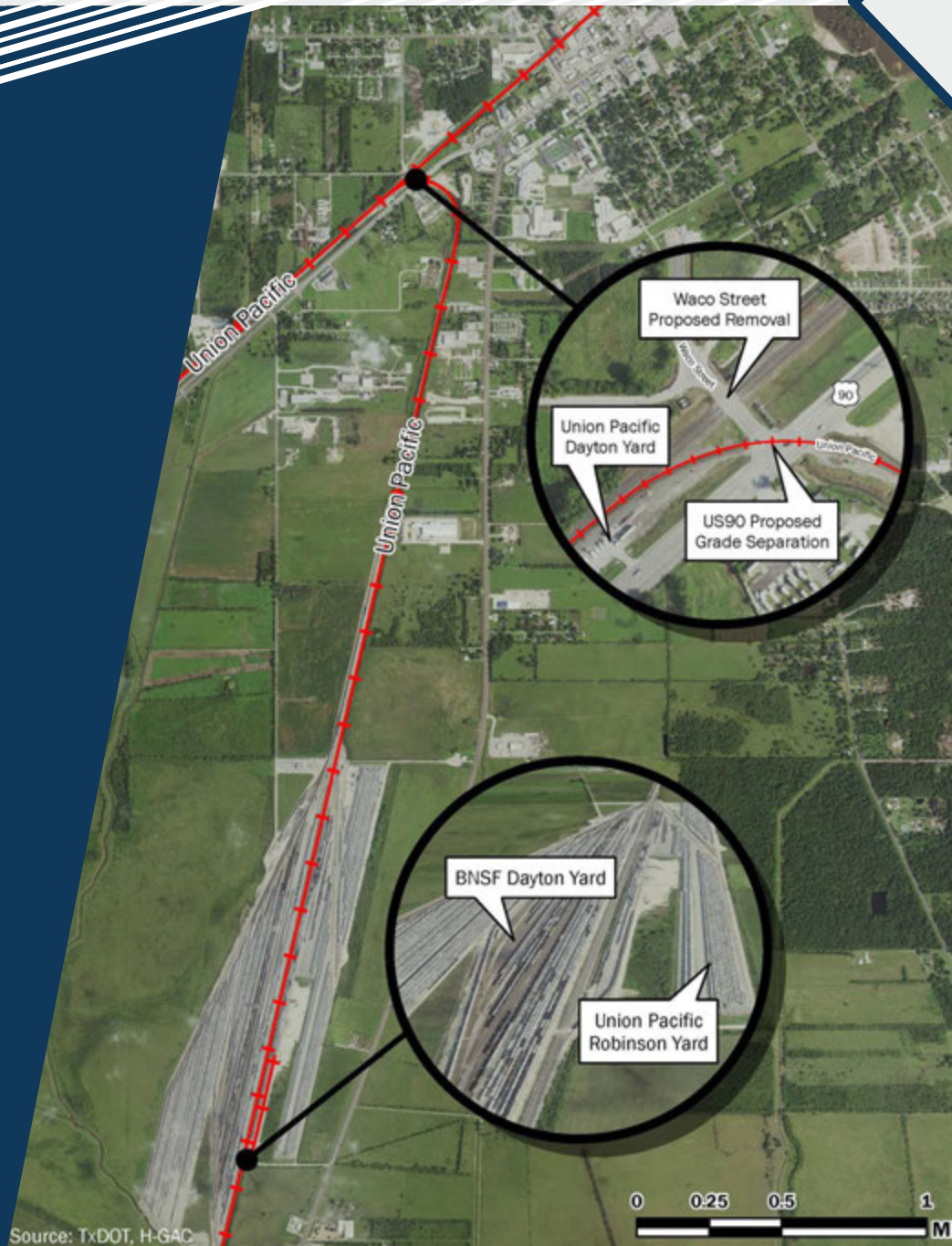


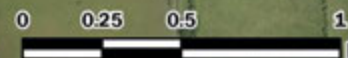
# US 90 GRADE SEPARATION

FY22 Railroad Crossing Elimination Grant Program

City of Dayton, Texas



Source: TxDOT, H-GAC



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# TABLE OF CONTENTS

## I. COVER PAGE

### TABLE OF CONTENTS

<b>II. PROJECT SUMMARY</b>	<b>1</b>
<b>III. PROJECT FUNDING</b>	<b>1</b>
<b>IV. APPLICANT AND PROJECT ELIGIBILITY</b>	<b>3</b>
<b>V. DETAILED PROJECT DESCRIPTION</b>	<b>4</b>
PROJECT BACKGROUND.....	4
ADDITIONAL BACKGROUND ON CHALLENGES THE PROJECT AIMS TO ADDRESS & THE EXPECTED OUTCOMES....	6
EXPECTED USERS AND BENEFICIARIES.....	8
SPECIFIC PROJECT COMPONENTS AND ELEMENTS.....	9
PERFORMANCE MEASURES.....	11
<b>VI. HIGHWAY-RAIL GRADE CROSSING SAFETY INFORMATION &amp; EDUCATION PROGRAMS</b>	<b>11</b>
<b>VII. PROJECT LOCATION</b>	<b>11</b>
<b>VIII. GRADE CROSSING INFORMATION</b>	<b>13</b>
<b>IX. EVALUATION AND SELECTION CRITERIA</b>	<b>14</b>
A. SAFETY.....	14
B. EQUITABLE ECONOMIC STRENGTH AND IMPROVING CORE ASSETS.....	15
C. EQUITY AND BARRIERS TO OPPORTUNITY.....	16
D. CLIMATE CHANGE AND SUSTAINABILITY.....	18
E. TRANSFORMATION OF OUR NATION'S TRANSPORTATION INFRASTRUCTURE.....	18
F. ELIMINATING CROSSINGS AND MAKING CORRIDOR-WIDE IMPROVEMENTS.....	19
G. GEOGRAPHIC DIVERSITY.....	19
<b>X. SAFETY BENEFIT</b>	<b>20</b>
<b>XI. DOT STRATEGIC GOALS</b>	<b>21</b>
<b>XII. PROJECT IMPLEMENTATION AND MANAGEMENT</b>	<b>21</b>
<b>XIII. ENVIRONMENTAL READINESS</b>	<b>24</b>
<b>XIV. APPENDIX</b>	

# TABLE OF CONTENTS

CONTINUED

## TABLES

<b>Table 1:</b> Funding Table.....	2
<b>Table 2:</b> Network Delay Without Improvement.....	7
<b>Table 3:</b> US DOT Highway-Rail Grade Crossing Inventory Information – US 90.....	13
<b>Table 4:</b> US DOT Highway-Rail Grade Crossing Inventory Information – Waco Street.....	13
<b>Table 5:</b> US 90 Project Area Truck Congestion Analysis Tool (TCAT).....	16
<b>Table 6:</b> US 90 Dayton Area Texas Freight Fluidity Tool.....	16
<b>Table 7:</b> Census Data.....	17
<b>Table 8:</b> Summary of Benefits and Costs.....	20
<b>Table 9:</b> TxDOT Discretionary Grants Awarded from 2015 to Present.....	22
<b>Table 10:</b> Potential Risks and Mitigation Strategies.....	23

## FIGURES

<b>Figure 1:</b> Project Area.....	4
<b>Figure 2:</b> Project Lifecycle.....	5
<b>Figure 3:</b> Eastbound US 90.....	5
<b>Figure 4:</b> Westbound US 90.....	5
<b>Figure 5:</b> Southbound Waco Street.....	5
<b>Figure 6:</b> Schematic Design.....	9
<b>Figure 7:</b> Project Location.....	11
<b>Figure 8:</b> Highway-Rail Incidents by State, 2019-2021.....	15
<b>Figure 9:</b> Highway-Rail Injury and Fatality Incidents by State, 2012-2021.....	15

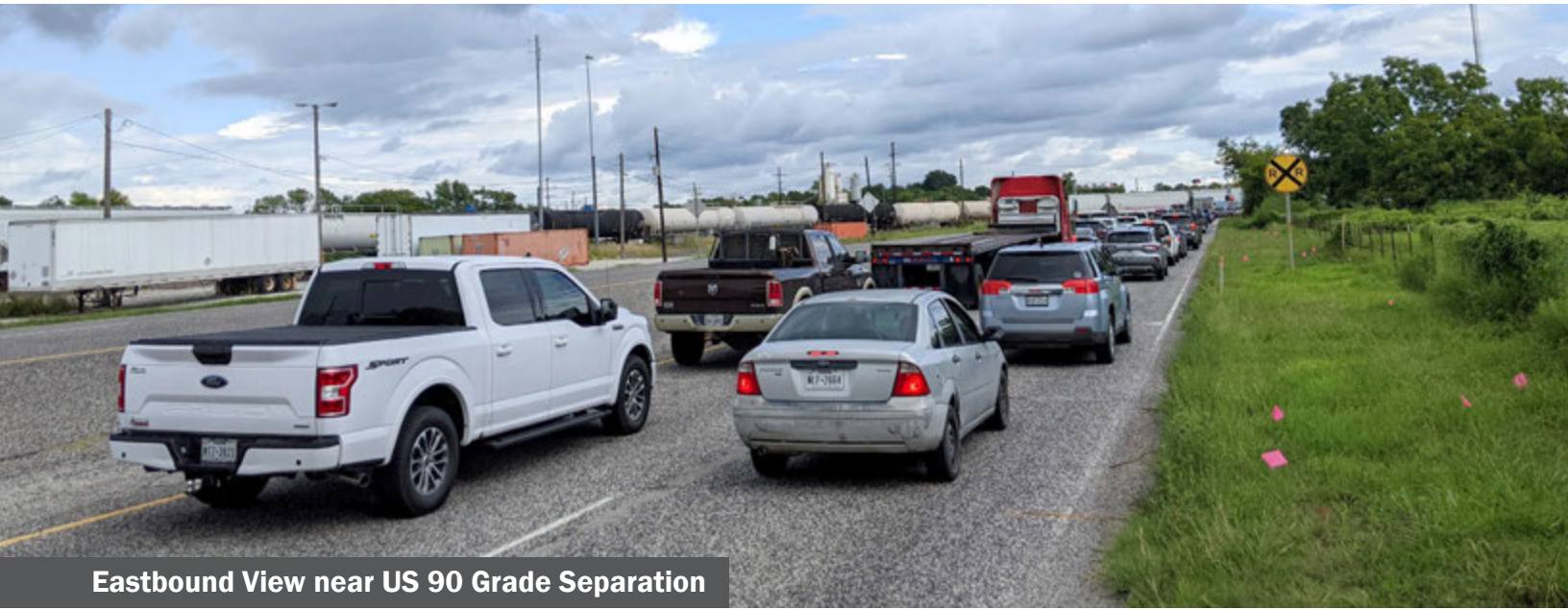
## APPENDIX

<b>Appendix A:</b> Funding Commitment Letters and Letters of Support
<b>Appendix B:</b> Grant Agreement Attachments
<b>Appendix C:</b> Environmental Compliance Documentation
<b>Appendix D:</b> Project Schematic Plan and Profile Sheets
<b>Appendix E:</b> USDOT Crossing Inventory

