APPENDIX A
SUMMARY OF PREVIOUS STUDIES REPORT

BORDER HIGHWAY EAST STUDY

CSJ: 0924-06-090

EL PASO COUNTY, TEXAS

TEXAS DEPARTMENT OF TRANSPORTATION

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

Border Highway East

SEPTEMBER 2014

Texas Department of Transportation

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1.0 INTRODUCTION

The anticipated growth of the City of El Paso and Ciudad Juarez, Mexico, is expected to affect the communities of the Lower Valley by bringing increased economic opportunities, as well as substantial challenges to the existing transportation system. The communities of the Lower Valley include Socorro, San Elizario, Town of Clint, Fabens, and Tornillo Census Designated Places (CDPs). Overall, the Lower Valley land is changing from primarily agricultural and rural uses to residential, commercial, and industrialized urban uses.

In May 2013, the Texas Department of Transportation – El Paso District (TxDOT) began the Border Highway East (BHE) Planning and Environmental Linkages (PEL) Study to identify the purpose and need for improvements within the BHE PEL study area, determine possible viable alternatives for a long-term solution, and recommend preferred alternatives that can be carried forward seamlessly into National Environmental Policy Act (NEPA) studies.

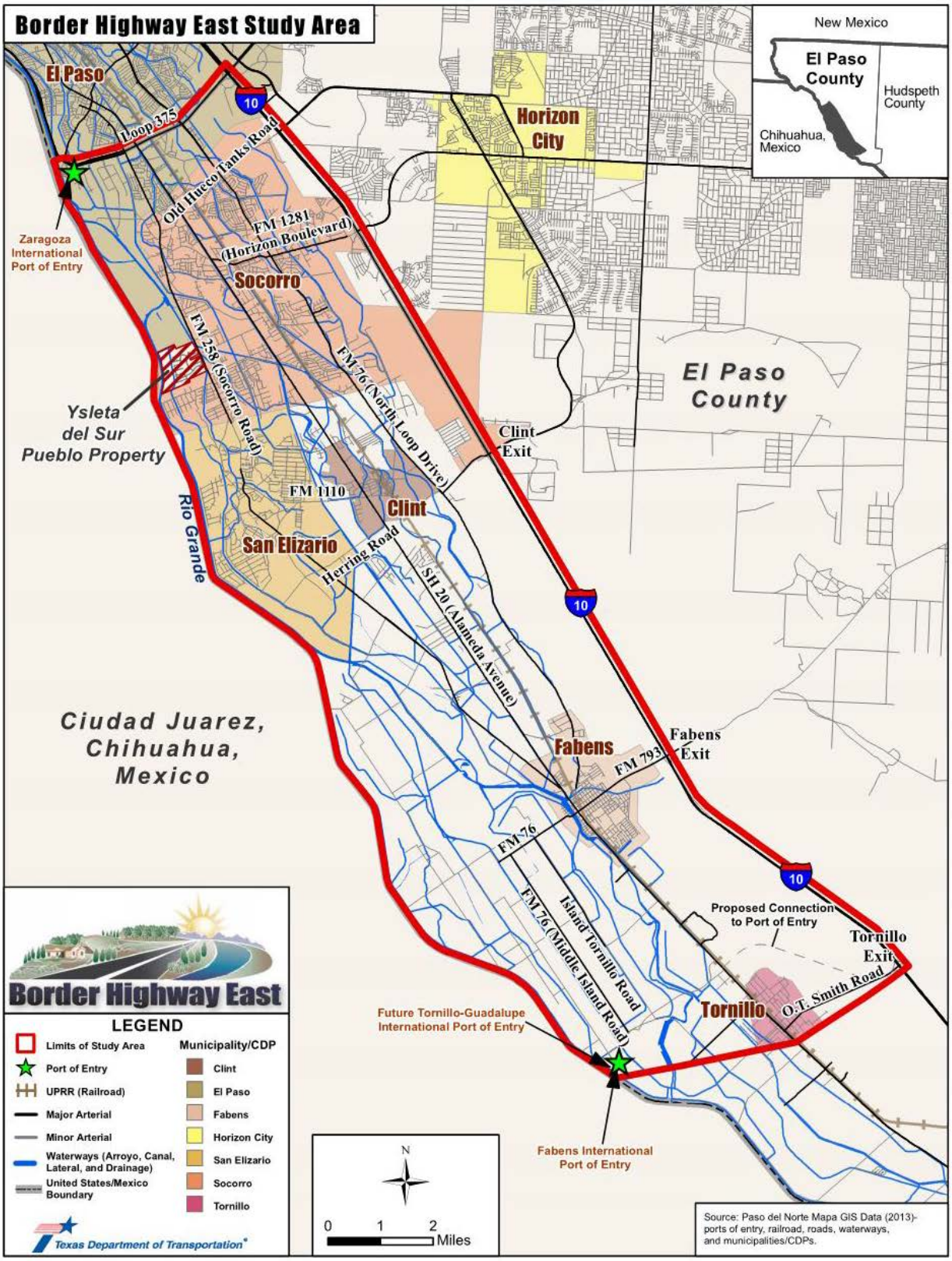
This document provides information on studies previously conducted for transportation improvements within the Lower Valley in El Paso County, Texas. The previous studies documented in this report utilized study areas that varied from the study area defined in the BHE PEL Study.

2.0 BHE PEL STUDY AREA

The BHE PEL study area or “study area” is located within the southwest portion of El Paso County in an area known as the Lower Valley. The northern limit of the study area is Loop 375 between the Zaragoza International Port of Entry (POE) and Interstate 10 (I-10). The study area extends approximately 20 miles in a southeasterly direction to just south of the Fabens International POE (future Tornillo-Guadalupe International POE). The western limit is the Rio Grande and the eastern limit is I-10. The study area is shown in **Figure 1** below.

I-10 is the primary route through southeast El Paso County. North Loop Drive (Farm-to-Market 76 (FM 76)), Alameda Avenue (State Highway 20 (SH 20)), and Socorro Road (FM 258) are the primary arterials which provide routes from the City of El Paso to the southeastern portion of the county, the Lower Valley. The study area connects six local communities: City of Socorro, City of San Elizario, Town of Clint, Fabens CDP, the majority of the Tornillo CDP, and a small portion of the City of El Paso.

Figure 1: BHE PEL Study Area



3.0 PREVIOUS PROJECT STUDIES

The BHE PEL Study is not the first attempt to identify transportation improvements for this region. In fact, multiple studies have been conducted within the Lower Valley over the last two decades. While these studies have facilitated a valuable collection of data and specific recommendations for improvements along the corridor, none have moved forward to the NEPA process due to funding constraints and other competing transportation needs within the region. Previous studies include the following:

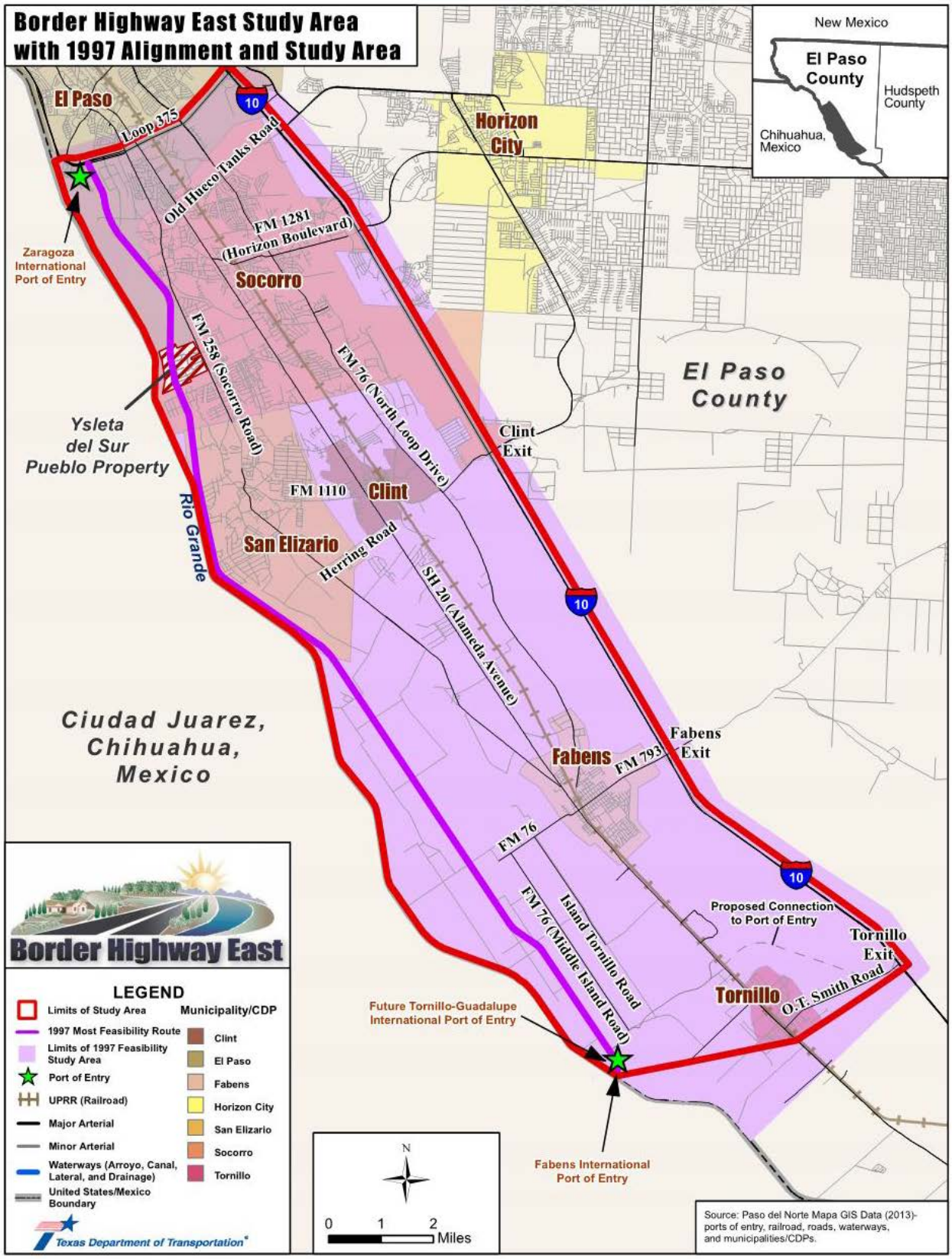
- The 1997 Border Highway Extension Feasibility Study (TxDOT 1997) was initiated to assess transportation solutions within the previously defined BHE study area. The study identified and analyzed constraints within the 1997 study area, assessed the existing transportation system, developed traffic projections, and considered alternatives. The study integrated the public involvement process and technical evaluation to develop a purpose and need, analyze and screen alternatives, and determine a feasible alignment/route. This study is further detailed in **Section 3.1**.
- In 2006, El Paso County initiated a proposed route for the Border Highway Extension East. This proposed alignment is further detailed in **Section 3.2**.
- In 2006, TxDOT initiated a tolling analysis for the BHE project. The conceptual tolling findings and recommendations were presented to TxDOT in March 2007 and the technical document, Border Highway Extension-East (El Paso District) Pass-Through Tolling Analysis Technical Memorandum (January 2007), was issued. The analysis and results are further described in **Section 3.3**.
- In 2008, the Partners for Mobility (El Paso Metropolitan Planning Organization (MPO), the City of El Paso, Camino Real Regional Mobility Authority (CRRMA), and TxDOT) developed the *2008 Comprehensive Mobility Plan* (July 2008). The Plan identified challenges, solutions through mobility, and potential partnerships. The analysis and results are further described in **Section 3.4**.

