DRAFT
Purpose and Need

I-10 from Executive Center Boulevard to State Loop 478 (Copia Street)

El Paso County, Texas

CSJ: 2121-02-166
TxDOT El Paso District
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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 12-9-2019, and executed by FHWA and TxDOT.

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1.0 INTRODUCTION

The proposed Downtown 10 project would improve I-10 from Executive Center Boulevard to State Loop 478 (Copia Street), a distance of approximately 5.7 miles. Proposed improvements may include widening and reconstruction of the mainlanes and reconstruction of cross streets. In addition, improvements may include the construction of retaining walls, bridges, and ramps, as well as the development of continuous frontage roads. Multimodal connections for pedestrians, cyclists, and transit users are also proposed.

From 2017 through 2019, the TxDOT Reimagine I-10 Corridor Study (Reimagine I-10 Study) included extensive public outreach and high-level engineering/environmental evaluations of future needs for the I-10 corridor from the New Mexico state line to Farm-to-Market (FM) 3380. The Reimagine I-10 Study resulted in a recommended study alternative and project objectives for the entire 55-mile-long corridor. As a result, the Downtown 10 project (Segment 2 of the Reimagine I-10 Study) was initiated. Provided below is the purpose and need for the proposed Downtown 10 project.

2.0 NEED FOR THE PROJECT

The Downtown 10 project is needed due to the following within the project limits:

- Traffic congestion and mobility issues
- Concerns surrounding incident management
- Failure to meet current design standards

The need for the proposed project was identified and refined through the Reimagine I-10 Study, including input from stakeholder workgroups and the public. Input from these entities, combined with background research, helped to define a preliminary assessment of the need for the proposed project. These preliminary project needs have continued to be refined through the National Environmental Policy Act (NEPA) process to date and will continue to be refined as new information is available.

2.1 Corridor Growth and Population

The I-10 corridor in El Paso serves both local, regional, national, and international traffic. I-10 is a major east to west Interstate Highway spanning approximately 2,460 miles in the Southern United States (U.S.). I-10 in Texas begins to the east at Orange, Texas and passes through the Cities of Houston and San Antonio before making its way to the City of El Paso, Texas. For this reason, I-10 is a vital link for freight and commercial traffic between East and West Texas and points beyond.

Locally, steady population growth in El Paso has resulted in increased traffic volumes and demands on infrastructure. Most of the I-10 facility in West Texas was constructed in the 1960's and 1970's. U.S. Census Bureau records from the 1960 Census indicate that the population of El Paso County at that time was 314,070[1]. Due to military, commercial, and educational expansion in the El Paso region, the population has steadily increased since the construction of I-10, growing from 314,070 in 1960 to 867,947 in 2021.[2]

According to Texas Demographic Center population projections, El Paso County is expected to continue to grow from the 2020 population. The estimated range of growth is between 9.6 and 13.7 percent from the year 2020 to the year 2060.[3]

2.2 International Impact on Project Area

I-10 not only serves the local and interstate freight and vehicle movement but also serves the international movement of people and goods to and through the region and the Downtown 10 project area. The El Paso Region has five Ports of Entry (POE) that not only serve the region but also provide a key international trade component to the area. The POEs provide daily movement of trucks, buses, and passenger cars that contribute to the overall need in the I-10 corridor. Based on data depicted in the Texas-Mexico Border Transportation Master Plan (2021) and actual counts provided by the U.S. Customs Service and Border Protection (2019), northbound passenger car crossings in the El Paso region are forecasted to increase from 12.3 million passenger car crossings in 2019 to 16.0 million in 2050, an increase of 30.1 percent. Similarly, northbound commercial vehicle crossings in the El Paso region are forecasted to increase from 1 million in 2019 to 2.2 million in 2050, an increase of 120 percent. The Ysleta-Zaragoza and Bridge of the Americas POEs are forecasted to have the highest volume of northbound passenger car crossings. The Ysleta-Zaragoza POE is forecasted to increase from 3.6 million in 2019 to 4.8 million in 2050, and the Bridge of the Americas POE is forecasted to increase from 3.2 million to 4.3 million in the same timeframe. Likewise, the northbound commercial vehicle crossings at the Ysleta-Zaragoza POE are forecasted to increase from 0.6 million in 2019 to 1.2 million in 2050, and the Bridge of the Americas POE vehicle crossings are forecasted to increase from 0.2 million to 0.4 million. This traffic, generated from the five regional POEs, is expected to utilize I-10 through and within the city of El Paso.

