects within the study area listed in the *Transportation Improvement Plan (TIP)*, which is a fiscally constrained transportation project listing related to the MPO's MTP. The study area defined for this effort is consistent with the *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)* study, and key network improvement recommendations from this report served as a starting point for future investment prioritization considerations. Over the course of this study, potential roadway improvements began to emerge as possible solutions for addressing congestion in the study area. The *Future Thoroughfare Plan*, included as part of the *VIVA Laredo* plan, served as the ultimate future roadway framework for this study. As the study progressed, certain modifications to that plan have been identified as necessary to address current and future mobility conditions, which are explained in **Section 3**.

In addition to previous studies, land development plans were obtained from the City of Laredo and through the Stakeholder meetings held between September 16-18, 2019. This provided an understanding of where short- and mid- term land development was going to occur, therefore informing where key investments might be made to the benefit of the overall network and provide some degree of input to the prioritization of those key investments. This not only provides insight into where development will occur, but how much additional traffic might be generated as a result of that development. It also highlights opportunities to partner with private interests in the delivery of major capital investments in the overall transportation network.

Although warehousing and freight developments are common in the study area, neighborhoods are interspersed within. Likewise, because of the warehousing, the southern portion of the study area is a major employment center in north Laredo and Webb County. During the Stakeholder meetings, officials from El Metro and United Independent School District (UISD) provided insights into their operations and experience with transporting passengers in the study area. UISD identified key routing they use today that could be improved by establishing alternative routes and key connections within the system. El Metro identified Route 17 as the fourth most productive route in the transit system and informed the discussion about active bike use and lack of sidewalk infrastructure. El Metro also identified the need for a North Transit Center that if implemented, could help with restructuring bus routes and potentially improving the quality of transit service in north Laredo. When developing transportation solutions as part of this study, and subsequently when contemplating prioritization of individual capital projects, the following considerations informed whether a solution was consistent with our study goals and how potential projects might be prioritized:

- Supports and is consistent with previous studies
- Supports local and regional Capital Improvement Plans
- Is consistent with known land development plans
- Supports and potentially improves El Metro & UISD operations and safety

Potential Environmental Constraints

Environmental constraints were reviewed at a high-level to get a basic understanding of some of the potential challenges that could be expected as a project progresses through the project planning process. Impacts that were considered in this planning study include potential right-of-way, displacements, disruptions during construction and potential impacts to the human and natural environments. While this was not meant to be a thorough environmental analysis, it does provide some insight into the likelihood of running into issues once the formal environmental process commences.

The more developed area in the south of the study area is expected to have more impacts to the human environment and disruption during construction, while the less developed lands in the northern part of the study area are expected to have greater impact to the natural environment. Because of the higher impact and greater disruption characteristics related to potential capital projects expected in the southern portion of the study area, individual projects were identified and given an informal rating based on data collection and local knowledge and familiarity with the area. These ratings are primarily meant to identify which projects may be more difficult to implement or require a higher level-of-effort to get environmental clearance, and are primarily reflected in the estimated project schedules found in **Section 5**. When considering potential environmental impacts, the following factors were considered:

- Natural resource impacts
- Cultural resource impacts
- Water resource impacts
- Air quality/traffic noise impacts
- Socio-economic impacts
- Hazardous materials impacts
- Potential utility impacts (municipal, oil & gas)
- Expected construction cost
- Traffic disruption during construction
- Right-of-way acquisition and relocation probability

Understanding Costs and Potential Property Impacts

This study began with a baseline of projects already in development and with recommendations for key network connections. While some costs had already been developed for key connections, most of these recommended capital improvements previously had no cost associated with them and limited understanding of potential right-of-way needs. To help frame the discussion around previous solutions that had been contemplated prior to this study, conceptual cost estimates and right-of-way needs were developed. These details, along with information about construction impacts to traffic, informed stakeholders and the public when providing input.

As the study progressed, additional projects were identified with associated conceptual costs and right-of-way needs. The first step toward estimating cost and establishing right-of-way is to understand a roadway's intended cross-section, which may or may not fit within the existing right-of-way, and when combined with the length of a potential project provides a clear assumption for material quantities and project complexity that can be used to develop probable construction cost. Unit cost assumptions came from TxDOT and City of Laredo unit prices on similar projects in 2019. The construction cost then provides a basis for estimating additional project requirements and accounts for sidewalks, utilities, structures, drainage and professional services as percentages of that cost. As a project is developed further, the costs will be refined and are likely to change.

The *Future Thoroughfare Plan* was the basis for establishing desired street cross-sections. This essential component of the *VIVA Laredo* plan is meant to provide guidance for how and where new roadways should be implemented throughout the region over the next few decades. An initial traffic analysis provided key information about where congestion is the most prevalent and helped to inform possible modifications to the prescribed cross-sections, especially when considering the number of freight trucks operating in the area daily and accounting for their size. When considering localized traffic patterns and congestion, modifications were explored through further traffic analysis and indicated some degree of benefit across the roadway network when additional capacity was tested.

As the study progressed, modified cross-sections based on the initial traffic analysis were used to determine cost and right-of-way needs, though whenever possible, the *Future Thoroughfare Plan* served as the basis for each cross-section. When contemplating project feasibility and prioritization, the following factors were considered to inform those recommendations:

- Total project right-of-way impact
- Number of potential relocations as a result of right-of-way acquisition
- Potential project capital costs

Traffic Analysis

The traffic patterns in the study area provided critical information about the effectiveness of a roadway and its given cross-section within the overall network. This information was used to confirm appropriate cross-sections, then used to analyze various combinations of roadway improvements to evaluate impacts and benefits to the overall network in base year 2018 and future year 2040. This was done using the latest available regional travel demand model from the MPO, which included a 2008 base year and 2040 future year.

Before the model could be used for this study, the 2008 base year needed to be updated to a 2018 base year, which was done by examining where development had occurred since 2008 as well as any critical road connections that had been built in that timeframe. Once updates to the network and underlying demographics were updated, the model could be used to test the effects of certain roadway modifications as well as entire combinations of improvements throughout the network.

Once the series of capital projects had been developed, traffic impacts and benefits could be analyzed by comparing various scenarios in 2018 and 2040 to get a clearer understanding of the role each individual capital improvement might play related to the overall transportation network. This helped to confirm whether certain roads should have additional capacity than previously considered or whether other roads might have an immediate positive impact on congestion management along busier roadways such as FM 1472.

The traffic analysis compared performance related to the overall network as well as how each scenario affected individual roadways in the system. Key information that was looked at to help identify priorities and design assumptions included the following items:

- Network/roadway vehicle miles traveled (VMT)
- Network/roadway vehicle hours traveled (VHT)
- Percentage of roadway operating over capacity
- Percentage of delay in the transportation network and on each roadway
- Volume to Capacity Ratio (V/C) for each roadway by network scenario

Public and Stakeholder Input

Arguably one of the most important sources of input to this study, public and stakeholder involvement played a critical role in establishing study goals, vetting potential roadway network solutions and gathering feedback on priorities. The RMA Board served as the initial stakeholder on August 20, 2019 to help establish the study purpose and outline goals. Once baseline project information and potential solutions were developed further, including limited cost, right-of-way and environmental information, a series of stakeholder meetings were held to gather input. These meetings included major stakeholders such as city, county, state, and federal officials; transportation authorities, the Metropolitan Planning Organization, as well as schools in the area, the business community, and emergency and medical services providers. The meetings were held September 16-18, 2019 to gain a better understanding of critical issues in the area, share initial ideas and discuss potential impacts. This series of meetings offered details about various operations and future development as well as specific knowledge about the study area. A list of entities represented can be found in **Figure 2**.

Figure 2 – List of entities represented in Stakeholder Meetings (September 16-18, 2019)

Public Agency Stakeholders

- Laredo MPO Board
- WCCL RMA Board
- City of Laredo
- Webb County
- TxDOT Laredo District
- El Metro
- U.S. Customs & Border Protection
- General Services Administration
- United Independent School District

Private Entity Stakeholders

- Area Land Developers
- Area Property Owners
- Laredo Chamber of Commerce
- Laredo Economic Development Corporation
- Laredo Motor Carriers Association
- Association of Logistics & Forwarding Agents
- Area Industrial Parks
- Laredo Association of Realtors

More information on the public and stakeholder involvement can be found in **Appendix E**. Some of the key takeaways from these meetings include the following:

- Make sure safety is explicitly included in the study goals
- Vallecillo Road, Hachar Parkway and Aquero Boulevard are the most important new roads
- Sara Road and Milo Road make sense to expand to serve as an alternate route to FM 1472
- A west extension of Milo Road to River Bank Drive should happen soon due to property
- Customs and Border Protection estimates World Trade Bridge will reach capacity in 10 years
- The previously proposed realignment of Killam Industrial Boulevard is no longer preferred
- Addressing the issue of truck parking on roadways should involve more than ticketing, rather, it should be a larger, more intentional solution.
- Status update on the IH-35 capacity improvements
- Insight into land development plans and trends in and adjacent to the study area
- Importance of crossing IH-35 and the Union Pacific Railroad to access both sides
- United Independent School District (UISD) typical school bus routing challenges
- UISD identified alternative routes and key connections that would help them improve transportation service for students.
- El Metro route 17, which provides transit services in the study area, has high productivity
- Bicyclists and pedestrians travel in the study area, despite lack of appropriate infrastructure

Following these meetings, the initial roadway map was updated according to the comments received, pedestrian and bike accommodations were elevated in their importance, and a safety-related study goal was added. These updates were then provided to the MPO and RMA Boards on October 21 and

22, 2019 respectively. Following those updates, study goals, existing conditions, future projections, and preliminary transportation solutions were presented at a public meeting, held at Julia Bird Jones Muller Elementary School on November 6, 2019. A general presentation about the study and some of the initial findings was provided to 65 attendees, most of which were from La Bota Ranch or other neighborhoods in the study area. A brief question and answer session was held following the presentation, then the meeting broke out into interactive stations around the room that allowed for meaningful interactions between members of the public and the project team. Officials from City of Laredo and TxDOT were also available to answer questions following the presentation.

The stations contained various exhibits and exercises designed to share information about the study, but more importantly, to collect input from members of the public. They included several maps and voting exercises to provide feedback on prioritization of projects and issues. On one map, members of the public were asked to share where they experience the most congestion as well as which areas caused them to have concerns about safety as they travel through. Another map provided space for residents to identify where transit, pedestrian or bike infrastructure would be helpful. Attendees were also asked to rank their top three transportation issues, which included factors such as safety, travel time, access to IH-35 or Loop 20, and separation of freight and passenger traffic to name a few. Similarly, attendees were shown a map of key potential roadway investments identified during the Stakeholder meetings including both existing and proposed roadways. Following the public meeting, an update was provided to the RMA Board on December 12, 2019 on public feedback and an initial look at potential projects and how they might be phased in the short-, mid- and long-term. More detail on the Public and Stakeholder Involvement for this study can be found in **Appendix E**. Some of the key takeaways from these meetings include the following:

- Consensus among residents that FM 1472 is too congested and cause for safety concerns
- La Bota Ranch needs a second point of access in addition to A.F. Muller Boulevard
- Residents need an alternate route that is not used by trucks
- The proposed Aquero Boulevard extension is a high priority for residents in the area
- Better connectivity to IH-35 and Loop 20 is a priority
- Support for improving conditions on Killam Industrial Boulevard
- Support for building Vallecillo Road and Hachar Parkway
- General support for improving transit, bike and pedestrian conditions
- Sidewalks are critical for the safety of students walking to and from the bus or school
- There is some consensus that a new international bridge could help ease future congestion

Defining Projects

As stated earlier in the *Building on Previous Work* section, this study began with project recommendations from previous studies. As the various roadway network scenarios were tested through the Traffic Analysis, the Environmental Constraints assessment provided additional input for what might be reasonably expected from an environmental impact perspective. While the *Future Thoroughfare Plan* included in *VIVA Laredo* contains future roadway alignments and functional classifications along with related roadway cross-sections, there are some recommendations outlined further in **Section 3** that discuss changes to consider to that plan.

This study took those “lines on a map” and began to add dimension, length and phasing possibilities. Proposed cross-sections were established, then used to develop individual project cost estimates. Projects were outlined individually, similarly to how one might find projects referred to in the TIP or Unified Transportation Plan (UTP). Proposed projects include reconstruction or addition of sidewalks to existing roadways as well as roadway extensions and new roads. Individual projects were then grouped into packages as appropriate to help communicate both the total improvement to the network and its respective individual project components, which can be found in **Section 4**.

Implementation Plan

Once individual projects were further defined, a specific phasing plan was developed to articulate when projects should be delivered. Project packages are arranged by short-term, mid-term and long-term, which translates to projects being delivered within the 2020-2024, 2025-2029 and 2030-2040 timeframes respectively. Project delivery in this context includes project development activities, funding, right-of-way acquisition where applicable, and construction. While there are many needs that stakeholders and members from the public identified as high-priority, many proposed projects have not been developed far enough to reasonably expect their delivery within the 2020-2024 timeframe and were shifted out to the mid-term (2025-2029). While this is the case, project development activities, funding allocation and right-of-way should begin prior to 2025 as appropriate. The Implementation Plan is described in more detail in **Section 5**.

Ongoing and Upcoming Projects

As discussed, extensive work and thought has led to the development of this study. It is informed by regional priorities set in the 2040 MTP, guidelines for growth discussed in the *VIVA Laredo* plan and started with recommendations made in the FM 1472 traffic study. The Laredo-Webb County region has needs and priorities in addition to those identified by this study. Limited funding availability for projects creates a challenge to ensure the roadway investments recommended by this plan and those identified by previous plans are both programmed.

Following the completion of this study, the next step is to identify where these specific priorities fall in the context of regional priorities, identify appropriate funding sources and partnerships, amend the TIP, engage in environmental clearance and project design, acquire right-of-way and initiate construction. In 2024, the Laredo MPO will have their next MTP update. As these and other project priorities from throughout the region move forward, the 2050 MTP update will benefit from the work and recommendations found in this document and incorporate them fully within the regional context. A graphic of where this study falls in context with the overall community planning process can be found in **Figure 3**.

Figure 3 – Where this study falls in the community planning and project development processes

There are already many capital projects in or directly related to the study area that are in various stages of development, some with committed funding to move forward, while others awaiting their turn to receive project funding. Below is a listing of capital projects that are currently in some stage of development. These projects were considered when deliberating recommendations for this study and assumed to be moving forward.

- **FM 1472 and Killam Industrial Boulevard** – capacity upgrades that will add a new continuous right-turn lane to the northbound side of FM 1472 and a right-turn lane to the westbound side of Killam Industrial Boulevard. This pair of projects is fully funded and, in the Plans, Specifications and Estimate (PS&E) phase of development.

- **Vallecillo Road** – new location east-west roadway located about a mile and a half north of IH-69W and aligned with A.F. Muller Boulevard, directly connecting FM 1472 with IH-35. This project is in the schematic phase of design and has most of the funding necessary already committed.

- **Hachar Parkway** – new location east-west roadway located more than 4 miles north of IH-69W directly connecting FM 1472 with IH-35. This project is in the schematic phase of design, in the TIP, and has most of the funding necessary already committed.

- **FM 3338 (Las Tiendas Road)** – expansion of the current road to a five-lane cross-section and upgraded to support freight traffic. This project has not been funded, though does have a schematic-level cost estimate. Upgrading the pavement to support freight traffic of the current two-lane section is under construction.

- **IH-35 Upgrades** – safety and operational upgrades to IH-35 between Shiloh Drive and U.S. 83, this is a series of upgrades to the Interstate including two additional Direct Connector ramps between IH-35 and IH-69W, a slight realignment and new grade separation over the Union Pacific railroad just north of Shiloh Drive as well as just north of U.S. 83. This series of individual projects will also include a widening of Uniroyal Drive passing under IH-35. These projects are all fully funded and in the schematic phase of design.

- **IH-69W Expansion** – expansion of Loop 20 between IH-35 and U.S. 59 to a full Freeway cross-section, effectively bringing this stretch of the highway up to Interstate standards. This project is fully funded and in the PS&E phase of development.

- **U.S. 83 Expansion** – expansion of the current road to a four-lane cross-section. This project has not been funded, though does have a schematic-level cost estimate.

- **World Trade Bridge FAST Lanes** – Free and Secure Trade (FAST) lanes being added to the World Trade Bridge port of entry that will allow expedited processing of trucks owned by commercial carriers that have completed background checks and fulfill certain eligibility requirements. This project is near the end of the PS&E phase of development and fully funded.

- **North Transit Center** – New transit center and administrative offices to be located at the corner of Jacaman Road and Bartlett Avenue. This will provide a transfer location for bus riders and allow routing efficiencies to be made, potentially improving route frequency. This project has a schematic-level cost estimate.

- **Outer Loop** – a secondary highway loop to be located 10-12 miles from downtown Laredo connecting TX 255 at IH-35 with U.S. 59 (IH-69W), TX 359 and U.S. 83 south of Laredo. This project is in the feasibility phase, about to enter schematic design. There is no funding identified for this project.

- **World Trade Bridge Expansion** – doubling of the bridge capacity at World Trade Bridge. This project is in the initial planning phases and some funding has been identified.

- **International Bridge 4/5** – proposed fifth international bridge crossing that would be located between Rio Bravo and El Cenizo, south of Laredo. While this proposed project is about 18 miles south of the study area, the international bridge system in Webb County is a major traffic generator for the local roadway network, and this could provide some relief from the rate of freight-supportive growth in the study area over the next 25 years. This project is in the feasibility phase and does not have a dedicated funding source.

- **IH-27 Ports to Plains** – this is a proposed extension of the Interstate Highway System that would extend IH-27 from Lubbock, south through Midland, San Angelo, Del Rio and Eagle Pass into Laredo. The expected route into Laredo could follow U.S. 83 to IH-35. This would provide a critical north-south link in West Texas to the Laredo port of entry. This project is in the early planning stages and does not have a dedicated funding source.

- **La Gloria-Colombia Highway** – a proposed highway in the Mexican State of Nuevo León that would ultimately provide a direct connection between Monterrey and the Colombia Solidarity Bridge. While the project status was not entirely clear when this study was complete, it is speculated that the road's design and its funding are not yet in place.

Personal non-commercial vehicles among the many trucks traveling north along FM 1472.

2 Identifying Needs

This section provides an overview of both network- and project-level needs to be addressed within and adjacent to the study area. This provides a summary of needs and a more detailed description of how the trucks and port-of-entry work along with their impacts and the overall physical constraints in the area.

Network and Project-Level Needs

As discussed in the Methodology, considerations were made for the network-level impact and benefit of a particular investment in addition to location-specific project-level considerations. Congestion in the study area can be attributed to high volumes of freight trucks in addition to passenger vehicles in certain locations and limited routing alternatives for any mode of transportation. Freight trucks take longer to get through intersections than most passenger vehicles and take up more space, thus reducing the relative capacity of the roadway network. This is not to say trucks are a "problem", but rather present challenges unique to freight traffic that impact the study area and adjacent areas.

When the volume of traffic that is using a specific stretch of road reaches the intended capacity of that road, traffic flow begins to break down leading to longer wait times to get through intersections and traffic backups that can begin to impact upstream traffic flow on the highway system or coming across the World Trade Bridge. A possible solution to this problem is to simply increase the capacity of that roadway to support greater volumes of cars and trucks, though over time, this capacity can be expected to fill up. Another consideration is to look at ways to increase capacity of the network by filling in gaps that if implemented, could offer more options and alternate routes for traffic to take, thus distributing the traffic across the network rather than trying to fit it onto to a single road.

The reality is that as the southern part of the study area has grown over the last 25 years, many of the opportunities to increase network connectivity are no longer available or require additional right-of-way due to how the land has developed. In other cases, however, it would be possible to greatly increase network connectivity with a small roadway extension that as a stand-alone project may not seem like that critical an investment. By looking at the full network, this study has aimed to identify ways to increase network capacity and recommend phases for implementing individual projects that collectively meet the overall goals of this study at a network and project-level.

The area will need both new road connections and added road capacity. It needs a safe pedestrian environment and safe routes for cyclists to use. There will need to be special considerations for trucks not typically considered when designing for a predominantly car environment. There is a need to offer an alternative route for residents in the area for improved access to the highway system requiring minimal interaction with the high volume of trucks traveling through the area daily. Understanding the complex combination of needs within the study area provides necessary insights into how best to address congestion, enhance safety and plan for future growth.

Gathering information about the network

Much of the effort involved with this study included gathering information from as many knowledgeable sources as possible about various aspects of the study area ranging from user experience and operations to policy and future growth considerations. Sources of this information primarily consist of previous studies (see **Appendix A**) and critical input from members of the general public and key stakeholders (see **Appendix E**).

Completed in 2015, the 2040 MTP indicates that Laredo is expected to grow in population by more than 60% between 2010 and 2040. Using building permits, it demonstrates that there is no sign of commercial and industrial growth stagnation in Laredo, and much of that is occurring within the study area. It identifies a need to find ways to separate commercial from non-commercial traffic and promotes a multimodal transportation system with transit centers and bike paths.[5]

[5] *Laredo Metropolitan Transportation Plan (2015-2040).*

Following the 2040 MTP, TxDOT commissioned a study to identify short-, mid- and long-term strategies for improving traffic conditions on FM 1472. The long-term traffic study generally provided the study area used for this study. The FM 1472 traffic study essentially concludes that by 2040, the roadway will need to increase in capacity, or the area will need to be served by alternate routes. It also indicates that finding ways to shift traffic to other Laredo ports of entry could provide relief for the road network nearest the World Trade Bridge. It suggests looking at creative Intelligent Transportation System (ITS) solutions and ways to better manage driveway access as next steps as well. Recommendations from the FM 1472 traffic study provided much of the baseline for beginning this study.[6]

In 2017, the City of Laredo adopted the *VIVA Laredo Comprehensive Plan*, effectively setting a policy framework for physical and economic development as the city grows. It includes a future thoroughfare plan with preferred roadway cross-sections and alignments, which provide a baseline for the future road network considered in this study. VIVA Laredo states a critical need for improved bike and pedestrian infrastructure to provide a safe, inexpensive travel choice for its residents and employees.[7]

In addition to this previous work, needs were also identified through public and stakeholder involvement. These activities are described in more detail in **Appendix E**. Public agency stakeholders such as TxDOT, the City, County, UISD and CBP were primarily concerned with safety, connectivity and alternate routes, capacity of the both the roadway network and the World Trade Bridge and the need for improved data collection. Private entity stakeholders representing commercial carriers, forwarding agents, property owners and developers were concerned with being able to continue growing, finding ways to partner with the public sector, and making sure there is good connectivity between areas on both sides of IH-35. A listing of public and private stakeholders can be found in **Figure 2**.

Another indispensable source of input came from a public meeting held on November 6, 2019 at Muller Elementary where 65 people, primarily residents from La Bota Ranch and other area neighborhoods, provided insight into their daily experiences with traveling through the area. A need to improve safety and provide a separate, alternate route for residents without trucks were among the primary concerns in addition to a general desire to reduce congestion in the area. There appeared to be general consensus among the public and stakeholders as well as consistency among the previous studies with many of the primary needs in the area, which can be found in **Figure 4**.

Location-specific challenges in the network

In addition to the network-level needs, there are needs related to specific locations, perhaps the most obvious of which is that there is a need for an alternate route to FM 1472. This was confirmed in the traffic analysis (see **Appendix C**) along with a need for additional east-west connectivity and added capacity to Milo and Sara Roads. When considering any proposed street sections, there will be limited need for right-of-way in most cases with the exception of new location roadways and any proposed major capacity enhancement to FM 1472 or Sara Road. In locations where substantial right-of-way would be needed for additional roadway capacity, this could impact business operations or building setback requirements, and potentially require relocations of some businesses. The largest impacts due to right-of-way would occur with the FM 1472 expansion to a freeway.

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[6] *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)*. Texas A&M Transportation Institute, February 2016 http://www.ci.laredo.tx.us/Planning/MPO/files/STUDIESPUBLICATIONS/FM1472-LongRangeStrategyAnalysis.pdf

[7] *VIVA Laredo – City of Laredo Comprehensive Plan*. City of Laredo, 2017 http://www.cityoflaredo.com/Planning/comprehensive-plan.html

Figure 4 – Summary of needs identified related to the study area

Summary of Needs

- Preparation for 60% population growth from 2010 to 2040
- Preparation for commercial/industrial growth, which is showing no signs of slowing
- Separate commercial from non-commercial traffic where possible
- Multimodal transportation investments including bike and pedestrian infrastructure
- FM 1472 either needs to increase capacity or alternate routes are needed
- Approaching capacity at World Trade Bridge (expected in less than 10 years)
- Consider intersection operations as a system rather than individually
- Safety of the traveling public
- Improved roadway network connectivity
- Grade-Separated railroad crossings whenever possible
- Facilitate safe crossing of the highway and railroad by people on bike and on foot
- Added capacity to some roadways
- Improved data collection and analysis
- Need to acquire right-of-way to add capacity to some, but not all roadways
- Find an intentional solution for truck parking on public roads supportive of freight operations
- Infrastructure recommendations in the area need to be "right-sized" for freight operations

Physical Conditions of the Study Area

As the study progressed, several key characteristics of the study area and general operations within it were made apparent through public and stakeholder input, previous studies and first-hand experience walking and driving through the area on several occasions. The most apparent feature is the unusually high percentage of freight truck operations on this portion of the roadway network and their physical presence. The international bridge system is a major traffic generator, particularly given the proximity of World Trade Bridge commercial port-of-entry to the busiest part of the study area. During peak travel periods, traffic flow begins to break down throughout the study area as well, which leads to traffic congestion. This creates safety concerns in some areas and overall mobility in the study area tends to be restricted due to the lack of connectivity within the current roadway network.

Trucks, trucks and more trucks

To fully understand the presence and amount of freight truck operations within the study area, it is critical to consider how the freight drayage system operates between both sides of the border. Due to restrictions on long-haul freight operations in the United States by Mexican trucks, freight almost always crosses the border in a drayage truck. Drayage refers to a short-haul segment of the supply chain where cargo is transported from one site to another, though not the entire distance of its trip. Nearly all drayage trucks operating in the study area are domiciled in Nuevo Laredo and begin their day picking up trailers dropped off by Mexican long-haul trucks, then cross primarily at the World Trade Bridge before delivering their trailer to one of 13 industrial areas in Laredo. Most destinations in Laredo for drayage trucks crossing the border are in proximity to World Trade Bridge, which is why nearly 90% of trucks crossing into Laredo use that port-of-entry. Types of drayage trips in Laredo are described in **Figure 5**.[8]

For every cross-border drayage trip, between one and two non-cross-border trips take place, typically making point-to-point trips within Laredo to consolidate loads with the goal of taking fully loaded trucks back into Mexico. To transport freight to its destination in the U.S. interior, a U.S. long-haul truck will then pick up the cargo before departing primarily up the IH-35 corridor. Because of this system, cross-border freight transportation can result in several individual truck trips in the study area such as traveling from either the World Trade or Colombia Solidarity Bridges to a warehouse or yard, traveling between warehouses or industrial areas within Laredo, and long-haul trucks bringing cargo to Laredo, then transporting cargo out into the U.S. interior. As U.S.-Mexico trade continues to grow, drayage activities will continue to increase, resulting in additional trips by freight trucks on the roadway network.[9]

Figure 5 – Typical drayage movements in Laredo

Drayage Types

- **Deep Trade Movements** – full trailer loads that originate and are headed to deep interior destinations in the United States or Mexico. This is generally how goods move at the Laredo border.
- **U.S. Interior to Border Maquila** – when a maquila factory is in the U.S.-Mexico border commercial zone (11 miles into Mexico to 8 miles beyond Laredo city limits), a Mexican long-haul service is not necessary to complete the trip.
- **Intermodal Container Drayage** – containers that are shipped long distances over land by rail and drayed from their origin and/or to their destination.
- **Sea Container Drayage** – though Laredo is not located near a sea port, sea containers still arrive in Laredo. Sea containers make up a small portion of all containers in Laredo, but they contribute to point-to-point drayage (see next bullet).
- **Laredo Point-to-Point** – additional drayage in support of activities such as repacking, consolidating containers, or value-added services such as rearranging and labeling.