3.1 1997 Border Highway Extension Feasibility Study

3.1.1 1997 Study Area

The 1997 study area is illustrated on **Figure 2**. The 1997 study area uses the same general limits as the BHE PEL study area. The northern limit of the 1997 study area is just north of Loop 375 between the Zaragoza International POE and I-10. The western limit is the Rio Grande and the eastern limit is just east of I-10. The southern limit is located south of the Fabens International POE (future Tornillo-Guadalupe International POE). The 1997 study area includes a larger area south of the Fabens International POE (future Tornillo-Guadalupe International POE), than what the BHE PEL study area included. **Figure 2** also presents the differences in the two study areas.

Figure 2: 1997 Study Area



3.1.2 Problem Statement

At the time of the 1997 study, the Lower Valley was experiencing a transformation from agricultural communities to increasingly residential, commercialized and industrialized urban communities. The following projects had recently been completed prior to the 1997 study: the Zaragoza Bridge at the Ysleta POE, the Pan American Industrial Park expansion, and the proposed Riverside International Industrial Center. It was anticipated that the industrial growth in the Lower Valley would alter the once rural character of the region.

3.1.3 Transportation Goals and Objectives

The Border Highway East Extension that was evaluated in the 1997 study involved a new route that would begin at Loop 375 near the Zaragoza POE and extend southeasterly 20.5 miles to terminate near the Fabens International POE (future Tornillo-Guadalupe International POE). The alignment for the new construction alternatives were within a corridor defined by the Rio Grande (International Boundary) to the southwest, by Socorro Road to Fabens on the northeast, and Middle Island Road (FM 76) to the project terminus. The roadway options ranged from controlled access to a two-lane rural highway, including divided arterial configurations. Depending on projected demand, various typical sections were proposed for different segments and a phased implementation was also proposed.

In addition to the corridor facility, the study examined routes to connect the proposed roadway to the existing network, including I-10. Consideration was given to providing improved connectivity to I-10 via the following existing roadways: Eastlake Drive-Old Hueco Tanks Road (proposed), Horizon Boulevard (FM 1281), San Elizario Road (FM 1110), Fabens Drive (FM 793), O.T. Smith Road (FM 1109), and the Manuel F. Aguilera Highway (FM 3380). The study did not complete detailed alignment studies for these facilities.

At the northwestern most portion of the study area, beginning at Loop 375, an interchange was determined to be necessary to facilitate movement between the existing and proposed highways. The type of interchange was not determined, but diamond and full-directional types were considered. At intersecting streets along the proposed route, diamond interchanges or at-grade intersections were considered based on the type of roadway, traffic demand, and the topographic features of these locations.

3.1.4 Purpose and Need

The *1997 Border Highway Extension Feasibility Study* identified potential challenges for the El Paso region from various sources including:

- Public’s insight to transportation problems and needs in the study area;
- Existing (1996) and future (2015) traffic data;
- Review of the existing environment within the study area;

- The Long-Range Transportation Plan Year 2015 for the El Paso Urban Transportation Study Area; and
- The Congestion Management Plan for the El Paso Urban Transportation Study Area.

From this review, the 1997 study identified the following challenges within the Lower Valley:

- Increasing traffic demands on east-west mobility;
- Lack of connectivity to I-10;
- Congestion and the need for an alternative/parallel route to existing roadways;
- Social and economic demands from population growth;
- Increasing strain on local roadways and railroads associated with international trade; and
- Interregional trade and freight rail movements.

3.1.5 Evaluation Process and Alternative Selection

The *1997 Border Highway Extension Feasibility Study* started with a range of alternatives that included highway, transit, bicycle and pedestrian, and congestion management alternatives. Roadway alternatives considered included new alignments and corridors as well as the expansion of existing roads or combination of new and existing roads.

The initial range of alternatives was presented at the project initiation meeting, which was attended by public officials, agencies, mass transit operators, the MPO, Federal Highway Administration (FHWA), and other local officials. The first level of alternative identification resulted from the project initiation meeting, summarized in **Table 1**.

Table 1: First Level Feasibility Study Alternatives

Transportation Alternative	Description	ID
No-Build (Option 1)	Expand Socorro Road (FM 258), Alameda Avenue (SH 20) and North Loop Drive (FM 76)	NB-1
No-Build (Option 2)	Transportation Management System (TSM) and Transportation Demand Management (TDM)	NB-2
Transit (Option 1)	Light Rail/Commuter Rail using Southern Pacific Railroad facilities	T-1
Transit (Option 2)	Local bus service	T-2
Transit (Option 3)	High Occupancy Vehicle (HOV) lanes on an existing facility (I-10, FM 76, or SH 20)	T-3
Transit (Option 4)	HOV lanes on the existing facility at the Border Highway Extension	T-4
Highway - Freeway (Option 1)	Border Highway extension as six-lane freeway (from Loop 375 to FM 1109)	FWY-1
Highway - Freeway (Option 2)	Border Highway extension as four-lane freeway (from Loop 375 to FM 1109)	FWY-2
Highway - Freeway (Option 3)	Widen existing I-10	FWY-3
Highway - Arterial (Option 1)	Border Highway extension as six/four-lane staged arterial (from Loop 375 to FM 1109)	AX-1
Highway - Expressway (Option 2)	Border Highway extension as six/four-lane staged expressway (from Loop 375 to FM 1109)	AX-2

Source: *1997 Border Highway Extension Feasibility Study* (TxDOT 1997)

The first level alternatives were screened using a qualitative assessment, or rating system, which measured how each alternative would address the corridor needs and how each alternative would impact certain evaluation factors, while incorporating public and agency input. The evaluation factors and the results of the screening analysis are presented in **Table 2**.

Table 2: Results of Qualitative Screening Analysis

Evaluation Factors	Alternatives										
	NB-1	**NB-2**	**T-1**	**T-2**	**T-3**	**T-4**	**FWY-1**	**FWY-2**	**FWY-3**	**AX-1**	**AX-2**
Suitability	2	2	0	0	0	0	0	1	0	2	1
Mobility/ Travel Benefits	2	0	0	0	0	0	2	2	-1	2	2
ROW Requirements	0	2	1	2	0	1	0	1	2	1	1
Cultural Resources	0	0	2	2	0	1	0	1	2	1	1
Environmental Resources	0	2	2	2	0	1	0	1	2	1	1
Economic Effects	0	0	0	0	0	0	1	1	0	1	1
Costs	0	2	0	0	0	0	0	0	1	1	0
Financial Feasibility	2	2	0	0	2	2	0	0	0	1	0
Total	**6**	**10**	**5**	**6**	**2**	**5**	**3**	**7**	**6**	**10**	**7**

Source: *1997 Border Highway Extension Feasibility Study* (TxDOT 1997)
Rating points: 2 – Better, best or favorable; 1 – Acceptable, neutral; 0 – Worse, unfavorable; -1 – Fails to meet project purpose

The 11 alternatives were reduced to the top four scoring alternatives (NB-2, FWY-2, AX-1, and AX-2) for further consideration. This proposed facility was identified as a major metropolitan transportation investment and as such, the feasibility analysis was required to meet the criteria of a Major Investment Study (MIS) and Congestion Management System (CMS) study consistent with the requirements of the joint Federal Transit Administration (FTA) and FHWA regulations. For alternatives to be considered feasible, the following three criteria[1] had to be met:

- The project can be economically justified;
- The project is the preferred way to accomplish the local, state, and federal goals for transportation needs; and
- The project can be financed and maintained.

A corridor analysis was also completed as part of the feasibility study which included a large data collection effort to compile a database managed by Geographical Information System (GIS). Additionally, the public was involved throughout the process, which consisted of the project initiation meeting, two series of public meetings, an agency follow-up meeting, a dozen personal interviews, and several follow-up mail-outs.

These efforts were used to develop the proposed alignments for the three build alternatives that were determined to be carried forward, which resulted in the preferred

[1] Adapted from "Procedural Guidelines for Highway Feasibility Studies," Federal Highway Administration, July 1995.

alternative. The No-Build Alternative and the three highway alignments are described as follows:

No-Build Alternative – This alternative considered various Transportation System Management (TSM) and Transportation Demand Management (TDM) techniques to be applied to Socorro Road and Alameda Avenue and included: coordinated traffic signals, improved signal timing and equipment, addition of pedestrian crosswalks, addition of raised-curb medians, driveway access improvements, and geometric intersection improvements.

Alignment 1 – Pan American Drive/Socorro Road/Island-Tornillo Road: This alignment would interchange with Loop 375 at Pan American Drive in the Pan American Center (its western terminus), cross several roads including Winn Road, FM 1110 and Fabens Road, and intersect with the Manuel F. Aguilera Highway at its eastern terminus. This alignment assumes extensions of Old Hueco Tanks Road and Horizon Boulevard for access to I-10. Also, this alignment overlaps with portions of Socorro Road and Island-Tornillo Road.

Alignment 2 – Southside Feeder/Middle-Island Road: This alignment would interchange with Loop 375 at approximately Southside Feeder (its western terminus), cross several roads including Winn Road, Dindinger Road, Las Pampas Drive, Herring Road, and Fabens Road, and intersect with the Manuel F. Aguilera Highway at its eastern terminus. This alignment assumes extensions of Old Hueco Tanks Road, Horizon Boulevard, and FM 1110 for access to I-10. Also, this alignment overlaps with portions of Glorietta Road and Middle-Island Road.

Alignment 3 – Rio Del Norte Drive/Island-Guadalupe Road: This alignment would interchange with Loop 375 at Rio del Norte Drive in the America International Center (its western terminus), cross several roads including Dindinger Road, Las Pampas Drive, and Jess Harris Road, and intersect with the Manuel F. Aguilera Highway at its eastern terminus. This alignment assumes extensions of Old Hueco Tanks Road, Horizon Boulevard, FM 1110, and Fabens Road for access to I-10. Also, this alignment overlaps with portions of Island-Guadalupe Road.