## I. COVER PAGE

PROJECT TITLE	US 90 GRADE SEPARATION
Applicant	<b>Texas Department of Transportation (TxDOT)</b>
Federal Funding Requested Under this Notice of Funding Opportunity (NOFO)	<b>\$19,550,000</b>
Proposed Non-Federal Match	<b>\$11,254,039</b> <b>In-Kind: \$0</b>
Does some or all of the proposed Non-Federal Match for the total project cost consist of preliminary engineering costs incurred before project selection? If yes, how much?	<b>No</b>
Other Sources of Federal funding (if applicable)	<b>CMAQ; \$25,000,000</b> <b>Section 130 Formula Funds: \$466,157</b>
Total Project Cost	<b>\$56,270,196</b>
Was a Federal Grant Application previously submitted for this Project? If yes, please specify the program, funding year, and project title of the previous application.	<b>Yes</b> <b>FY19 CRISI Grant</b> <b>Dayton Rail Crossings Improvement Project</b>
City(-ies), State(s) Where the Project is Located	<b>Dayton, Texas</b>
Congressional District(s) Where the Project is Located	<b>Texas District 36</b>
Is this project identified in: <ul style="list-style-type: none"> <li>The Freight Investment Plan component of a State freight plan, as required under Section 70202(b)(9);</li> <li>A State rail plan prepared in accordance with Chapter 227; or</li> <li>A State highway-rail grade crossing action plan, as required under section 11401(b) of Passenger Rail Reform and Investment Act of 2015 (title XI of P.L. 114-94).</li> </ul> If yes, please specify in which plans the project is currently identified and provide the identifying number if applicable.	<b>Yes</b> <b>State Freight Plan: Draft Texas Freight Mobility Plan (2022)</b> <b>State Freight Plan: Texas Freight Mobility Plan (2018); pg. 452</b> <b>State Rail Plan: Texas Rail Plan (2019), pg. 328, 5-28</b> <b>State Crossing Action Plan: Draft Texas State Highway-Rail Grade Crossing Action Plan (2022), Appendix A pg. 55</b> <b>Regional Freight Study: Draft Houston-Beaumont Region Freight Study (2021)</b>
Is the Project Located in a Rural Area or on Tribal Land?	<b>Yes: Rural Area</b>
Is the project eligible for a funding set-aside in Section B.1? If yes, please specify which one [Planning Projects, Safety Information and Education Program, Rural or Tribal Set-Aside].	<b>Yes: Rural Set-Aside</b>
If the Project is located in a Rural Area or Tribal Land, is the Project Located in a county with 20 or fewer residents per square mile, according to the most recent decennial census.	<b>No</b>
U.S. DOT Crossing Number(s) (if applicable)	<b>762790L, 762789S</b>
Is the Project located on real property owned by someone other than the applicant? If yes, list real property owners and the nature of the property interest.	<b>No</b>





Eastbound View near US 90 Grade Separation

## II. PROJECT SUMMARY

This proposed project will eliminate two at-grade highway-rail crossings by providing a grade separation at the US 90 at-grade crossing over the Union Pacific Railroad (UPRR) tracks and removing the at-grade crossing at Waco Street in Dayton, Texas. In the project area, US 90 is a five-lane primary arterial highway carrying significant traffic due to the industrial nature of the highway and two nearby railyards. The curved Baytown Subdivision tracks cross US 90 and the intersection with Waco Street at a skew and carry approximately 17 trains a day; the Houston Subdivision double tracks cross Waco Street and carry 16 trains a day. The Texas Department of Transportation (TxDOT) is requesting \$19.55 million in Fiscal Year (FY) 2022 Rail Crossing Elimination funds for construction of this grade separation project to improve safety and mobility by eliminating two highway-rail grade crossings. This project qualifies for the required set-aside for rural investment. TxDOT and UPRR will provide the 20 percent non-federal match.

## III. PROJECT FUNDING

The total project cost is \$56,270,196. TxDOT is seeking \$19,550,000 in FY2022 Rail Crossing Elimination (RCE) grant funds, which represents 34.7 percent of the estimated project cost. TxDOT and UPRR will provide the 20 percent matching funds of \$11.3 million. The Houston-Galveston Area Council (H-GAC) Transportation Improvement Program (TIP) allocates \$25 million in Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds to the project.<sup>1</sup>

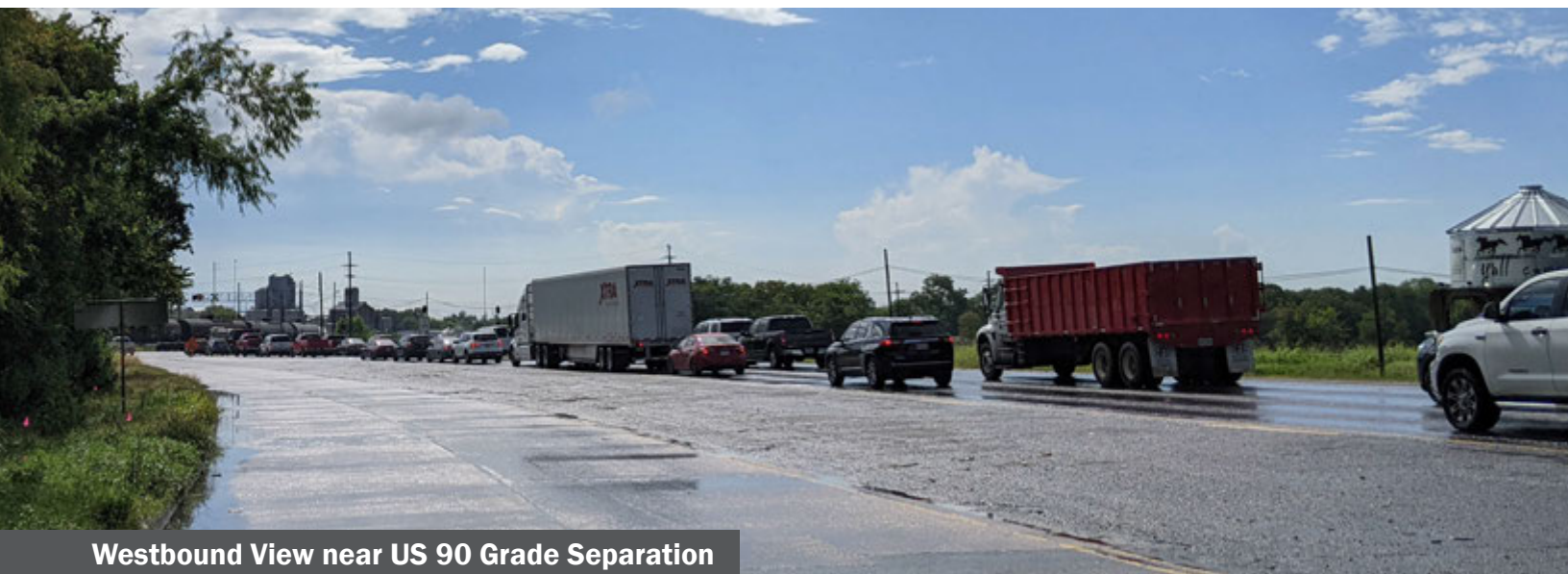
The funding sources and tasks are summarized in **Table 1**, respectively. TxDOT committed a non-federal contribution of \$11.3 million to the project (20 percent of total project cost) from state funds. As described in 23 CFR 646.210, more specifically for the elimination of existing grade crossings at which active warning devices are in place, UPRR will commit to a 5 percent cost share as described in 23 CFR 646.210(b)(3) based on the costs of construction within the limits of the structure and approaches required to transition to a theoretical highway profile which would have been constructed if there were no railroad present, for the number of lanes on the existing highway and in accordance with the current design standards of the State highway agency.

<sup>1</sup> <https://www.h-gac.com/getmedia/c5ca89c2-1469-4c06-a954-4f7eb619d056/Draft-TIP-Project-Listing.pdf>; page 7

**Table 1: Funding Table**

<b>FUNDING COMPONENTS</b>				
<b>TASK</b>	<b>TASK NAME/ COMPONENT</b>	<b>FEDERAL CONTRIBUTION</b>	<b>NON-FEDERAL CONTRIBUTION</b>	<b>TOTAL COST</b>
<b>1</b>	<b>Detailed Project Work Plan</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>2</b>	<b>Final Design</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>3</b>	<b>Construction</b>	<b>\$45,016,157.00</b>	<b>\$11,254,039.00</b>	<b>\$56,270,196.00</b>
<b>4</b>	<b>Project Close Out</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
<b>TOTAL PROJECT COST</b>		<b>\$45,016,157.00</b>	<b>\$11,254,039.00</b>	<b>\$56,270,196.00</b>
<b>FUNDING SOURCES</b>				
<b>Federal Funds</b>			<b>\$25,466,157.00</b>	<b>45.26 percent</b>
<i>TxDOT Rail-Highway Crossings (Section 130) Program</i>			<i>\$466,157.00</i>	<i>0.83 percent</i>
<i>Congestion Mitigation and Air Quality (CMAQ)</i>			<i>\$25,000,000.00</i>	<i>44.43 percent</i>
<b>Federal Funding Request Under this NOFO</b>			<b>\$19,550,000.00</b>	<b>34.74 percent</b>
<b>Non-Federal Funding/Match</b>			<b>\$11,254,039.00</b>	<b>20.0 percent</b>
<i>TxDOT State Funds</i>			<i>\$11,254,039.00</i>	<i>20.0 percent</i>
<b>Portion of Non-Federal Funding from the Private Sector</b>			<b>As required by 23 CFR 646.210</b>	
<i>Union Pacific Railroad (UPRR)</i>			<b>(5 percent of theoretical cost)</b>	
<b>Portion of Project Costs Spent in Rural Area or Tribal Lands</b>			<b>\$56,270,196.00</b>	<b>100.00 percent</b>
<b>Pending Federal Funding Requests</b>			<b>\$0.00</b>	<b>0.00 percent</b>

Funding commitment letters are included in **Appendix A**. TxDOT is committed to delivering a high-quality project on time and under budget along with partners at the UPRR.