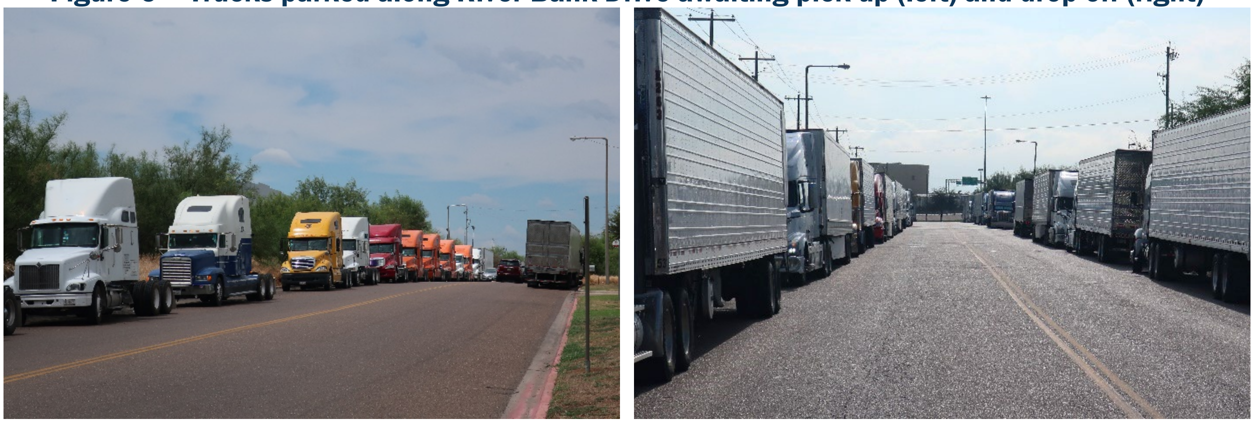
Source: Texas A&M Transportation Institute

As part of this system, once trucks come across the border from Mexico with freight, or when they are picking up a trailer to take back into Mexico, they will sometimes be required to wait outside a storage facility until their appointment is taken, which often results in trucks parking on-street just outside a facility until they are called, at which point they proceed to either drop off or pick up their next load. As shown in **Figure 6**, this can often result in several trucks parking in a travel lane along a roadway in each direction, effectively reducing the road's capacity by half, and creating line-of-sight issues for other users of the roadway and potentially dangerous conditions for truck drivers exiting their vehicle into traffic. This is done in an ad hoc manner and is not technically sanctioned by the owners of public right-of-way or the private storage facilities awaiting pick-up or delivery by the trucks parked along an

[8] *Characterizing Drayage Activities and Emissions in the Laredo-Nuevo Laredo Airshed*. Texas A&M Transportation Institute, March 2016
[9] Ibid.

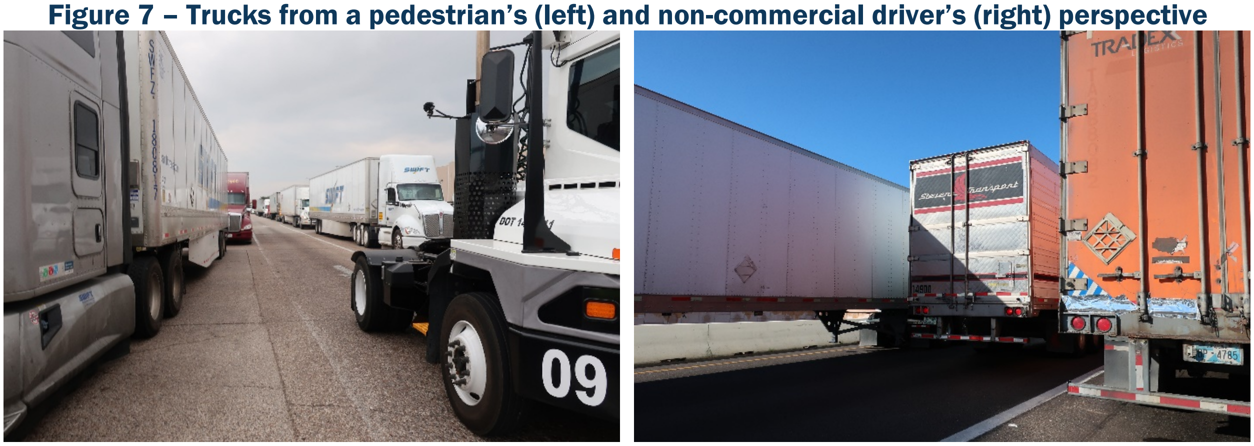
adjacent street, though little to no corrective action is taken. This creates a need to identify ways to accommodate this function of the freight distribution system while improving the situation for trucks, pedestrians and non-commercial drivers.

Figure 6 – Trucks parked along River Bank Drive awaiting pick up (left) and drop off (right)



The sheer volume of trucks in the area contributes to an intimidating travel environment (**Figure 7**) for non-commercial drivers, pedestrians and cyclists as well as a real or perceived safety concern. While this freight operation is essential to the economy of Laredo, Texas and the United States, residents, employees and students are also traveling throughout the study area daily. Of the total volume of vehicles traveling through the area, up to 60% are freight trucks.[10] When recommending solutions for the study area, it will be necessary to "right-size" any project to accommodate this truck-dominant environment from both a safety and operational standpoint.

Figure 7 – Trucks from a pedestrian's (left) and non-commercial driver's (right) perspective



Ports-of-Entry

The study area is bound by IH-69W (south) and TX 255 (north), which provide direct access to the World Trade Bridge and Colombia Solidarity ports-of-entry respectively. With more than 2.3 million trucks traveling north across the border into the United States in 2018, Laredo is the busiest port-of-entry on either the Mexican or Canadian borders. This equates to approximately 36% of all trucks coming across the U.S.-Mexico border and more than half the cross-border truck traffic crossing into Texas. Laredo has nearly 2.5 times as many truck crossings as the next busiest port-of-entry along the

[10] *Traffic Analysis for Highway Design Forecast*.

U.S.-Mexico border in Otay Mesa, California.[11] Over a 12-month period from November 2018 to October 2019, the value of freight crossing into the United States from Mexico was nearly $617 billion, with more than $228 billion, or about 37% of that trade coming through the Laredo port-of-entry.[12]

It is quite clear that the Laredo port-of-entry has national significance and importance. Trade through Laredo contributes to about $72 billion in gross domestic product for the State of Texas[13] and the trade transportation industry represents 30% of Laredo's workforce.[14] Almost 90% of the truck traffic crossing the border into Laredo is coming across the World Trade Bridge.[15] This translates to roughly 7,500 trucks daily crossing into the southern part of the study area. Annual growth in truck traffic has normally been about 3%-5%, though has most recently been as much as 8%. At this rate, Customs and Border Protection estimates that the World Trade Bridge could reach its daily capacity to process trucks within 10 years, meaning that additional freight traffic might be expected to cross at Colombia Solidarity or a new crossing.[16]

Regardless of where additional trucks might cross in the future, the World Trade Bridge is likely to remain the busiest in the system for the foreseeable future. Infrastructure to support international trade is currently located and being developed further within and adjacent to the study area along IH-69W and IH-35. While diverting new truck traffic to another crossing could help to slow the increase in traffic expected in the southern part of the study area, continued growth in traffic will occur as long as international trade is thriving.

Intersection Operations

Many intersections along FM 1472, particularly south of FM 3338, experience delay during peak travel hours, which in this case spans the part of the day from morning until evening. Most of the intersections located on this part of FM 1472 are controlled by traffic signals. There are also relatively busy intersections such as Killam Industrial Boulevard and Sara Road that are controlled by a four-way stop. These are typical treatments for intersections like these, though as discussed before, there are thousands of trucks on the road network in this area each day.

The result of a truck-dominant environment such as this is that when the signal changes from red to green, trucks take longer to accelerate from a full stop and therefore each take longer to clear an intersection. In addition to that, most of these trucks are typically somewhere between 70'-80' in length when pulling a trailer, resulting in fewer vehicles getting through an intersection during a green signal phase than if these were more conventional non-commercial vehicles. This is indeed a unique characteristic of the road network within the study area that creates a need to improve intersections and consider them as a network rather than individual locations.

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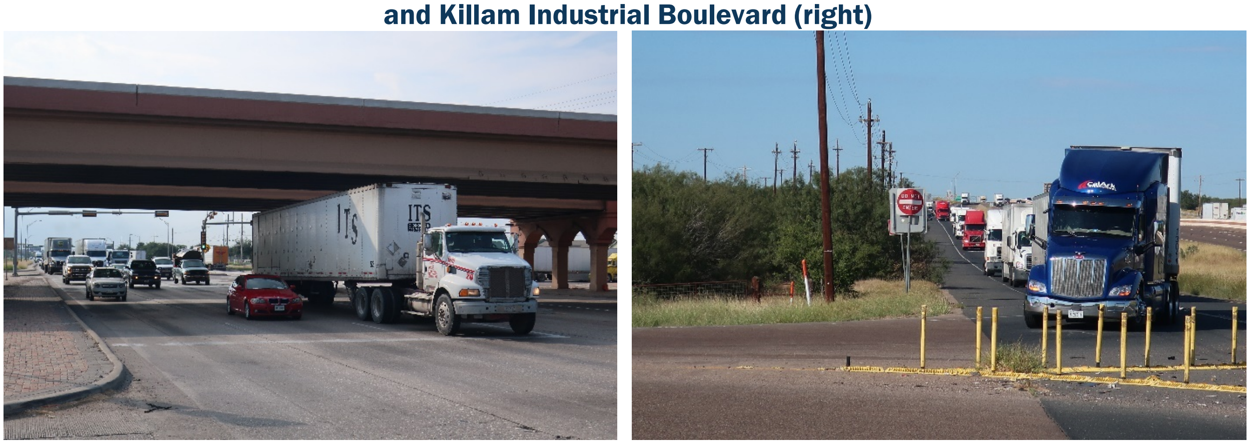
[11] Bureau of Transportation Statistics, Annual Border Crossing/Entry Data. https://www.bts.gov/content/border-crossingentry-data, accessed December 2019.
[12] Bureau of Transportation Statistics, TransBorder Freight Data.
[13] Texas Comptroller, Economy, Ports. https://comptroller.texas.gov/economy/economic-data/ports/laredo.php, accessed December 2019.
[14] Laredo Economic Development Corporation, Workforce. https://www.laredoedc.org/site-selection/workforce/, accessed December 2019.
[15] Laredo International Bridge System, Traffic Distribution. https://www.cityoflaredo.com/bridgesys/Bridge_Index.html, accessed December 2019.
[16] Stakeholder Discussion, Customs and Border Protection. September 17, 2019.

Safety & Mobility Considerations

Most of the traffic through the study area can be attributed to freight trucks, and most people traveling between home and work through the area are driving in cars. That said, there are many people who are also using El Metro bus services, riding their bike, walking or a combination of these means to complete part or all of their trip into and out of the study area each day. A critical issue that needs to be addressed is the lack of sidewalks throughout the warehousing districts. It is likely that most pedestrians and cyclists in this area are also using El Metro Route 17 or the C1 neighborhood circulator to access bus stops located on Killam Industrial Boulevard, Sara Road or Milo Road, none of which have sidewalks as shown in **Figure 8**. Despite its 40-60-minute service frequency, Route 17 remains the fourth most productive route in the El Metro system, carrying 21 passengers per revenue hour, which indicates that people are using the bus in the study area and there may even be demand for higher frequency service.[17] There are no dedicated bike lanes or facilities within the study area, and while current bike ridership may be relatively low in the area, the fact remains that people are indeed riding their bikes at real and perceived risk to their safety.

Figure 8 – Bus stops in industrial areas do not have sidewalks (left), though there is evidence of people traveling through the area on foot (right).

Figure 9 – The southern portion of the study area is only accessed at FM 1472 (left) and Killam Industrial Boulevard (right)

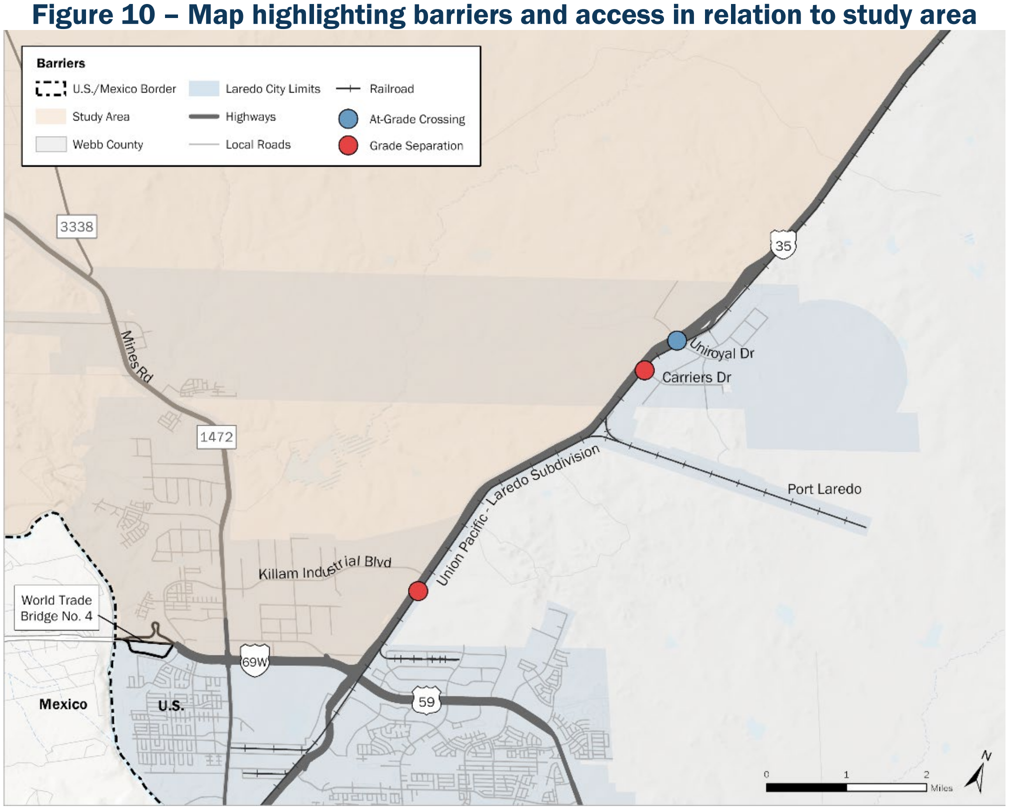


[17] Stakeholder Discussion, El Metro. September 16, 2019.

In addition to limited accommodations for people on foot or bike, the transportation network itself has some inherent barriers that should be considered when formulating mobility solutions for the area. Perhaps the most obvious are IH-35 and IH-69W, each offering limited options for accessing or crossing either facility. In fact, in relation to the most congested area located in the southern part of the study area, each facility has just a single point of access at FM 1472 and IH-69W, and at Killam Industrial Boulevard and IH-35, each shown in **Figure 9**.

In the case of IH-35, the Union Pacific (UP) Laredo Subdivision railroad tracks run parallel to the interstate, primarily on the east side of the highway as far north as mile marker 18 before the interstate crosses under the railroad placing the tracks on the west side of the highway (see **Figure 10**). This adds an additional layer of complexity when contemplating potential mobility solutions for the study area. The Laredo Subdivision runs about 150 miles from its southern terminus near the Texas Mexican Railway International Bridge in Laredo, north to San Antonio. Approximately 20 trains travel along the UP Laredo Subdivision through Webb County each day, many of them serving the Port Laredo Intermodal Facility operated by UP on the east side of IH-35 near mile marker 12.[18] The volume of trains each day and their operational requirements related to Port Laredo and other customers located adjacent to the railroad highlights a need to avoid at-grade roadway/railroad conflicts whenever possible, especially when considering the volume of freight truck operations that saturate this part of the roadway network. There is currently no safe route for cyclists or pedestrians across IH-35 or a direct route for school buses serving the connection to United High School from neighborhoods within the study area.[19]

Figure 10 – Map highlighting barriers and access in relation to study area



[18] FRA GIS Dataset. Federal Railroad Administration, accessed January 2020. https://fragis.fra.dot.gov/GISFRASafety/
[19] Stakeholder Discussion, United Independent School District. September 17, 2019.

With respect to IH-69W, FM 1472 serves as the only major throughway into and out of the study area with access to most warehousing districts in this part of Laredo. This is what has led to the 60,000 vehicles, including about 36,000 trucks on this road each day.[20] In addition to the sheer volume of vehicles on FM 1472, there are a significant number of driveways, which present higher risks for crashes and can result in slowing travel speeds down by as much as 10 miles per hour. While these driveways provide convenient access to warehouses and other businesses, the high concentration of driveways may cause traffic delay and increase safety risks. There is a need to manage the number of access points along FM 1472 by consolidated access points to minimize their negative impacts on safety and operations.[21]

Another highway crossing exists beneath IH-69W near the World Trade Bridge at River Bank Drive. This is primarily used by non-commercial vehicles and El Metro to cross under IH-69W. This crossing provides an opportunity for bikes, pedestrians, and El Metro to safely cross the highway in this area. While there will likely be a need for freight trucks to continue using the southern portion of River Bank Drive between IH-69W and Logistic Drive, River Bank Drive, along with Aquero Boulevard offers a reasonable alternative route for non-commercial vehicles.

[20] *Traffic Analysis for Highway Design Forecast*.
[21] *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road)*.

Trucks traveling along Sara Road
(facing south from Killam Industrial Boulevard)

3 Exploring Solutions

This section responds to the needs described in the previous section with network-level solutions. It identifies the primary and secondary roads and recommends solutions to improve network connectivity, provide alternative routes and enhance safety for all users of the network.

Managing Roadway Congestion

The Laredo region is projected to grow by more than 160,000 people between 2010 and 2040, which is akin to adding the population of Brownsville to Laredo. This population growth has generated new travel demands on the roadway network from people commuting to work or school, or those heading to shop or socialize. This increase in travel leads to congestion, longer wait times, and slower speeds in certain areas.

In addition to this local growth, the Laredo port-of-entry is the busiest crossing along the U.S.-Mexico border with 37% of all trade between the countries coming through, or more than $228 billion in trade annually totaling 2.3 million trucks traveling north into Laredo. This translates to thousands of trucks on the local roadway network every day. The continued success of Laredo as a trade hub of state, national, and global significance will lead to the growth of freight transport through the city. This is a boon to the economy, but also brings with it planning and transportation challenges as trucks and passenger vehicles share the road.

Every community expresses desires for a reduction in congestion, which usually means a better travel experience or another option that would be more reliable and less stressful. People are concerned with their safety and time and would like to have the liberty to get around to do the things they would like to do. With growth in population, and in the case of Laredo, thriving international trade, roadway usage is likely to increase, leading to increased congestion.

Mobility is the ability to move freely and easily. While for most, mobility may mean improved travel by car, improved mobility can be expressed through making other travel options more reliable such as travel by bus, bike or on foot. While congestion is difficult to reduce, its impacts can be managed through a careful balance of using the right-of-way to increase capacity for multiple modes of travel and by spreading the flow of traffic across a better-connected roadway system that includes new alternative routes. In certain locations, deployment of real-time traffic management technology can help to actively manage traffic flow according to conditions on the roadway network at a given time.

When considering mobility solutions for addressing travel needs in the study area, this study has identified solutions that involve improving the roadway network for both cars and trucks, as well as improving the travel environment for pedestrians, cyclists and transit riders. These solutions are discussed in terms of their function in the overall network, then expressed as a series of individual capital projects in **Section 4**.

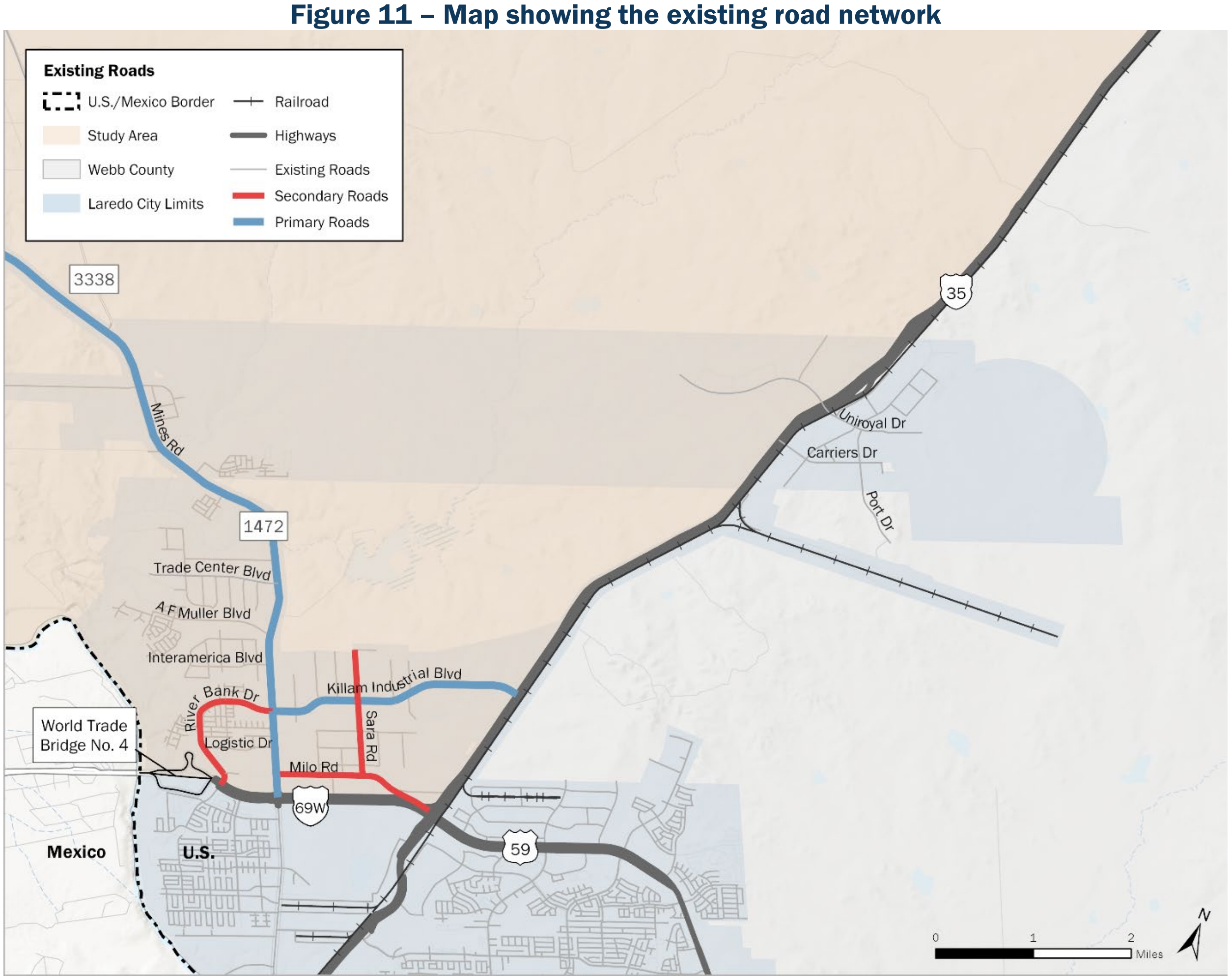
Roadway Solutions

Over the course of this study, several needs were identified through considering previous work, doing independent analyses and by talking with members of the general public and key public and private-sector stakeholder representatives. Many of these needs can be addressed through improvements to the roadway network in alignment with the goals of this study. Some general needs that are addressed include “right-sizing” infrastructure for the heavy truck traffic throughout the study area, improving network connectivity with alternative routes and improving safety for all the traveling public. Some roadways will require added capacity, which could call for additional right-of-way. The highway and railroad need grade-separated crossings to facilitate safe and reliable traffic flow between both sides of IH-35. These needs and others are addressed through various network solutions discussed below.

Primary Roads for Potential Projects

In the busiest part of the study area, there are essentially two primary (FM 1472 and Killam Industrial Boulevard) and three secondary roadways (River Bank Drive, Milo Road and Sara Road) carrying traffic through the area, with a series of other collectors providing access to industrial parks and neighborhoods, as shown in **Figure 11**. The roadway network in this area has grown segment-by-segment as development has occurred incrementally over time, and as a result, the road network in many places has gaps and remains incomplete. This study recommends that roadway projects be planned comprehensively and built in increments that improve overall network connectivity rather than those that simply provide the minimum access needed for a given development.

Figure 11 – Map showing the existing road network



Roadway infrastructure should be prioritized where it can improve overall connectivity and circulation, and where new development is most likely to occur. The highest concentration of the existing industrial park development in the study area is located south of A.F. Muller Boulevard and FM 1472, and between FM 1472 and IH-35. Nearly all of this development can be accessed directly from FM 1472 or Killam Industrial Boulevard, or from a collector street that intersects one of these two roads. There are also significant industrial parks located off FM 1472 between A.F. Muller Boulevard and FM 3338 at Trade Center and Pan American Boulevards, and further north at World Trade Center Loop. Land along Killam Industrial will soon be developed all the way to IH-35, and there is demand for additional development further north and on the east side of IH-35.

Regarding the residential development in this part of the study area, there are a few small subdivisions located off of River Bank Drive to the south, a gated community on A.F. Muller Boulevard and a few more located north of Pan American Boulevard at FM 1472 and Verde Boulevard. Most residents living in these neighborhoods have no choice other than to travel on FM 1472 for any trip they must make to and from home. Some might avoid this using Killam Industrial Boulevard or River Bank Drive, though to travel through this area, most drivers will be sharing part of their trip into or out of the area with hundreds of freight trucks each day.

When considering traffic conditions and overall density, the portion of the study area generally south of mile marker 15 along IH-35 or where FM 3338 meets FM 1472 is where most congestion can be found and where most development is likely to occur over the next five to ten years. For this reason, it is recommended that solutions be considered in terms of short- and mid-term improvements to be made over the next 10 years and long-term improvements to be made beyond that time frame. Most solutions that can satisfy the goals of this study are likely to be located in the southern portion of the study area and recommended for implementation at some point within the next 10 years.