[1] https://www.txcip.org/tac/census/hist.php?FIPS=48141
[2] https://www.census.gov/quickfacts/elpasocountytexas
[3] https://demographics.texas.gov/data/tpepp/projections/

2.3 *Traffic and Roadway Congestion*

2.3.1 Traffic

Historic and projected population increases in El Paso and neighboring cities, along with increased trade and economic activity, are expected to result in increased demand on the existing transportation infrastructure. Data from the Destino 2045 Travel Demand Model (TDM), developed by the El Paso Metropolitan Planning Organization (MPO), and projections from TxDOT's 2018 Freight Mobility Plan were utilized to estimate future traffic volumes.[4] In response to increasing demand, TxDOT, the El Paso MPO, and local governments have planned for the city to be served by various controlled access freeway corridors that would traverse and encircle the region. However, the natural topography of El Paso, including the Franklin Mountains and the Rio Grande, presents limitations on how and where transportation infrastructure can be expanded. These natural features, in addition to Fort Bliss and state and international boundaries, have defined the parameters for development in the region and have compounded the need to expand and enhance existing transportation corridors.

Between 2010 and 2020, traffic has generally increased within the corridor, with the exception of a drop in average annual daily traffic (AADT) in 2020 due to the COVID-19 Pandemic (**Table 1**). This is similar to the drop in traffic and congestion that was observed nationally and statewide.

Table 1: Mainlane Historic Traffic Data

Location	AADT			
	2010	2015	2019	2020
I-10 at Executive Center Blvd	131,000	139,073	149,686	131,725
I-10 at Cotton St	165,890	169,660	187,056	164,610

Source: TxDOT Statewide Planning Map[5]

As seen in **Figure 1**, monthly traffic counts taken between January 2015 and February 2022 show a steep decline in AADT at the beginning of 2020, which is reflective of lockdowns in the state of Texas due to the COVID-19 Pandemic. In addition, as COVID-19 restrictions have and continue to be lifted, there has been a general upward trend toward pre-pandemic AADT counts.

[4] https://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/freight-mobility/2018/plan.pdf
[5] https://www.txdot.gov/apps/statewide_mapping/StatewidePlanningMap.html