The results of the corridor analysis for the four alternatives were evaluated. The corridor analysis included the following data collection efforts:

- GIS
  - Property Information
  - Land Use
  - Utilities
  - Historic/Archeological Features
  - Environmental Features
- Transportation System
  - Highway Network

    - Roadway Crossings
    - Roadway Functional Classification
    - Key Intersections and Traffic Signals
    - Existing Traffic Volumes
    - Crash Analysis
    - Public Transportation – Transit
    - Pedestrian, Bicycle and Transit Facilities
    - International Ports of Entry
- Drainage Study
    - Hydrologic/Hydraulic Conditions
    - Floodplains
    - Drainage Criteria and Analysis
- Utilities
    - Regional Summary
    - Study Corridor

The corridor analysis concluded that the urbanized communities of Socorro and San Elizario would be areas of concern. These communities include homes, schools, and historic missions and it was determined that there is no viable route that can avoid these communities completely. Specific issues include displacements, traffic noise, and neighborhood disruption. The following list includes points that were identified to be areas of concern for the location and design of a Border Highway East Extension:

- The Zaragoza International POE and its access facilities;
- Industrial areas near Loop 375 including the Pan American Center, Americas Industrial Park, and the Riverside International Industrial Center;
- The irrigation canals and drainage system of the Lower Valley;
- Jonathan Rogers Water Treatment Plant;
- Roberto Bustamante Wastewater Treatment Plant;
- Socorro Wastewater Treatment Plant (out of service);
- Rio Bosque Park (and proposed wetlands preserve);
- Socorro Road (Historic Mission Trail);
- El Gran Valle Subdivision;
- Colonia De Las Azaleas Subdivision;
- Las Azaleas Constructed Wetlands (proposed-not probable);
- Bosque Bonito Subdivision;
- Las Pampas Subdivision;
- Lee Moore Children's Home;
- Lower Valley Farms and Farm Houses; and
- Caseta-Fabens International POE.

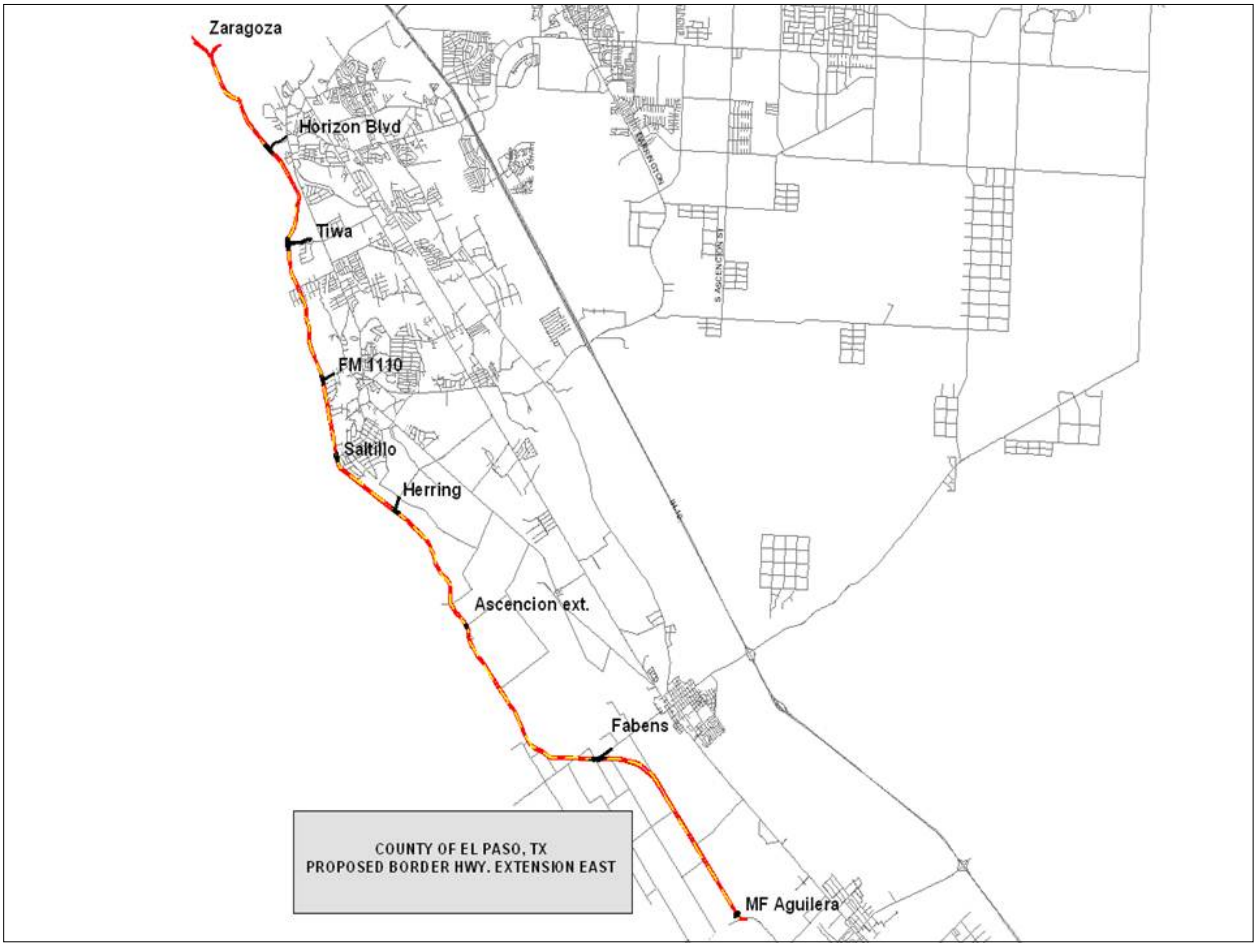
The 1997 study concluded that based on travel demand in the study area, a new highway would best serve the corridor. The most feasible route, illustrated on **Figure 2**, would connect with Loop 375 at approximately Southside Feeder Road (Southside Drive) and continue along this road; cross the Riverside Canal to the north and across the Riverside International Industrial Center; cross the Riverside Canal once more and head southeast; cross the El Gran Valle, Las Azaleas and Bosque Bonito subdivisions; and continue in an easterly direction across mostly agricultural areas in the lower portion of the valley to its terminus at the Manuel F. Aguilera Highway. The facility would consist of an urban six-lane arterial from Loop 375 to approximately Herring Road. East of Herring Road, the facility would consist of a rural four-lane arterial to its terminus at the Manuel F. Aguilera Highway/Fabens International POE (future Tornillo-Guadalupe International POE). The total estimated project cost, in 1996 dollars, of the feasible alternative was $101.5 million.

After recognizing the need to improve the transportation system within the Lower Valley, the MPO included the *1997 BHE Feasibility Study* in the 1994-1999 Transportation Improvement Program (TIP).

3.2 2006 County Route Study

A proposed alignment was developed for the Border Highway Extension-East by El Paso County in 2006. The proposed alignment generally follows the U.S./Mexico International border, as presented in **Figure 3**.

Figure 3: 2006 Border Highway Extension East Alignment



Source: Border Highway Extension-East by El Paso County, 2006.

The proposed extension begins at Loop 375 near the Ysleta POE and traverses generally south terminating at the Fabens International POE (future Tornillo-Guadalupe International POE). The Fabens International POE (future Tornillo-Guadalupe International POE) is located approximately 16 miles southeast of the El Paso city limits. The Fabens International POE will soon be replaced by the future Tornillo-Guadalupe International POE to accommodate commercial truck traffic and address the need for additional capacity, access, and east-west mobility in the study area. The Fabens International POE (future Tornillo-Guadalupe International POE), which currently can only process automobiles, light trucks, and pedestrians, would be upgraded to process commercial trucks, diverting some of the international truck traffic from the other POEs in the region.

The proposed extension also included connections to existing roadways, including the following:

- Horizon Boulevard via Belen Street;
- Timothy via Tiwa Boulevard;

- San Elizario Road (FM 1110) via Luisa Guerra Drive; and
- Chicken Ranch and FM 1110 via Saltillo Road.

The southern terminus of the extension was proposed to connect to the Manuel F. Aguilera Highway, near the Fabens International POE (future Tornillo-Guadalupe International POE). The Manuel F. Aguilera Highway would provide connectivity to Alameda Avenue.

3.3 Border Highway Extension-East (El Paso District) Pass-Through Tolling Analysis

The *Border Highway Extension-East Pass-Through Tolling Analysis* document was prepared by TxDOT in January 2007). This document compared pass-through toll feasibility with conventional toll feasibility for the proposed Border Highway Extension-East. The Border Highway Extension-East was evaluated, between Loop 375 and Fabens POE. The alignment (approximately 21 miles) varied in the number of proposed lanes depending on projected demand for the year 2053. Depending on the segment, the proposed alignment would vary between a two-lane to a six-lane urban roadway.

3.3.1 Description of Pass-through Tolling

Pass-through tolling describes a financial arrangement where TxDOT pays, on behalf of users, all or part of the toll fee assessed to construct or improve a transportation facility. Like conventional user-paid tolls, pass-through tolls are assessed based on vehicle type and the distance traveled on the facility. Where pass-through tolling covers the entire toll, as considered in this study, no toll plazas or toll collection equipment are necessary; therefore, operational costs associated with toll collection are absent. Because there is no toll to avoid, both traffic usage and public acceptance are higher than for a conventionally tolled facility.

Pass-through tolling enables TxDOT to advance projects that might otherwise take 20 to 30 years to fund for construction. As a simplified example, under TxDOT's traditional pay-as-you-go approach, TxDOT may have $100 million allocated for construction over a 10-year period, or $10 million per year. Under this funding, only one $10 million dollar project could be constructed each year. However, with pass-through tolling, 10 projects could be financed, developed, and constructed immediately by another entity. As part of the pass-through arrangement, TxDOT would commit to annual re-payments to the paying entity over the next 10 years, allocated to the project as pass-through tolls.

3.3.2 Alternative Analysis

To determine the estimated number of users of the proposed facility, future traffic forecasts were developed utilizing the El Paso MPO TransCAD travel demand model. This study utilized 2013 as the opening year and 2053 as the forecast year. Future demand on all facilities was extrapolated using a 2.8 percent regional growth rate.

All of the alternatives included varying number of lanes per segment based on the future demand. Four alternatives, two pass-through tolling alternatives and two conventional tolling alternatives, were evaluated, using the revenue assumptions presented in **Section 3.3.3**.