## IV. APPLICANT & PROJECT ELIGIBILITY

The applicant meets the eligibility criteria defined in the Notice of Funding Opportunity Section C(1)(a). The lead applicant for this grant is TxDOT, a unit of state government. As a State Department of Transportation, TxDOT is an eligible applicant with an extensive and successful history of delivering a sizable federal aid program, including funds administered by the Federal Railroad Administration (FRA). As detailed in the TxDOT Annual Financial Report for the Fiscal Year ended on August 31, 2021, TxDOT total revenues were \$13.2 billion with 7,490 construction projects in progress (and/or starting soon) valued at an estimated \$32.6 billion. TxDOT is a professional workforce made up of engineers, administrators, financial experts, and many others who work together to realize the TxDOT mission: **Connecting you with Texas.**

The primary contact for this application is:



**Texas Department of Transportation (TxDOT)**  
*State Department of Transportation (Applicant)*

**Robin Ayers**  
Government Affairs Division, Legislative Liaison  
125 E. 11th Street  
Austin, TX 78701-2483  
512.463.8345 | robin.ayers@txdot.gov

As the lead applicant for this FRA grant, TxDOT will serve as the fiduciary recipient and grant administrator for federal funds. TxDOT will oversee and coordinate with multiple project partners, such as UPRR and H-GAC, to facilitate the completion of the project activities.

This project is eligible under the Notice of Funding Opportunity Section C(3)(a)(1) grade separation or closure, including through the use of a bridge, and Section C(3)(a)(3) the improvement or installation of protective devices, signals, signs, or other measures that improve safety, provided that such activities are related to a separation or relocation project described in paragraph C(3)(a)(1). The project will include eligible components for construction, and construction engineering and inspection. The grant would fund 34.74 percent of the \$56,270,196 total project cost. The cost estimate and federal/non-federal funding sources are outlined in **Table 1**.



Eastbound View near US 90 Grade Separation

## V. DETAILED PROJECT DESCRIPTION

### PROJECT BACKGROUND

The 2021 Draft Houston-Beaumont Region Freight Study screened at-grade highway-rail crossings within the region for grade separation potential. The study identified US 90 in Liberty County as a potential crossing for improvement. The 2021 – 2024 TxDOT State Transportation Improvement Plan (STIP), 2019 Texas State Rail Plan, 2022 Draft Texas Freight Mobility Plan, 2018 Texas Freight Mobility Plan, and 2022 Draft Texas State Highway-Rail Grade Crossing Action Plan also identified the US 90 grade separation project.<sup>2,3,4</sup> As detailed in the Safety Section of this application, the nation's highest number of highway-rail incidents occurred in Texas within the previous five years, and this project further advances a key incident location within the State. The project area is displayed in **Figure 1**.

**Figure 1** : Project Area<sup>5</sup>



Funding for the project is allocated in the Fiscal Year (FY) 2023-2026 H-GAC TIP. The 60 percent schematic design and public engagement meetings are completed. Environmental studies are currently underway.

The US 90 Grade Separation is currently in the Project Development stage of the Project Lifecycle, as shown in **Figure 2**. The federal discretionary grant funding will support the Final Design and Construction stages. Completed Project Development steps are shown in **Appendix D**.

<sup>2</sup> <https://ftp.txdot.gov/pub/txdot-info/tpp/stip/2021-2024/highway.pdf>, page 197

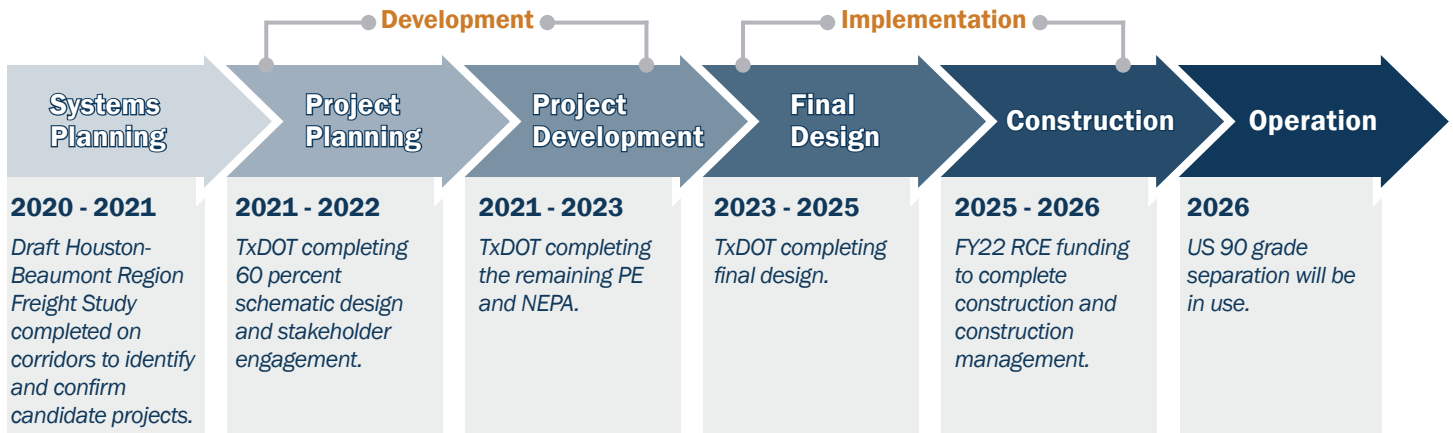
<sup>3</sup> <https://ftp.dot.state.tx.us/pub/txdot-info/rail/texas-rail-plan-chapters.pdf>, page 331

<sup>4</sup> <https://ftp.txdot.gov/pub/txdot/move-texas-freight/studies/freight-mobility/2018/appendices.pdf>, page 452

<sup>5</sup> <https://www.txdot.gov/projects/hearings-meetings/beamont/us-90-uprr.html>



**Figure 2: Project Lifecycle**



US 90 is a south-central Texas highway spanning nearly the entire width of Texas. It serves as a key freight corridor within the state and is part of the National Highway System (NHS). Within Dayton, Texas, US 90 is a five-lane primary arterial highway. The US 90 highway-rail crossing (United States Department of Transportation [USDOT] #762790L) is controlled by an active warning device and is the only at-grade highway-rail crossing along US 90 between Houston and Beaumont. The location serves approximately 22,000 vehicles per day. Approximately 17 trains per day traverse the Baytown Subdivision crossing. Significant truck and train traffic volume at this crossing is due to the industrial nature of US 90 and two nearby railyards: the UPRR Dayton Yard and joint BNSF Railway Dayton Yard/UPRR Robinson Yard. The curved tracks cross the highway at a skew across US 90 and the intersection of US 90 and Waco Street. The active highway-rail at-grade crossing at Waco Street is on the Houston Subdivision and is connected perpendicular to US 90. The Waco Street highway-rail crossing serves approximately 3,860 vehicles and 16 trains per day. Existing conditions are displayed on the cover and page 10. **Figure 3** through **Figure 5** show Streetview photos.

The Baytown Subdivision rail corridor, which includes the US 90 highway-rail grade crossing, is owned by UPRR with trackage rights for BNSF and the Amtrak (ATK) Sunset Limited Route. The UPRR Dayton Yard is approximately one-quarter mile west of the Waco Street crossing. One mainline track and one siding track feed into the UPRR Dayton Yard that crosses Waco Street. The BNSF Dayton Yard/UPRR Robinson Yard is approximately 1.75 miles south of the crossing. The US 90 rail corridor operates at slow speeds, between 10 to 20 mph, due to the proximity of the joint yard. The slow speed and high frequency of trains create a longer blocked crossing time. Blocked crossings cause delays for roadway users including truck drivers and emergency responders. In addition, rear end crashes from traffic congestion are far too common at this blocked crossing.

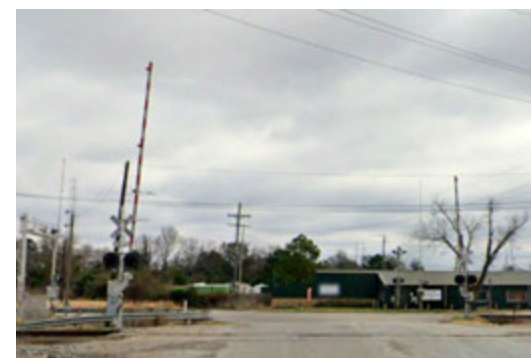
**Figure 3: Eastbound US 90<sup>6</sup>**



**Figure 4: Westbound US 90<sup>7</sup>**



**Figure 5: Southbound Waco Street<sup>8</sup>**



<sup>6</sup> Google Maps. (May 2022). [Eastbound US 90] [Street Map]. <https://www.google.com/maps/@30.0397441,-94.8975813,3a,90y,34.24h,92.04t/data=!3m6!1e1!3m4!1sQkKdroaNYHo9V0we580GJg!2e0!7i16384!8i8192>  
<sup>7</sup> Google Maps. (June 2022). [Westbound US 90] [Street Map]. <https://www.google.com/maps/@30.0402313,-94.8969514,3a,75y,227.76h,96.44t/data=!3m6!1e1!3m4!1sqSeGcEMACnJSUIU9d-c1IQ!2e0!7i16384!8i8192>  
<sup>8</sup> Google Maps. (January 2022). [Southbound Waco Street] [Street Map]. <https://www.google.com/maps/@30.0405885,-94.8979847,3a,90y,147.77h,88.84t/data=!3m6!1e1!3m4!1sc69B9XMppwuS0TMU3Ppq2Q!2e0!7i16384!8i8192>

The US 90 highway-rail crossing is an active crossing equipped with lights, bells, and three gate arms; the eastbound and westbound US 90 movements and southbound movement at Waco Street are protected by gates. The crossing is configured in a unique way, as it intersects the roadway at a T-intersection. The single mainline track across US 90 is spaced approximately 125 feet from the two (one mainline and one siding) tracks along Waco Street. Similarly, the Waco Street crossing is equipped with lights, two gates, and bells.