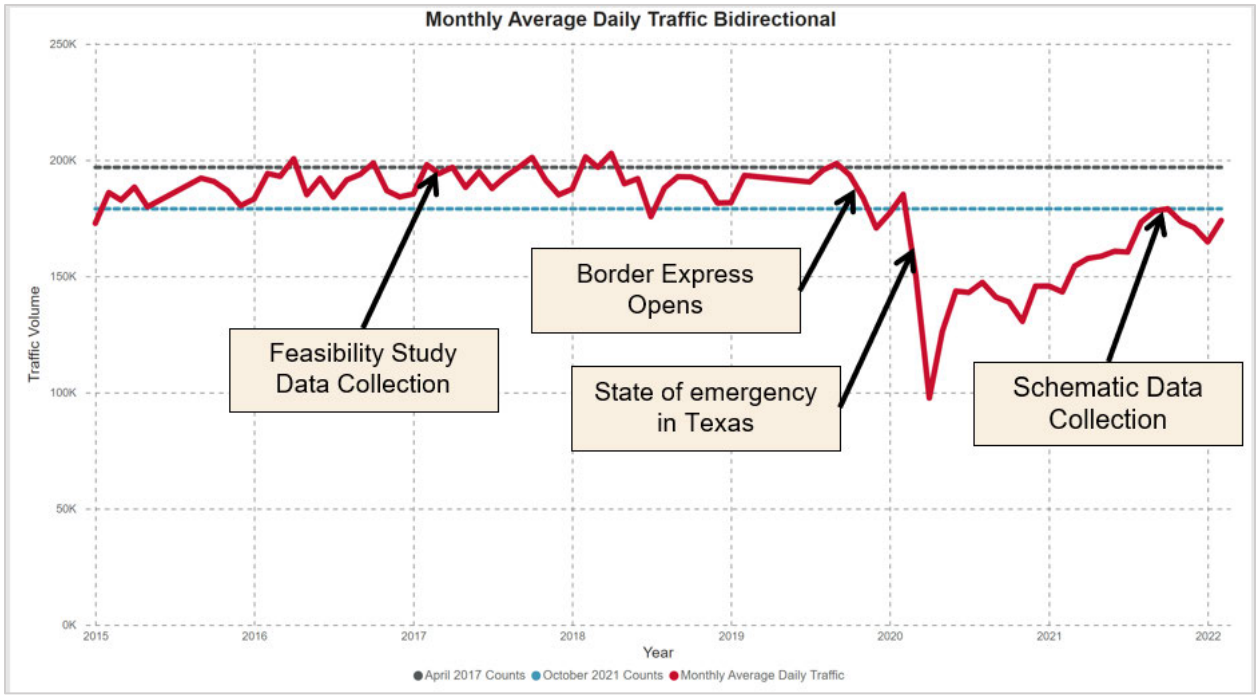

Figure 1. Monthly Daily Average Traffic

2.3.2 Roadway Congestion

According to the Texas Transportation Institute (TTI) 2019 Urban Mobility Report, following the recovery from the 2008/2009 economic recession, congestion began increasing statewide between 1 and 3 percent every year – which meant that extra travel time for the average commuter increased over one hour every year.[6] Since the end of the economic recession, congestion has gotten worse in each of the last several years before the COVID-19 Pandemic. According to this report, congestion growth is the result of an imbalance between growth in travel demand and the supply of transportation capacity.[7]

As part of the Reimagine I-10 Study, TxDOT looked at various measures of effectiveness (MOE) to evaluate current and projected traffic demand within the Downtown 10 project area (Segment 2 of the Reimagine I-10 Study). These MOE included various measurements of delay, increased travel time, and the cost associated with workforce delays in order to quantify existing traffic operations.[8] As demonstrated in **Table 2**, this section of I-10 is projected to experience increased travel time and travel delays, and decreased travel speeds by the year 2042.

[6] https://static.tti.tamu.edu/tti.tamu.edu/documents/umr/archive/mobility-report-2019.pdf

[7] https://static.tti.tamu.edu/tti.tamu.edu/documents/umr/archive/mobility-report-2019.pdf

[8] https://ops.fhwa.dot.gov/publications/fhwahop08054/execsum.htm

Table 2: Current and Projected Measures of Effectiveness, I-10 Segment 2

MOE	AM Peak Hour		PM Peak Hour	
	2019 Existing AM	2042 AM	2019 Existing PM	2042 PM
Average Delay time per vehicle (sec/veh)	81	275	107	570
Average speed (mph)	41	23	37	12
Travel Time (min/veh)	5.62	9.51	6.11	17.32
Annual Delay Hours	524,000	2,371,000	731,000	4,578,000
Annual Delay ($)*	$ 9,520,000	$43,060,000	$13,270,000	$83,140,000
Vehicle Miles Traveled	107,153.70	127,001.44	109,307.6	95,023.0

*Annual delay dollars based on 250 Working days/ 3 hours of peak traffic in each AM & PM peak / $18.19 per hour based on TTI's 2015 Urban Mobility Scorecard

Initial preliminary traffic analysis based on the El Paso MPO's TDM indicated that the existing I-10 facility within the project area does not meet current traffic demands and will not meet projected future demands.