Pass-Through Tolling Alternatives

Alternative 1 – Low-Growth Rate: Alternative 1 assumed that a public or private entity would finance and construct the project. For this analysis, it was assumed this entity would accept a return on investment equal to the inflation rate. Under this alternative, TxDOT would repay the project cost by reimbursing, on behalf of the users, the amount that each user would pay in tolls if conventionally tolled, paid annually up to the cumulative amount equaling the total project cost. This alternative assumed a low-growth rate for the traffic and revenue forecasts. The growth rate used resulted in a traffic forecast lower than that demonstrated by the TxDOT Transportation Planning and Programming (TPP) Division forecast. Thus, this alternative presented the potential minimum annual payments TxDOT would make under a pass-through tolling agreement.

Alternative 2 – High-Growth Rate: Alternative 2 also assumed that a public or private entity would finance and construct the project and the entity would be willing to accept a return on investment equal to the inflation rate, same as Alternative 1. This alternative used the same project cost as Alternative 1, but assumed a high-growth rate for the traffic and revenue forecasts. The growth rate was based on the historical trends in the corridor, which resulted in a forecast that was higher than the 2030 TransCAD model. Thus, this alternative presented the potential maximum annual payments TxDOT would make under a pass-through tolling agreement.

Conventional Tolling Alternatives

Alternative 3 – BHE Conventional Tolling, with Bonding: Alternative 3 assumed that TxDOT would be the owner/operator of the facility, would finance through selling bonds, and would collect tolls from motorists to reimburse all or a portion of the construction financing, operations, and maintenance costs. Toll collection was assumed to be by means of an Electronic Toll Collection (ETC) Only method over a 40-year analysis period.

Alternative 4 – BHE Conventional Tolling, without Bonding: Alternative 4 assumed that TxDOT would be the owner/operator of the facility; would finance through collecting tolls from motorists to reimburse all or a portion of the construction, operations, and maintenance costs. Toll collection was assumed to be by means of an ETC-Only method over a 40-year analysis period. Alternative 4 demonstrated the application of conventional tolling as an alternative funding strategy without bonding.

3.3.3 Assumptions, Calculations and Results

Future demand indicated that two-lane to six-lane divided segments would provide adequate capacity for the proposed corridor. Conceptual toll revenue was calculated using the total vehicle miles traveled (VMT) along the segment for each year of the 40-year analysis period multiplied by the length of the segment and the applicable toll rate. Tolls were calculated using the following revenue assumptions:

- The opening year (2013) toll was based on $0.16/mile for passenger vehicles and $0.39/mile for trucks;
- A 3 percent per year increase in tolls was applied every 5 years;
- There are 290 toll days per year;
- Tolls were based on 8 percent trucks; and
- A 3 percent annual discount rate was applied.

The proposed project cost was estimated in 2006 dollars and assumed the following costs: preliminary engineering, environmental clearance, final engineering, right-of-way, environmental mitigation, utility relocation, construction cost, construction engineering and inspections, and a 20 percent contingency.

Net present value was used for comparing the value of the 40-year net revenue stream for each alternative to 2006 dollars. A 3.5 percent rate of inflation was assumed for the calculations. Calculations involving the pass-through tolling alternatives (Alternatives 1 and 2) assumed TxDOT repays the project cost by reimbursing, on behalf of the users, the amount that each user would pay in tolls at conventional toll rates, paid annually up to the cumulative amount equaling the total project cost of $279.2 million (2006 dollars). The total repayment accounts for the cost of inflation only, assumed to be 3.5 percent per year.

Alternatives 1 and 2 utilize pass-through tolling as a funding mechanism and include TxDOT's potential maintenance commitment as shown in **Table 3**.

Alternatives 3 and 4 considered conventional tolling as an alternative funding mechanism. Alternative 3 explored the feasibility of funding this project using a conventional bonding package with revenue bonds. The positive net revenue could support an estimated $48.6 million net bond issuance, financing approximately 8 percent of the total project cost.

Alternative 4 considered collecting conventional tolls without bonding the project. Under this alternative, the projected toll collections would provide revenue that would not otherwise be available.

Table 3: Results Summary in Terms of TxDOT's Financing

Results by Alternative	Total Project Cost	Portion of Project Cost Funded by TxDOT (Outlay)	Total Net Revenue Returned to TxDOT Revenue	Total Potential Maintenance Contribution by TxDOT (Outlay)	TOTAL TxDOT Contribution (Outlay) or Revenue	Repayment Period
Pass-Through Tolling Alternatives						
Alternative 1 – Low-Growth Rate, 2 to 6-Lane Divided Section (9a)	$279.2	($279.2)	$0	($174.5)	($453.7)	25 years
Alternative 2 – High-Growth Rate, 2 to 6-Lane Divided Section	$279.2	($279.2)	$0	($174.5)	($453.7)	21 years
Conventional Tolling Alternatives						
Alternative 3 – with Bonding, 2 to 6-Lane Divided Section	$565.4	($524.5)	$0	$0	($524.5)	N/A
Alternative 4 – without Bonding, 2 to 6-Lane Divided Section	$565.4	($565.4)	$302.6	($174.5)	($437.3)	N/A

Notes: All dollar values are in millions, 2006 dollars.
Funds identified for this project in the 2006 SMP: $0
Revenues and Costs to Other Parties not Shown
All financial assumptions in this document are made from a conceptual, planning perspective only, by HNTB.
Source: *Border Highway Extension-East (El Paso District) Pass-Through Tolling Analysis* (TxDOT 2007)

The total TxDOT contribution in 2006 dollars is the same for Alternatives 1 and 2. However, under Alternative 2, the high-growth rate alternative, TxDOT's repayment period would cease after 21 years, whereas the repayment period under the low-growth rate alternative (Alternative 1) would cease after 25 years. It was determined that the pass-through tolling alternatives were not viable because the shortest payback period would be 21 years (Alternative 2).

It was determined that approximately 8 percent of the total project cost of Alternative 3 could be financed through bonds, but it would take 12 years to offset the operational and maintenance costs using this method. Alternative 4 did not include a bond option, and therefore, requires TxDOT to fund the project's development costs up front, leaving these project development dollars unavailable for other projects. It would take over 40 years to offset the operational and maintenance costs of Alternative 4. Conventional tolling alternatives were also determined to be not viable because less than 10 percent of the total project cost would be recovered.

Based on the financial analysis, the Border Highway Extension-East, between Loop 375 and the Fabens International POE (future Tornillo-Guadalupe International POE), was not determined to be viable for tolling because the cost to build, operate, and maintain the roadway would be greater than the revenue the tolling would generate.

3.4 2008 Comprehensive Mobility Plan

The *2008 Comprehensive Mobility Plan* (July 2008) was developed by the Partners for Mobility, which included El Paso MPO, the City of El Paso, CRRMA, and TxDOT. The Plan identified challenges, solutions through mobility, and potential partnerships.

On December 16, 2013, the El Paso Commissioners Court approved 16 transportation projects that had been presented by the County, TxDOT, and the CRRMA. The projects originated from the *2008 Comprehensive Mobility Plan* and would be included in the *2013 Comprehensive Mobility Plan*. Of the 16 approved projects, four projects are within the BHE PEL study area and are anticipated to be let in 2015. The projects include the following:

- Old Hueco Tanks (Construct new four-lane road to extend Eastlake from North Loop Drive/FM 76 to I-10);
- FM 1110 Extension (Construct/upgrade to a four-lane, divided arterial from I-10 to Alameda Avenue);
- FM 1110/I-10 (Bridge Replacement); and
- FM 3380/Manuel F. Aguilera Highway Connection (Construct new location non-freeway facility from south of Alameda Avenue to I-10).

A presentation was given to the El Paso County Commissioners Court detailing the conceptual graphics for the proposed improvements. This presentation is included in **Attachment A**.

4.0 RECOMMENDATIONS FOR THE USE OF PREVIOUS STUDIES

4.1 1997 BHE Feasibility Study

Minimal operational and maintenance improvements have been implemented in the project study area since the *1997 Border Highway Extension Feasibility Study* was completed. Many of the identified problems remain. The transportation goals and objectives as well as some of the proposed alternative solutions are applicable to the BHE PEL Study. The purpose and need statement, developed for the 1997 study, was considered as a basis for the BHE PEL Study's purpose and need statement.

The alternatives developed during the *1997 Border Highway Extension Feasibility Study* were taken into consideration and incorporated into the Universe of Alternatives. Alternatives were evaluated using the most recent environmental and social datasets that were documented in the *BHE PEL Study Environmental Constraints Report* (**Appendix B**). Innovative funding strategies and potential funding sources for alternative implementation were explored during the BHE PEL Study.

4.2 2006 County Route Study

The 2006 County Route study was considered and incorporated into the Universe of Alternatives developed for the BHE PEL Study.

4.3 Border Highway Extension-East (El Paso District) Pass-Through Tolling Analysis

This tolling analysis conducted in 2007 was used to evaluate the viability of instituting toll collection on the alternatives developed in the BHE PEL Study. Based on the financial analysis, the Border Highway Extension-East, between Loop 375 and the Fabens International POE (future Tornillo-Guadalupe International POE), was not determined to be viable for tolling because the cost to build, operate, and maintain the roadway would be greater than the revenue the tolling would generate.

4.4 2008 Comprehensive Mobility Plan

The 2008 Comprehensive Mobility Plan was used during the development of the Universe of Alternatives to identify potential solutions.

5.0 APPLICABILITY OF PREVIOUS TRANSPORTATION PLANS AND STUDIES

Although the BHE PEL Study incorporates the latest available data and public input into the development of recommended improvements within the study area, it drew from ideas and information gathered from previous studies, where appropriate and feasible.

6.0 REFERENCES

County of El Paso, CRRMA, TxDOT. 2013. *2013 El Paso County Comprehensive Mobility Plan* Presentation to the El Paso Commissioners Court on December 16, 2013.

El Paso MPO. "Horizon 2040 Metropolitan Transportation Plan" October 2013. Web. November 2013. http://www.elpasompo.org/MTPDocs/HorizonMTPFinalCOMP.pdf

FHWA. *Guidance on Using Corridor and Subarea Planning to Inform NEPA*, April 5, 2011.

Partners for Mobility. 2008 Comprehensive Mobility Plan. July 2008. Available online at: http://www.elpasomobility.org/pdf/2008-comprehensive-mobility-plan.pdf.

Texas Department of Transportation – El Paso District. "Border Highway Extension Feasibility Study." February 1997. Print.

Texas Department of Transportation – El Paso District. *Border Highway Extension-East (El Paso District) Pass-Through Tolling Analysis*. Prepared by HNTB Corporation. January 2007.