## ADDITIONAL BACKGROUND ON THE CHALLENGES THE PROJECT AIMS TO ADDRESS & THE EXPECTED OUTCOMES



### SAFETY

**Challenge:** The US 90 grade separation project area experienced a high incident rate over the previous five years (2017 – 2021). Seventy-one (71) incidents occurred within a 500-foot buffer of both the US 90 and Waco Street highway-rail crossings. Of the 71 incidents, 47 were directly related to either the two highway-rail crossings or the Waco Street and US 90 intersection. Two of these were FRA reported incidents and were therefore classified as train-vehicle incidents. The remaining incidents due to the highway-rail crossings (US 90 and Waco Street) were related to secondary conditions surrounding the crossings, such as rear end crashes when a train was blocking the roadway.

Incident information originates from FRA Highway/Rail Grade Crossing Incident Data and the TxDOT Crash Records Information System (CRIS). Additional incident details include:

- **Existing Layout:** The Baytown Subdivision railroad tracks cross US 90, and a portion of Waco Street, at a curve. The tracks intersect the roadway at a T-intersection. The Houston Subdivision double tracks along Waco Street are closely spaced to the Baytown tracks.
- **Incident Frequency:** Seventy-one (71) incidents occurred during the previous five years, which is roughly 14 incidents per year.
- **Incident Severity:** Nine incidents (13 percent) resulted in an injury. No incidents resulted in a fatality.
- **Incident Type:** Approximately 41 percent of incidents occurred in vehicles traveling the same direction. These typically occurred from rear-end incidents, often due to queues resulting from the blocked crossing. About 32 percent of incidents were angle crashes; these typically occurred from a turning vehicle at the US 90 and Waco Street intersection, which will be removed with the project.
- **Vehicle-Train Incidents:** Nineteen (19) incidents directly related to the US 90 crossing (two FRA reported). Two incidents directly related to the Waco Street crossing (zero FRA reported).

**Expected Outcome:** The project implements countermeasures including elimination of two at-grade highway-rail grade crossings, elimination of intersection and direct access private driveways to US 90, lane configuration modifications, and intersection lighting. The project eliminates all highway-rail incidents at both crossings. All automobile-rail interactions related to US 90 and Waco Street will also be eliminated. Of the 71 incidents that occurred within the previous five years, 47 incidents (66 percent) will be directly eliminated from the project countermeasure construction.



### TRAVEL DELAY

**Challenge:** The existing at-grade highway-rail crossing along US 90 causes significant vehicular delay. A blocked crossing occurs when a train occupies the roadway for an extended period of time, impeding the flow of traffic. The FRA created an interactive database for the public to report blocked crossings in December 2019. Between January 1, 2021, and May 26, 2022, there were 26 reported blocked crossings at the two highway-rail crossing locations. This includes five reports at Waco Street (USDOT #762789S) and 21 reports at US 90 (USDOT #762790L). A high amount of blocked crossing reports indicates user frustration from delays.

Both highway-rail crossings are located adjacent to railyards. This typically indicates slower moving, longer trains. In addition, the tracks at US 90 highway-rail crossing are curved. This causes the trains to travel slowly, around 10 mph. **Table 2** displays train length, trains per day, and delay assumed during each time a train is crossing US 90. This analysis shows an average 11-minute delay for each train, which occurs 17 times a day.

**Table 2:** Network Delay without Improvement

PERIOD	Existing (2019)			Future (2046)			Difference
	Trains per Day	Average Length	Delay (minutes)	Trains per Day	Average Length	Delay (minutes)	Percent Difference
Per Blocked Crossing	17	10,000	11	23	15,000	17	+43 percent

Source: TxDOT US 90 Virtual Meeting, <https://www.txdot.gov/projects/hearings-meetings/beaumont/us-90-uprr.html> (2022)

**Expected Outcome:** The removal of the US 90 and Waco Street highway-rail grade crossings eliminates vehicular delay along US 90 and Waco Street. The grade separation project allows the area to operate without delay. This saves an average of 187 minutes of delay per day in existing conditions and 391 minutes of delay per day in the future. US 90 is blocked roughly 13 percent of the day. US 90 is projected to be blocked 27 percent of the day in the future, which is twice as much delay as users experience now.



**RAIL OPERATIONS**

**Challenge:** UPRR trains along both the Houston and Baytown Subdivision are typically 10,000 to 15,000 feet in length. The US 90 crossing is primarily blocked due to slow moving trains traversing the wye connecting the Houston Subdivision to the Baytown Subdivision. Because the track is along a curve, the train is only able to move between five to ten miles per hour (mph). The combination of slow moving and lengthy trains can cause the crossing to be blocked for extended periods of time. The Waco Street crossing is blocked when trains pass or enter/exit the UPRR Dayton yard.

**Expected Outcome:** This project allows two Class I railroads to effectively manage rail traffic and yard operations as rail movement continues to increase. The elimination of two at-grade highway-rail crossings would allow the railroads to hold trains along their track without impeding vehicular traffic.



**IMPROVED CORRIDOR**

**Challenge:** The US 90 highway-rail grade crossing in Dayton is one of only seven along the entire approximately 763-mile US 90 corridor between Van Horn, Texas and the Louisiana border. All US 90 grade crossings are equipped with active warning devices. At-grade highway-rail crossings pose safety risks, vehicular/truck delays, and increased emissions due to idling. TxDOT understands the value of this corridor for its statewide connectivity. A US 90 corridor-wide study is currently underway at TxDOT to identify and address needs including elimination of highway-rail crossings along the corridor. US 90 is a key corridor of the Texas roadway and freight network and is critically important for the safe and efficient movement of people and goods.

**Expected Outcome:** This project would help reduce highway-rail conflict points and promote corridor-wide grade crossing improvements. The removal of the at-grade highway-rail crossing along US 90 would reduce the number of highway-rail at-grade crossings along US 90 to six crossings. The heavily traveled corridor between Houston and Beaumont would have no at-grade highway-rail crossings. The closest highway-rail crossing to the west is near Uvalde. The project would increase the distance along US 90 without highway-rail crossings, between Uvalde and Beaumont, to approximately 315 miles.





## ACCESS MANAGEMENT

**Challenge:** Within the project area, 12 private driveways and one street are directly accessed from US 90. Eight driveways are along the south side of US 90 and four driveways are along the north side. The proposed one-way frontage roads provide eastbound and westbound vehicle access to these driveways and streets. Additionally, the segment of Waco Street between US 90 and Sawmill Road will be eliminated. Access to the northern portion of Dayton, including the downtown business district, is eliminated on Waco Street; access remains available on other routes, including CR 494/601, grade separated SH 321 (Cleveland Street), Main Street, and FM 1409 (N. Winfree Street).

**Expected Outcome:** *The project reduces the number of conflict points by eliminating direct access to US 90 from private driveways or public streets within the project area. Access will remain to existing driveways; however, the driveways will only be accessible by one-way frontage roads.*

## EXPECTED USERS & BENEFICIARIES

There are multiple groups and users that would benefit from the project:

- **Traveling Public:** More than 25,000 vehicles currently cross these at grade intersections every day. Eliminating two grade crossings will improve safety and reduce delay for the traveling public.
- **Freight Rail:** The primary operator of the two at-grade highway-rail crossings is UPRR, with trackage rights to BNSF, Amtrak, and KCS, respectively. The project will directly benefit two Class I Railroads, as rail operations with the two (one UPRR, one joint BNSF/UPRR) yards would be optimized with track expansion and potential development.
- **Passenger Rail:** One Amtrak route uses the Houston Subdivision corridor six times per week. The Sunset Limited connects New Orleans to Los Angeles with major stops within Texas at Beaumont, Houston, San Antonio, and El Paso. In 2019, 91,800 passengers rode the Sunset Limited.<sup>9</sup> The elimination of the Waco Street at-grade highway-rail crossing would reduce vehicle-train conflict risks and increase safety for Amtrak passengers.
- **Freight Industries and Truck Traffic:** Approximately 2,000 trucks use the US 90 crossing daily. The track extension will provide quicker train travel time to/from the joint yard and improve efficiency. A significant amount of US 90 truck traffic volume will have reduced travel times and improved efficiency due to the removal of the at-grade highway-rail crossing.
- **Residents:** The project area is located within Dayton and close to several eastern Houston suburbs and Liberty, Texas. Dayton is estimated to have 9,134 residents within its city limits, and all residents are expected to be directly impacted.<sup>10</sup>
- **Employees:** Approximately 2,901 jobs are located within a two-mile radius of the project.<sup>11</sup> Residents within Dayton and the surrounding area will benefit from reduced travel delays, reliability, and safety to and from work including employment within Houston.
- **Emergency Services:** The Dayton Police and Fire Department are within 1.5 miles of the project. The elimination of the US 90 at-grade highway-rail crossing will provide a reliable, unblocked route for emergency services (fire, police, and emergency medical) to assist both sides of Dayton and the surrounding area.
- **Schools:** Three schools are located within one mile of the project: Nottingham Elementary School, Stephen F. Austin Elementary School, and Woodrow Wilson Junior High School. The Dayton Independent School District serves 3,627 (65 percent) economically disadvantaged students.<sup>12</sup>