2.4 Multimodal Facilities

The El Paso MPO's *Destino 2045 Needs Assessment Report* highlights I-10 as one of the emphasis corridors that serves as the backbone for all transportation in the region. By 2045, the Destino 2045 TDM model estimates that I-10 will be responsible for 32 percent of all VMT within the region and is estimated to generate 8,112,238 vehicle hours of annual delay, which is 26 percent of all delay within the region (**Table 3**). According to Destino 2045, the percent of VMT on I-10 is double the second highest corridor (Loop 375) and has the largest network delay in the region.

Table 3: Major Highway and Emphasis Corridor Delay Changes

Corridor	2045 Daily VMT	Percent of Total Network VMT	Annual Delay (Vehicle Hours)	Percent of Total Network Delay
Alameda Avenue	529,826	2%	829,355	3%
Doniphan Drive	227,199	1%	240,962	1%
Dyer Street	290,550	1%	377,523	1%
N. Mesa Street	381,855	2%	712,966	2%
Montana Avenue	1,683,658	8%	1,870,205	6%
N. Loop Drive	390,745	2%	644,918	2%
Paisano Drive	194,383	1%	214,332	1%
P. Domenici Memorial Highway	165,689	1%	201,073	1%
Zaragoza Road	365,158	2%	662,901	2%
Spur 601	272,249	1%	457,117	1%
Loop 375	3,224,437	14%	5,019,525	16%
IH 10*	7,097,223	32%	8,112,238	26%
US 54	1,637,025	7%	1,860,092	6%
Total Network	**22,281,000**	-	**31,247,000**	-

Source: El Paso MPO Destino 2045 MTP

* Downtown 10 project is within this corridor

These statistics indicate how vital the I-10 corridor is for the region, which is constrained geographically due to the Franklin Mountains, Fort Bliss, and the international border with Mexico. Understanding the significance of the I-10 corridor, the Reimagine I-10 Study recommended the "adaptive lane" concept. The intent of the adaptive lane is to behave similar to a managed lane and provide a reliable trip for multiple modes such as auto, truck, and/or transit users of I-10. Designating adaptive lanes for truck use could facilitate trade and the movement of goods through El Paso and also make pick-up/drop-off times for deliveries more predictable. Designating adaptive lanes for transit use could increase the quality of service offered to transit riders and potentially increase ridership.

Furthermore, there is a lack of connectivity for non-automobile modes across and along I-10 within the project area. Investments in quality infrastructure for these modes and the potential to provide missing connections could improve the usefulness and user experience of the multimodal network in an around Downtown El Paso. The City of El Paso's 2016 Bike Plan has recommended bicycle facilities that are within and cross the corridor.[9] Based on this plan and

[9] https://altago.com/wp-content/uploads/El-Paso-Bike-Master-Plan.pdf

the lack of accommodations within the project vicinity, there is a need to provide safer and more continuous accommodations for bicyclist and pedestrians.

2.5 Crashes, Conflict Points, and Incident Management

Data obtained from the TxDOT Crash Records Information System (CRIS) database shows that the annual crash rate remains near the statewide average (**Table 4**).

Table 4. Annual Crash Data

	Year				
	2017	2018	2019	2020	2021
Yearly Total of Crashes	556	558	551	340	472
I-10 Corridor Crash Rate	154.72	156.84	154.29	106.13	164.36
Statewide Average Crash Rate for Interstate Facilities	154.48	151.22	156.41	134.96	158.85
Corridor Safety Ratio	1.00	1.04	0.99	0.79	1.03

Source(s): TxDOT CRIS, TxDOT Crash Statistics Accessed October 2022, Downtown 10 Existing Conditions, 2022; https://www.txdot.gov/content/txdotreimagine/us/en/home/data-maps/crash-reports-records/motor-vehicle-crash-statistics.html

The corridor crash rate is approximately average (1.00) for facilities of the same type across the state. It fell below average in 2020; however, 2020 data is not as reliable as other years because of exceptional circumstances due to the COVID-19 Pandemic.