Attachment A

2013 El Paso County Comprehensive Mobility Plan

December 16, 2013

2013 El Paso County Comprehensive Mobility Plan

Map No.	Project Name
01	I-10 COLLECTOR DISTRIBUTOR LANES
02	I-10/BORDER HIGHWAY CONNECTORS
03	I-10/VISCOUNT TO AIRWAY RAMP IMPROVEMENTS
04	LP 375/SPUR 601 DIRECT CONNECTOR
05	I-10/FM 1110 BRIDGE REPLACEMENT
06	I-10 COLLECTOR DISTRIBUTOR LANES – MESA PARK
07	I-10/LP 375 DIRECT CONNECTORS
08	DELTA OVERPASS
09	EASTLAKE WIDENING PROJECT #9
10	OLD HUECO TANKS
11	EASTLAKE WIDENING PROJECT #11
12	ROJAS WIDENING
13	FM 1110 CONSTRUCTION/UPGRADE
14	GREG/EDGEMERE
15	ARTERIAL 1
16	MANUEL F AGUILERA HIGHWAY

I-10 Collector Distributor Lanes

- Mesa Street to Executive Center (Project #1)
- Preliminary Construction Cost Estimate $150M
- Environmental and Schematic Completion Anticipated Spring 2014
- Letting Year Fall 2014

I-10 Collector Distributor Lanes - Mesa Park

- Construct frontage roads and Interchange improvements at Mesa Park(Project #6)
- Preliminary Construction Cost Estimate $25M
- Letting Year Fall 2014

I-10/Border Highway Connectors

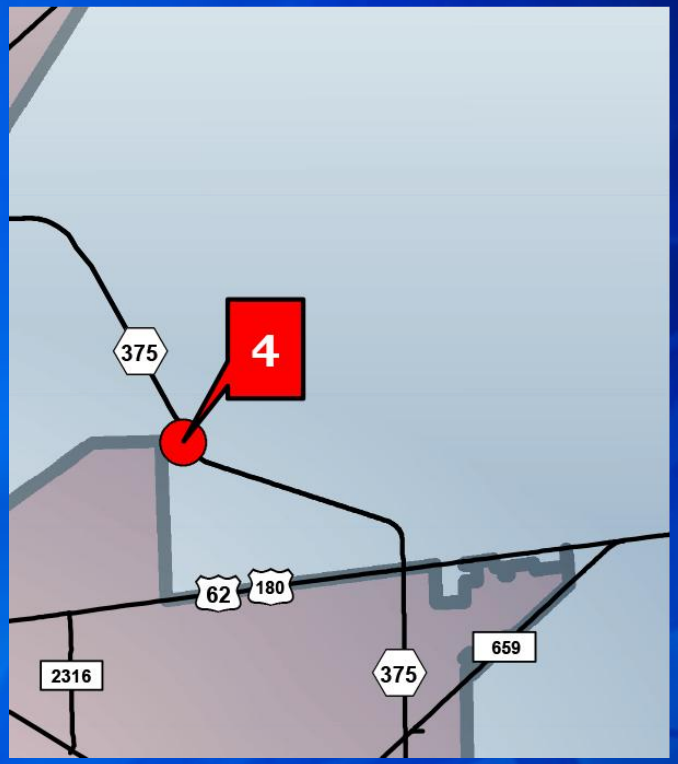
- Construct New Connections from I-10 to LP 375 (Project #2)
- Preliminary Construction Cost Estimate $25M
- Letting Year 2016

I-10 Viscount to Airway Ramp Improvements

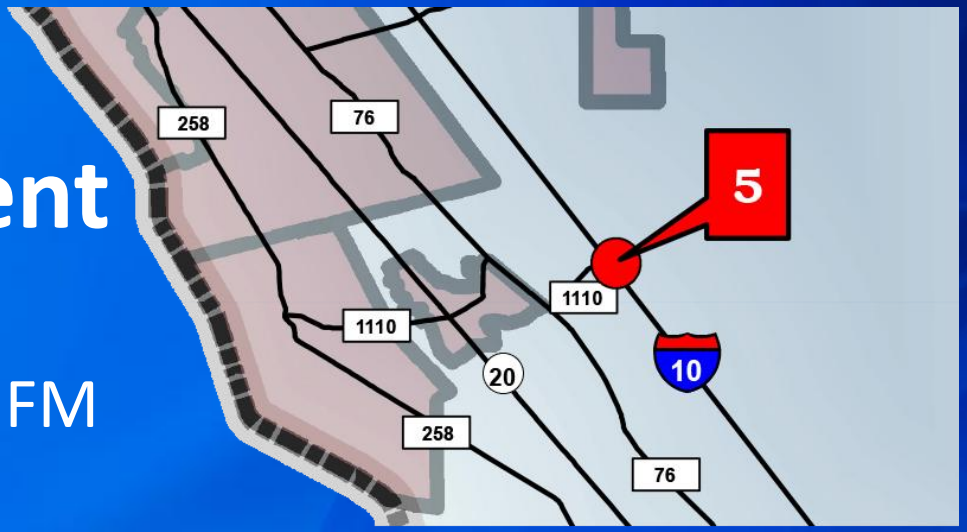
- Add mainlanes and improve interchange from Viscount Blvd. to Airway (Project #3)
- Preliminary Construction Cost Estimate $12M
- Letting Year Spring 2015

LP 375/Spur 601 Direct Connector

- Construction northbound to westbound direct connector (Project #4)
- Preliminary Construction Cost Estimate $15M
- Environmental and Schematic Completion Anticipated Spring 2014
- Letting Year 2019



I-10/FM 1110 Bridge Replacement



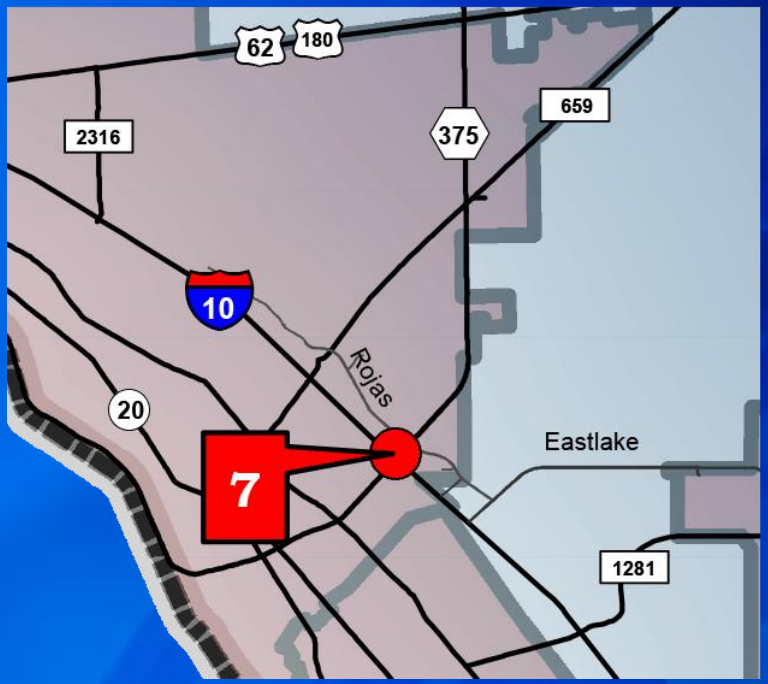
- Replace bridge at I-10 and FM 1110 (Project #5)
- Preliminary Construction Cost Estimate $12M
- Letting Year 2015

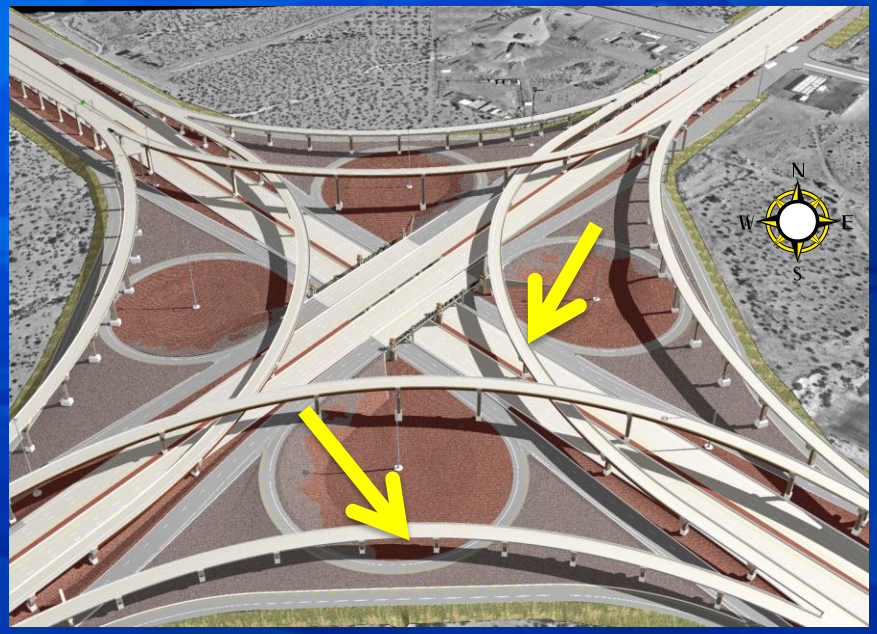
FM 1110 Construction/Upgrade

- El Paso County/Clint
- Construct/Upgrade to a 4 lane divide arterial from I-10 to SH 20 (Project #13)
- Preliminary Construction Cost Estimate $38M
- Letting Year 2015

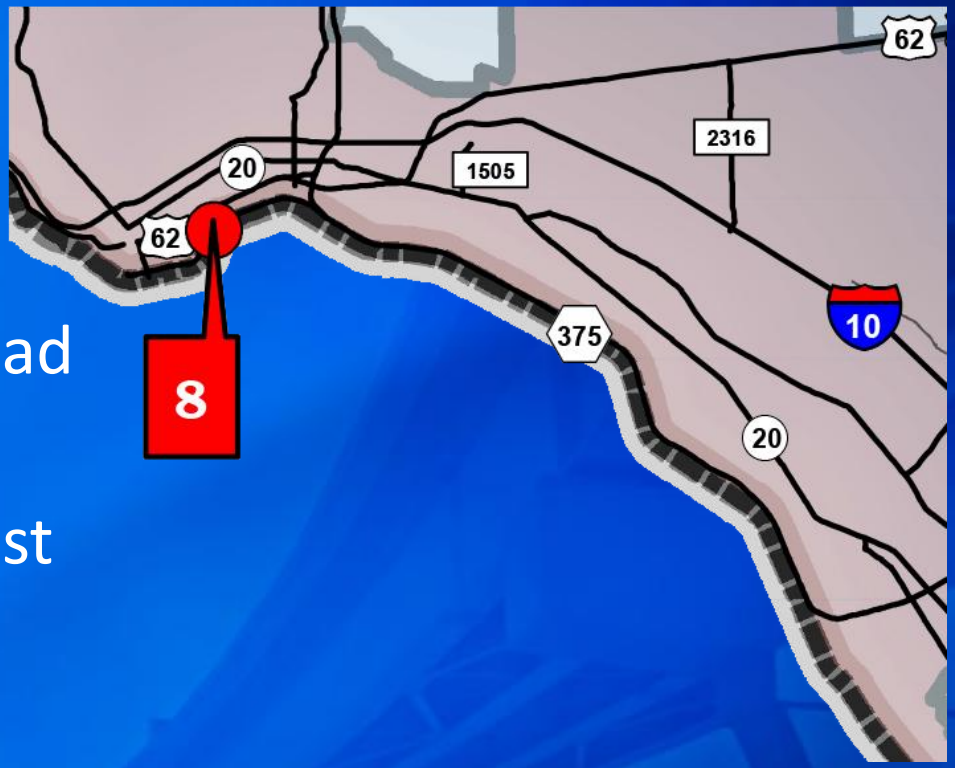
I-10/LP 375 Direct Connectors

- Construct southbound to eastbound and northbound to eastbound direct connectors (Project #7)
- Preliminary Construction Cost Estimate $28M
- Environmental and Schematic complete
- Letting Year 2019