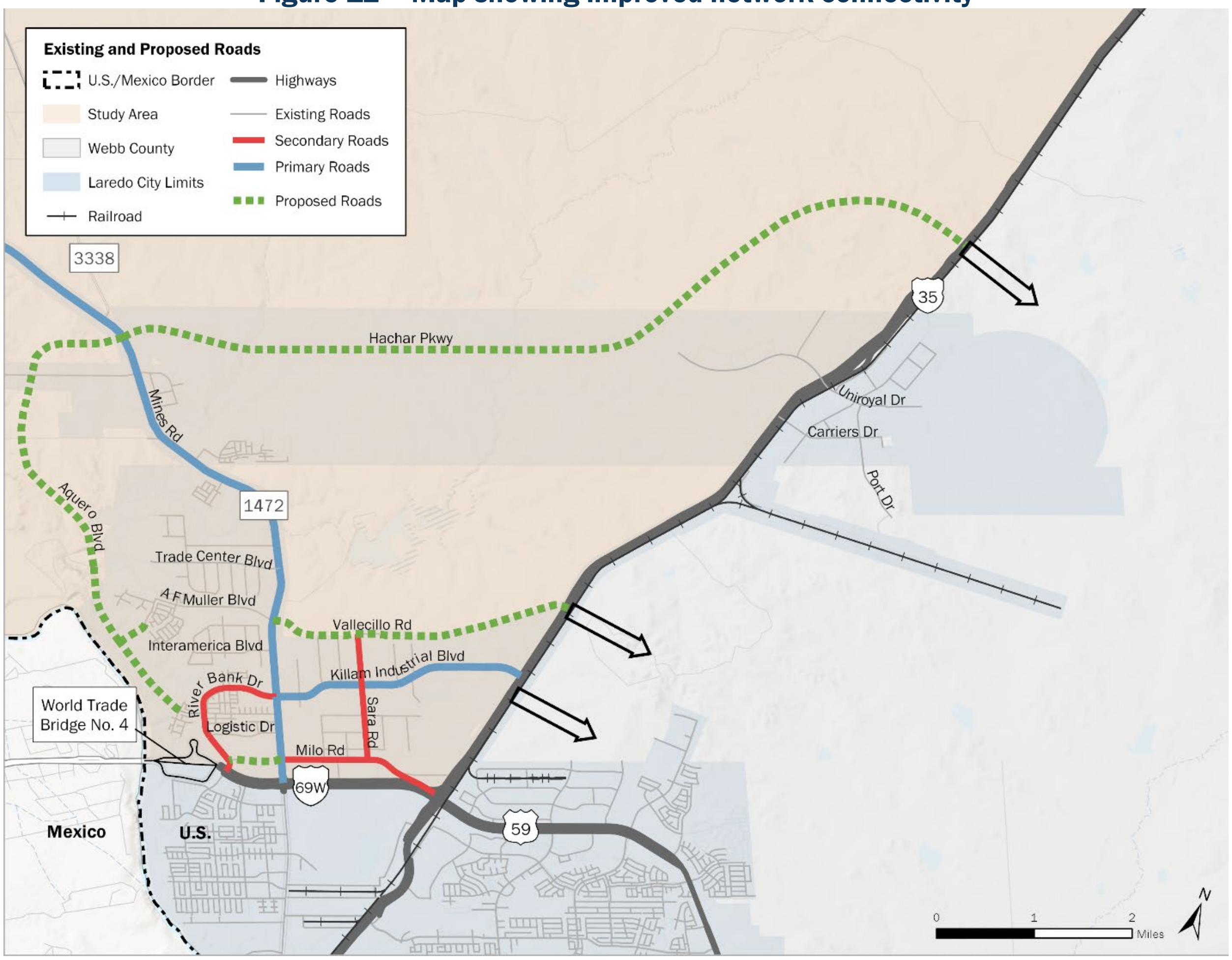
To find the right balance between using right-of-way to increase capacity for multiple modes of travel and spreading the flow of traffic across a better-connected roadway system that includes new alternative routes, several independent solutions at a network scale have been considered. The most obviously congested roadway both from a traffic volume and public perception standpoint is FM 1472. Because it carries as much or more traffic on a daily basis than IH-35 most days, it makes sense to consider converting the farm-to-market road to a full access-controlled freeway with overpasses, exits, on-ramps and frontage roads. Converting FM 1472 to a freeway first could make it more difficult to find funding for other critical improvements to the roadway network, such as alternate routes. From a cost and disruption standpoint, focusing on alternate routes first could satisfy the need to keep traffic moving during construction of a freeway build out of FM 1472.

In the current condition, FM 1472 is essentially the best and most direct route into and out of the area. It offers direct connectivity to IH-69W, which connects to north and southbound IH-35, Loop 20 and the World Trade Bridge. Killam Industrial Boulevard offers another option, though it has an offset alignment with its interchange at IH-35 and the connection from IH-35 to Loop 20 from this direction remains cumbersome until the direct connectors and Loop 20 mainlanes, scheduled to be completed in the next few years, are implemented. While the improvements to the interstate and eventual extension of IH-69W along Loop 20 to TX 359 will help to keep traffic flowing, the roadway network in this part of the study area needs alternative routes for commuters and trucks to access the highway system.

By investing in intentionally higher capacity arterials and planning for future highway connectivity across north Laredo before the development occurs, the infrastructure can support new growth and offer more immediate relief for all drivers using this part of the roadway network. Improved connectivity within the network, supplemented by strategic increases in capacity along certain roads will offer other route alternatives and help to spread traffic more evenly across the system. Direct connectivity to and across IH-35 will also be key to supporting future growth in traffic volume and offer better routing options for drivers.

Drivers can also access IH-69W from River Bank Drive, which offers neighborhood connectivity as far south as Flecha Lane, about a mile-and-a-half south of the study area. With limited industrial development accessed from River Bank Drive, there is an opportunity to extend Aquero Boulevard along the river as a parallel route for residents to use, further limiting their interactions with the heavy truck traffic found on FM 1472. If extended further north near to where FM 3338 intersects with FM 1472, land along this road could possibly support additional residential development independent from FM 1472. In addition to serving as an alternative route for residents to access the interstate, pedestrian and bike-friendly infrastructure along this roadway could serve as a backbone through this part of the study area for this type of infrastructure in a way that also facilitates a crossing to connect with neighborhoods south of IH-69W.

Figure 12 – Map showing improved network connectivity



The proposed network shown in **Figure 12**, illustrates how existing roads can be supplemented by new critical roadway connections to the highway network or by extending existing roads to improve connectivity within the system. From a traffic analysis perspective, when compared to solely converting FM 1472 to a full freeway, a more connected network results in greater network efficiency and operations and an overall decrease in delay. In fact, making the improvements shown in **Figure 12** would result in an improved travel environment, particularly for non-commercial vehicles.

In addition to this, when discussed with members of the general public and key stakeholders, there was a general consensus that making these connections would produce desirable results in terms of improved circulation and supporting new development. Below are a series of brief descriptions for how each component of this extended network could function. These are described in further detail in **Section 4** as individual capital projects.

FM 1472 (Mines Road)
This is the primary thoroughfare through the study area providing a continuous route extending north from IH-35 to TX 255, and technically, on to Eagle Pass. As discussed before, converting FM 1472 into a freeway could provide much needed capacity and better access management, however, it must ultimately be supported by a better-connected roadway network and disruption during construction of such a project without that network would likely have an adverse impact on the ability to conduct business as usual throughout this area during that time. A short-term solution for FM 1472 would be to make safety and operational improvements at key intersections south of FM 3338 as well as capacity upgrades along certain segments.

Milo Road
Originally meant to serve as the alignment for IH-69W, Milo Road serves as a connection between the IH-35/IH-69W interchange and FM 1472, just inside the southern portion of the study area. Milo Road is classified as an industrial collector, though it currently connects the interchange with Sara Road and FM 1472, with potential to connect to River Bank Drive, just a half-mile to the west. This provides further potential for a direct connection to the World Trade Bridge port-of-entry. Because of this key east-west connectivity, it is recommended that the functional classification of Milo Road be changed to a principal arterial to maximize use of this small, but critical link in the network. For an expanded Sara Road to function as discussed above, Milo will need to have adequate capacity to handle additional traffic.

Hachar Parkway
Not yet implemented, Hachar Parkway is designated to be a freeway connecting FM 1472 just south of FM 3338, with IH-35 just north of mile marker 15, and providing direct access to Beltway Parkway, which aligns with Uniroyal Drive across IH-35. Hachar Parkway has also been designated as an oversize/overweight route for appropriate cargo to move between World Trade Bridge and IH-35.[22] This is a long-term investment that will help shape new growth starting in the mid-term in this part of the study area for years to come. In its first iteration, it will be a five-lane urban arterial rather than a full access-controlled freeway.

Killam Industrial Boulevard
Currently, the only east-west connection between IH-35 and FM 1472 north of Milo Road, Killam Industrial Boulevard is a minor arterial that will continue to serve as a critical link in the network. Assuming improvements are made to Milo Road as stated above, and that Vallecillo Road is added to the network, Killam Industrial Boulevard should be able to function largely as it does today. Where Killam Industrial Boulevard meets IH-35, the tie-in to the southbound frontage road is about 1,000 feet north of where there is an overpass over IH-35 and the railroad. Current development plans for both sides of IH-35 do not align with this overpass. Realignment of Killam Industrial Boulevard with this overpass and with United Avenue across the highway would have the benefit of improved safety and connectivity from a network perspective. This is ultimately the community's decision to make, including the City of Laredo and MPO for the long-term resiliency of the network. While the realignment would be consistent with the goals of this study, because the change is not currently preferred, this realignment of Killam Industrial Boulevard is not represented in **Section 4**.

River Bank Drive
This is the closest to an alternative route to FM 1472 for residents as can be found in the area. While there are a limited number of industrial properties using River Bank Drive for access, trucks awaiting

[22] *Potential Metrics for Designating and Monitoring Oversize/Overweight Corridors*. Texas A&M Transportation Institute, November 2016 https://static.tti.tamu.edu/tti.tamu.edu/documents/PRC-16-10-F.pdf

pick-up and drop-off appointments can often be found parked along the curb on both sides of the road. This effectively reduces the road's capacity by half and creates safety and line-of-sight issues for both commercial and non-commercial drivers as shown in **Figure 6** and depicted in **Figure 14**. Because this road provides a connection to Riverbank Drive south of IH-69W, it can also function as a critical bike and pedestrian connection with appropriate infrastructural improvements discussed in more detail below under Multimodal Solutions.

Vallecillo Road

Not yet implemented, Vallecillo Road has been in the planning phase under the RMA's purview for some time and once built, will serve as a principal arterial between FM 1472 and IH-35. Vallecillo Road is expected to share its intersection at FM 1472 with A.F. Muller Boulevard, providing a direct route from that road to, and eventually across IH-35. Vallecillo Road will be the first fully-built roadway in the area to completely precede adjacent land development, though this is expected to occur shortly after the road is complete. Most new development along Vallecillo Road in the short- to mid-term will occur on the south side of the roadway, with the north left for future growth. From the beginning, Vallecillo will have 150' of right-of-way reserved and is being completely built out with five lanes and bike/pedestrian accommodations.

Aquero Boulevard

Located off River Bank Drive within the study area, Aquero Boulevard extends just less than a quarter-mile west toward the river. Classified as a collector street parallel to FM 1472, if built out, Aquero presents an opportunity to function as a real alternative to FM 1472 for nearly all neighborhoods in the study area if designated a non-truck route between River Bank Drive (south) and FM 1472 (north). It is also recommended that this road be reclassified as a major or minor arterial to ensure that it is prepared for future demands and to provide a safe route for pedestrians and cyclists that may live in the area. The conceptual alignment of Aquero Boulevard in the Future Thoroughfare Plan shows the road passing through La Bota Ranch, however, it is recommended that the road bypass the neighborhood to the west and provide a connection by extending Muller Memorial Boulevard to Aquero, providing a second point of access for the neighborhood.

Sara Road

This is as close to a north-south parallel route to FM 1472 as can be found within the study area where critical access to several industrial parks is already being served between Milo Road and about a half-mile north of Killam Industrial Boulevard where the proposed Vallecillo Road will be located. By facilitating a direct connection to IH-69W about 1,000 feet south of Milo Road as well as to a completed Vallecillo Road, Sara can become a more reliable alternative for trucks commonly traveling through this area. Added capacity will be necessary to attract and carry traffic off of FM 1472, which will require additional right-of-way and set-back variances for properties along Sara. This is consistent with Sara Road's functional classification as a principal arterial.

Railroad/Interstate Grade-Separations

To maximize safety for traffic passing between the east and west sides of IH-35, any new crossings will need to be elevated to allow for at least 23'4" of clearance over the railroad.[23] Access to IH-35 and connectivity across the interstate is essential to keep traffic flowing and maximize the number of alternative routes in the network. Each proposed interchange includes a bridge structure over the

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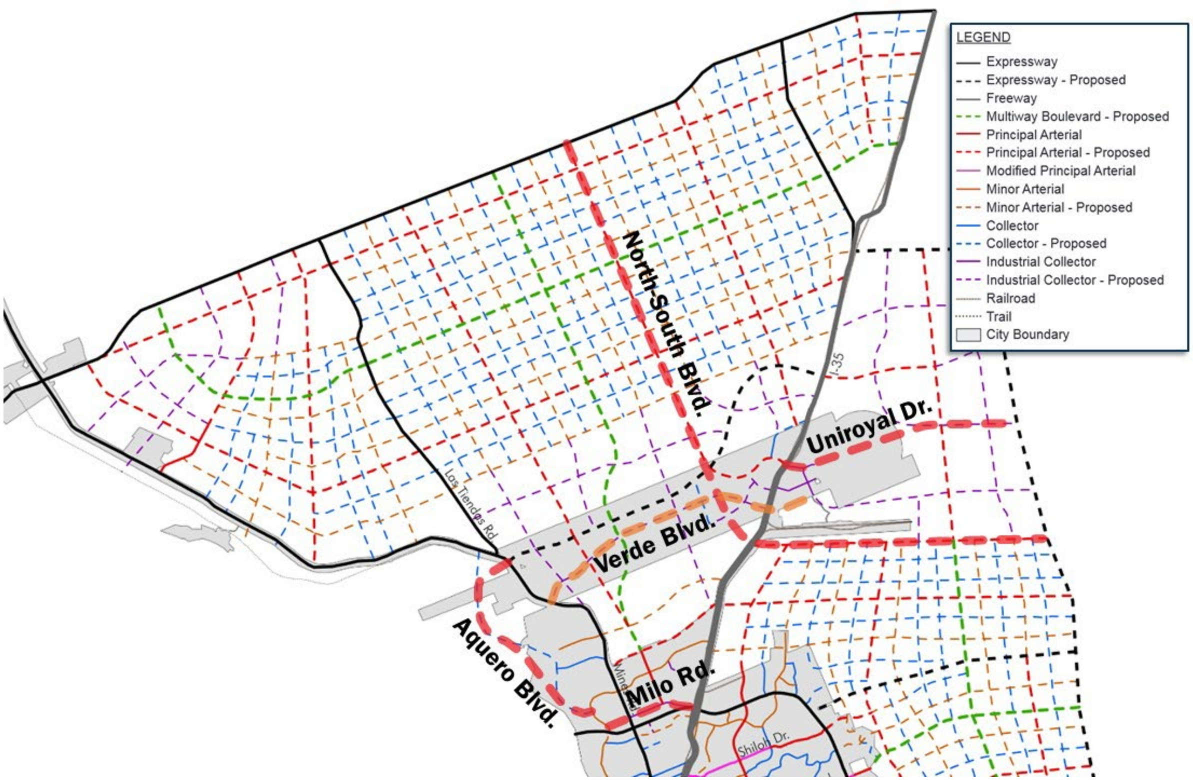
[23] *Guidelines for Railroad Grade Separation Projects*. Union Pacific and BNSF Railway, January 2016 https://www.up.com/cs/groups/public/documents/document/pdf_rr_grade_sep_projects.pdf

mainlanes and adjacent railroad, and to access that bridge, they will require retaining walls, pavement, and signage. Each interchange should also provide for safe passage for pedestrians and cyclists, matching the proposed cross-section for each road crossing the highway.

According to the American Association of State Highway and Transportation Officials (AASHTO), it is recommended that interchanges be placed at least 1 mile apart.[24] The first interchange north of the IH-35/IH-69W interchange is about 1,000 feet (0.2 miles) south of Killam Industrial Boulevard. United Avenue has been proposed to extend to Killam Industrial Boulevard from the east side of IH-35. Further north, the next interchange is found at Carrier Drive, and like United to the south, it provides grade-separation over the railroad. Just over a half-mile north of Carrier Drive is Uniroyal Drive. It has been determined that the improved interchange at Uniroyal Drive will remain at-grade.

New Interchanges have been proposed where Vallecillo Road, Verde Boulevard and Hachar Parkway cross IH-35. Vallecillo Road and Hachar Parkway are both proposed to be spaced 1 mile and more than 2 miles from the nearest interchange respectively. Verde Boulevard however, is proposed to cross just north of Port Laredo and about a half-mile south of Carrier Drive. This would place interchanges at Verde Boulevard, Carrier Drive and Uniroyal Drive all within just over a mile of one another. While this is not ideal, the three interchanges can be organized as a single system.[25] What is most critical is the direct connectivity across IH-35 and the railroad. An additional interchange is recommended a mile south of Verde Boulevard, and just south of Port Laredo to further facilitate connectivity across the interstate.

Figure 13 – Recommended Future Thoroughfare Plan modifications



[24] *A Policy on Geometric Design of Highways and Streets.* American Association of State Highway and Transportation Officials, 2004.
[25] *Long-Range Strategies to Improve Traffic Conditions on FM 1472 (Mines Road).*

Future Thoroughfare Plan

The Future Thoroughfare Plan included in the *VIVA Laredo Comprehensive Plan* served as the baseline for roadway alignments and functional classifications for this study. As the study progressed, a few modifications were recommended for consideration as shown in **Figure 13**. Perhaps the biggest recommended modification can be seen on the map represented as North-South Boulevard. This links up the north-south major arterial currently aligned with Beltway Parkway that extends north to TX-255 from Hachar Parkway with an east-west major arterial proposed to run parallel to and just south of Port Laredo on the eastside of IH-35. Connectivity across IH-35 on both sides of Port Laredo will maximize the ability for drayage operations and non-commercial drivers to have multiple options for getting around this area in the future.

Other modifications include changing functional classifications of Aquero Boulevard, Milo Road, Verde Boulevard and Uniroyal Drive. The industrial collector classification should be a minimum standard and not used for all roads through industrial parks, and particularly not for critical links in the roadway network. Extensions of Uniroyal Drive, Verde Boulevard and Milo Road are recommended as is a realignment of Aquero Boulevard bypassing La Bota Ranch and aligning with Hachar Parkway at FM 1472.

Traffic Management

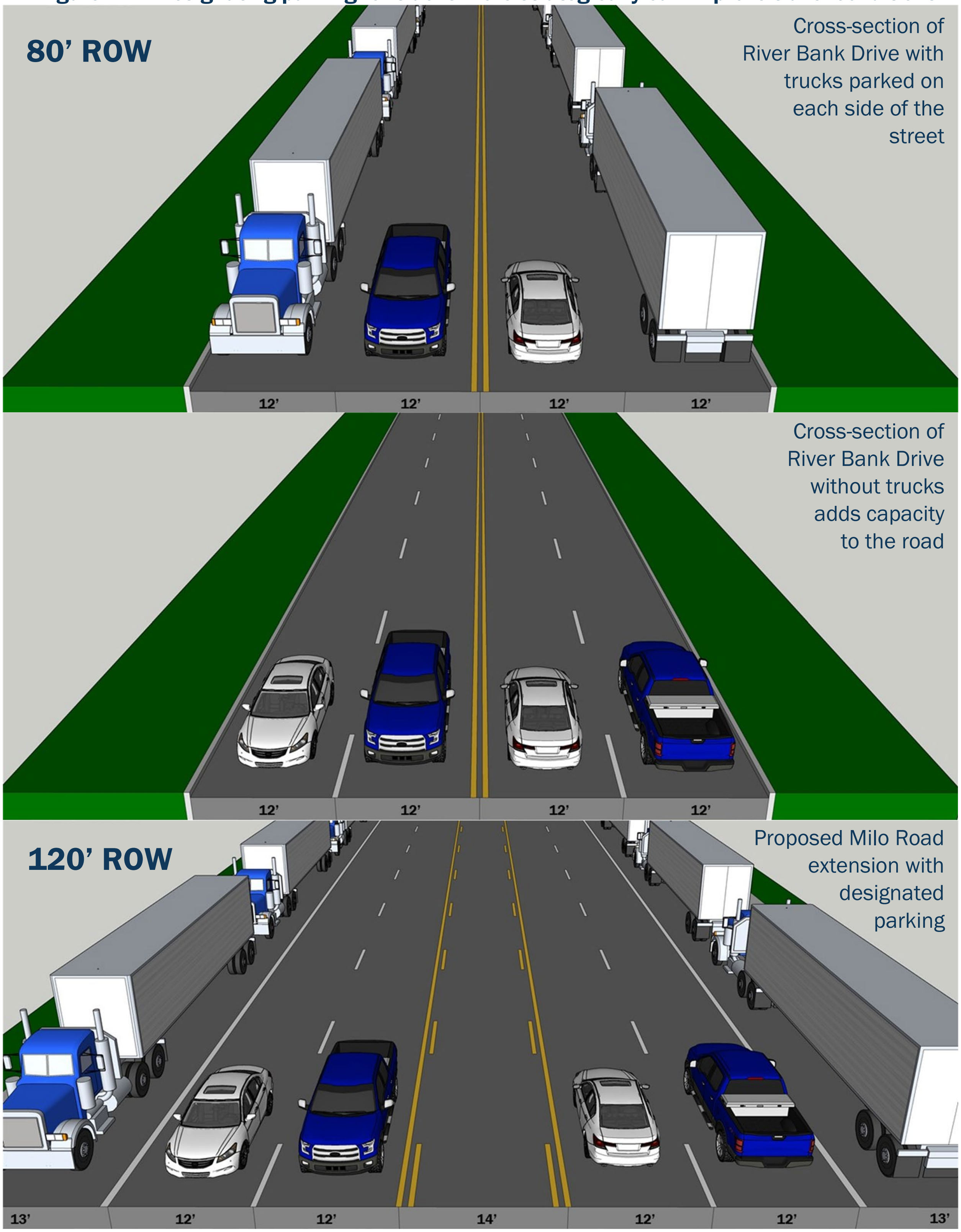
One potential solution for helping to manage the congestion that occurs in the area is to deploy a series of intelligent transportation systems (ITS) that can together, help to actively manage traffic flow according to conditions on the road network in real-time. Some ways to do this is through integrated corridor management (ICM) strategies by which a certain level of congestion can be detected, and traffic control equipment and dynamic signage can help to direct traffic in a way that offers some degree of relief in certain parts of the system. Regular traffic counting and monitoring can also provide information that can help to determine patterns and identify trends. These systems may also help to detect traffic incident such as crashes or inform drivers that an emergency vehicle is about the approach.

While technology can provide feasible solutions that may be able to enhance the travel experience across all or part of the roadway network, the network itself must have alternative routes if the technology is going to be most effective from a redirecting traffic standpoint. ITS equipment and systems will be able to work best with a more complete and connected roadway network, and transportation planning will be better informed with data that can be gathered on a regular basis through various detection systems.

Truck Parking

As discussed in **Section 2**, a consequence of the drayage operations has led to trucks parking along the curb of several roadways throughout the southern part of the study area. This has been observed on Killam Industrial Boulevard, along the westbound frontage road of IH-69W and on River Bank Drive between IH-69W and Logistic Drive. The most common location where this has been observed multiple times is on River Bank Drive. While a longer-term solution still needs to be analyzed and vetted for how best to address trucks awaiting appointments outside of their destination, a shorter-term solution may include finding a roadway that could safely and intentionally serve this function. In the case of River Bank Drive, trucks can most often be found parking along both sides of a 1,500-foot segment between Logistic Drive and Midland Drive.

Figure 14 – Designating parking for trucks more strategically can improve travel conditions



Midland Drive serves as the proposed alignment for Milo Road to extend 2,500 feet between River Bank Drive and FM 1472. Given its proximity to establishments on River Bank Drive and between Milo Road and IH-69W frontage road, this may be a good segment to pilot on-street truck parking. Given the size of the trucks and a need for safe ingress/egress for their commercial drivers, it is recommended that 13' lanes be used. It is also recommended that the truck parking be accommodated outside the proposed travel lanes on Milo Road, reserving that capacity for general traffic. By restricting trucks from parking on River Bank Drive, the right-of-way may be used to provide a safe bike and pedestrian route, and better function as a route for non-commercial traffic.

As illustrated in **Figure 14**, removing trucks from River Bank Drive would open capacity back up to serve a mobility function on that road rather than a logistical scheduling function. Accommodating truck parking more intentionally on another road like Milo could serve as a short-term solution for this function, while also improving connectivity and capacity of the roadway network.

Multimodal Solutions

To satisfy the goal of promoting safety for all users of the transportation network, this study includes recommendations for providing sidewalks and bike facilities, and highlights opportunities for improved transit service into and out of the study area. Considering a setting where people are waiting for their bus, walking, or moving through the area on bike, the travel environment should be held to a much higher standard of safety and quality for all users, regardless of quantity or mode split.

North Transit Center

El Metro operates two routes through the study areas, route 17 and a neighborhood circulator, route C1. Route 17 is the fourth most productive route in the El Metro system, carrying 21 passengers per revenue hour, which indicates that there is demand for higher frequency service. Having limited resources and demand in other parts of the system, increasing route frequency is a challenge for El Metro, or any public transit provider for that matter.