<sup>9</sup> <https://www.railpassengers.org/site/assets/files/3438/33.pdf>

<sup>10</sup> <https://www.census.gov/quickfacts/daytoncitytexas>

<sup>11</sup> <https://onthemap.ces.census.gov/>

<sup>12</sup> <https://rptsvr1.tea.texas.gov/adhocrpt/adstc.html>, 2021-2022

### SPECIFIC PROJECT COMPONENTS & ELEMENTS

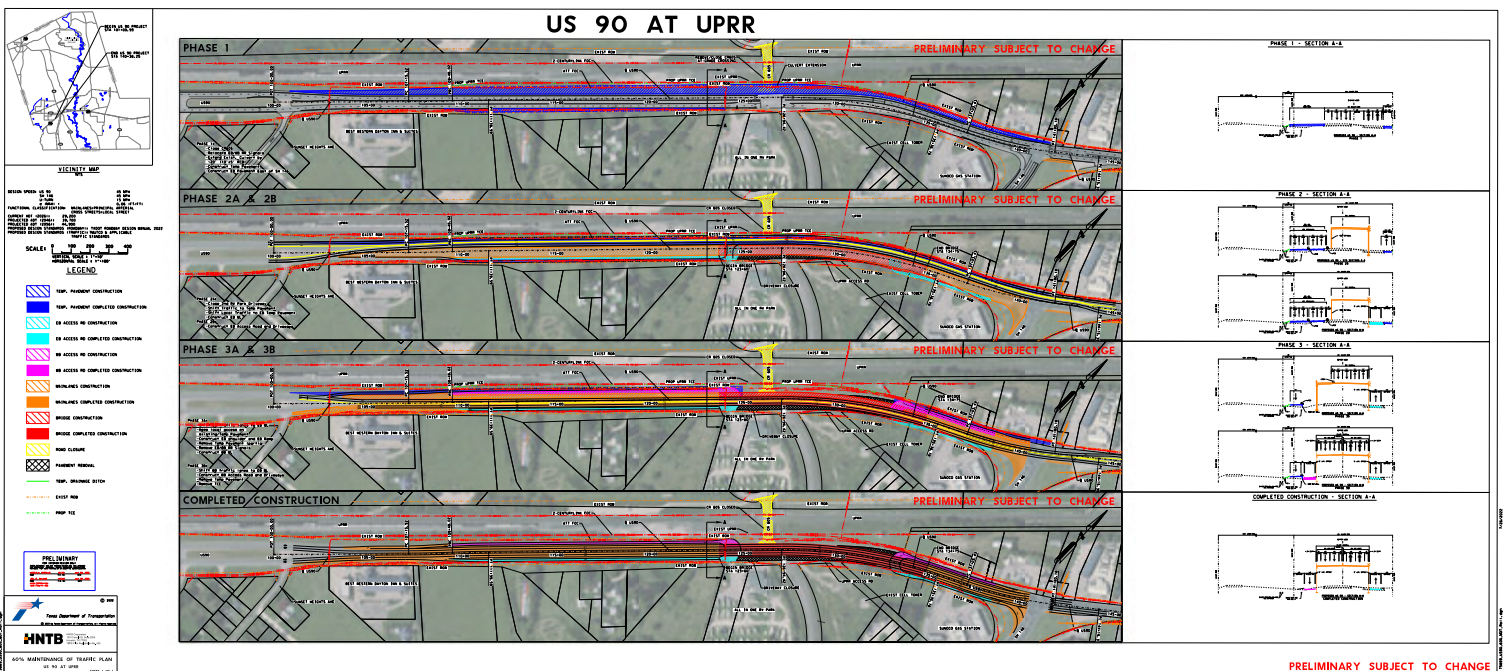
The project includes approximately one mile of project improvements in the City of Dayton in Liberty County, Texas. The specific components include closure of the at-grade highway-rail crossing along Waco Street, elimination of the US 90 highway-rail crossing by building a bridge grade separation over the existing UPRR tracks, construction of a frontage road to maintain access and U-turn opportunities, and the addition of safety lighting. The proposed roadway consists of a grade separated bridge along US 90 over UPRR tracks. The proposed bridge is approximately 1,100 feet in length. The variable right-of-way (ROW) ranges from 128 to 131 feet wide; therefore, no additional ROW is anticipated to complete the project. The Schematic Design is displayed in **Figure 6** and **Appendix D**.

Key elements of the project include:

- **Closure:** The US 90 (USDOT #762790L) highway-rail crossing is removed through grade separation. Waco Street is also removed, therefore the Waco Street highway-rail crossing (USDOT #762789S) and Waco Street and US 90 intersection will be eliminated.
- **Typical Section:** The proposed US 90 typical section reflects the US 90 grade separation bridge and frontage road lanes. The existing and proposed typical sections are shown in **Appendix D**.<sup>13</sup>
- **Access:** Several existing public/private driveways provide access along US 90. Access is better managed by providing private driveways access along the eastbound and westbound US 90 frontage roads.
- **Safety:** The project eliminates all vehicle-train conflicts and several vehicle-vehicle conflicts by constructing a grade separation and removing the Waco Street connection. Street lighting is installed to improve visibility within the surrounding area.
- **Adequate Planning:** The US 90 grade separation bridge is designed to provide adequate space for a future UPRR wye extension between the joint UPRR/BNSF yard and mainline tracks.

The FY22 RCE Grant would be utilized for only eligible construction activities for the US 90 Grade Separation project. Construction of this grade separation project includes mobilization, utility adjustments, traffic control, and landscaping along with professional services for administration of the construction project including inspection, insurance, and testing.

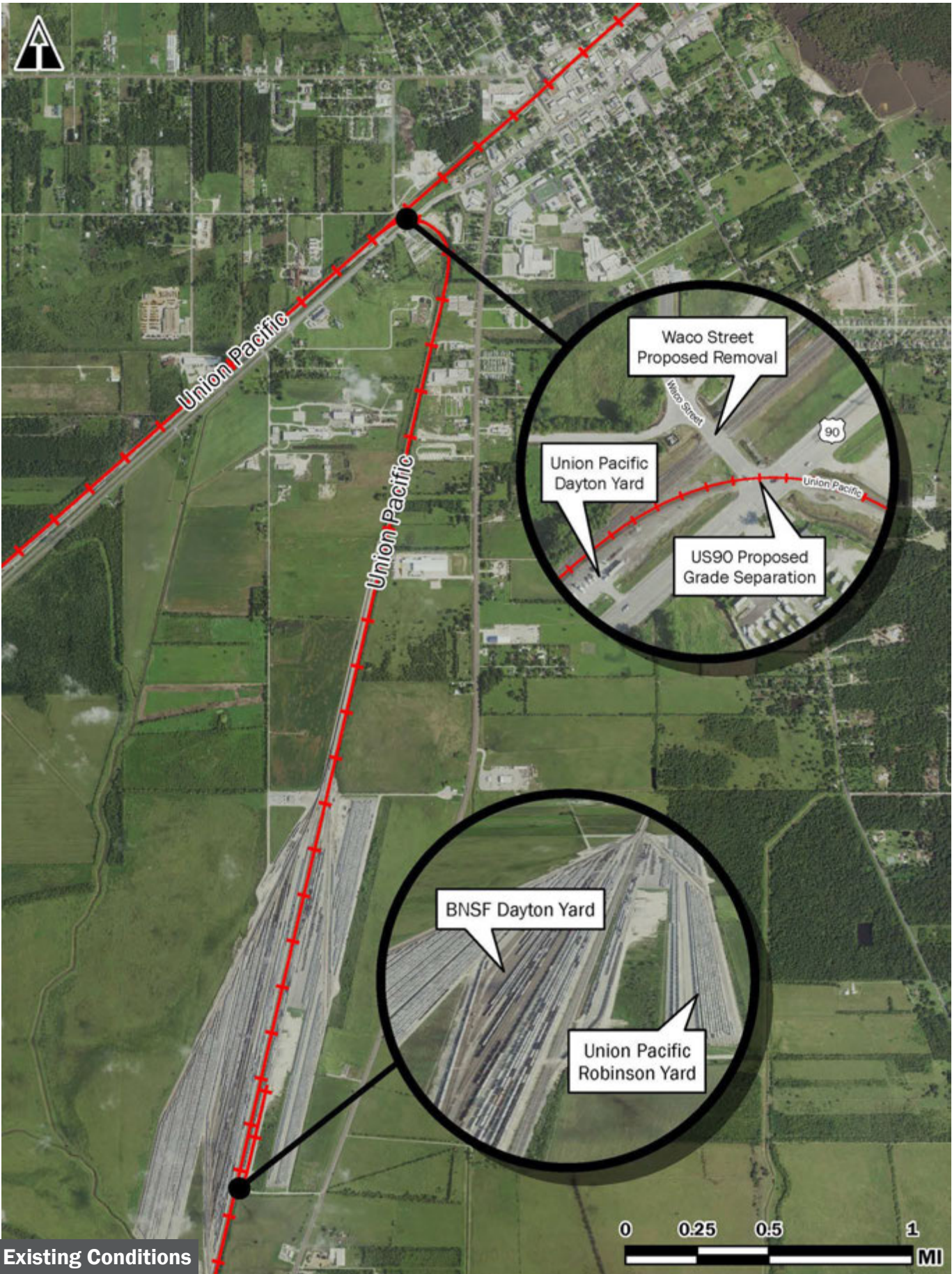
Figure 6: Schematic Design<sup>14</sup>



<sup>13</sup> <https://www.txdot.gov/projects/hearings-meetings/beaumont/us-90-uprr.html>

<sup>14</sup> Ibid





Existing Conditions



## PERFORMANCE MEASURES

FRA documents railroad project performance measures in Attachment 5 of the Grant Agreement (see **Appendix B**). The performance measure most relevant for this project measures the success of the project in eliminating vehicle-train interaction by constructing a grade separation and removing two highway-rail grade crossings. The project performance (successful construction) will result in the total elimination of annual vehicle crossings at the location. This is a reduction in risk for 29,200 vehicles per day after project implementation, anticipated for 2026.

The project will eliminate two at-grade highway-rail grade crossings. The at-grade highway-rail grade crossing at US 90 (USDOT #762790L) will be eliminated by constructing a grade separation and the at-grade highway-rail crossing at Waco Street (USDOT #762789S) will be eliminated through removal of the street.