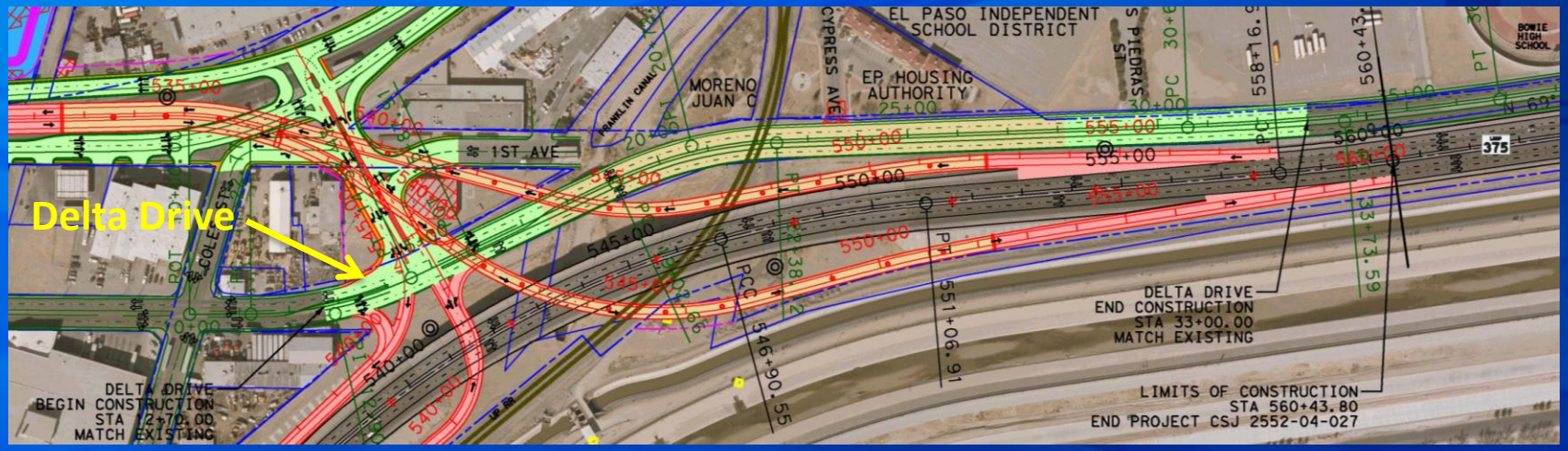




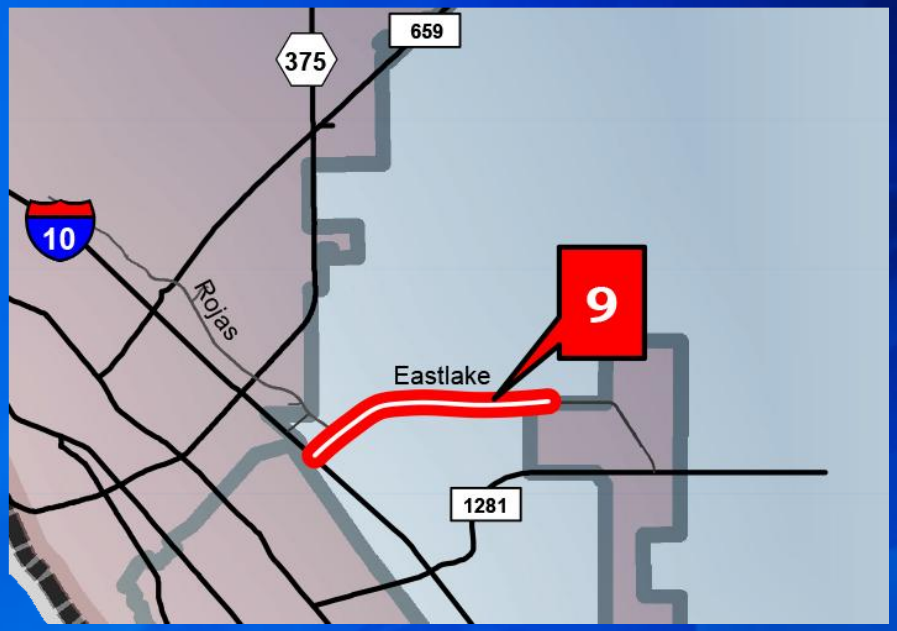
Delta Overpass



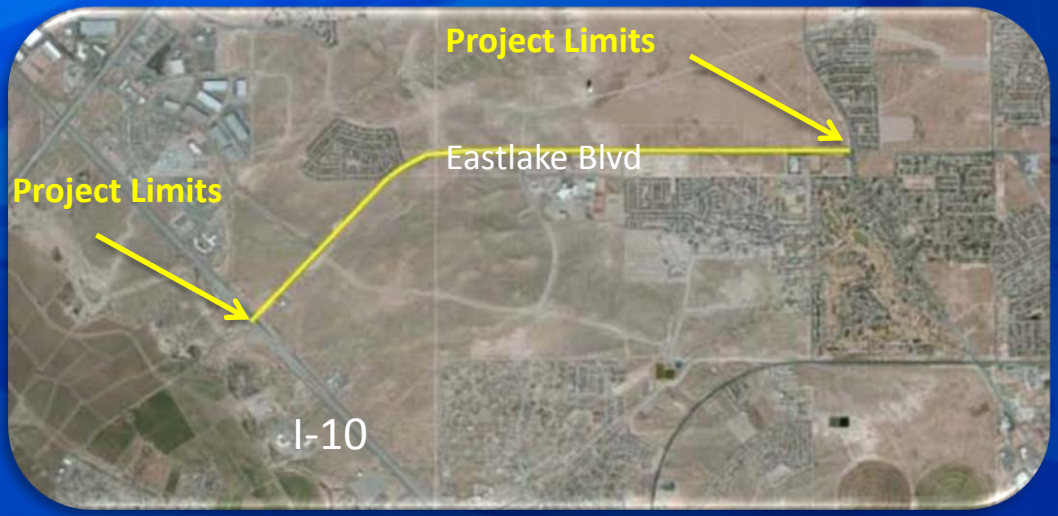
- Construct overpass at railroad crossing (Project #8)
- Preliminary construction cost estimate $8M
- Letting Year Summer 2015



Eastlake Widening Project #9

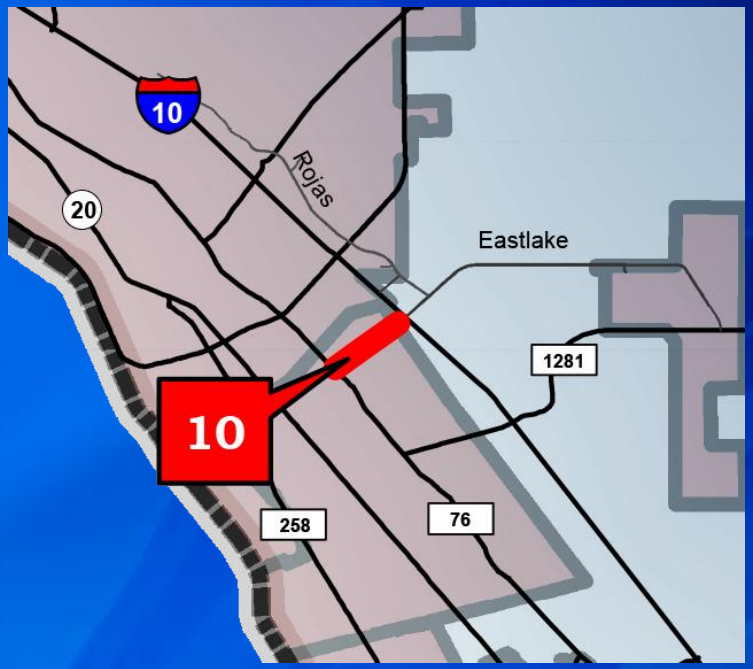


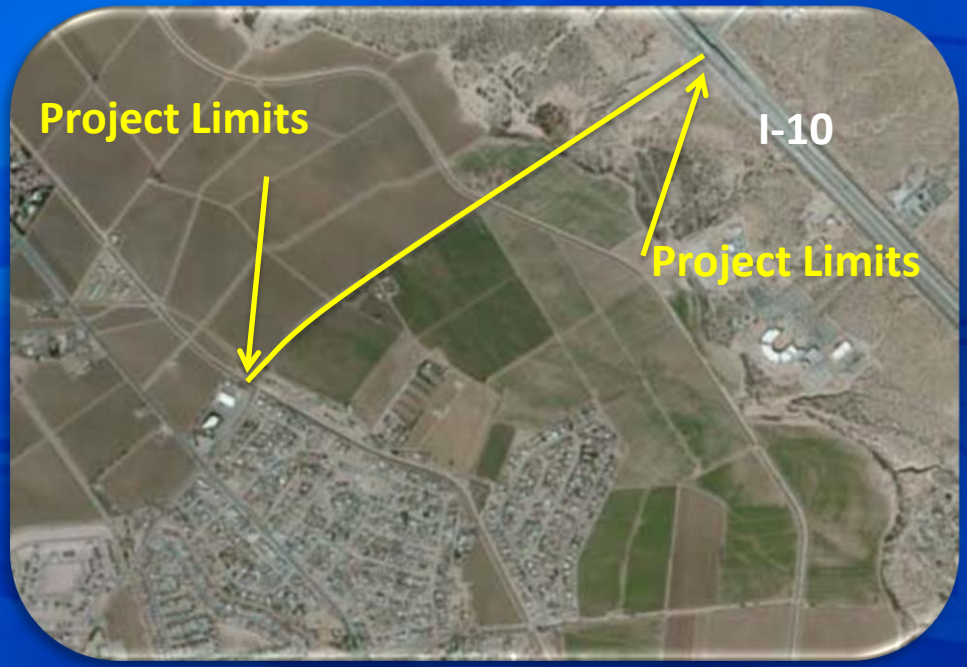
- Widen Eastlake to 6 lanes divided from I-10 to west of Darrington Road (Project #9)
- Preliminary construction cost estimate $15M
- Letting Year 2015