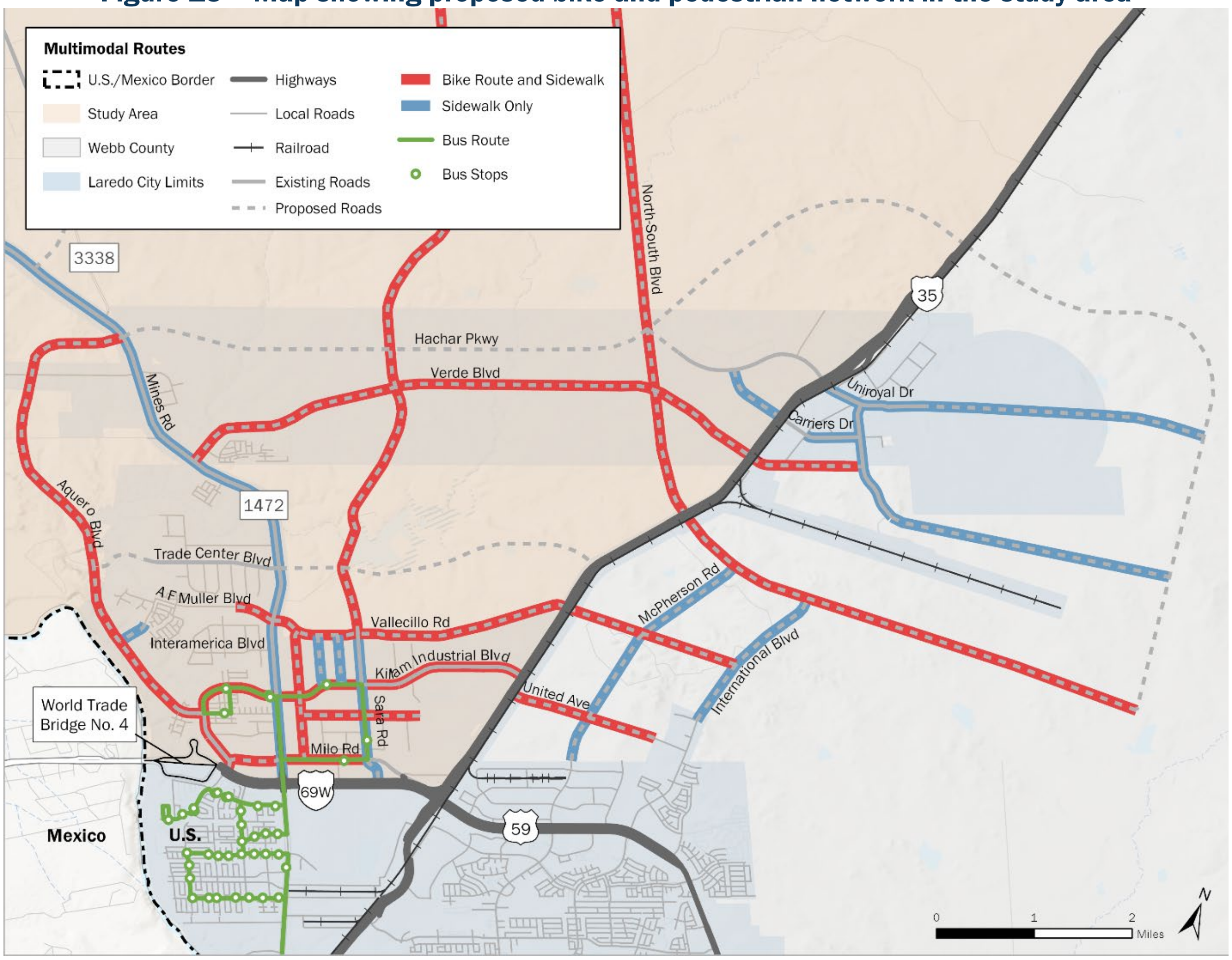
The eight most productive routes in the system serve various parts of north Laredo, including route 17. For the most part, these routes converge in relatively the same place outside the study area near Del Mar Boulevard and IH-35. All routes in the El Metro system currently offer direct service to the El Metro Transit Center located in downtown Laredo. There is an opportunity to restructure the system in a way that could bring some or all these north Laredo routes together intentionally at a new transit center and have some of them end their trip there. This would in effect force a transfer for passengers intending to travel into downtown, though by shortening these routes, fewer buses are needed to offer the service and thus can be re-appropriated to improve their frequency or used to improve other routes. More frequent service is needed for route 17, and by making this investment, El Metro may have an opportunity to shift resources around to increase frequency.

Sidewalks and Bike Facilities

Within the study area, there are currently no bike facilities and sidewalks are only in and around residential subdivisions. Almost no sidewalks can be found around any of the industrial parks because when they were developed, there was not a requirement in place that sidewalks be installed. While the assumption may have been that there would not be a need to get around on foot in these areas, the fact remains that people do in fact need to use the bus, ride a bike or walk for part of their trip to work. Sidewalks are also critical to the safety of students walking to and from the school bus or school. This study recommends addressing this head on by building up a framework across the existing network and as part of other network improvements discussed herein.

In some locations, protected bike lanes make sense, though in most cases, bikes can be accommodated using a shared-use path, which is essentially a 10-foot wide sidewalk that can be shared by a mix of cyclists and pedestrians and can facilitate passing when bikes are traveling in opposite directions. Pedestrian lighting should also be included as part of this improvement. Connectivity across the interstates need to be facilitated with any new interchanges. In **Figure 15**, a proposed bike and pedestrian network illustrates how by making a relatively minor improvement when compared to the cost of a full roadway, the quality and reach of the pedestrian and bike network can be dramatically improved.

Figure 15 – Map showing proposed bike and pedestrian network in the study area



Facing south along IH-35 from the United Ave. interchange toward the IH-69W interchange

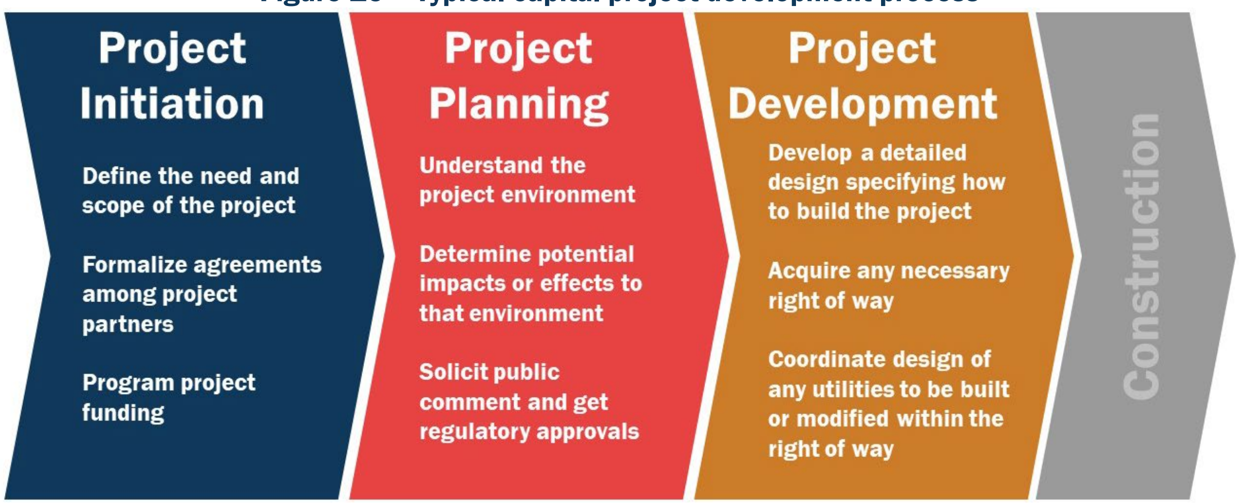
4 Defining Projects

Building upon the solutions outlined in the previous section, this section provides an overview of a series of recommended capital projects and proposes sequencing. This section then includes more detail on each project or set of projects including cost, description, benefits, map and typical section.

Translating Solutions into Projects

Individual capital projects each include their own scope, cost and purpose. Once identified through various planning exercises to be programmed into the capital improvement plan (CIP) of City of Laredo, the unified transportation plan (UTP) for TxDOT or the MPO's transportation improvement plan (TIP), each project is assigned one or several funding sources to cover the cost. Where the previous section offered network-level solutions, this section takes these a step further by offering some level of project definition, cost and prioritization. Some of these projects are in progress, with some or all funding already identified, while most projects discussed in this section have little or no planning done outside of this study. The project development process is illustrated in **Figure 16** to clarify the necessary next steps along with a comprehensive project list. Projects are packaged into groups and described in more detail in this section.

Figure 16 – Typical capital project development process



Project Development Process

An important question asked by a member of the general public during this study was "why do these projects take so long to build?" This is indeed a common question that many people have, particularly when they are feeling the stresses of congestion now. Building and improving roads happens one capital project at a time, and the need for those projects is identified in planning studies like this one or through the MPO's Metropolitan Transportation Plan (MTP) process. The MTP ultimately formalizes the prioritization of projects and identifies when they might be funded.

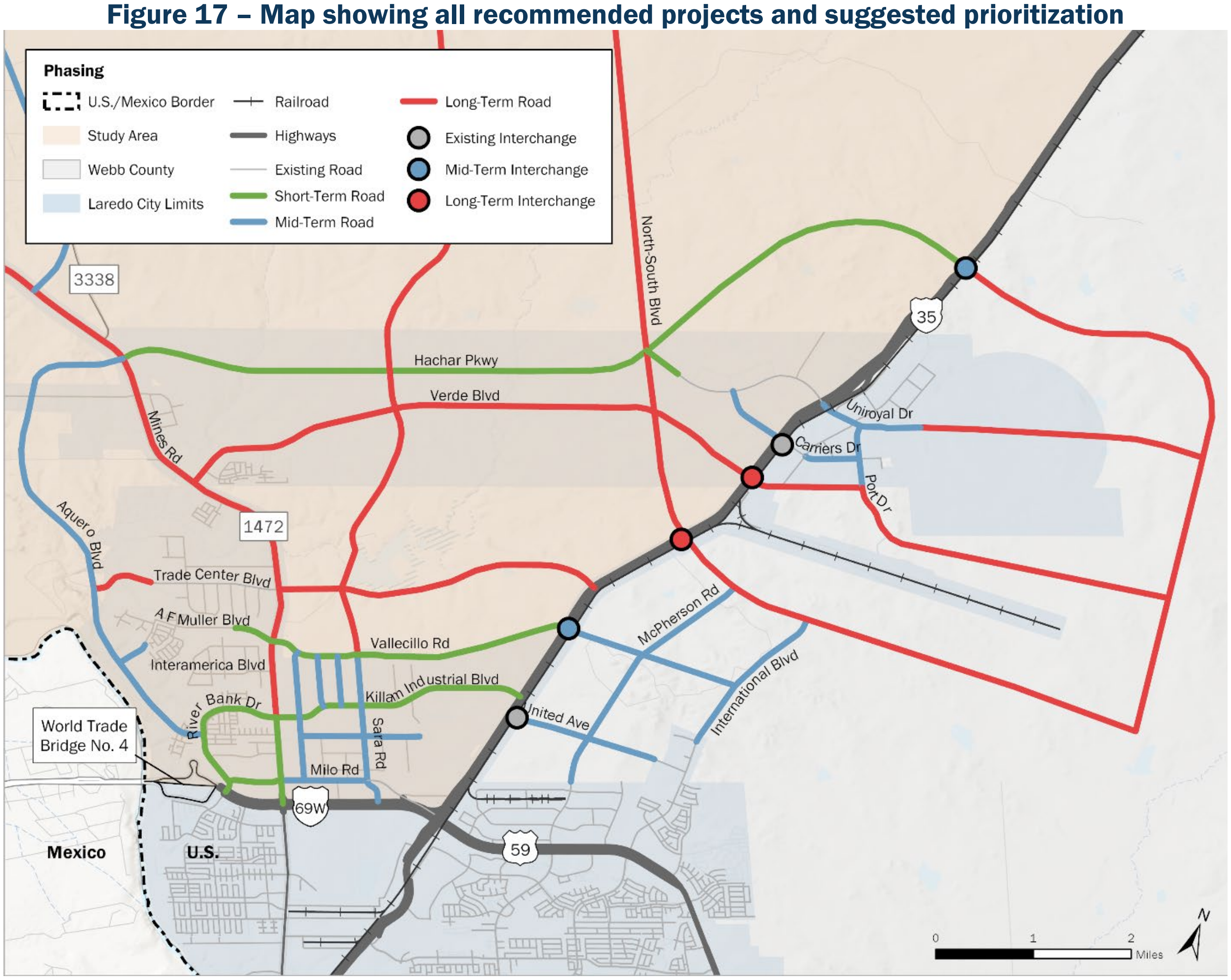
Once a project has been identified, as many have in this study, they must formally become a project through scoping and agency agreement, then go through a careful project planning process followed by a more detailed development of specifications for precisely how to build the project. Once this has been developed, the project can go into construction, which can be a lengthy process unto itself depending upon the project's size and complexity. Very large projects may not only take more time to construct, but the construction process can be quite disruptive to daily traffic flows, impacting commute times during that phase.

Once this study is complete, projects not already in progress will need to be initiated by defining their scope and the need with all project partners in agreement. Funding will also have to be identified. Then, the project will be further defined through schematic design, and any potential environmental impacts will be identified and mitigated. This is when the general public will have an opportunity to review the proposed project and provide comments. This is a formal process that is required by the state or federal government, depending upon the project scope and funding sources. Once all environmental approvals are acquired, the project moves into the design phase where detailed plans and specifications are refined along with the project's cost estimate. The more detail that is specified about a project, the more likely a cost estimate will be accurate. During each phase of this process, the cost estimate can be expected to change.

Proposed Project Prioritization

While all the improvements recommended in this study together offer a collective network benefit, not all projects can be funded or built at the same time. Although certain projects individually would have a greater immediate benefit for some users of the roadway network, there are others in areas in need of urgent relief that would be higher priority. There are a few projects discussed in this study that are already at some point in the project planning or project development phase, with all or most of their funding secured. Most of the projects are new recommendations however and would be starting in the project initiation phase. Prioritization in this study is represented by short-term, mid-term and long-term, which refers to the timeframe in which a project could reasonably be expected to have construction completed.

Figure 17 – Map showing all recommended projects and suggested prioritization



Short-Term projects are already in development or relatively minor improvements that can form critical links in the network or improve safety for all users of the transportation network. These projects can be expected to open for use some time between **2020** and **2024**.

Mid-Term projects are critical improvements that would create alternate routes or enhance network connectivity. Many of these projects might be desired in the short-term, though they may be more complicated or require more funding, which makes them more likely to be open for use sometime between **2025** and **2029**.

Long-Term projects establish the larger framework for expanding a well-connected roadway network as the region continues to grow. Plans like this one need to be revisited every few years to account for unforeseen circumstances, and when this happens, long-term priorities might change. These projects still remain a critical part of how the roadway network should grow but are more likely to be open for use sometime between **2030** and **2040**.

Recommended Capital Projects

A comprehensive listing of the capital projects recommended in this study can be found in **Table 2**. There are both individual projects in this list and packages of multiple projects in this list. In most cases where multiple projects have been packaged, these are project phases or key components such as a highway interchange. In a few cases, projects have been categorized into “Pedestrian/Bike Improvement Projects.” In those cases, projects are in related packages composed primarily of improvements on different, but related roadways. In all cases where there is a package of projects, each individual project component has been identified has been given a letter to differentiate it from the other components.

Projects are listed by short-, mid- or long-term and include a planning-level opinion of probable cost. As the project becomes more defined and progresses through the project development process, there can be more certainty with the what the likely capital cost will be, so over the course of developing the project, its cost estimate can be expected to change. Costs are based on each project’s intended cross-section, understanding which aspects of that section need to be built, calculating the length of the improvement, quantifying materials needed to construct the project and then calculating a cost based on unit prices from recent similar TxDOT and City of Laredo capital projects. Costs shown in this section are planning-level estimates and rounded up to the nearest thousand dollars. It should be noted that the costs included in this study represent an estimate of probable costs prepared in good faith and with reasonable care. The costs of construction labor, materials, equipment, internal staffing and operations structure, or results from bidding cannot be controlled.

In addition to using unit costs from TxDOT and City of Laredo FY 2019 average bid item unit prices, total project costs were increased to account for a 3.5% annual inflation rate. This rate was applied by using the proposed year of opening and construction duration found on **Table 4** in **Section 5**. While this does not represent a final project cash flow, it does offer some insight into the financial impact of delaying projects over time and helps to manage expectations about possible cost increases due to inflation.

Looking at the costs in **Table 2**, a few things stand out. First, is that projects identified as a short-term priority together cost much less than those identified as mid- and long-term. Three of the five short-term projects are also fully or partially funded, while none of the mid- and long-term projects have any funding identified. Pedestrian/Bike Improvement Projects are also much less expensive than full roadway projects primarily due to many of these being restricted to the implementation of sidewalks without substantial roadway modifications. Another notable item about the costs is that the combination of all short- and mid-term projects equals a fraction of the probable cost of converting FM 1472 to a full freeway. It is not just that these projects are less expensive, but they are indeed necessary to help manage congestion by providing alternate routes and connectivity for the ultimate build-out of FM 1472 to function properly once it comes on line.

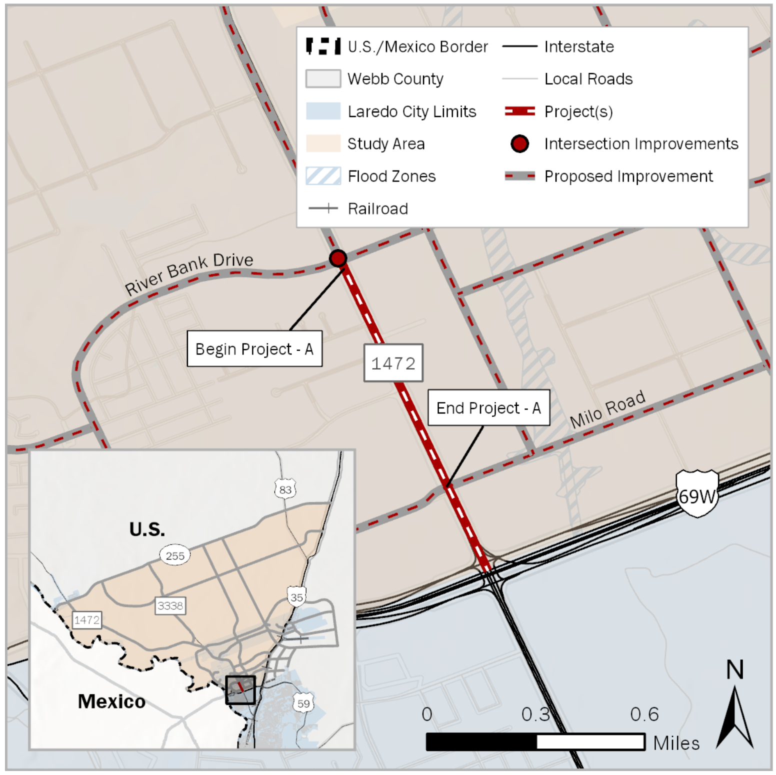
Table 2 – Comprehensive table of recommended capital projects for North Laredo

North Laredo-Webb County Transportation Planning Study
Project List combined with Schedule accounting for Inflation

Implementation timeline provides planning tool to assess costs over time. This is *not* a final cash flow.

Page #	Facilities	FY19 Total Cost (2019 $)	YOE Total Cost	Opening Year	Const. Duration (Years)
	Capital Cost Inflation Factor			update as appropriate	
42	**FM 1472 - Mines Road Capacity Upgrades**	$ 18,905,000	$ 19,909,000	2022	2
43	**Milo Road Extension**	$ 14,713,000	$ 16,598,000	2024	2
44	**Hachar Parkway**	$ 55,530,000	$ 60,526,000	2023	2
45	**Pedestrian/Bike Improvement Projects I**	$ 5,610,000	$ 6,438,000	2024	1
46	**Vallecillo Road**	$ 31,471,000	$ 34,302,000	2023	2
		$ 126,229,000	**$ 137,773,000**		
47	**Aquero Boulevard**	$ 59,134,000	$ 71,462,000	2026	2
48	**Carrier Drive Extension**	$ 5,255,000	$ 6,136,000	2025	2
49	**Sara Road & Milo Road Widening**	$ 39,163,000	$ 49,846,000	2028	3
50	**Hachar Parkway Extension**	$ 79,461,000	$ 108,554,000	2032	7
51	**Pedestrian/Bike Improvement Projects II**	$ 12,239,000	$ 15,045,000	2026	1
52	**Port Drive Widening & Extension**	$ 24,742,000	$ 33,170,000	2030	4
53	**Uniroyal Drive Widening & Extension**	$ 31,315,000	$ 41,982,000	2030	4
54	**Vallecillo Road Extension**	$ 40,887,000	$ 49,411,000	2026	2
55	**FM 3338 - Las Tiendas Road Widening**	$ 45,000,000	$ 60,293,000	2029	2
56	**International Boulevard Extension**	$ 15,889,000	$ 19,873,000	2027	2
57	**McPherson Road Extension**	$ 21,096,000	$ 26,386,000	2027	2
58	**United Avenue Extension**	$ 16,799,000	$ 21,012,000	2027	2
		$ 390,980,000	**$ 503,170,000**		
59	**FM 1472 - Mines Road Widening to Freeway**	$ 772,674,000	$ 1,148,501,000	2033	4
60	**North-South Boulevard (unnamed)**	$ 137,807,000	$ 197,909,000	2032	4
61	**Trade Center Boulevard Extension**	$ 28,241,000	$ 43,447,000	2034	4
62	**Verde Boulevard Extension**	$ 70,112,000	$ 117,508,000	2036	3
63	**East-West Boulevard (unnamed)**	$ 174,827,000	$ 336,238,000	2040	3
64	**Sara Road Extension**	$ 103,068,000	$ 185,047,000	2038	3
65	**TX 255 Widening**	$ 129,388,000	$ 248,847,000	2040	3
		$ 1,416,117,000	**$ 2,277,497,000**		
	TOTAL PASSENGER FACILITY CAPITAL COST				
	Assumptions				
	Construction Cost Escalation Rate	3.5%			

FM 1472 – Mines Road Capacity Upgrades



Project Location:

Existing FM 1472–Mines Road from Milo Road to Killam Industrial Boulevard.

Project Description:

This consists of three independent projects meant to increase capacity and improve operations along FM 1472.

The projects include the implementation of a new continuous right-turn lane on FM 1472 between Big Bend Boulevard and Killam Industrial and a right-turn lane on Killam Industrial at FM 1472. This package also includes the bridge widening at IH-69W at FM 1472.

Recommended Timeframe:

Short-Term 2020-2024

Opinion of Probable Cost (FY19):

$18,905,000

Possible Project Schedule:

Initiation	2018
Planning	2019
Development	2020
Construction	2022

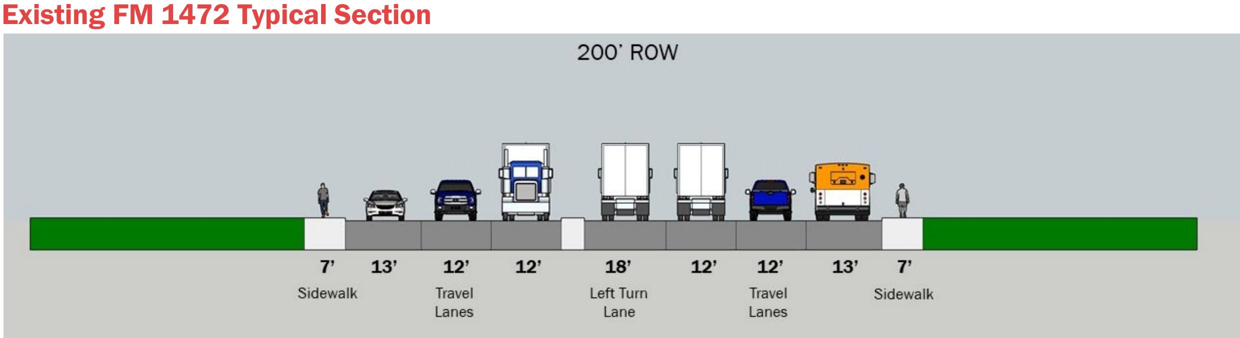
Potential Project Benefits:

This is a short-term fix to help keep traffic flowing at this key intersection. There should be some improvement to level-of-service at this location.

Individual Project Component Costs:

A) FM 1472 Widening	$4,168,000
B) IH 69W Bridge Widening	$13,457,000
C) Killam Industrial Boulevard Turn Lanes	$1,280,000

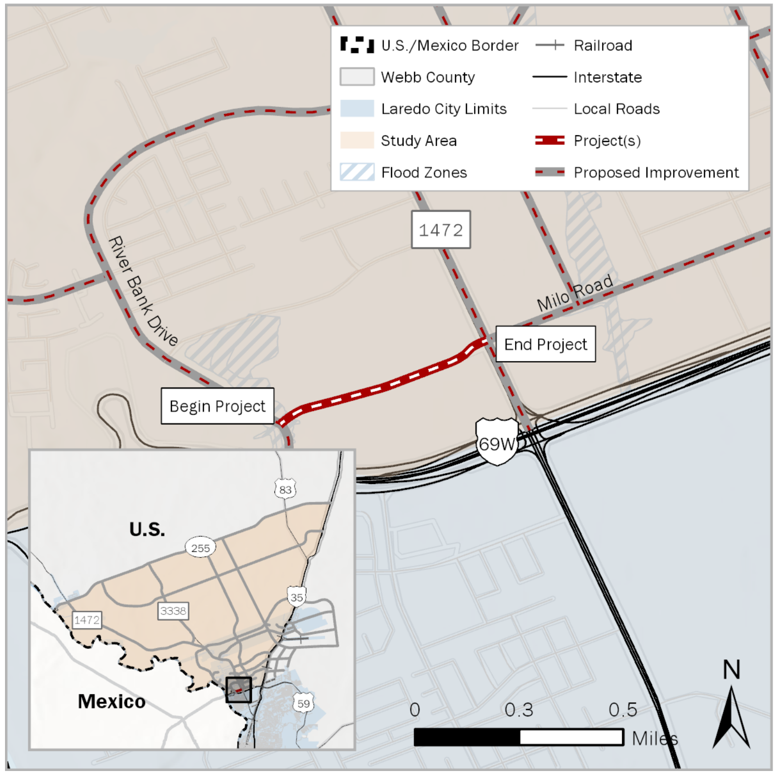
Existing FM 1472 Typical Section



Milo Road Extension

Project Location:

New extension of Milo Road between FM 1472 and River Bank Drive.



Project Description:

This project is a half-mile extension of Milo Road. The project will include a 5-lane roadway, on-street parking reserved for trucks, and sidewalks, including a 10' shared-use path on one side.

This is not only a critical link in the network, but its proximity to World Trade Bridge also presents an opportunity for a direct inbound connection from the POE to Milo Road, allowing trucks to avoid FM 1472 and reduce left turns from IH-69W. This requires further study.

Recommended Timeframe:

Short-Term 2020-2024

Opinion of Probable Cost (FY19):

$14,713,000

Possible Project Schedule:

Initiation	2020
Planning	2021
Development	2022
Construction	2024

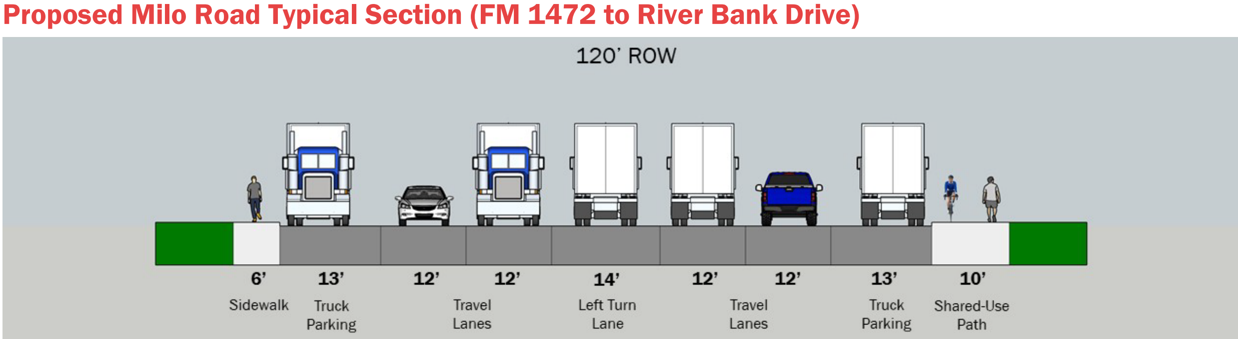
Potential Project Benefits:

This project will complete a small, but critical link in the network in the most congested part of the system. It will also facilitate safe bike and pedestrian connectivity between River Bank Drive and Sara Road. This project presents opportunities for improved freight operations by eventually connecting to the World Trade Bridge and by purposefully facilitating truck parking.