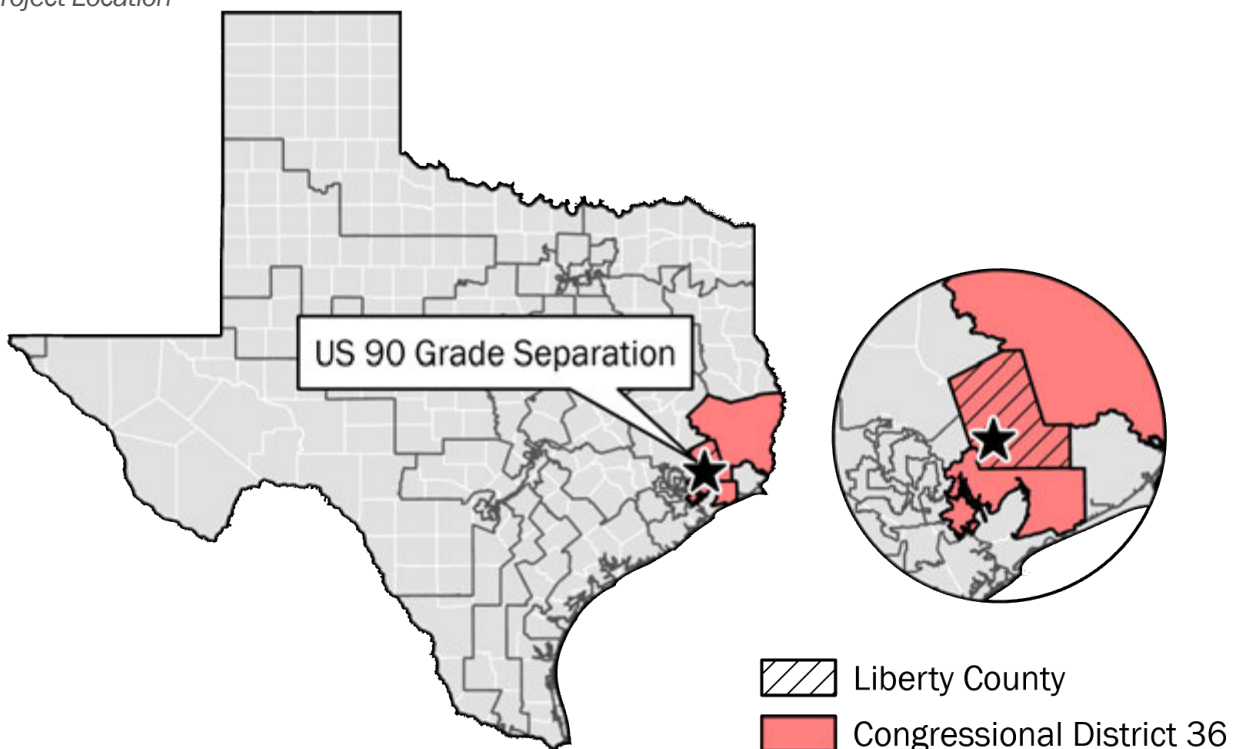
## VI. HIGHWAY-RAIL GRADE CROSSING SAFETY INFORMATION & EDUCATION PROGRAMS

TxDOT is proud to serve as a key partner with [Texas Operation Lifesaver](#), a nonprofit public safety organization committed to reducing the number of tragic incidents at highway-rail grade crossing intersections and trespassing on railroad rights-of-way. Increased awareness equates to increased safety. Education and outreach activities are vitally important at locations such as US 90 in Dayton due to the large number of slow-moving trains blocking the crossing and leading to traffic delay and safety concerns. TxDOT will continue to facilitate this information and education outreach to improve safety.

## VII. PROJECT LOCATION

The US 90 grade separation is in the City of Dayton, Texas within Liberty County. This location is served by the 13-county H-GAC. According to the USDOT Rural Funding Eligibility tool, the project location is considered rural.<sup>15</sup> The project location in relation to the state of Texas and Texas Congressional Districts is displayed in **Figure 7**. The US 90 Grade Separation is within Congressional District 36.

**Figure 7:** Project Location



<sup>15</sup> <https://www.transportation.gov/rural/eligibility>

**US 90 (USDOT #762790L)**

**Primary Operating Railroad**

Union Pacific Railroad

**Railroad Subdivision**

Baytown Subdivision

**Railroad Milepost**

48.53

**Geographic Location**

Latitude 30.0400398, Longitude -94.8973150

**Waco Street (USDOT #762789S)**

**Primary Operating Railroad**

Union Pacific Railroad

**Railroad Subdivision**

Houston Subdivision

**Railroad Milepost**

327.56

**Geographic Location**

Latitude 30.0403480, Longitude -94.8977530



Northbound View from SR-147



Westbound View at Sunoco Gas Station

## VIII. GRADE CROSSING INFORMATION

This project is located along UPRR Baytown Subdivision at the US 90 crossing (USDOT #762790L) and along the UPRR Houston Subdivision at the Waco Street crossing (USDOT #762789S) in Dayton, Texas. The US 90 crossing will be grade separated and the Waco Street crossing will be removed.

US 90 is classified as a five-lane principal arterial roadway. It serves roughly 22,000 vehicles per day. The roadway volume is based on the USDOT Crossing Inventory Form, however more recent data is likely available. There are 17 trains that operate daily along the single main track on US 90. This information is based on the FRA Inventory Database. Additional information regarding US 90 is outlined in **Table 3** and within **Appendix E**.

**Table 3:** USDOT Highway-Rail Grade Crossing Inventory Information – US 90

ROADWAY	CHARACTERISTIC	US 90	RAIL	CHARACTERISTIC	BAYTOWN SUBDIVISION
	USDOT Number	762790L		Subdivision	Baytown
	Jurisdiction	Dayton, Liberty County		Ownership/Primary Operator	UPRR
	Milepost	48.53		Trackage Rights	BNSF
	Crossing Position	At-Grade		Tracks	1
	Warning Device	Lights, Bells, Gates		Total Trains	17 (2019)
	Road Classification	Principal Arterial		Maximum Train Speed	20 mph
	Lanes	5		Typical Train Speed	5 to 8 mph
	Roadway Volume (Year)	22,000 (2011)		Crossing Width	175 feet
	Posted Speed Limit	45 mph			

Source: USDOT Crossing Inventory Form, 2022

Waco Street is classified as a two-lane major collector roadway that serves 3,860 vehicles per day. UPRR is the owner/primary operator; ATK, BNSF, and Kansas City Southern (KCS) have trackage rights. The Waco Street crossing is a double track with one main line and one siding leading to the UPRR Dayton Yard with 16 trains operating daily. Additional information regarding Waco Street is outlined in **Table 4** and within **Appendix E**. Similar to the US 90 highway-rail crossing, the following information is based on the FRA Inventory Database.

**Table 4:** USDOT Highway-Rail Grade Crossing Inventory Information – Waco Street

ROADWAY	CHARACTERISTIC	WACO STREET	RAIL	CHARACTERISTIC	HOUSTON SUBDIVISION
	USDOT Number	762789S		Subdivision	Houston
	Jurisdiction	Dayton, Liberty County		Ownership/Primary Operator	UPRR
	Milepost	327.56		Trackage Rights	ATK, BNSF, KCS
	Crossing Position	At-Grade		Tracks	2
	Warning Device	Lights, Bells, Gates		Total Trains	16 (2019)
	Road Classification	Major Collector		Maximum Train Speed	60 mph
	Lanes	2		Typical Train Speed	30 to 60 mph
	Roadway Volume (Year)	3,860 (2013)		Crossing Width	48 feet
	Posted Speed Limit	30 mph			

Source: USDOT Crossing Inventory Form, 2022



## IX. EVALUATION AND SELECTION CRITERIA

The proposed project meets all evaluation and selection criteria per NOFO Section E.

### EVALUATION CRITERIA

i. Project Benefits	ii. Technical Merit
A. Improves Safety at Grade Crossings ✓ <i>Section IX (A)</i>	A. Statement of Work ✓ <i>Appendix B</i>
B. Proposes to Grade Separate, Eliminate, or Close ✓ <i>Section IX (F)</i>	B. Project Readiness ✓ <i>Section V &amp; XII</i>
C. Improves Mobility of People and Goods ✓ <i>Section IX (B &amp; E)</i>	C. Experience of Key Personnel ✓ <i>Section XII</i>
D. Reduces Emissions, Protects Environment, Community Benefit ✓ <i>Section IX (D)</i>	D. Freight Investment Plan ✓ <i>Cover Page</i>
E. Improves Access to Emergency Services ✓ <i>Section V</i>	E. Innovation ✓ <i>Section IX (E)</i>
F. Improves Access to Communities ✓ <i>Section IX (C &amp; E)</i>	F. Rail Carrier Financial Support ✓ <i>Section III</i>
G. Provides Economic Benefit ✓ <i>Section IX (B)</i>	G. Mobility of Multiple Modes ✓ <i>Section V</i>
H. Uses Contracting Incentives to Employ Local Labor ✓ <i>Section IX (C)</i>	

### SELECTION CRITERIA

#### A. SAFETY

Investment in this stakeholder-supported grade crossing elimination project, selected through a robust data-driven prioritization process, is strongly justified with state and FRA incident data. The FRA Highway-Rail Grade Crossing Incidents Dashboard provides extensive safety data supporting investment in grade crossing safety improvements in Texas. **Figure 8** shows the total grade crossing incidents for 2019 through 2021. The largest number of highway-rail grade crossing incidents in the nation occurred in Texas. **Figure 9** shows injury and fatality incidents from 2012 through 2021 with Texas also leading the nation.

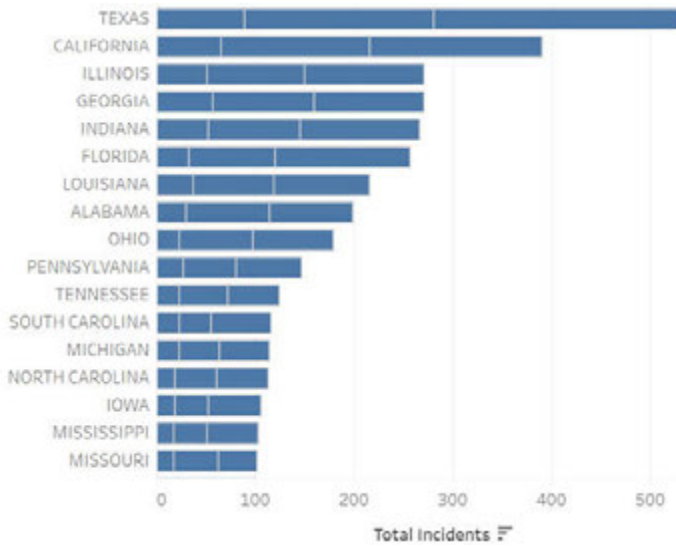
**Reduce Injury and Fatality Crashes:** This project will enhance the safety of the transportation system for all people within the study area and advance the Texas State Highway-Rail Grade Crossing Safety Action Plan (SAP) to help to reduce the overall number of incidents statewide. Texas was one of the original ten states required to submit a SAP in 2011 after the passage of Section 202 of the Rail Safety Improvement Act of 2008. As detailed in the TxDOT 2022 Highway-Rail Grade Crossing SAP TxDOT implemented the strategic actions outlined in the 2011 SAP. Additionally, TxDOT implemented several rail safety initiatives featured in the 2016 Federal Highway Administration (FHWA) report, Highway-Railway Grade Crossing Action Plan, and Project Prioritization Noteworthy Practices Guide.

TxDOT uses a sophisticated weighted selection process as an initial step in project prioritization. Categories include safety, study/stakeholder priority, connectivity, traffic delay, blocked crossings, passenger use, land use, and community cohesion/accessibility. As detailed in the SAP, TxDOT developed an index to rate crossings for highway-rail grade crossing safety.