Old Hueco Tanks

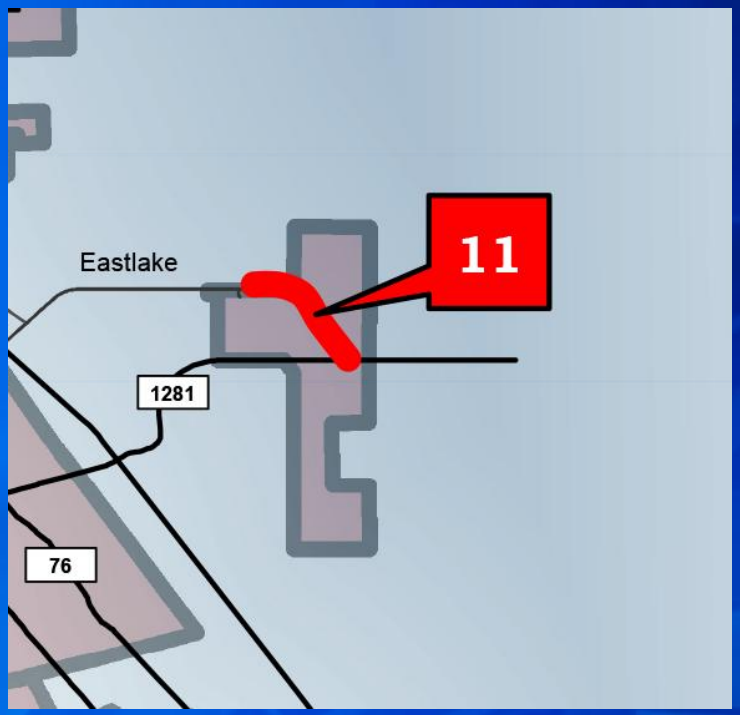
- El Paso County/Socorro
- Construct new 4 lane road to extend Eastlake from North Loop/FM 76 to I-10 (Project #10)
- Preliminary Construction Cost Estimate $12M
- Letting Year 2015





Eastlake Widening Project #11

- El Paso County/Horizon
- Widen Eastlake from Darrington Road to Horizon Blvd. (Project #11)
- Preliminary Construction Cost Estimate $23M
- Letting Year 2015

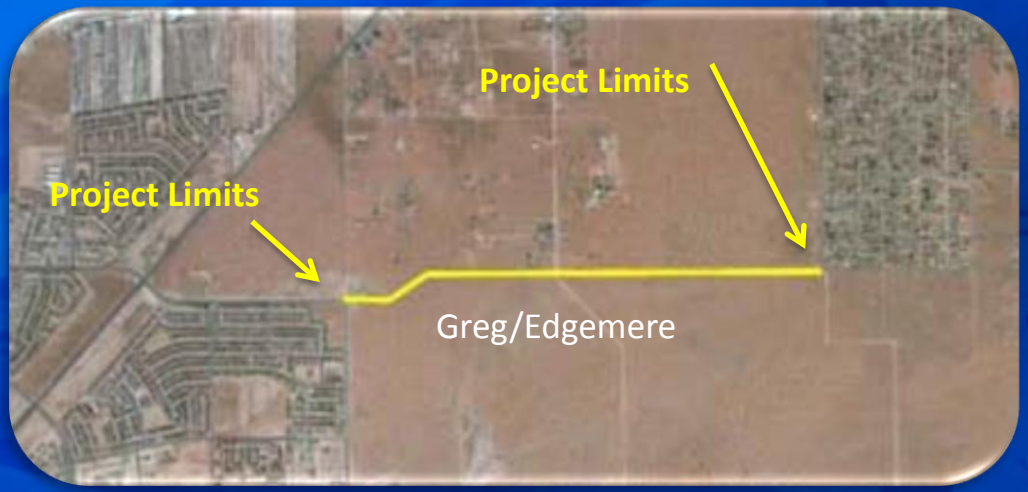


Rojas Widening

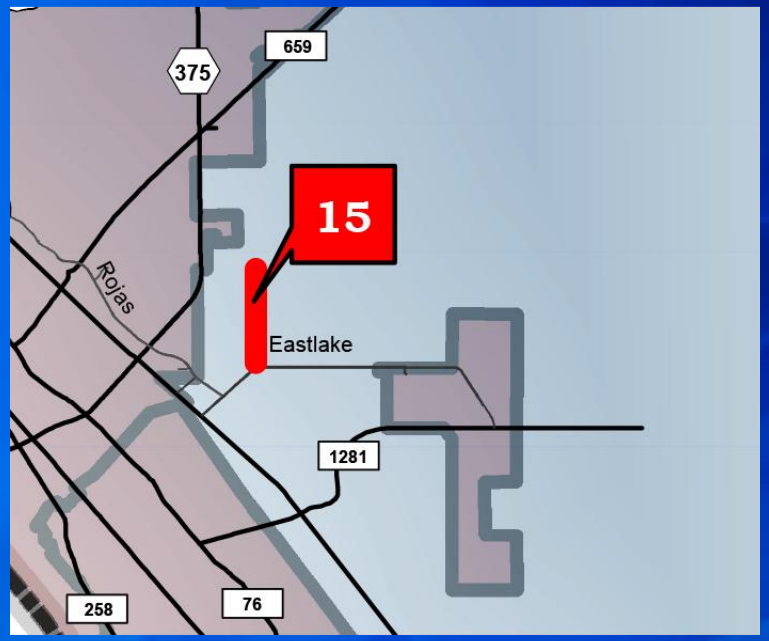
- Widen Rojas to 6 lanes from El Paso City limits to Eastlake Blvd. (Project #12)
- Preliminary Construction Cost Estimate $4M
- Letting Year 2015

Greg/Edgemere

- Construct a 4 lane divided arterial from El Paso City Limits to Vista del Este Street (Project #14)
- Preliminary Construction Cost estimate $1M
- Letting Year 2016



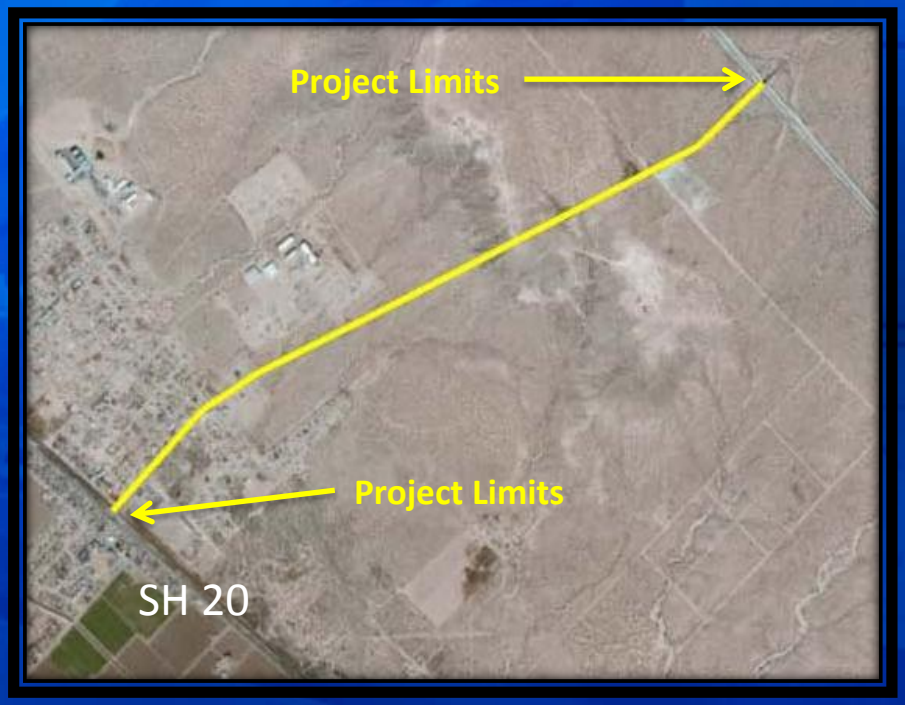
Arterial 1



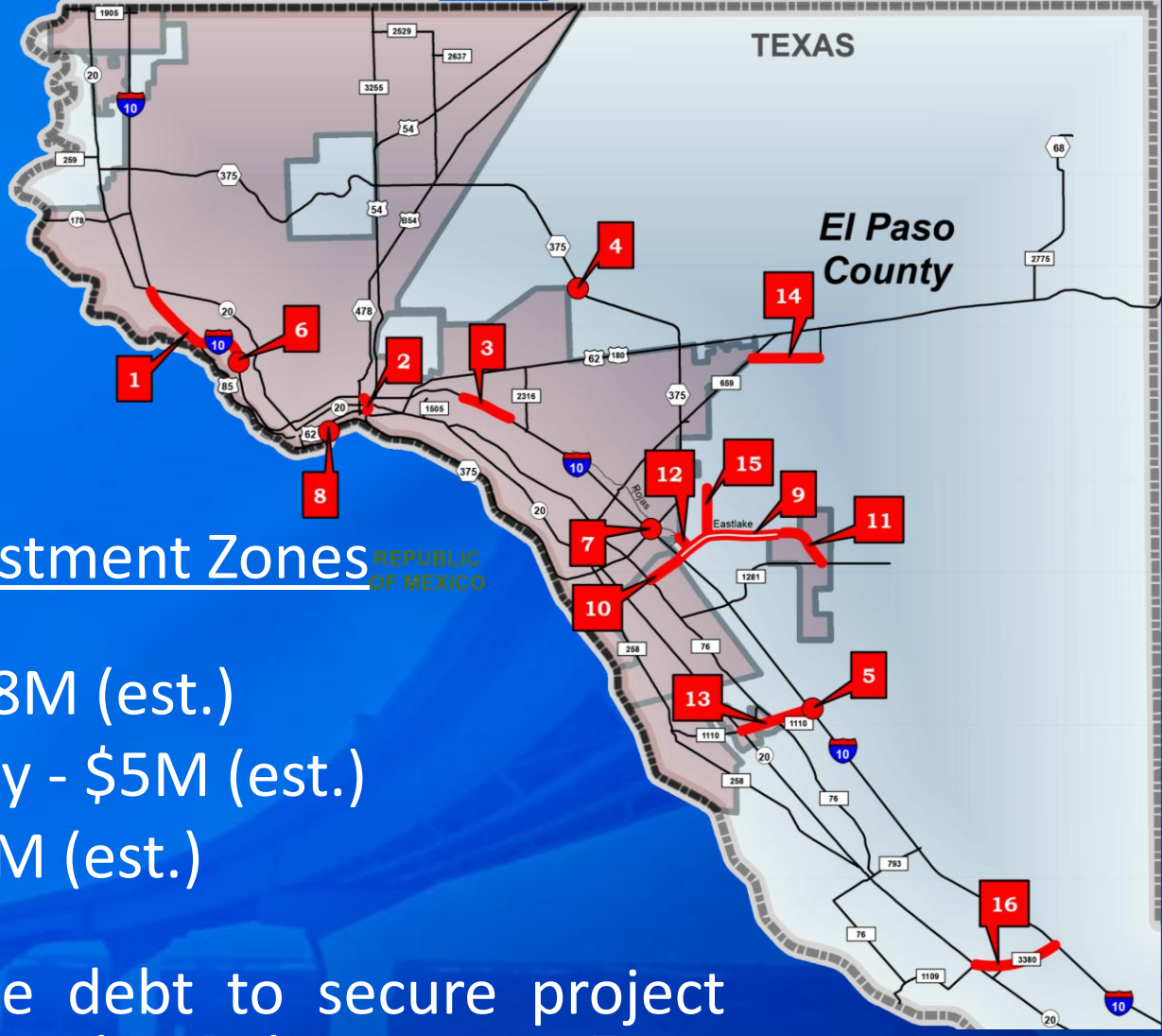
- Construct a 4 lane arterial from Pellicano Drive to Paseo del Este Street (Project #15)
- Preliminary Construction Cost Estimate $7.5M
- Letting Year 2016