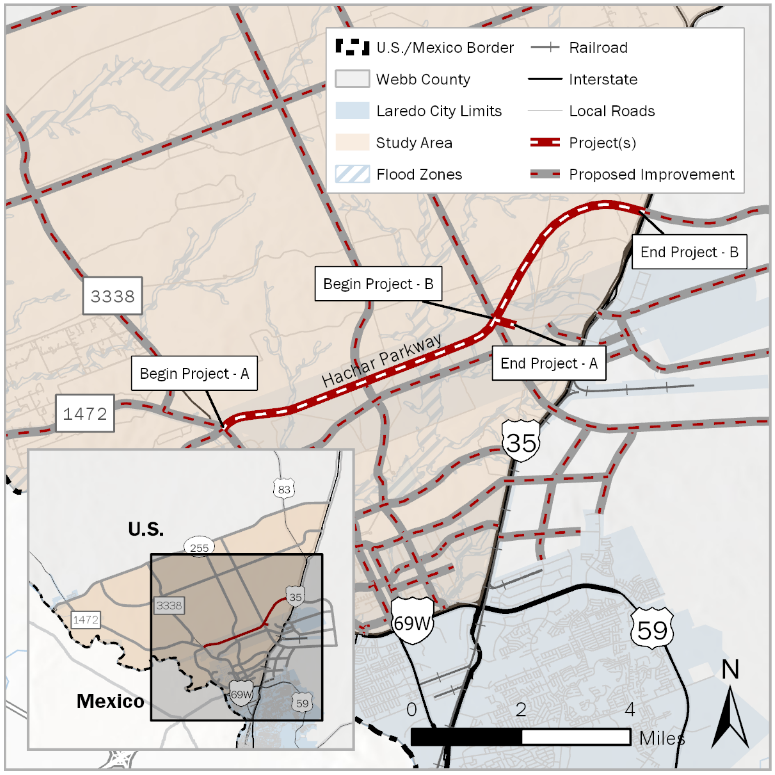
Individual Project Component Costs:

A) Milo Road Extension	$14,713,000

Proposed Milo Road Typical Section (FM 1472 to River Bank Drive)



Hachar Parkway



Project Location:

New location roadway connecting FM 1472 near FM 3338 to Beltway Parkway, and on to IH-35

Project Description:

This project is just over 9.5 miles of new roadway that includes a continuous 400' wide right-of-way for future freeway expansion. Initially this will be a five-lane roadway that will link key north-south roadways (FM 1472 and IH-35) where continued industrial growth can be expected.

Hachar Parkway has also been designated as an oversize/ overweight route for appropriate cargo to move between World Trade Bridge and IH-35.

Recommended Timeframe:

Short-Term 2020-2024

Opinion of Probable Cost (FY19):

$55,530,000

Possible Project Schedule:

Initiation	2018
Planning	2019
Development	2021
Construction	2023

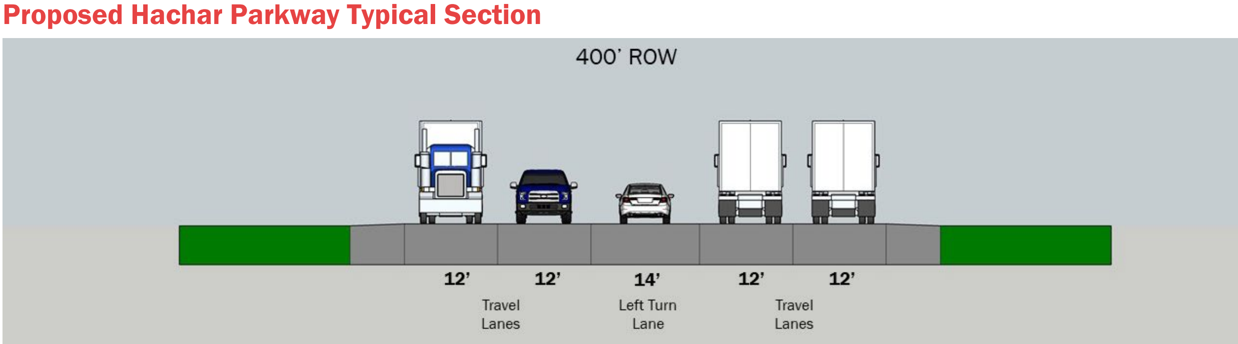
Potential Project Benefits:

Hachar Parkway will offer an alternative freight route connecting FM 1472 and IH-35. This roughly 9.5-mile stretch will also become opened up for new industrial development that can offer some relief to other parts of the system.

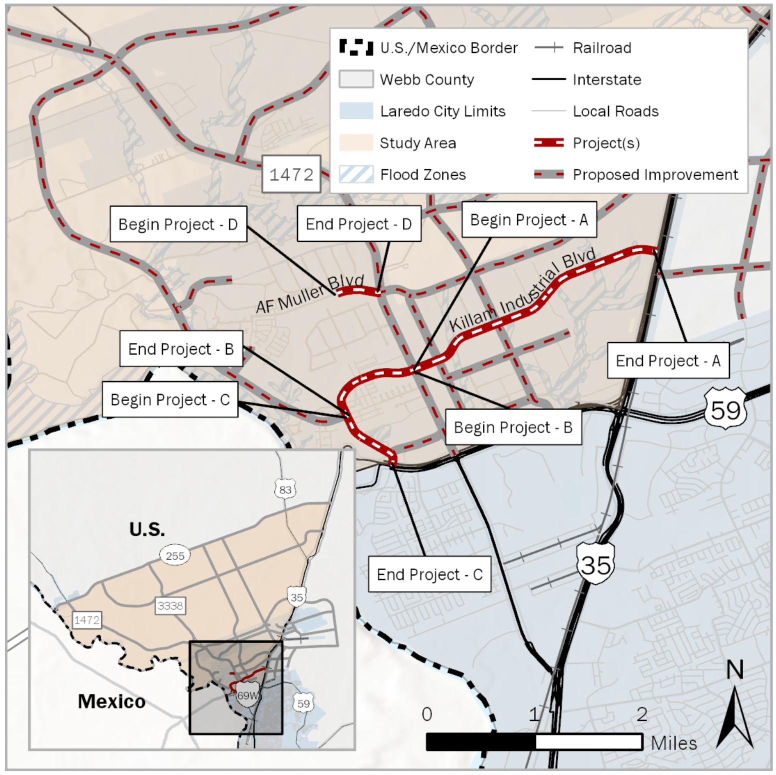
Individual Project Component Costs:

Phase I & II PS&E	$1,634,000
Phase I Total (FM 1472 to Beltway)	$32,455,000
Phase II Total (Beltway to IH 35)	$21,441,000

Proposed Hachar Parkway Typical Section



Pedestrian/Bike Improvement Projects I



Project Location:

A series of bike/pedestrian improvements along three key roadways in the most congested part of the study area.

Project Description:

This project will add sidewalks to both sides of Killam Industrial and include improving the roadway pavement. Sidewalk gaps along River Bank Drive will be filled in, as well. This includes a 10' shared-use path on one side and making the sidewalk on A.F. Muller a shared-use path.

On River Bank Drive, south of Logistic Drive, a two-way cycle track will be added within the existing pavement to move truck parking over to Milo Road (see section).

Recommended Timeframe:

Short-Term 2020-2024

Opinion of Probable Cost (FY19):

$5,610,000

Possible Project Schedule:

Initiation	2020
Planning	2022
Development	2023
Construction	2024

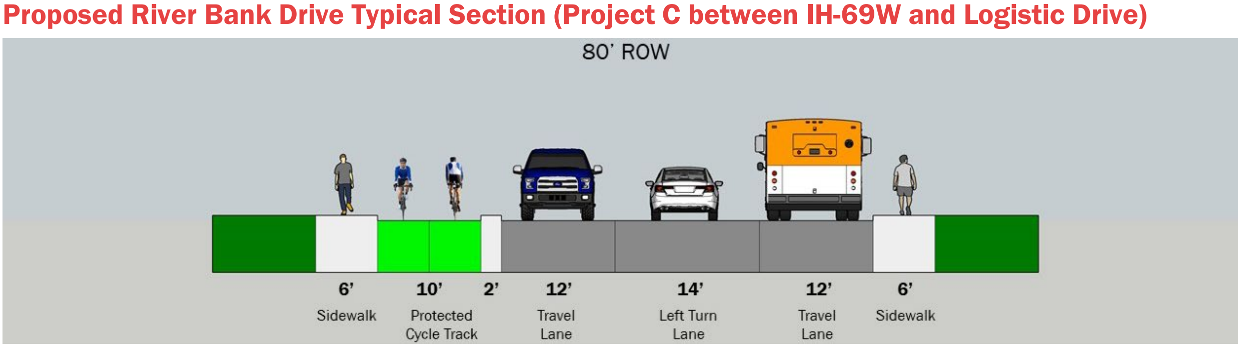
Potential Project Benefits:

People are walking in the area and taking the bus. The quality of the pedestrian environment will be improved through this series of investments in the short-term. This will form the framework for multimodal access in the area.

Individual Project Component Costs:

A) Killam Industrial Boulevard Improvements	$3,857,000
B) River Bank Drive Sidewalk Gaps	$422,000
C) River Bank Drive Sidewalks & Bike Lane	$1,128,000
D) A.F. Muller Boulevard Shared-Use Path	$203,000

Proposed River Bank Drive Typical Section (Project C between IH-69W and Logistic Drive)



Vallecillo Road

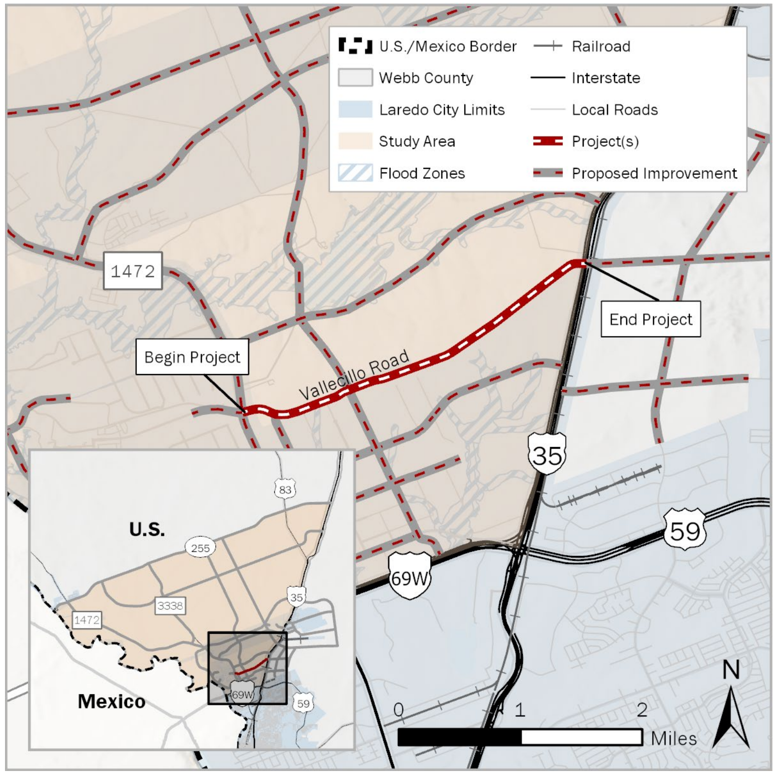
Project Location:

New location roadway connecting FM 1472 at A.F. Muller to IH-35

Project Description:

This project is approximately 3.2 miles of new roadway that includes a continuous 150' wide right-of-way for future expansion. Initially this will be a five-lane roadway that will link key north-south roadways (FM 1472 and IH-35) where continued industrial growth can be expected to occur on the south side of the road.

The project ties into A.F. Muller Boulevard and will have sidewalks on both sides including a 10' shared-use path on one side.



Recommended Timeframe:

Short-Term 2020-2024

Opinion of Probable Cost (FY19):

$31,471,000

Possible Project Schedule:

Initiation	2018
Planning	2019
Development	2020
Construction	2022

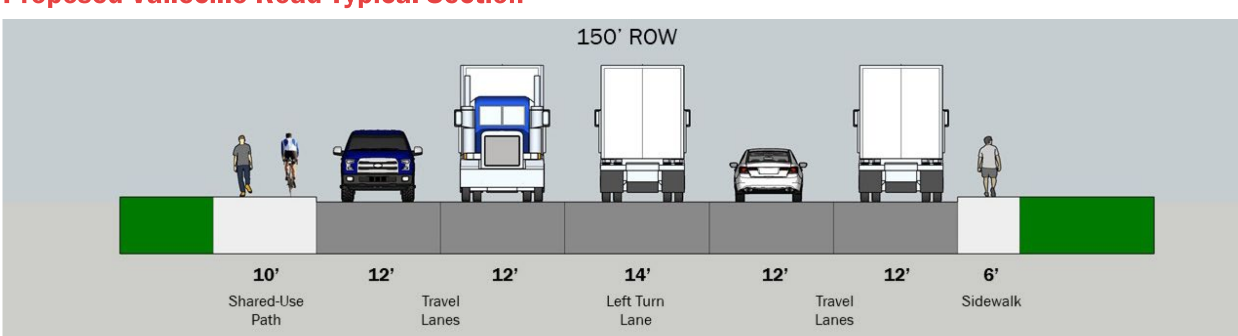
Potential Project Benefits:

This project will serve as a critical connection in the network, not only between FM 1472 and IH-35, but also to several north-south roadways that currently dead end where Vallecillo Road will eventually be, providing relief for Killam Industrial Boulevard. Vallecillo Road will also be an important part of the multimodal framework.

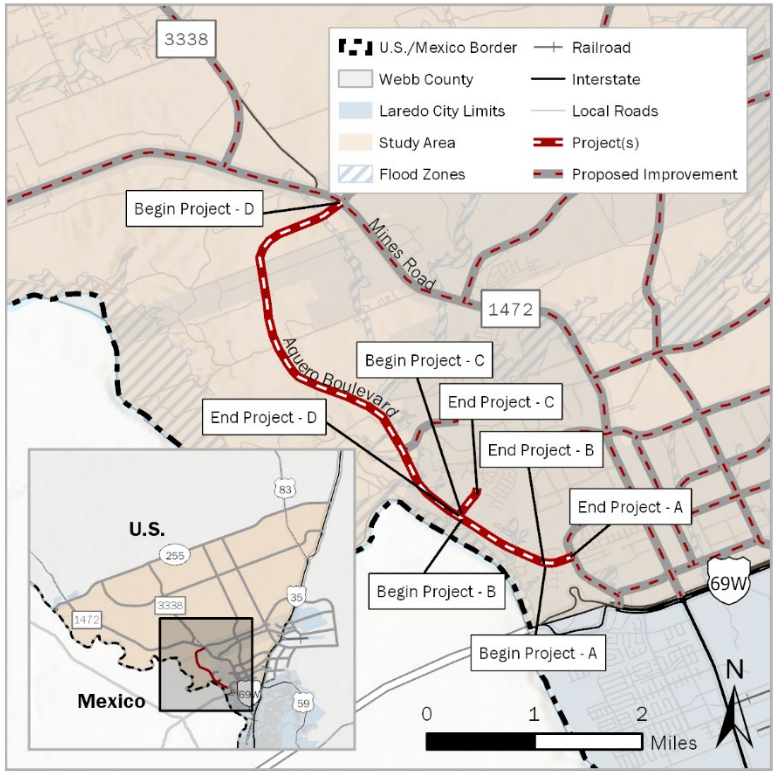
Individual Project Component Costs:

A) Vallecillo Road	$31,471,000

Proposed Vallecillo Road Typical Section



Aquero Boulevard



Project Location:

New location roadway extending Aquero Boulevard northwest to FM 1472 at Hachar Parkway.

Project Description:

This project is just under 5.5 miles of new roadway that includes a continuous 100' wide right-of-way. This will be a five-lane roadway that will serve as a parallel route to FM 1472 that could be restricted to non-commercial vehicle use.

The project includes a raised center median as well as sidewalks and buffered bike lanes on both sides. The project is recommended to tie in to Hachar Parkway at FM 1472.

Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$59,134,000

Possible Project Schedule:

Initiation	2020
Planning	2022
Development	2024
Construction	2026

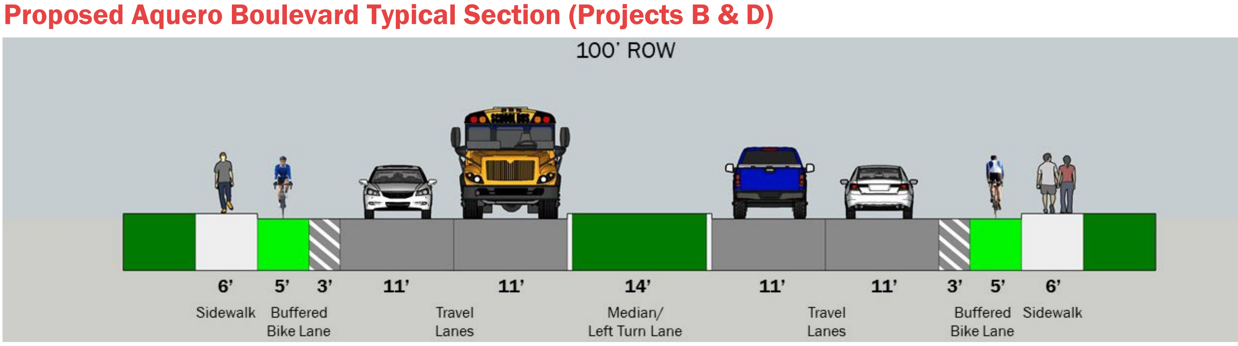
Potential Project Benefits:

This project will be a key connection for residents living in the study area, offering an alternate route to FM 1472 for personal vehicles. This road presents an opportunity to be provide a route that does not allow trucks to use and will open property up for new residential development.

Individual Project Component Costs:

A) Aquero Bike Lanes	$746,000
B) La Bota Extension	$9,866,000
C) Muller Memorial Boulevard Extension	$2,179,000
D) North Extension	$46,343,000

Proposed Aquero Boulevard Typical Section (Projects B & D)



Carrier Drive Extension

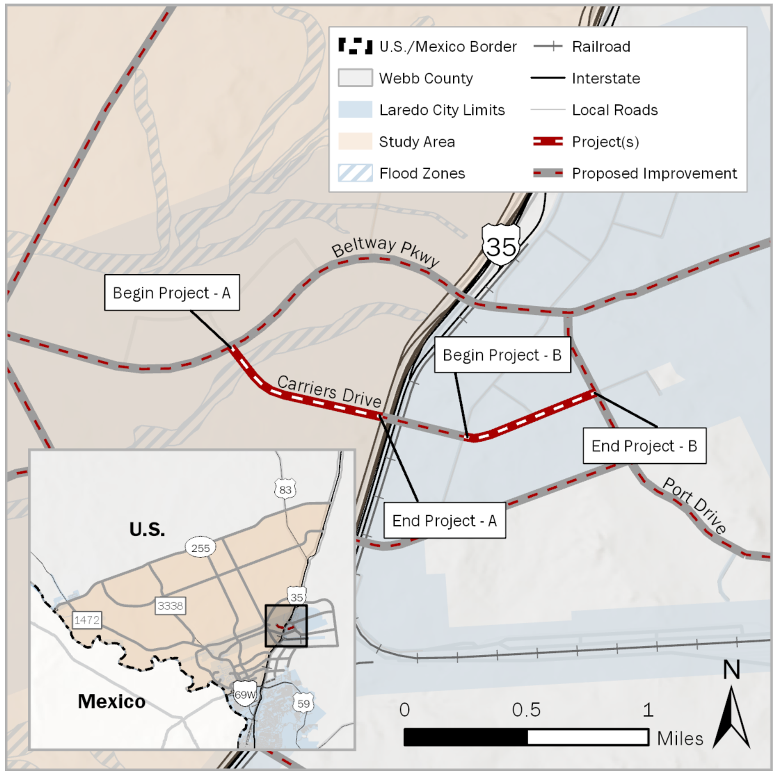
Project Location:

New location extension of Carrier Drive west from IH-35 to Beltway Parkway. Includes sidewalks on east side of IH-35.

Project Description:

This project includes 0.7 miles of new roadway with a continuous 80' wide right-of-way. The extension component will tie in to the existing interchange at IH-35. This will be a four-lane roadway with sidewalks on either side.

Another component of this project includes the implementation of sidewalks along the existing portion of Carrier Drive from Unitec Drive. 0.7 miles east to the end of the roadway.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$5,255,000

Possible Project Schedule:

Initiation	2020
Planning	2022
Development	2023
Construction	2025

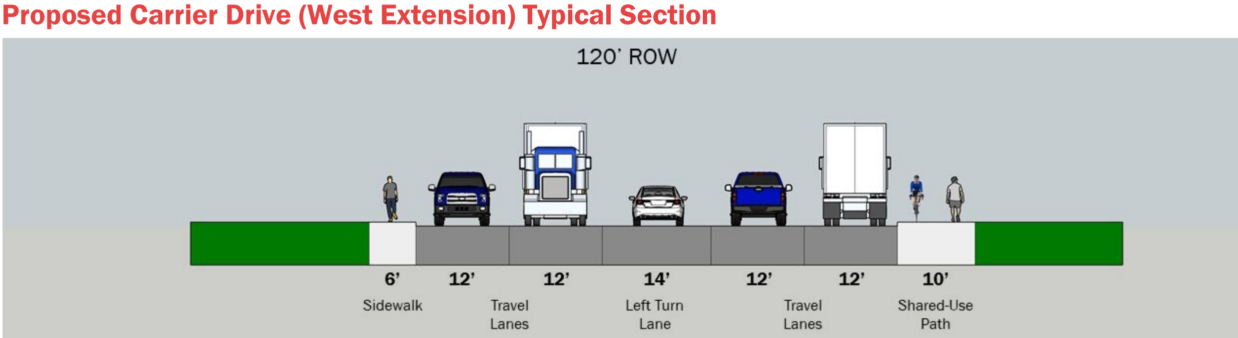
Potential Project Benefits:

The west extension of Carrier Drive will offer a critical grade-separated connection across the railroad and Interstate in a congested industrial area. Carrier Drive serves as the only grade-separated connection in this area.

Individual Project Component Costs:

A) West Extension	$4,987,000
B) East Sidewalks	$268,000

Proposed Carrier Drive (West Extension) Typical Section



Sara Road & Milo Road Widening

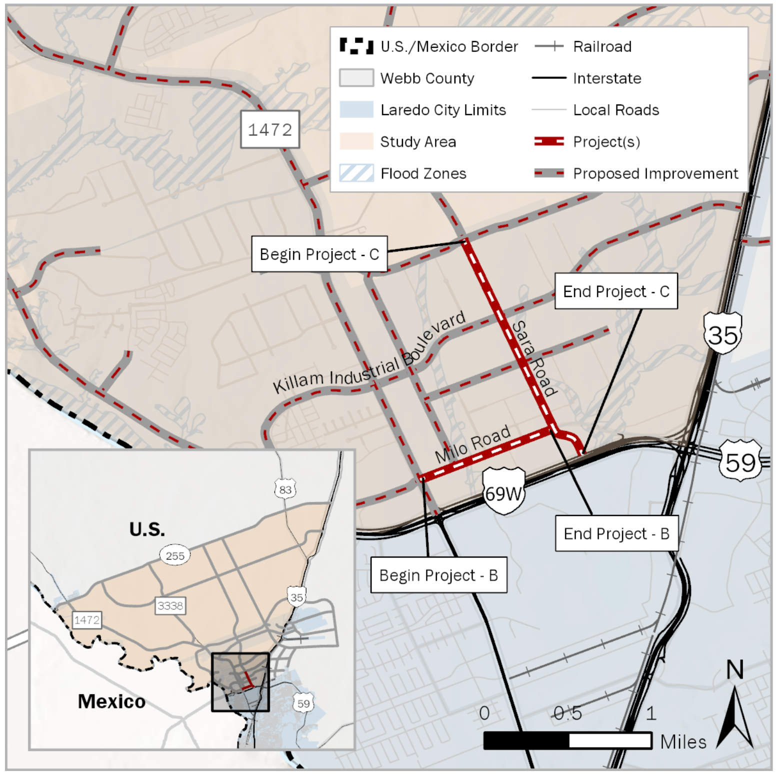
Project Location:

Key freight network improvements in the southern part of the study area; adding capacity to Milo Road from FM 1472 to Sara Road; adding capacity to Sara Road from US-69W to Vallecillo Road.

Project Description:

This project includes expanding Milo Road to five lanes with sidewalks including a 10' shared-use path and expanding Sara Road to seven lanes with sidewalks on either side.

The Sara Road expansion will require 20' of additional right-of-way on both sides, which may also require setback variances for existing buildings along Sara Road.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$39,163,000

Possible Project Schedule:

Initiation	2021
Planning	2023
Development	2025
Construction	2028

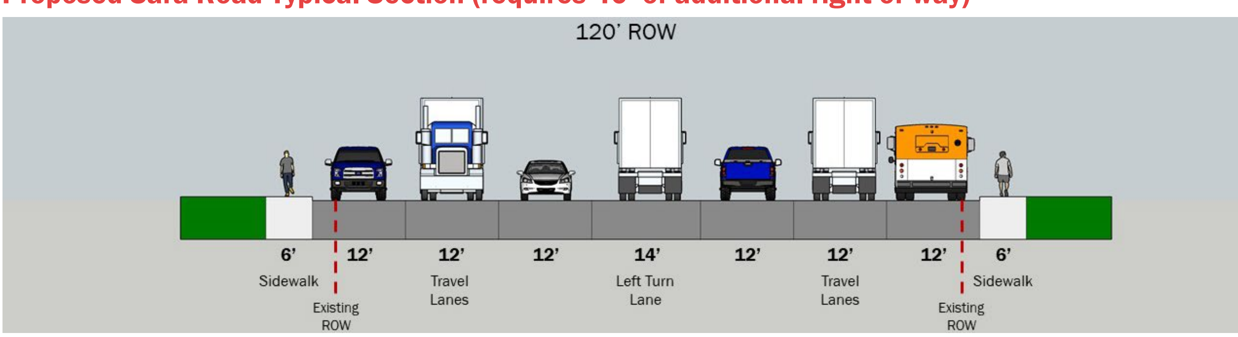
Potential Project Benefits:

Combined with the extension of Milo Road, these improvements provide an alternative route to FM 1472 for trucks. This will offer some congestion relief in the mid-term and provide an alternate route for traffic during construction should FM 1472 be expanded to a full freeway. Milo Road serves as a critical connection in the multimodal framework.

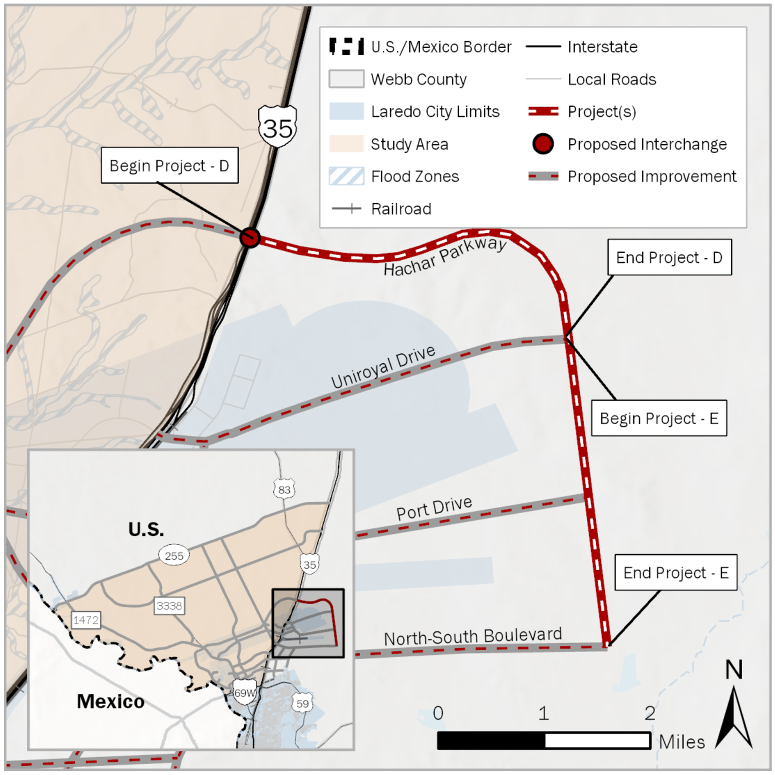
Individual Project Component Costs:

B) Milo Road Widening	$9,083,000
C) Sara Road Widening	$30,080,000

Proposed Sara Road Typical Section (requires 40' of additional right-of-way)



Hachar Parkway Extension



Project Location:

New location extension of Hachar Parkway east from IH-35, then south past Port Laredo.