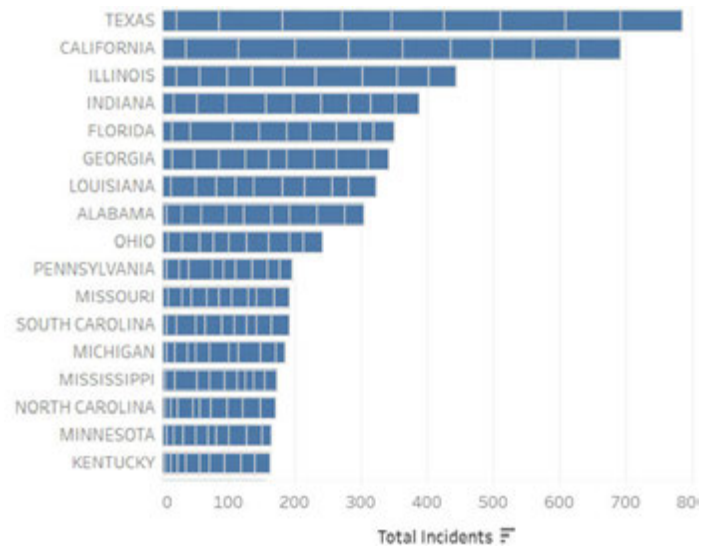
# 71

Incidents occurred  
within 500 feet of  
US 90 and Waco Street  
between 2017-2021.

**Figure 8: Highway-Rail Incidents by State, 2019-2021**



**Figure 9: Highway-Rail Injury and Fatality Incidents by State, 2012-2021**



The factors include road miles, traffic volume, rail miles, carloads, crossings, and incidents. Texas grade crossing risks are high across the board for roadway and rail factors. Texas’s high number of grade crossing incidents correlates with the state’s extensive highway system and rail network. The SAP also provides detailed information about TxDOT’s grade separation prioritization process, highlighting the state’s deep knowledge base to prioritize crossings for grade separations. The 2022 Texas SAP identified the US 90 crossing as a high priority.

This project will significantly enhance the safety of vehicle drivers/passengers because it will eliminate all vehicle-train conflict points for two at-grade highway-rail grade crossings. Between 2017 and 2021, there were 71 incidents within a 500-foot buffer of the two at-grade highway-rail crossings (US 90 and Waco Street). Roughly 13 percent of incidents resulted in an injury. Implementing this project would reduce all highway-rail crossing incidents at two locations. The project would also eliminate all conflict points for turning vehicles at the US 90 and Waco Street intersections.

**Reduce Exposure for Freight and Passenger Rail:** The US 90 grade separation project upgrades infrastructure for a higher level of safety and will greatly enhance the safety for train employees and passengers. All vehicle-train conflict points will be eliminated for two at-grade highway-rail grade crossings. The Waco Street crossing will not only reduce the risk for freight trains, but also passenger train riders. The 17 daily trains along US 90 and 16 daily trains along Waco Street would have no potential for incidents.

**B. EQUITABLE ECONOMIC STRENGTH AND IMPROVING CORE ASSETS**

Gross Domestic Product (GDP) is a measurement of the size and strength of an economy. According to 2019 GDP data from the International Monetary Fund, if Texas were a nation, it would be recognized as the ninth largest economy in the world. Strong employment and income growth forecasts rank Texas as first in the country for its growth prospects.<sup>16</sup>

**Investment in Infrastructure Assets:** Two at-grade highway-rail crossings will be removed, reducing upkeep and maintenance costs. The project eliminates the small segment of Waco Street between US 90 and Sawmill Road, which has poor pavement conditions. Although small, the amount of pavement to maintain will slightly reduce. The US 90 Grade Separation will invest in upgraded pavement conditions and bridge design standards. Adequate drainage will be constructed.

<sup>16</sup> <https://www.forbes.com/places/tx/?sh=4e58cab5fbad>

**Long-Term Job Creation and Economic Security:** The city of Dayton, Texas, has a solid industrial and manufacturing sector. The western portion of the town is more industrial than the eastern portion. The US 90 corridor is one of the most useful routes to connect Dayton employees to work. The proposed project would improve the reliability and efficiency of the corridor to provide better access to jobs, resources, and other needs. According to the 2017 Dayton Comprehensive Plan, several of the largest employers, like Global Tubing, Dayton Lease and Pipeline Services, Insteel Wire Products, Amico-Klemp, Huntsman Corporation, and Sam's Distribution Center, are industrial.<sup>17</sup>

The area adjacent to the joint yard is the anticipated construction site of the Gulf Inland Logistics Park.<sup>18</sup> It will be a 1,050 acre multi-modal transportation and logistics center designed to meet logistics, transportation, and manufacturing business needs. This location was selected due to the proximity of multiple railroads and highways and will bring new jobs to the area.

**Freight Reliability:** Texas created a Truck Congestion Analysis Tool (TCAT) through the Texas A&M Transportation Institute (TTI). Shown in **Table 5** is information from the Texas TCAT. The data indicates that nearly 2,000 trucks use the US 90 crossing daily, equating to approximately 9 percent of trucks along the corridor. US 90 is a vital economic corridor, and this project advances an inclusive and sustainable economy through the removal of a freight bottleneck and will promote economic prosperity for the region.

**Table 5:** US 90 Project Area Truck Congestion Analysis Tool (TCAT)

ROUTE ID	TO - FROM (MI)	TRUCK PERSON HOURS OF DELAY	TRUCK AADT	TRUCK VEHICLE MILES OF TRAVEL
US 90	687.14 – 687.90	1,032	1,959	514

Source: <https://tcatwebprod.z14.web.core.windows.net/>, TCAT (2020)

Texas also developed a Freight Fluidity tool through TTI. The program uses 2015 Transearch data, so the resulting commodity tonnage and value are conservative estimates. The data in **Table 6** shows commodity information that goes through the US 90 corridor within Dayton. This data indicates a high volume of freight commodities traveling on the US 90 corridor. Eliminating the US 90 highway-rail crossing would assist in reducing travel time and improving the safe movement of millions of dollars of commodities annually.

**Table 6:** US 90 Dayton Area Texas Freight Fluidity Tool

ROUTE ID	COMMODITY TONS (ANNUAL)	COMMODITY VALUE (ANNUAL)
US 90	34,494	\$80,125,238

Source: <https://txfreightfluidity.tti.tamu.edu/>. Texas Freight Fluidity, (2015)

Texas outbound rail commodity is expected to increase by 2.9 percent annually, therefore requiring increased rail employment.<sup>19</sup> Class I Railroads offer high paying jobs. Texas ranks first in number of Freight Rail employees and eighth in average wages and benefits per employee (\$131,850).<sup>20</sup> The proximity of two railyards to residential homes increases the opportunity for surrounding area residents to gain economic security through rail employment.

## C. EQUITY AND BARRIERS TO OPPORTUNITY

**Expansion and Improvement of Transportation Options:** This project would improve a critical roadway connection between two block groups with a high proportion of people of color, low-income persons, and

<sup>17</sup> <https://www.cityofdaytontx.com/home/showpublisheddocument/1260/637540805730470000>

<sup>18</sup> [https://www.daytontx.com/sites/default/files/fileattachments/dcdc/page/2377/gulfinlandbrochure\\_2.pdf](https://www.daytontx.com/sites/default/files/fileattachments/dcdc/page/2377/gulfinlandbrochure_2.pdf)

<sup>19</sup> <https://ftp.dot.state.tx.us/pub/txdot-info/rail/texas-rail-plan-chapters.pdf>

<sup>20</sup> <https://www.aar.org/wp-content/uploads/2021/02/AAR-State-Rankings-2019.pdf>



people with lower educational attainment.<sup>21</sup> **Table 7** displays demographic information for the project area block groups. Additionally, two Dayton census tracts (7008 and 7010) including/surrounding the project area are denoted as historically disadvantaged communities.<sup>22</sup> The project is directly located in census track 7010. This tract is also designated as disadvantaged.

This grade separation project would improve the existing transportation system by providing a safer, more convenient connection between residences, jobs, public services, and local amenities. For some residents, their home is on one side of the tracks while their workplace and/or school is on the other side. This grade separation project would lead to consistent travel times for all residents, including students.

**Table 7: Census Data**

	CATEGORY	LOCAL PERCENTAGE	NATIONAL PERCENTILE
NORTHWESTERN BLOCK GROUP	People of Color	22 percent	39th
	Low-Income	35 percent	62nd
	High School Education	15 percent	68th
	Linguistic Isolated	0 percent	45th
SOUTHEASTERN BLOCK GROUP	People of Color	60 percent	71st
	Low-Income	39 percent	67th
	High School Education	30 percent	91st
	Linguistic Isolated	2 percent	57th

Source: <https://ejsscreen.epa.gov/mapper/>

**Mitigate Safety Risk:** For safety, the USDOT highway-rail grade crossing incident database and TxDOT CRIS database were used to identify incidents that occurred in the project area. In the last five years (2017-2021), there have been 71 incidents in the project area. The report lists no fatalities; however, there were nine injuries during the study. Out of the 71 incidents in the project area, 47 are anticipated to be preventable by the project construction. This project will improve safety for all rail employees, passengers, and vehicle users.

**Community Engagement:** TxDOT gathered stakeholder input at public project meetings.<sup>23</sup> Both in-person and virtual options were available for the March 31, 2022, meeting.<sup>24</sup> The virtual public meeting received 401 views; 71 people signed-in while attending the in-person meeting. During the month-long public comment period, TxDOT received 32 comments. The public provided extremely positive comments about the US 90 Grade Separation. In addition, frustrated travelers have taken to social media to urge policymakers to provide a grade separation at this crossing.

Previously conducted and future community engagement will assure considerations for disadvantaged and underserved communities are integrated into project implementation. Notably, some community members have a primary language other than English. TxDOT offered the US 90 public meeting in English with an opportunity for an interpreter. Additionally, TxDOT provided Spanish translation for several presentation slides, the project notice (posted in the Houston Chronicle, La Prensa de Houston, and the Liberty Gazette), and comment forms. Community engagement efforts will continue to be deliberate in accommodating non-English speakers and community members requiring additional accommodations.