Manuel F Aguilera Highway

- Construct new location non-freeway facility from south of SH 20 to I-10 (Project #16)
- Preliminary Construction Cost Estimate $17M
- Environmental and Schematic Completion Anticipated Spring 2014
- Letting Year 2015



Financial Details

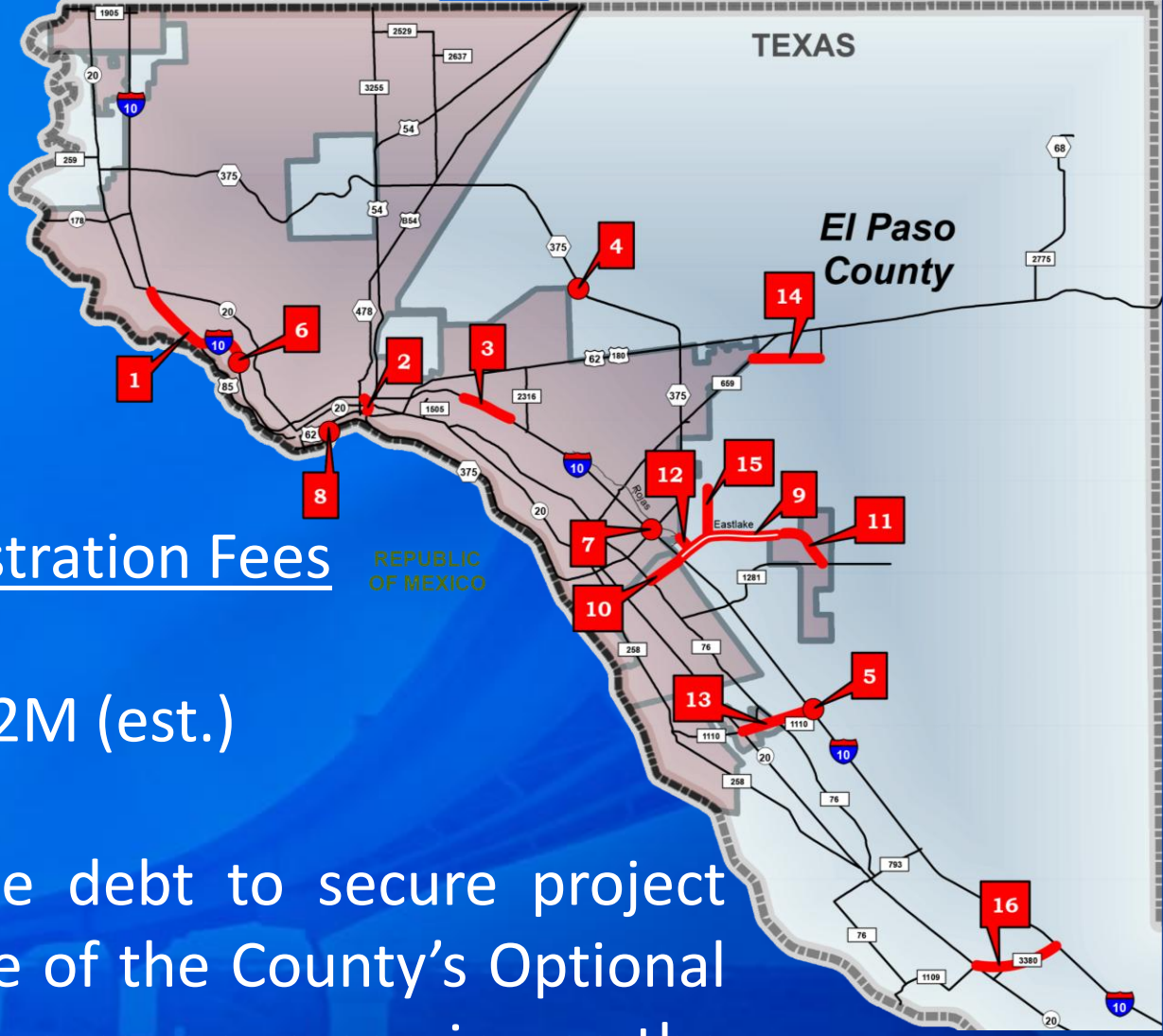


Transportation Reinvestment Zones

- El Paso County - $48M (est.)
- Town of Horizon City - $5M (est.)
- City of Socorro - $9M (est.)

The CRRMA will issue debt to secure project funding, with Transportation Reinvestment Zone revenue pledges serving as the repayment source. The CRRMA will also serve as project developer for the TRZ funded projects.

Financial Details

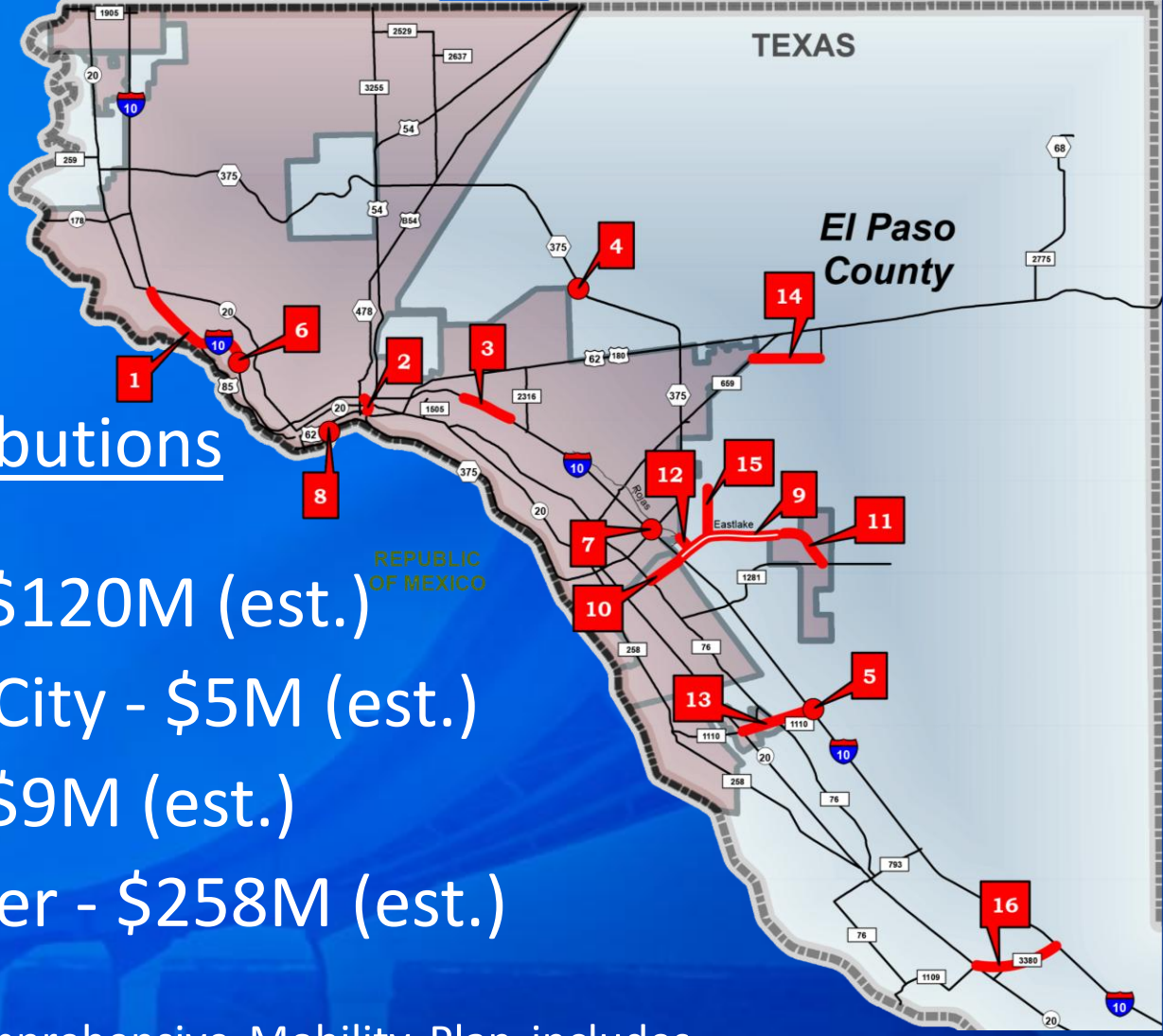


<u>Optional Vehicle Registration Fees</u>

- El Paso County - $72M (est.)

The CRRMA will issue debt to secure project funding, with a pledge of the County's Optional Vehicle Registration Fee revenue serving as the repayment source. The CRRMA will also serve as project developer for several of the VRF funded projects.

Financial Details



Total Project Contributions

- El Paso County - $120M (est.)
- Town of Horizon City - $5M (est.)
- City of Socorro - $9M (est.)
- TxDOT/MPO/Other - $258M (est.)

The 2013 El Paso County Comprehensive Mobility Plan includes sixteen major transportation projects with cumulative estimated project costs of $392M. The Plan includes projects throughout El Paso County, many of which will be let in 2014 and 2015, through the cooperation of many area entities.

TEXAS
El Paso County
REPUBLIC OF MEXICO
Eastlake
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QUESTIONS?