Project Description:

This project is 7 miles of new roadway that includes a continuous 400’ wide right-of-way for future freeway expansion. Initially this will be a five-lane roadway extending Hachar Parkway east of IH-35. In the mid-term, this project includes an interchange at IH-35 to facilitate a grade-separated crossing. Longer-term improvements include extending Hachar Parkway to the east. This alignment is subject to change as is the typical section. Alignment may instead extend east to planned Outer Loop.

Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$79,461,000

Possible Project Schedule:

Initiation	2021
Planning	2023
Development	2025
Construction	2028, 2030, 2032

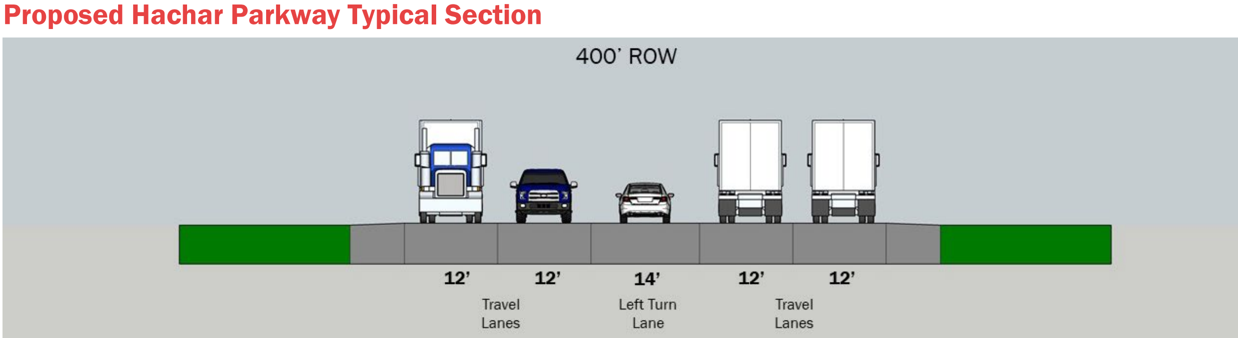
Potential Project Benefits:

Description of what the project will be able to accomplish

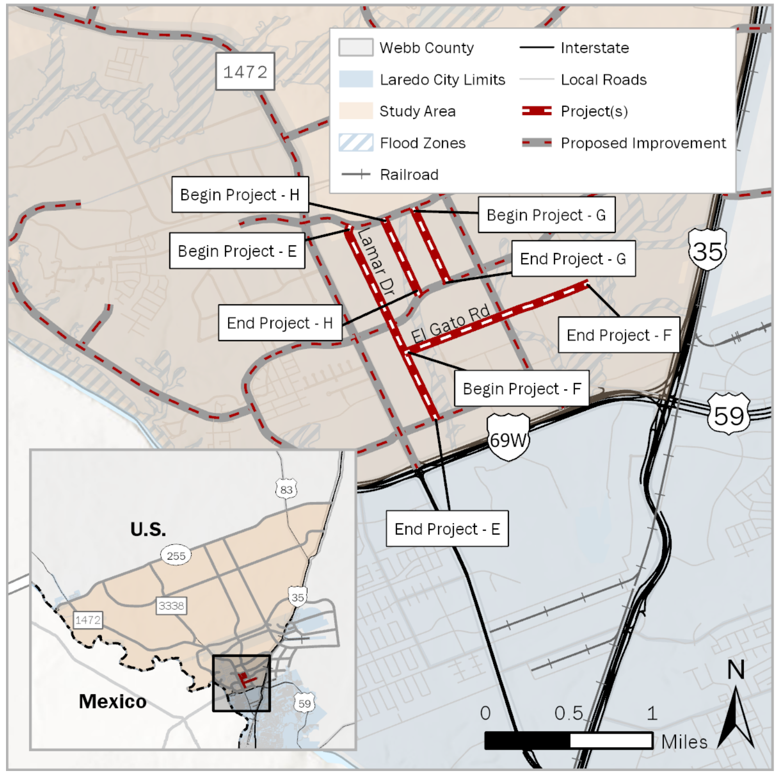
Individual Project Component Costs:

C) Interchange at IH 35	$24,203,000
D) East Extension	$29,936,000
E) South Extension	$25,322,000

Proposed Hachar Parkway Typical Section



Pedestrian/Bike Improvement Projects II



Project Location:

A series of bike/pedestrian improvements along four key roadways in the most congested part of the study area.

Project Description:

This project will add sidewalks to both sides of Lamar Drive, El Gato Road, Archer Drive and Spivey Drive, including a 10' shared-use path along one side of Lamar and El Gato Road.

This also includes extending Lamar north and south to link Milo Road to Vallecillo as well as removing a center median from the existing portion of Aquero Boulevard and adding buffered bike lanes within the existing pavement.

Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$12,239,000

Possible Project Schedule:

Initiation	2022
Planning	2023
Development	2025
Construction	2026

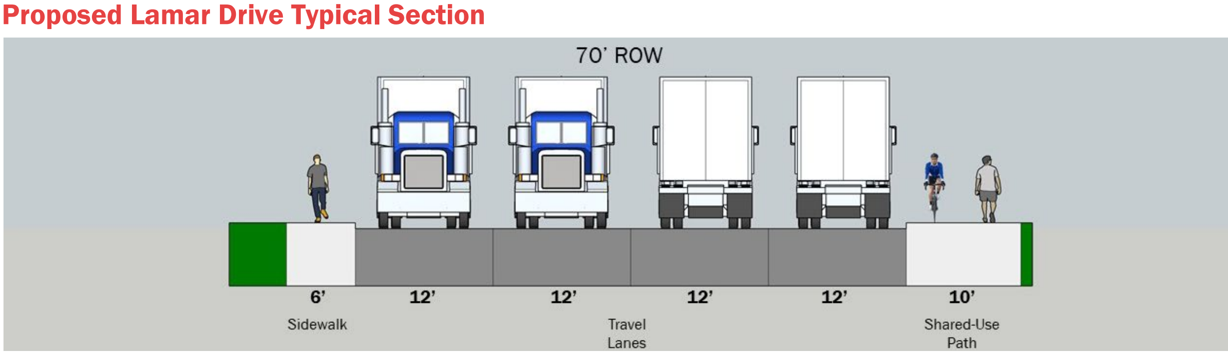
Potential Project Benefits:

These improvements will create a pedestrian network in this area where people are walking for the bus stop on Killam Industrial Boulevard. Extending Lamar Drive to connect Milo Road with Vallecillo Road will offer a parallel route to FM 1472 that would be more safe for people on foot and on bike.

Individual Project Component Costs:

E) Lamar Drive Extension	$11,315,000
F) El Gato Road Shared-Use Path	$312,000
G) Archer Drive Sidewalks	$303,000
H) Spivey Drive Sidewalks	$309,000

Proposed Lamar Drive Typical Section



Port Drive Widening & Extension

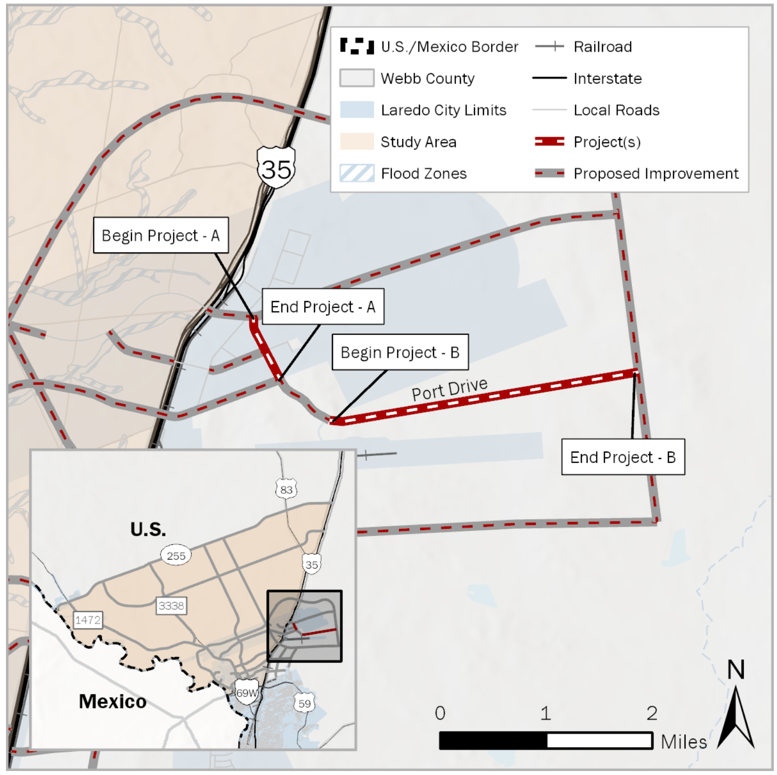
Project Location:

Reconstruction of existing Port Drive from Uniroyal Drive to 0.7 miles south and a 3.5-mile extension of the road from there to the new Hachar Parkway.

Project Description:

This project converts Port Drive from a relatively minor roadway in the area to a critical industrial collector that will play an important role in distributing traffic as this area continues to grow.

The road will be expanded to a four-lane roadway with sidewalks on either side in the mid-term and extended in the long-term.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$24,742,000

Possible Project Schedule:

Initiation	2023
Planning	2025
Development	2026
Construction	2028, 2030

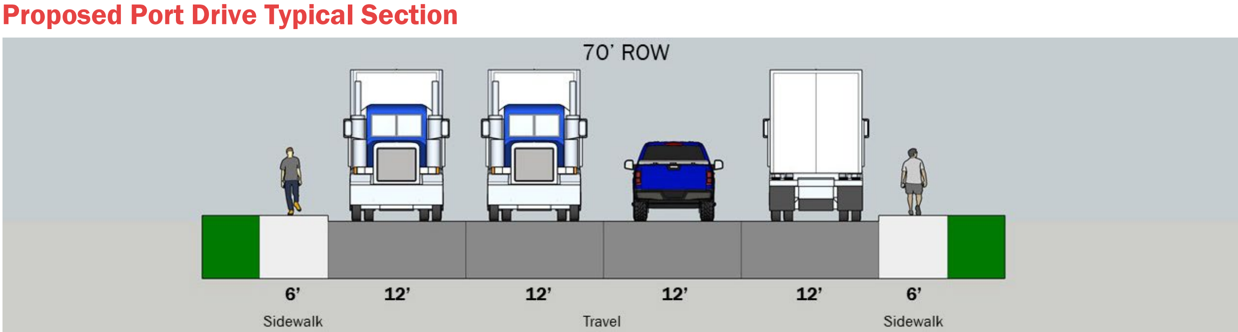
Potential Project Benefits:

This roadway is a critical link between Uniroyal Drive, Carrier Drive, and in the future, Verde Boulevard. It also connects this area to Port Laredo. Sidewalks will be added here as well, improving multimodal connectivity in the area.

Individual Project Component Costs:

A) Port Drive Widening	$3,483,000
B) Port Drive Extension	$21,259,000

Proposed Port Drive Typical Section



Uniroyal Drive Widening & Extension

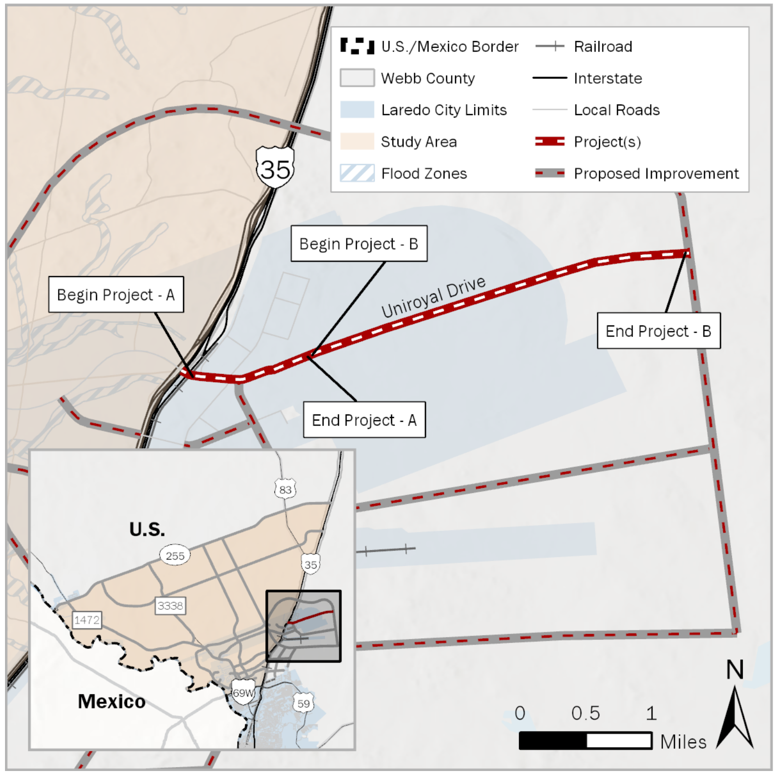
Project Location:

Reconstruction of existing Uniroyal Drive from IH-35, 1 mile to the end of the roadway and a 3-mile extension of the road from there to the new Hachar Parkway.

Project Description:

This project converts Uniroyal Drive from an industrial collector to a principal arterial that will play an important role in distributing traffic as this area continues to grow.

The road will be expanded to a five-lane roadway with sidewalks on either side in the mid-term and extended in the long-term.



Recommended Timeframe:

Mid-Term 2020-2024

Opinion of Probable Cost (FY19):

$31,315,000

Possible Project Schedule:

Initiation	2023
Planning	2025
Development	2026
Construction	2028, 2030

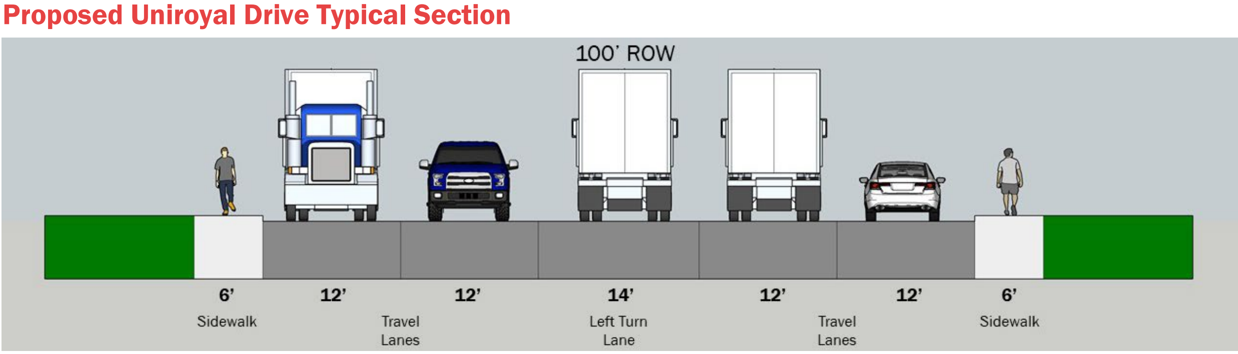
Potential Project Benefits:

As this area just east of IH-35 continues to grow, Uniroyal Drive will become a key arterial that ties into Beltway Parkway on the west side of IH-35. Sidewalks will improve multimodal conditions in the area as well.

Individual Project Component Costs:

A) Uniroyal Drive Widening	$6,852,000
B) Uniroyal Drive Extension	$24,463,000

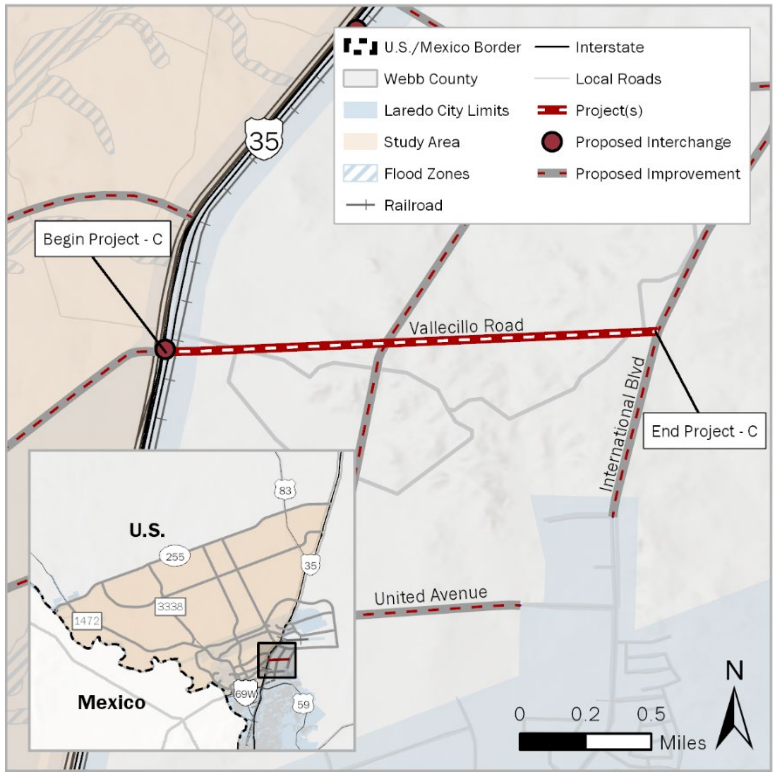
Proposed Uniroyal Drive Typical Section



Vallecillo Road Extension

Project Location:

New location extension of Vallecillo Road east from IH-35 to International Boulevard



Project Description:

This project is approximately 1.8 miles of new roadway that includes a continuous 150' wide right-of-way for future expansion. Initially this will be a five-lane roadway that will link the southern part of the study area, with key north-south roadways (McPherson Blvd., International Blvd.) on the east side of IH-35.

The project will have sidewalks on both sides including a 10' shared-use path on one side, and a grade-separated interchange at IH-35.

Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$40,887,000

Possible Project Schedule:

Initiation	2021
Planning	2023
Development	2024
Construction	2026

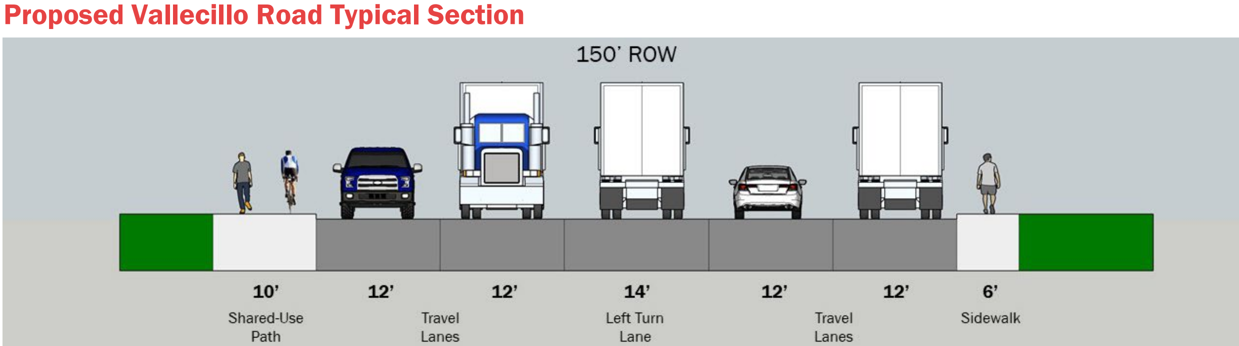
Potential Project Benefits:

This project will serve as a critical connection in the network, opening the east side of IH-35, south of Port Laredo up for development. Vallecillo will also be an important part of the multimodal framework and offer a safe path across IH-35.

Individual Project Component Costs:

B) Interchange at IH 35	$28,059,000
C) East Extension	$12,828,000

Proposed Vallecillo Road Typical Section



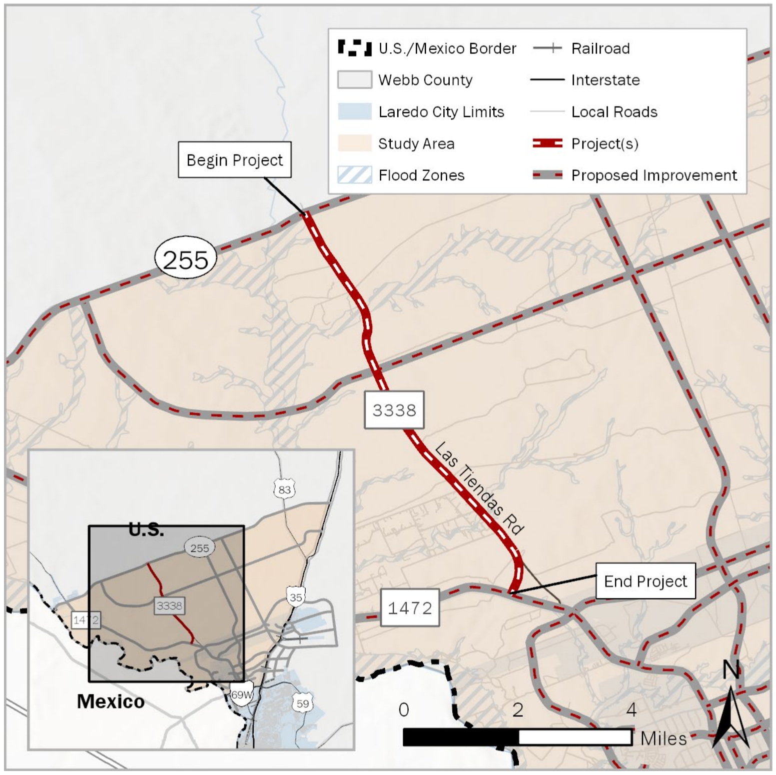
FM 3338 – Las Tiendas Road Widening

Project Location:

Expansion of existing FM 3338 from FM 1472 to TX 255.

Project Description:

This project includes expanding FM 3338 to five lanes with shoulders. There are two realignments, the first being at a curve located two miles south of TX 255, and the other relocating the FM 1472 intersection about a mile north of its current location to improve spacing between FM 3338 and the future intersection where Hachar and Aquero will cross FM 1472.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$45,000,000

Possible Project Schedule:

Initiation	2023
Planning	2025
Development	2027
Construction	2029

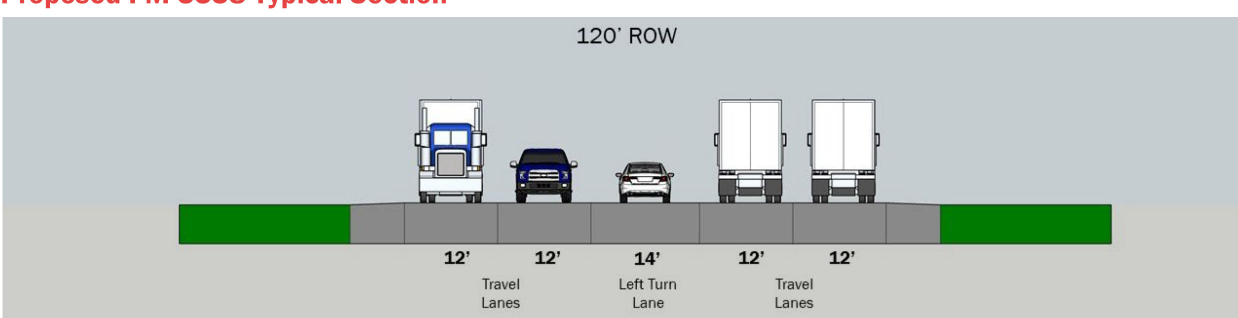
Potential Project Benefits:

This will add capacity and safety to this road as commercial and non-commercial traffic continues to grow in the area.

Individual Project Component Costs:

FM 3338 – Las Tiendas Road Widening	$45,000,000

Proposed FM 3338 Typical Section



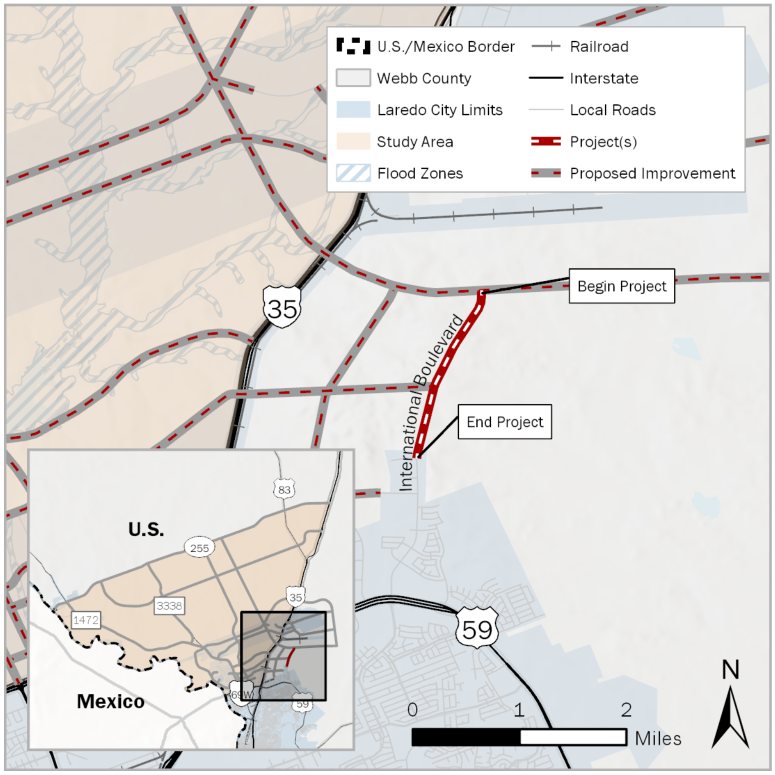
International Boulevard Extension

Project Location:

New location extension of International Boulevard from United Avenue to the proposed North-South Boulevard.