The yearly total crashes between 2017 and 2021 average to 1.36 crashes a day. As the largest corridor (in terms of AADT) in the El Paso region, any incidents have the potential to cause severe delays and/or lack of access. Additionally, the lack of continuous frontage roads in the project corridor exacerbates the potential incident management issue because there is no direct alternate route if the mainlanes of I-10 had to be closed.

The Reimagine I-10 Study identified opportunities to reduce conflict points along this segment of the corridor.

2.6 Design Standards

I-10 within the project limits does not meet current roadway design standards based on TxDOT's Roadway Design Manual,[10] Hydraulic Design Manual,[11] and the Texas Manual of Uniform Traffic Control Devices (TxDOT 2011).[12]

[10] http://onlinemanuals.txdot.gov/txdotmanuals/rdw/rdw.pdf
[11] http://onlinemanuals.txdot.gov/txdotmanuals/hyd/index.htm
[12] https://www.txdot.gov/content/txdotreimagine/us/en/home/business/resources/traffic-design-standards/tmutcd.html

As previously mentioned, much of the existing I-10 infrastructure was built in the 1960s and 1970s. Overtime, as design standards have evolved and integrity of materials diminishes, the need to update aging infrastructure has arisen. Within the proposed project limits, there are currently 34 bridges along or across I-10. Of these bridges, 32 are over 40 years old. TxDOT evaluates bridge integrity through sufficiency ratings. TxDOT's Bridge Development Manual defines sufficiency rating as "A single numerical rating ranging from 0 to 100 that is based on federal criteria and takings into consideration a bridge's structural adequacy and safety, serviceability and functional obsolescence, and essentiality of traffic service." Eight of the 34 bridges within the project limits have a sufficiency rating less than 80 percent (three of these eight are utility bridges, which do not have the same requirements).

The 2022 TxDOT Roadway Design Manual specifies that all controlled access highway grade separation structures, including railroad underpasses, should provide 16 feet 6 inches of minimum vertical clearance over the usable roadway.[13] Roadways under the mainlanes of interstate or controlled access highways must meet the appropriate clearance required by the undercrossing roadway classification. However, the 2018 Texas Freight Plan recommends vertical clearances of 18 feet 6 inches. Pon-Tex bridge reports show that 16 underpass bridges within the project limits have existing clearance between 13 feet 6 inches and 16 feet 5 inches, indicating the need to upgrade to current standards where possible.[14]

The existing I-10 corridor has many design deficiencies in its horizontal and vertical geometry. Within the Downtown 10 project limits, 17 out of 25 (68 percent) horizontal curves and four out of 25 (16 percent) vertical curves do not meet the design requirements for the posted design speed (60 miles per hour). Bringing these horizontal and vertical curves up to design standards is crucial to maintain driver safety and comfort along the corridor.

Due to the age of the infrastructure, the Americans with Disabilities Act (ADA) design standards to accommodate pedestrians and bicyclists are not met at various locations throughout the corridor; therefore, improvements will be designed to meet ADA standards.

3.0 PURPOSE OF PROJECT

The purpose of the proposed project is to improve mobility and long-term congestion management, reduce potential conflict points, improve incident management, and bring the facility up to current design standards within the project limits (Executive Center Boulevard and State Loop 478 [Copia Street]).

[13] http://onlinemanuals.txdot.gov/txdotmanuals/rdw/index.htm
[14] https://www.dot.state.tx.us/move-texas-freight/studies/freight-plan.htm, pg. 7-8.