Project Description:

This project is approximately 1.9 miles of new roadway that includes a continuous 120' wide right-of-way. This will be a five-lane roadway that will link the San Isidro Northeast area with Vallecillo Road on the east side of IH-35. The project will have sidewalks on both sides.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$15,889,000

Possible Project Schedule:

Initiation	2022
Planning	2024
Development	2025
Construction	2027

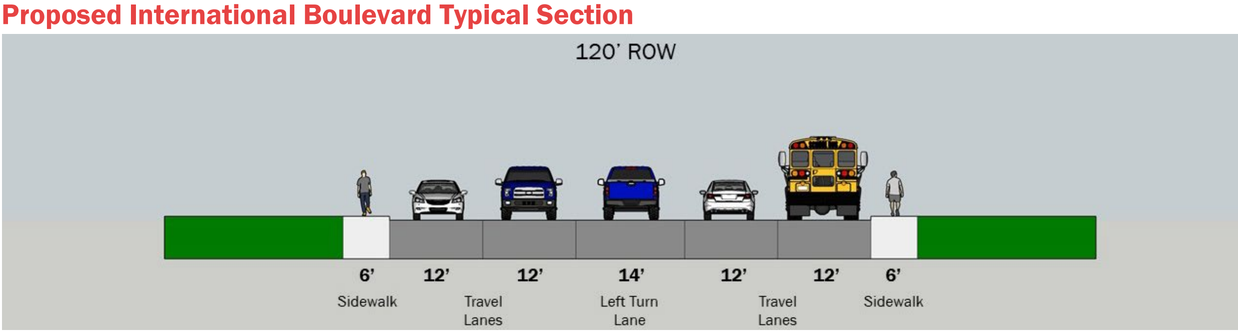
Potential Project Benefits:

This road plays a key role in establishing a well-connected street grid on the east side of IH-35 and opens the area for residential development.

Individual Project Component Costs:

A) North Extension	$15,889,000

Proposed International Boulevard Typical Section



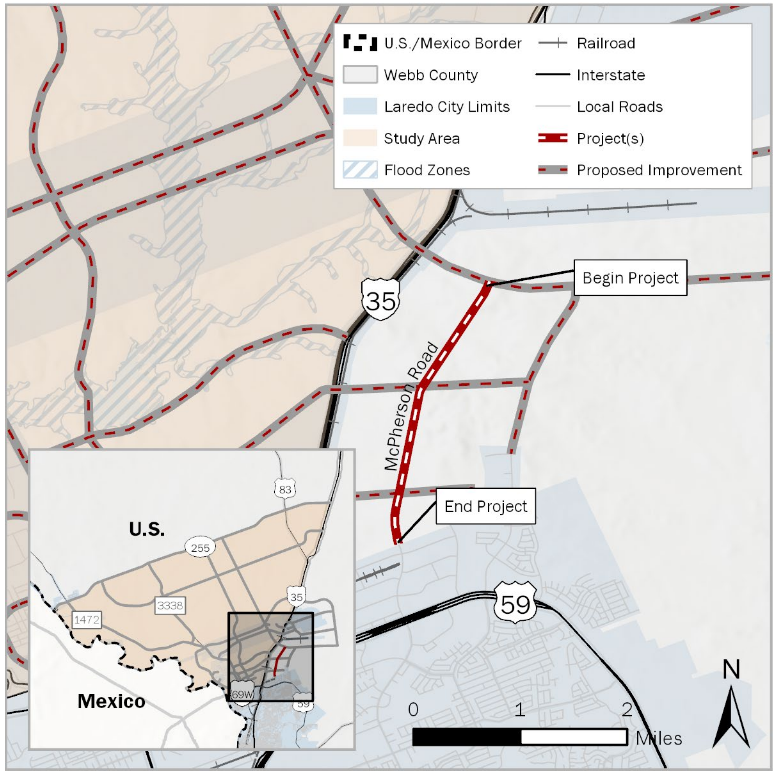
McPherson Road Extension

Project Location:

New location extension of McPherson Road from Union Pacific Boulevard to the proposed North-South Boulevard.

Project Description:

This project is approximately 3 miles of new roadway that includes a continuous 120' wide right-of-way. This will be a five-lane roadway that will link industrial parks northeast of the IH-35/IH-69W interchange with Vallecillo Road on the east side of IH-35. The project will have sidewalks on both sides.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$21,096,000

Possible Project Schedule:

Initiation	2022
Planning	2024
Development	2025
Construction	2027

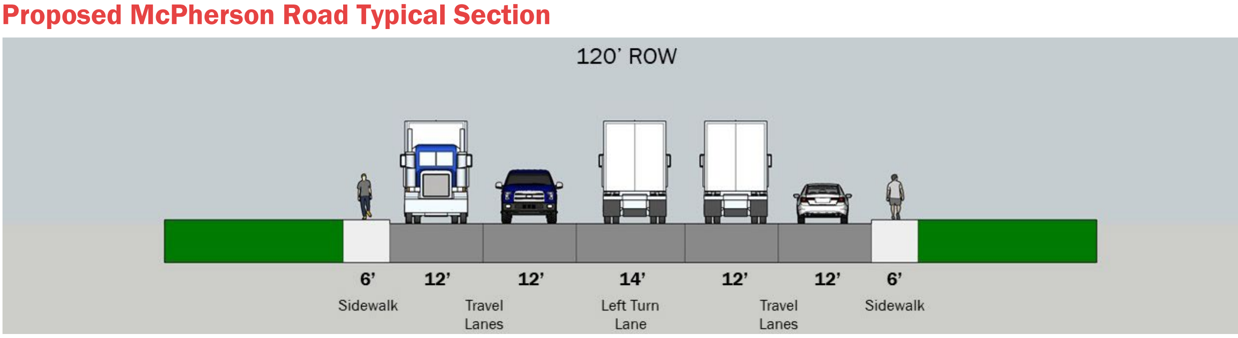
Potential Project Benefits:

This road plays a key role in establishing a well-connected street grid on the east side of IH-35 and opens the area for development.

Individual Project Component Costs:

A) North Extension	$21,096,000

Proposed McPherson Road Typical Section



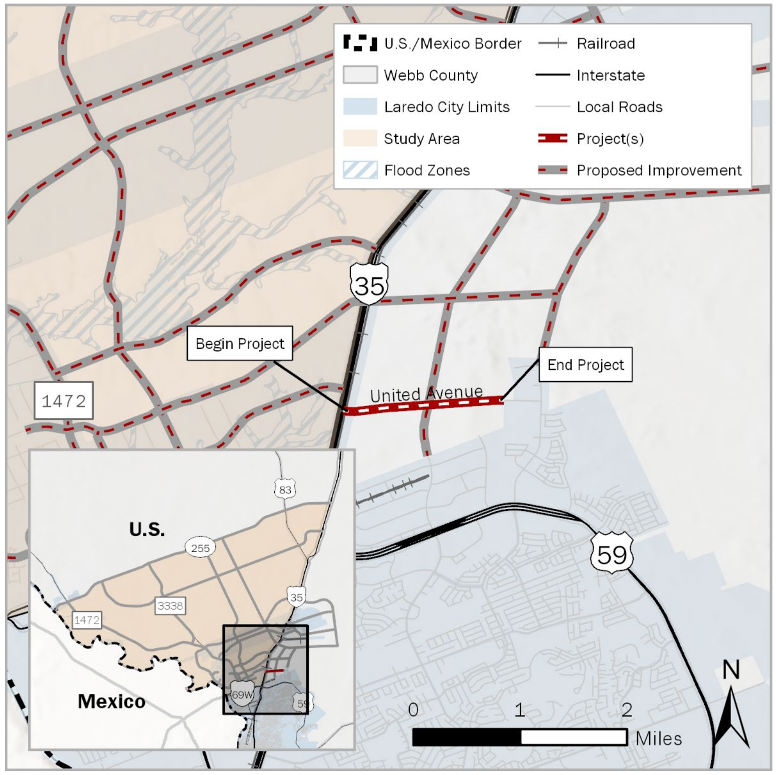
United Avenue Extension

Project Location:

Extension of United Avenue from United High School to IH-35.

Project Description:

This project is approximately 1.5 miles of new roadway that includes a continuous 90' wide right-of-way. This will be a five-lane roadway that will tie into the existing grade-separated interchange with IH-35 located less than a quarter-mile south of Killam Industrial Boulevard. The project will have sidewalks on both sides of the roadway including a 10' shared-use path.



Recommended Timeframe:

Mid-Term 2025-2029

Opinion of Probable Cost (FY19):

$16,799,000

Possible Project Schedule:

Initiation	2022
Planning	2024
Development	2025
Construction	2027

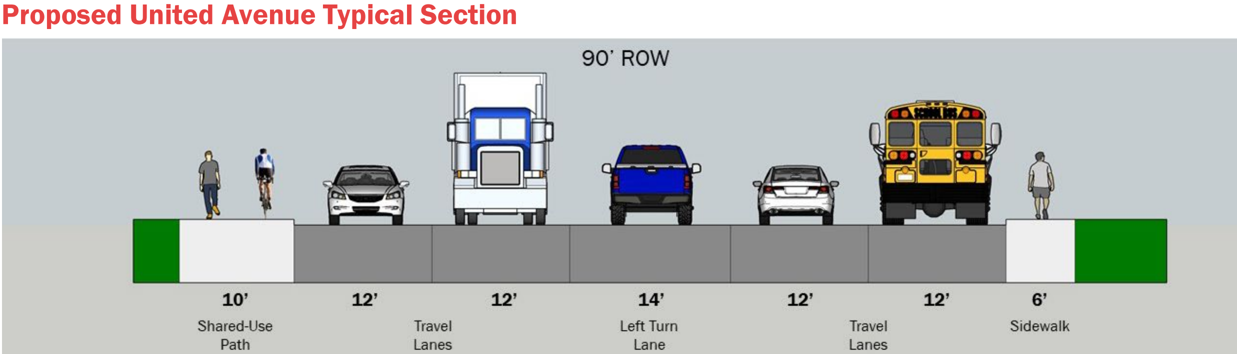
Potential Project Benefits:

This road plays a key role in establishing a well-connected street grid on the east side of IH-35 and opens the area for development. This also supports better connectivity to United High School.

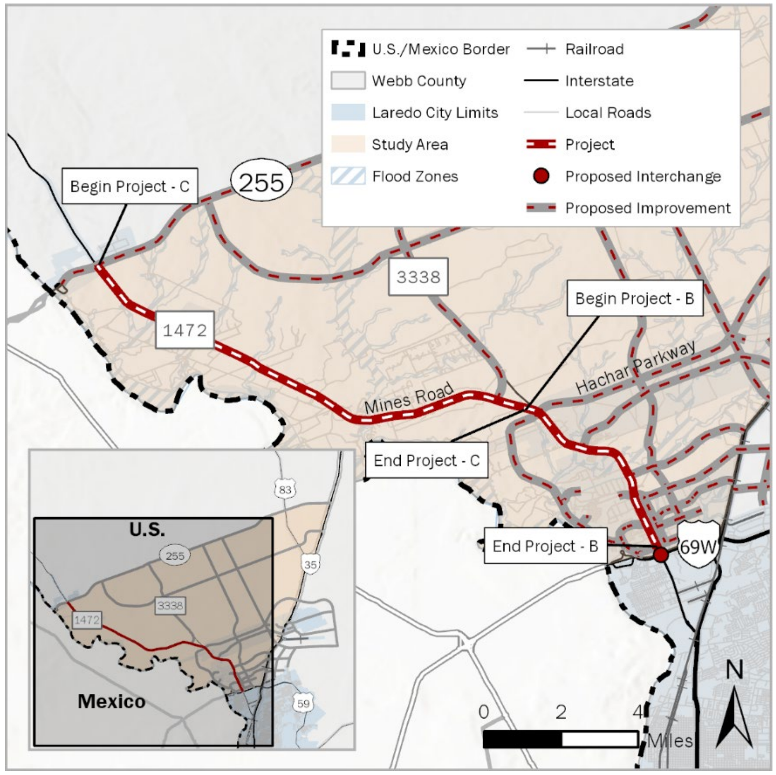
Individual Project Component Costs:

A) West Extension	$16,799,000

Proposed United Avenue Typical Section



FM 1472 – Mines Road Widening to Freeway



Project Location:

Expansion of FM 1472 from IH-69W to TX 255.

Project Description:

This project involves converting 18.8 miles of FM 1472 to a full freeway. This would include a six-lane freeway with overpasses and interchanges at key intersections, with two frontage lane on either side of the facility. This requires a continuous 300' wide right-of-way, with 400' at interchanges. This project includes a completely new interchange at IH-69W.

The right-of-way required can be expected to impact several properties in the southern part of the study area.

Proposed ROW Requirement

Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$772,674,000

Possible Project Schedule:

Initiation	2024
Planning	2027
Development	2029
Construction	2033

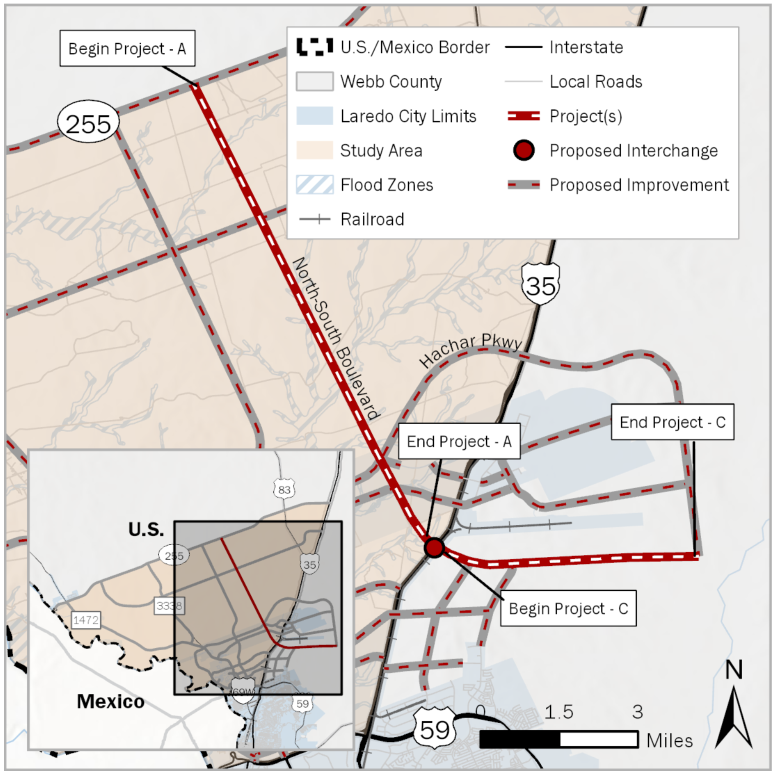
Potential Project Benefits:

A full freeway section for FM 1472 would help to keep greater volumes of traffic flowing through the area. This could greatly improve capacity and travel time.

Individual Project Component Costs:

A) Direct Connectors (2) at IH 69W	$74,391,000
B) Central Segment	$276,917,000
C) North Segment	$421,366,000

North-South Boulevard (unnamed)



Project Location:

New location roadway from TX 255 (between U.S. 83 and FM 3338) to east of IH-35 to the proposed Hachar extension.

Project Description:

This project is approximately 16 miles of new roadway that includes a continuous 120' wide right-of-way. This will be a five-lane roadway that will serve as a parallel route to FM 1472/FM 3338 that will be critical to future growth of the transportation network.

The project passes through the future intersection of Hachar Parkway and Beltway Parkway, then crosses IH-35 near exit 12A, just south of Port Laredo, continuing east for 5 miles.

Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$137,807,000

Possible Project Schedule:

Initiation	2024
Planning	2026
Development	2028
Construction	2030, 2032

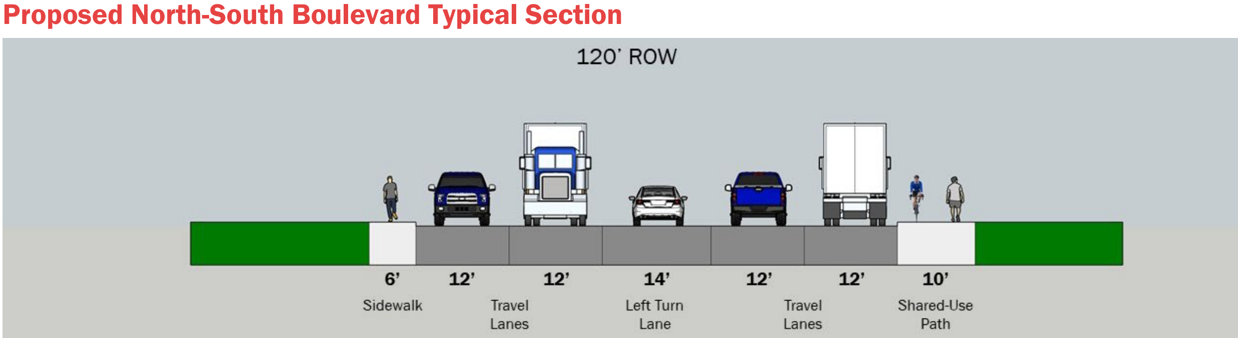
Potential Project Benefits:

This project will offer some structure to the roadway network as a new north-south principal arterial connecting both sides of IH-35 and areas that will develop off Beltway Parkway.

Individual Project Component Costs:

A) North Segment	$74,657,000
B) Interchange at IH 35	$25,166,000
C) East Segment	$37,984,000

Proposed North-South Boulevard Typical Section



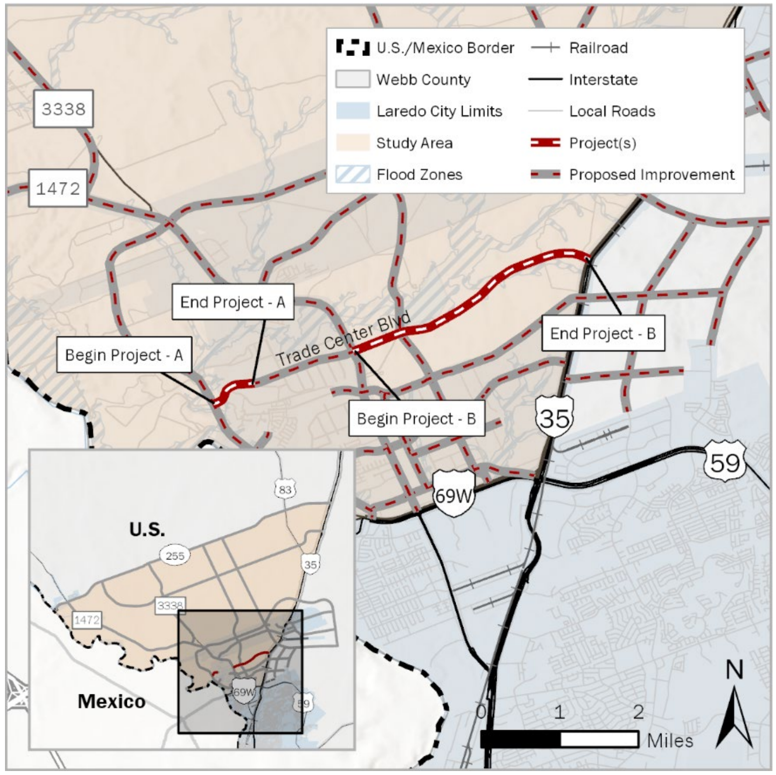
Trade Center Boulevard Extension

Project Location:

Two new location extensions of Trade Center Boulevard that together will complete a connection between Aquero Boulevard and IH-35.

Project Description:

This project has a 0.6-mile extension west to Aquero Boulevard and another 3.4 miles east to IH-35. This includes a continuous 80’ wide right-of-way. This will be a four-lane roadway primarily meant to facilitate truck movement. This roadway would terminate at the southbound frontage road of IH-35, similar to Killam Industrial Boulevard.



Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$28,241,000

Possible Project Schedule:

Initiation	2028
Planning	2030
Development	2031
Construction	2032, 2034

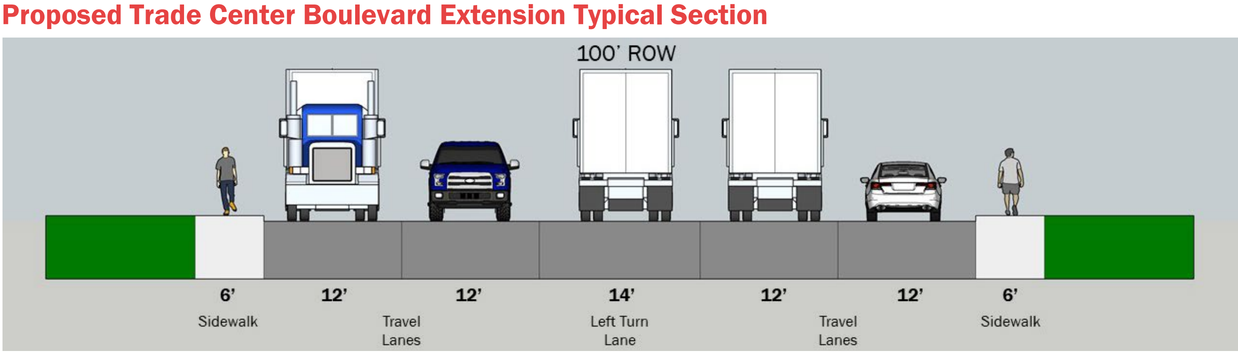
Potential Project Benefits:

This project will offer some structure to the roadway network as a new east-west connection between FM 1472 and IH-35.

Individual Project Component Costs:

A) West Extension	$6,247,000
B) East Extension	$21,994,000

Proposed Trade Center Boulevard Extension Typical Section



Verde Boulevard Extension

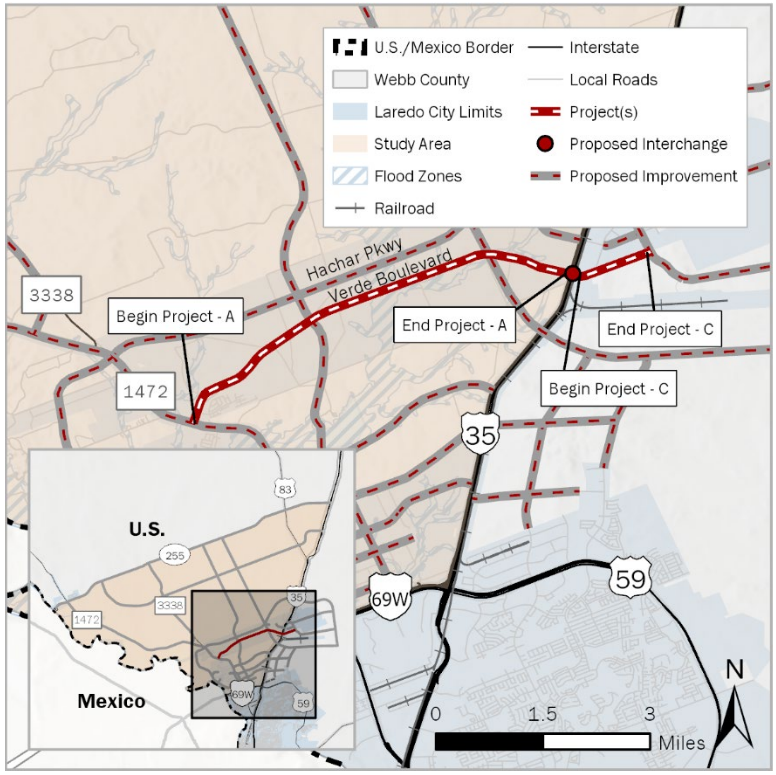
Project Location:

A new location extension of Verde Boulevard from FM 1472 to IH-35.

Project Description:

This project has a 7.3-mile extension east to and across IH-35 that includes a continuous 100' wide right-of-way. This will be a four-lane roadway serving as a parallel route to Hachar Parkway.

The project has sidewalks on both sides, including a 10' shared-use path on one side.



Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$70,112,000

Possible Project Schedule:

Initiation	2029
Planning	2031
Development	2033
Construction	2036

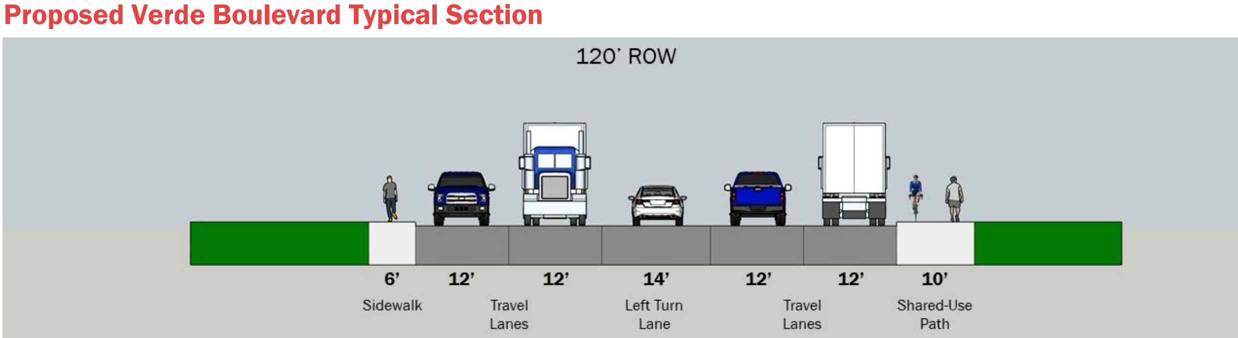
Potential Project Benefits:

This project will offer some structure to the roadway network as a new east-west connection between FM 1472 and IH-35.

Individual Project Component Costs:

A) Central Segment	$40,052,000
B) Interchange at IH 35	$20,851,000
C) East Segment	$9,209,000

Proposed Verde Boulevard Typical Section



East-West Boulevard (unnamed)

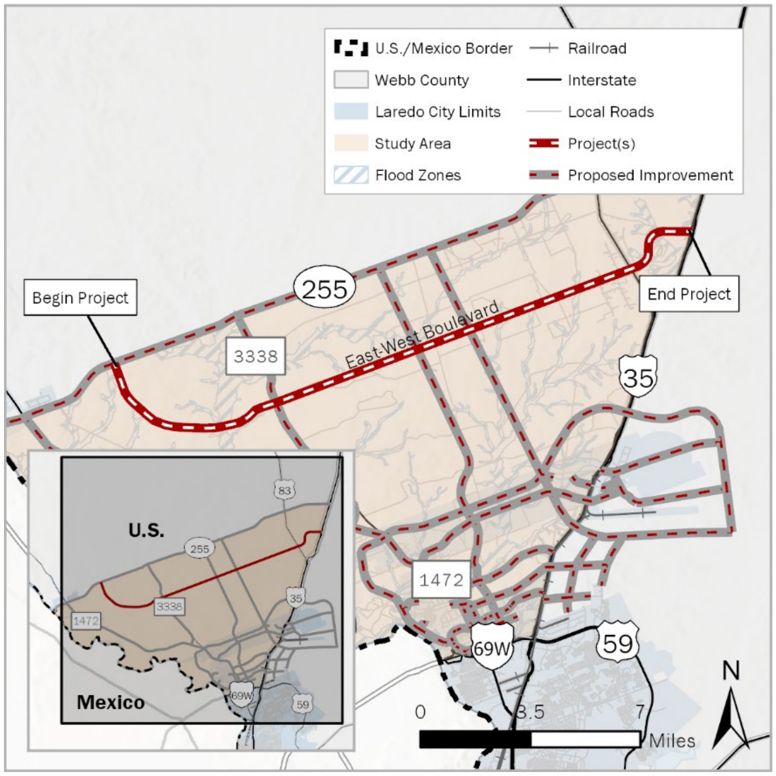
Project Location:

A new location roadway from IH-35 to FM 3338, continued on to TX 255.

Project Description:

This project has a 21.7-mile new location roadway that includes a continuous 140' wide right-of-way for future expansion. This will be a four-lane roadway with a center median serving as a parallel route to TX 255.

The project has sidewalks as well as buffered bike lanes on both sides of the roadway. This project has been identified as a "Multiuse Boulevard" in the Future Thoroughfare Plan.



Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$174,827,000

Possible Project Schedule:

Initiation	2033
Planning	2035
Development	2037
Construction	2040

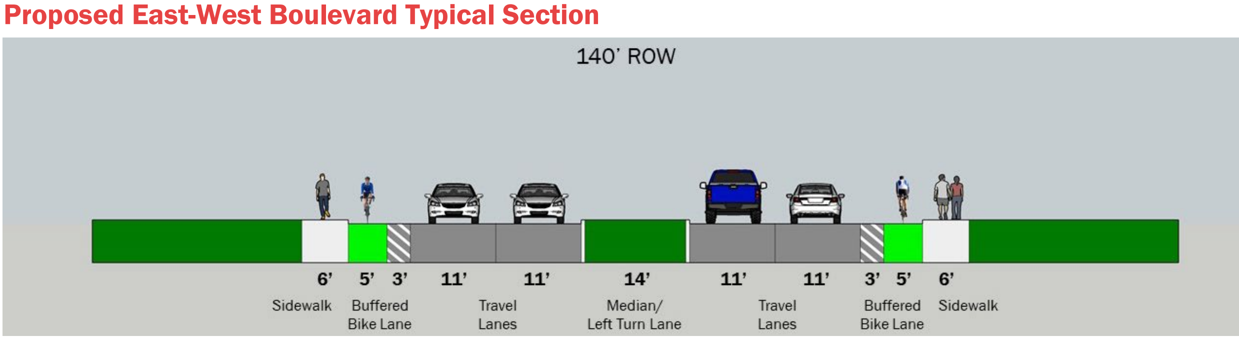
Potential Project Benefits:

This project will offer some structure to the roadway network as a new east-west connection parallel to TX 255.

Individual Project Component Costs:

A) East-West Boulevard	$174,827,000

Proposed East-West Boulevard Typical Section



Sara Road Extension

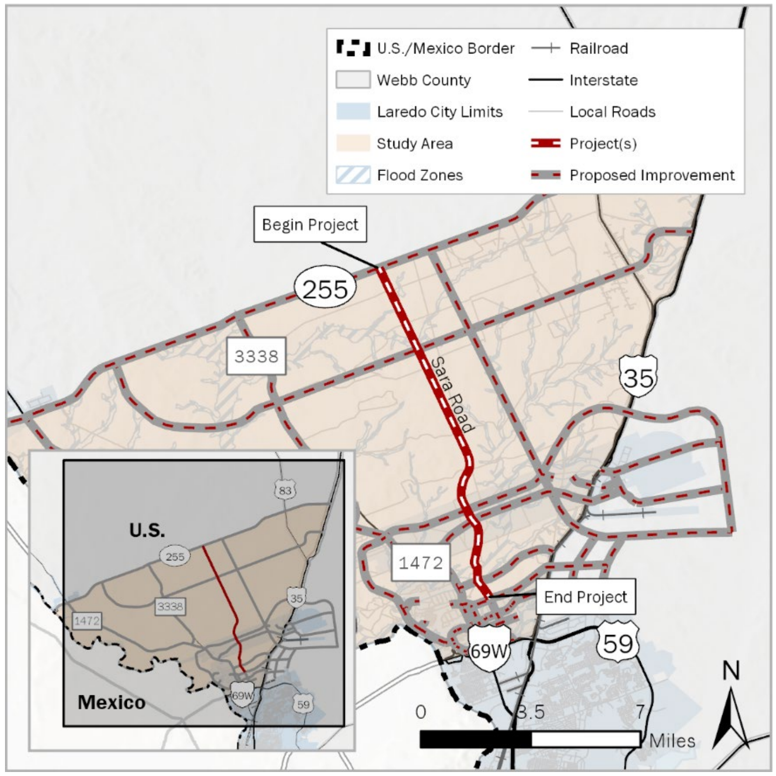
Project Location:

A new location extension of Sara Road from Vallecillo Road to TX 255.

Project Description:

This project has a 12-mile new location roadway that includes a continuous 140' wide right-of-way for future expansion. This will be a four-lane roadway with a center median serving as a parallel route to TX 255.

The project has sidewalks as well as buffered bike lanes on both sides of the roadway. This project has been identified as a "Multiuse Boulevard" in the Future Thoroughfare Plan.



Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$103,068,000

Possible Project Schedule:

Initiation	2031
Planning	2033
Development	2035
Construction	2038

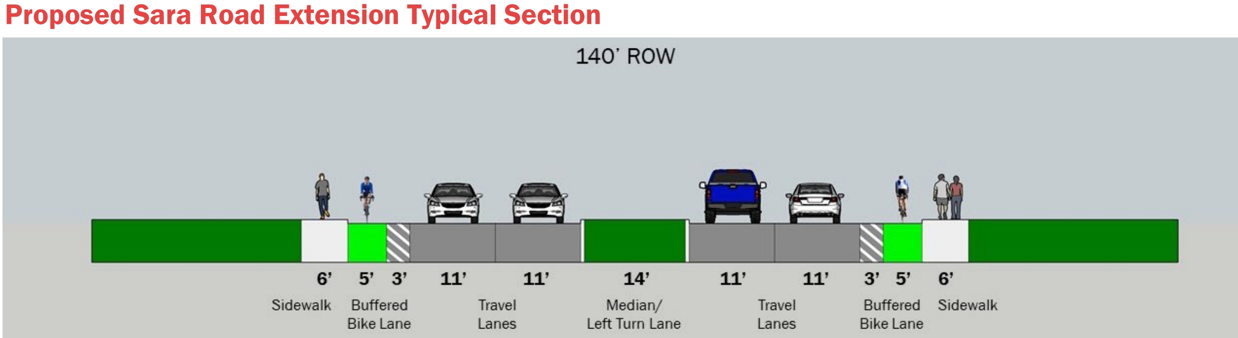
Potential Project Benefits:

This project will offer some structure to the roadway network as a new north-south connection parallel to FM 1472/FM 3338.

Individual Project Component Costs:

A) North Extension	$103,068,000

Proposed Sara Road Extension Typical Section



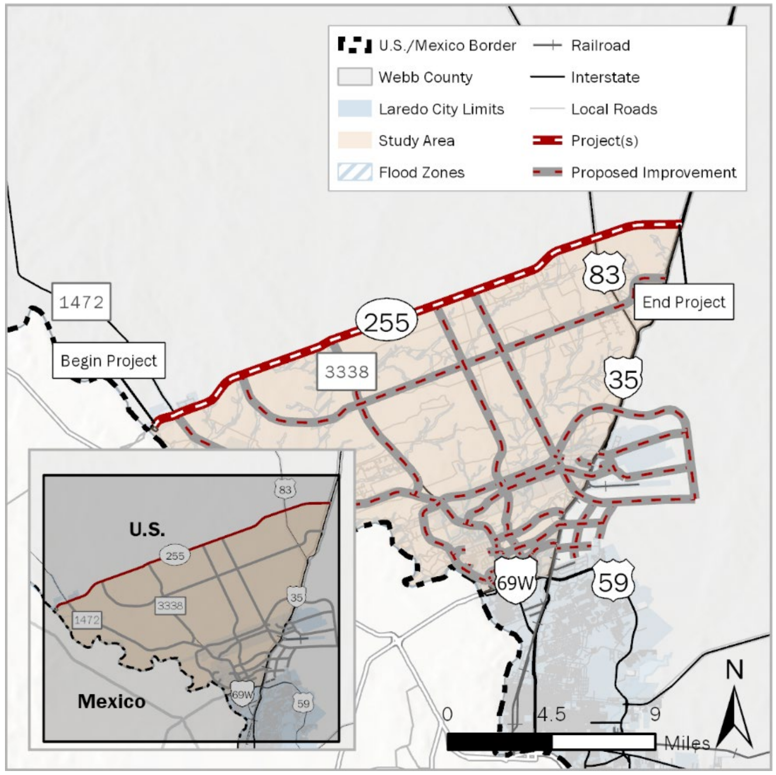
TX 255 Widening

Project Location:

Expansion of TX 255 from IH-35 to FM 1472.

Project Description:

This project includes expanding TX 255 to four lanes with shoulders, effectively adding a lane in each direction for the entire length of the roadway.



Recommended Timeframe:

Long-Term 2030-2040

Opinion of Probable Cost (FY19):

$129,388,000

Possible Project Schedule:

Initiation	2033
Planning	2035
Development	2037
Construction	2040

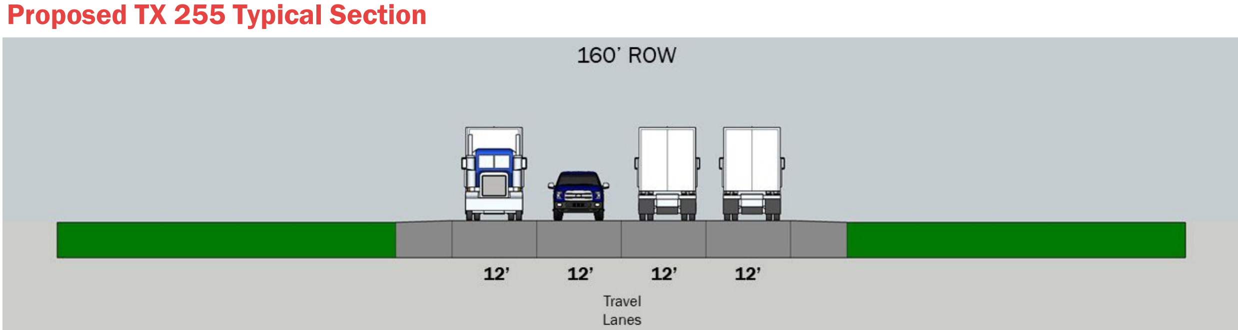
Potential Project Benefits:

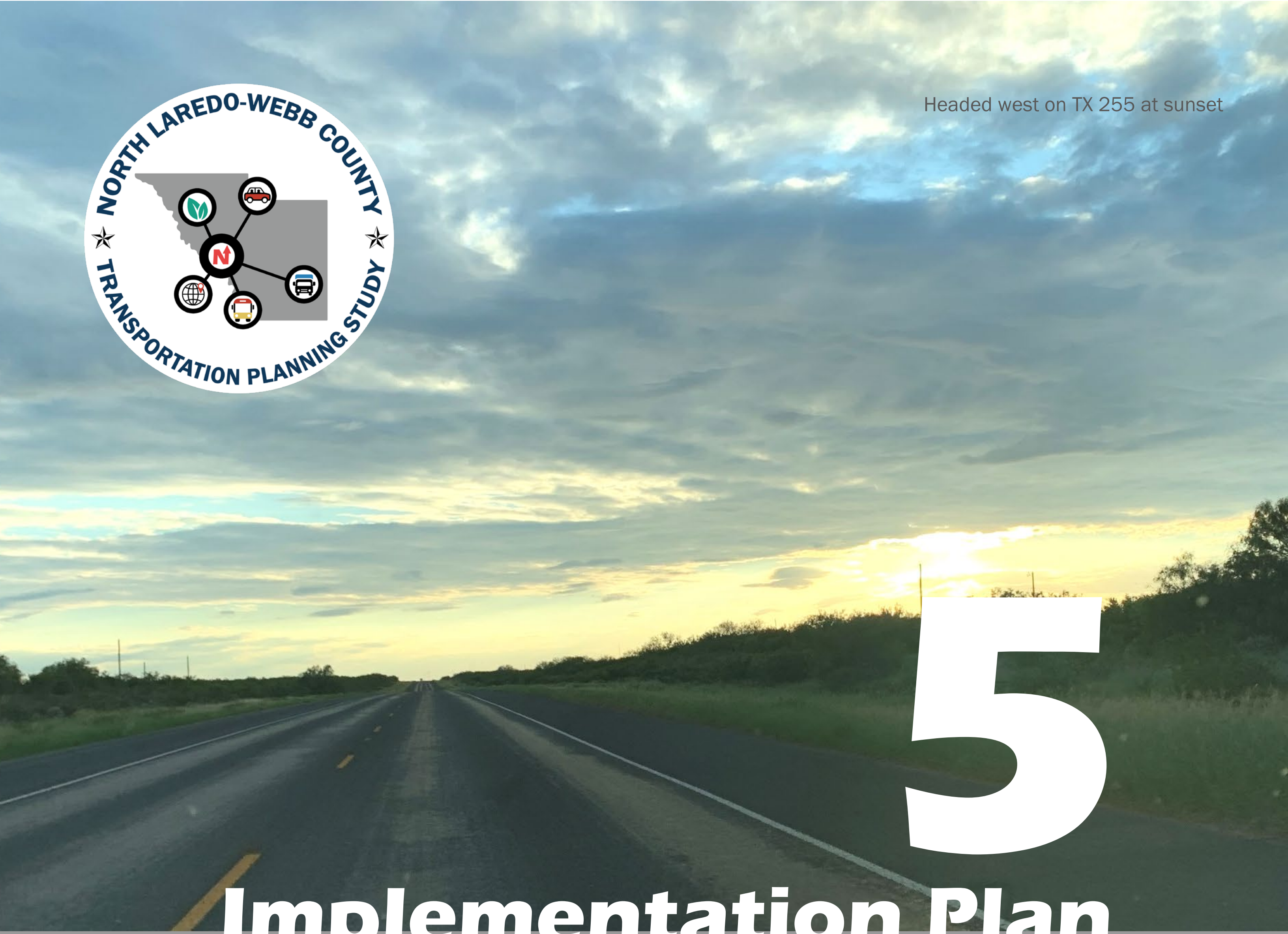
This will add capacity to TX 255 in the long-term.

Individual Project Component Costs:

A) TX 255 Widening	$129,388,000

Proposed TX 255 Typical Section





Headed west on TX 255 at sunset

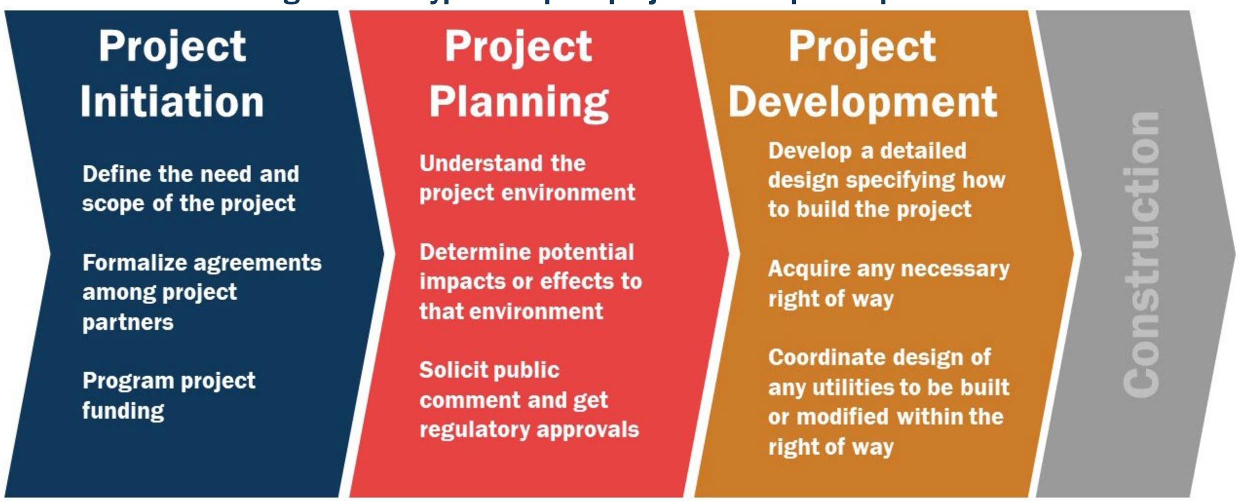
5 Implementation Plan

This section takes the recommended short-, mid- and long-term priority phasing a step further and assigns estimated schedules to each project. These schedules are subject to change as the projects develop further. This section also lists projects by phase and by year for the first five years of implementation of this plan.

Building a Program of Projects

As discussed in **Section 4**, each capital project is implemented through a process of defining, planning and designing in order to get to construction. Each of these phases requires funding and resources to get to the next phase of implementation. Because there is limited funding and resources, the projects recommended in this study have been prioritized. The implementation process in **Figure 18** applies to each of the projects in this study.

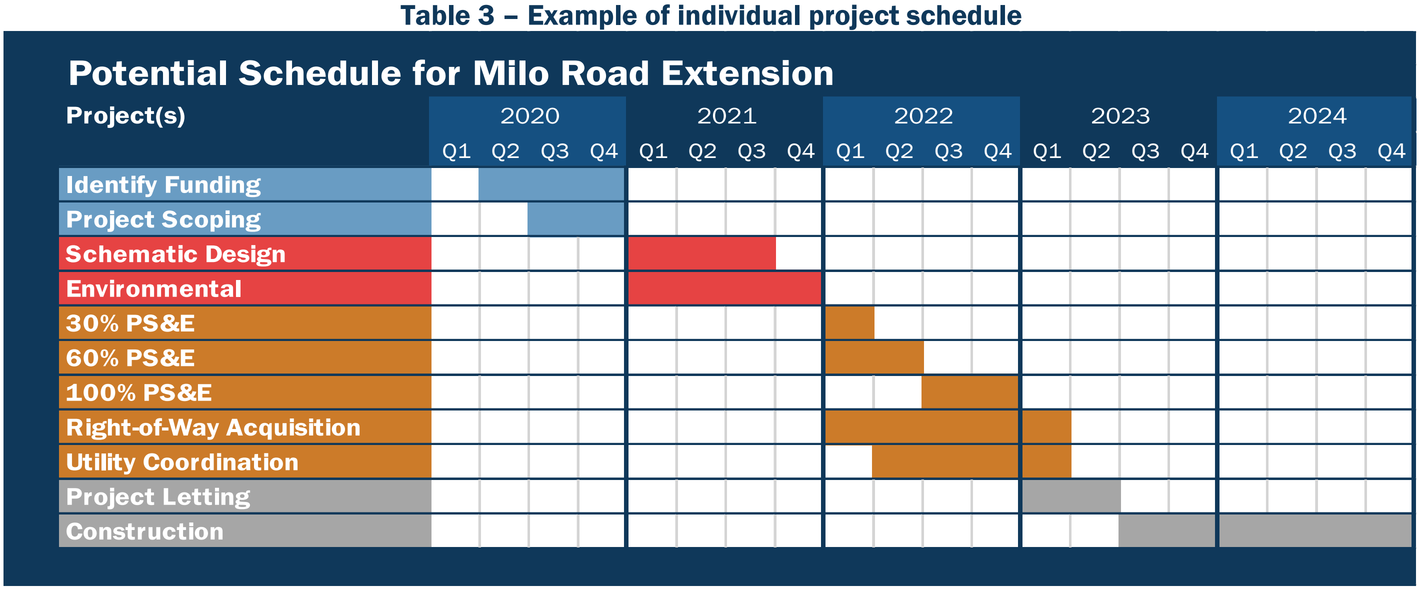
Figure 18 – Typical capital project development process



Project Schedule

Every capital project is unique. Its environmental conditions are unique, and the scope and complexity of each project is also different. While this may be the case, they all follow the same general process. Those unique factors all have some degree of bearing on how much effort is required during each phase of this process, and therefore differs in the amount of time it takes to deliver a fully built project. An example of how the process in **Figure 18** applies to an actual project including dates and milestones is illustrated in **Table 3**.

Table 3 – Example of individual project schedule



Each project schedule gets even more detailed than what is shown in **Table 3**. Each individual project schedule will be revisited and defined in more detail as part of the scoping discussions during the project initiation phase. In **Table 4**, a comprehensive listing of all the projects described in **Section 4** and their respective schedules are simplified further and shown together. The colors represent different phases and they are placed in the year those activities can be generally expected to occur. The number at the end of the estimated construction timelines indicate the year the project can be expected to open for use. As discussed in **Section 4**, the projects are split into short-, mid- and long-term, which essentially reflects the time period when a project can be expected to be completed. As illustrated in **Table 4**, even if a project is characterized as mid- or even long-term, there are still several activities that must occur in the short-term to deliver the project on time.

Table 4 – Comprehensive table of estimated project schedules

Estimated Schedules for Recommended Projects

Page #	Project	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
42	FM 1472 - Mines Road Capacity Upgrades			22																		
43	Milo Road Extension					24																
44	Hachar Parkway				23																	
45	Pedestrian/Bike Improvement Projects I					24																
46	Vallecillo Road				23																	
47	Aquero Boulevard							26														
48	Carrier Drive Extension						25															
49	Sara Road & Milo Road Widening									28												
50	Hachar Parkway Extension									28		30		32								
51	Pedestrian/Bike Improvement Projects II							26														
52	Port Drive Widening & Extension									28		30										
53	Uniroyal Drive Widening & Extension									28		30										
54	Vallecillo Road Extension							26														
55	FM 3338 - Las Tiendas Road Widening										29											
56	International Boulevard Extension								27													
57	McPherson Road Extension								27													
58	United Avenue Extension								27													
59	FM 1472 - Mines Road Widening to Freeway														33							
60	North-South Boulevard (unnamed)											30		32								
61	Trade Center Boulevard Extension													32		34						
62	Verde Boulevard Extension																	36				
63	East-West Boulevard (unnamed																					40
64	Sara Road Extension																			38		
65	TX 255 Widening																					40

* Project component recommended as long-term

Initiation | Planning | Development | Construction

First Five Years

The full listing of projects and schedules illustrates how multiple things must occur at the same time in order to implement this program of projects. It is important to determine how to execute this in the first five years. In **Table 5**, projects are shown by which phase they should be in by year over the next five years. This shows that five projects can be delivered within the next five years, though 16 new projects will have been initiated within that same timeframe.

Table 5 – Phasing schedule for proposed projects

Recommended Projects by Phase In First Five Years				
Year	**Project Initiation**	**Project Planning**	**Project Development**	**Construction**
2020	Milo Road Extension Ped/Bike I Aquero Blvd Carriers Drive		FM 1472 Capacity Hachar Parkway Vallecillo Road	
2021	Sara/Milo Widening Hachar Extension Vallecillo Extension	Milo Road Extension Ped/Bike I Aquero Blvd Carriers Drive	Hachar Parkway	FM 1472 Capacity Vallecillo Road
2022	Hachar Extension McPherson Extension United Extension	Ped/Bike I Aquero Blvd Carriers Drive Sara/Milo Widening Hachar Extension Vallecillo Extension	Milo Road Extension	***FM 1472 Capacity*** Hachar Parkway ***Vallecillo Road***
2023	Port Drive Widening Uniroyal Widening FM 3338 Widening FM 1472 Freeway	Sara/Milo Widening Hachar Extension Ped/Bike II International Extension McPherson Extension United Extension	Ped/Bike I Aquero Blvd Carriers Drive	Milo Road Extension ***Hachar Parkway***
2024	FM 1472 Freeway North-South Blvd	Port Drive Widening Uniroyal Widening FM 3338 Widening International Extension McPherson Extension United Extension	Aquero Blvd Sara/Milo Widening Hachar Extension Ped/Bike II	***Milo Road Extension*** ***Ped/Bike I*** Carriers Drive

BOLD Construction completed during the year

As projects are developed, planning for future projects remains continuous. Planning is occurring at several levels as well including the City, MPO and State levels, where annual budgeting is an ongoing function. It is important to maintain an awareness of the needs in the region and the projects that can be implemented to meet those needs. As circumstances change, so too can priorities, which should be reflected in how projects are planned.

Project Preparedness

While the projects discussed in **Section 4** address the physical characteristics and constraints of the overall network, there are also many organizational and analytical needs to consider when implementing projects and to inform decision-making and prioritization. Planning and organizing individual projects strategically to improve the overall roadway network communicates a clear intent and function for each individual project. This helps prioritize projects and be best prepared for funding when there is a call for projects or a discretionary grant opportunity that a given project may be competitive for.

There are several transportation needs across the region of which the projects in this study are just a part. Continued coordination between the City, TxDOT, MPO, RMA and private developers is key to identifying needs, prioritization and funding. Many projects can only be realized if several different funding sources are combined to cover the costs. Anticipating future projects and targeting the less costly, earlier project phases for which to obtain funding is necessary to be prepared as funding opportunities are made available. Demonstrating that a project has some level of funding identified, that there is support for the project and that it is clearly defined along with all its benefits and risks, makes a project that much more likely to be considered for funding. It is important to get projects into the pipeline and keep them moving to the extent possible.

Data Recommendations

In addition to investing in roadway infrastructure, it is recommended that to better understand what is happening within the roadway network and inform decision-making, a more robust data collection and analysis infrastructure be put in place. Often over-looked or collected on an as-needed basis data such as traffic counts, origin and destination and socio-economic data can be extremely valuable tools if consistently updated at regular intervals.

In developing the traffic analysis for this study, it was determined that the regional travel demand model is due for an overhaul. This would require some investment, though there may be opportunities to include sub models or improved functionality for testing different scenarios and roadway configurations. Due to the conditions unique to this study area, there should be a way to differentiate between cars and trucks to be able to test truck-specific scenarios. To take that a step further, it is recommended that a freight commodity based sub-model element be included in the travel demand model update. This can be done building off the Texas Statewide Analysis Model, which includes Mexico, so data such as cross-border freight can be utilized and expanded upon. This statewide model pulls from the Freight Analysis Framework national dataset which includes commodity information.[26] This information can be further enhanced with localized origin and destination datasets such as Streetlight.

In addition, keeping socioeconomic data up to date at least in five-year intervals in line with the MPO Metropolitan Transportation Plan updates will help to make more defensible projections when considering changes to the road network. Revisiting the TAZ structure as the road network and land develop will help to keep the model consistent with what is occurring at a giving time. Similarly, it is recommended that traffic counts be collected every two to three years along key roadways in the system. This may require some coordination in terms of resources to keep this data as up-to-date as

[26] *Development of a Comprehensive Urban Commodity/Freight Movement Model for Texas*. Texas A&M Transportation Institute, January 2006 https://static.tti.tamu.edu/tti.tamu.edu/documents/0-4430-1.pdf

possible. To understand traffic conditions, compare over time and validate assumptions in the travel demand model, a comprehensive traffic data set will prove valuable for decision-making. Counts should also differentiate trucks from cars at key locations.

Like the roadway network capital project recommendations, these investments will cost money and may require commitments from multiple partners to deliver. This would be a worthwhile investment to make up front and program for in the future to make the most informed decisions possible and to keep up with trends happening on the ground in Laredo and Webb County.

Summary of Implementation

There are many moving parts to any implementation plan. This plan is primarily focused on projects in North Laredo-Webb County and other considerations may need to be part of the considerations moving forward. A brief list of next steps is provided below, outlining key points in this process that should be met over the next 24 months:

- Identify key partners and determine commitments to the first five years of this plan
- Determine how to formalize partnerships for funding projects in the plan
- Finalize funding for Vallecillo Road and Hachar Parkway
- Determine how to formalize partnerships for data collection and sharing
- Determine approach for Travel Demand Model Update and Data Collection Plan
- Identify funding for first set of Pedestrian/Bike Improvements and Milo Road Extension
- Identify Project Development funds for Aquero Boulevard and Carrier Drive extensions
- Identify funds for investment in Travel Demand Model update
- Proceed with PS&E on Vallecillo Road and Hachar Parkway
- Begin Environmental Process and Schematic Design on Milo, Aquero and Carrier
- Finalize funding for Milo, Aquero, Carrier and first set of Pedestrian/Bike projects