<sup>21</sup> <https://ejsscreen.epa.gov/mapper/>

<sup>22</sup> <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

<sup>23</sup> <https://www.txdot.gov/inside-txdot/get-involved/about/hearings-meetings/beaumont/033122.html>

<sup>24</sup> <https://ftp.txdot.gov/pub/txdot/get-involved/bmt/us90-uprr/033122-pm-documentation.pdf>

**Expand Workforce and Training:** TxDOT, in partnership with the Highway Construction Workforce Partnership (HCWP), recently initiated a pilot program for highway construction training and placement.<sup>25</sup> The initiative increased the number of people trained and hired for construction trades and crafts. TxDOT developed an ethnicity goal for the demographic data of the applicant pool in targeted congressional districts. The program intends to bring appropriate training and numerous job opportunities for the Texas community. This workforce program may be implemented with the construction of the US 90 grade separation project.

#### D. CLIMATE CHANGE AND SUSTAINABILITY

**Reduces Emissions and Promote Energy Efficiency:** This project supports reductions in emissions and fuel consumption. According to the Environmental Protection Agency's (EPA) EJScreen website, the project area is in the 80th percentile nationally for particulate matter 2.5 (PM<sub>2.5</sub>) in the air with 9.5 ug/m<sup>3</sup>. This section of US 90 has 22,000 vehicles per day, including approximately nine percent freight trucks with much higher emissions than passenger vehicles. The average daily delay is currently 187 minutes and is projected to more than double by 2046 without this project.

This grade separation project further promotes energy efficiency by reducing emissions from idling vehicles delayed at the crossing. Upgrading the highway-rail grade crossing to a grade separated crossing would significantly decrease roadway users' travel delay, reducing the amount of fuel consumed and particulate matter emissions from drivers idling their engines while waiting for the train to pass.

**Increases Resiliency and Prepare for Extreme Weather Events:** The grade separation will provide access along US 90, even during high water/flooding. The Federal Emergency Management Agency (FEMA) created a national and statewide risk index for each US county based on expected annual loss, social vulnerability, and community resilience. The project area, within Liberty County, is identified as relatively moderate on the national risk index scale.<sup>26</sup> Its national risk index is 16.99, higher than the Texas average (12.89) and the national average (10.60), primarily due to increased vulnerability from hurricane exposure. Investment at this key location in Texas improves network resiliency to extreme weather events such as hurricanes.

**Recycles or Redevelop Existing Infrastructure:** In addition to existing US 90 highway infrastructure, the project supports three existing railyards in rural Liberty County, Texas. The grade crossing elimination project not only improves connectivity for 22,000 daily vehicles but also improves safety and delay along this existing railroad corridor. Furthermore, the project reinforces the commitment to providing safe passenger rail by reducing exposure along an existing Amtrak route.

**Protects Local Ecosystems:** Landscaping, drainage enhancements, and construction best practices would support the protection of local ecosystems. Overall, the project would improve the functionality of the transportation system without increasing impermeable surfaces and minimize impacts to undeveloped land. Drainage enhancements would follow best practices for stormwater pollution prevention to reduce impacts on water resources and erosion control during construction.

The average daily delay  
is currently 187 minutes  
and without this project  
is projected to more than  
double by 2046.

391

#### E. TRANSFORMATION OF OUR NATION'S TRANSPORTATION INFRASTRUCTURE

**Advance Purpose-Driven Research:** The project will advance the thoroughly researched 2021 Draft Houston-Beaumont Region Freight Study, which screened at-grade highway-rail crossings within the region for grade separation potential. The study identified US 90 in Liberty County as a potential crossing for improvement. The specified project is in several other statewide plans, including the 2021 – 2024 TxDOT STIP, 2019 Texas State Rail Plan, 2022 Draft Texas Freight Mobility Plan, and 2022 Texas State Highway-Rail Grade Crossing Action Plan. Including the US 90 grade separation project in these plans shows its significance to the State of Texas.

<sup>25</sup> [https://www.fhwa.dot.gov/innovativeprograms/pdfs/centers/workforce\\_dev/FHWA\\_WDCO\\_HCWP\\_Pilot\\_Survey\\_Metrics\\_TX.pdf](https://www.fhwa.dot.gov/innovativeprograms/pdfs/centers/workforce_dev/FHWA_WDCO_HCWP_Pilot_Survey_Metrics_TX.pdf)

<sup>26</sup> <https://hazards.fema.gov/nri/map#>

**Add Capacity to Congested Road Corridor:** The elimination of the US 90 highway-rail grade crossing will eliminate 187 minutes per day of delay for 22,000 vehicles in existing conditions. Trains along the US 90 corridor are currently around 10,000-feet long and expected to grow to 15,000-feet long in the future. The slow speed, due to the curve, and increased length will increase the US 90 crossing delay by 6 minutes per blocked crossing. The delay occurs on average 17 times per day now and is anticipated to be 23 times per day in the future.

**Add Capacity to Congested Rail Corridor:** The two highway-rail crossings to be eliminated are along the Baytown and Houston Subdivisions. Both freight and passenger rail trains pass through the crossings. Removing the two highway-rail crossings will improve safety by reducing all vehicle-train conflict points. The project will help improve the transportation system to serve surrounding residents, freight drivers, railroad employees, and passenger rail users. Additionally, supporting railroad operations supports the national economy.

**Ensure a State of Good Repair:** The US 90 corridor is a significant truck route with 22,000 vehicles per day and approximately 2,000 trucks. The project further improves the existing at-grade crossing at Waco Street to support the existing UPRR Dayton yard and enhances the existing at-grade crossing at US 90 to support the joint UPRR/BNSF yard. Additionally, the project ensures the removal of two physical barriers to improve the flow of vehicular and truck traffic. The US 90 grade separation will improve pavement conditions for the surrounding area to maintain proper pavement for the heavily traveled corridor.

## F. ELIMINATING CROSSINGS AND MAKING CORRIDOR-WIDE IMPROVEMENTS

This project is part of the Baytown and Houston Subdivisions in UPRR and proposes eliminating two separate at-grade highway-rail crossings: one through grade separation and another through closure. The grade separation of US 90 will create an improved corridor between Beaumont and Houston. The US 90 corridor spans nearly the entire width of Texas, and this project upgrade would reduce the number of at-grade highway-rail crossings along the corridor to six. This project would help reduce highway-rail conflict points and improve corridor-wide grade crossing.

The City of Dayton was awarded FRA's FY19 Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program Project Grant.<sup>27</sup> The rural designated planning project provided the City of Dayton with a resource to complete preliminary engineering and environmental analysis for four at-grade highway-rail crossings. This FRA investment helped the City of Dayton and TxDOT identify the US 90 project as the priority for the region. Award of this US 90 grade separation project would progress this previously awarded CRISI grant through the project lifecycle stages to construction.

## G. GEOGRAPHIC DIVERSITY

The US 90 grade separation project is located in Dayton, Texas within Liberty County. The project is designated by the FRA as a rural location. Due to the rural nature of the project area, implementation and construction of the project will have an impact on the entire City of Dayton. As of July 1, 2021, Dayton is estimated to have 9,134 residents. The City is growing at a rate of approximately 4 percent a year. The project will improve quality of life for all Dayton residents and surrounding communities, particularly those living within Liberty County.

This project represents an investment in a diverse geographic area in population, land use, and track use. According to the EPA's EJScreen Demographic Index, which combines percent low-income and percent minority demographics, the project is located between two block groups with demographic indexes in the 80th to 90th percentile, nationally. Land use around the project area is also diverse. It includes industrial sites, commercial development, single-family homes, multiple manufactured home communities, a public park, Nottingham Elementary School, Stephen F. Austin Elementary School, and Woodrow Wilson Jr. High School located within an approximately one-half mile radius of the project site. A diverse group of residents and users would benefit from the roadway improvements. UPRR and BNSF would also benefit from the highway-rail grade crossing removal.

<sup>27</sup> [https://railroads.dot.gov/sites/fra.dot.gov/files/2020-09/FY19%20CRISI%20Project%20Selections\\_0.pdf](https://railroads.dot.gov/sites/fra.dot.gov/files/2020-09/FY19%20CRISI%20Project%20Selections_0.pdf)

<sup>28</sup> <https://www.census.gov/quickfacts/daytoncitytexas>



## X. SAFETY BENEFIT

This project eliminates the active at-grade highway-rail crossing at US 90 by constructing a four-lane grade-separated bridge. Additionally, Waco Street and the current at-grade highway-rail crossing, which is connected perpendicular to US 90, will also be removed. The elimination of two grade crossings will significantly improve safety at one of Texas' highest priority grade crossing locations. The FRA Highway/Rail Grade Crossing Incidents Dashboard provides extensive safety data supporting investment in highway-rail grade crossing safety improvements in Texas. For the most recent three years of data, Texas leads the nation in overall incidents and in incidents that result in injury and fatality for more than ten years. The US 90 Grade Separation Project was selected through a robust, data-driven prioritization process and is strongly justified with state and FRA incident data.

USDOT Benefit-Cost Analysis (BCA) Guidelines for Discretionary Grant Programs (2022) were utilized to evaluate safety justifications for this project based on standardized, objective safety measures. The USDOT BCA guidelines use similar metrics to GradeDec.Net. The US 90/Waco Street project will produce several benefits over the "No Build" scenario. Benefits conferred by the project are derived from the residual project value, savings from reduced travel delays, and improved vehicular safety from reduced incidents involving injuries and fatalities. Travel time savings from reduced traffic delays make up the most significant share of total benefits. The residual value (the remaining useful life past the analysis period) comprises the second greatest percentage of total benefits. Safety benefits for drivers and passengers from the expected reduction in vehicular incidents make up the remaining share of the project's full benefits. **Table 8** summarizes the total discounted and undiscounted benefits under the project for which benefits are discounted at a seven percent rate.

According to incident data in the project area, 71 incidents (nine involving injuries) occurred from 2017 to 2021. Although there were 71 incidents within the surrounding area, only 47 would be directly eliminated with the implementation of the project. Therefore, only these 47 incidents were used within the benefit and cost analysis.

Safety for future vehicular traffic in the project area will significantly improve as the number of incidents involving injuries and fatalities is reduced. The grade separation will reduce incidents resulting from vehicle collisions near the railroad crossing and vehicle-train collisions. Incidents resulting from crossing-related congestion will also be reduced as vehicles no longer queue while the highway-rail crossing is occupied. All future incidents that would have happened at the intersection of US 90 and Waco Street or the Waco Street at-grade highway-rail crossing will be eliminated entirely.

**Table 8:** Summary of Benefits and Costs

BENEFITS AND COSTS	DISCOUNTED* (\$ MILLIONS)	UNDISCOUNTED* (\$ MILLIONS)
<b>Incidents</b>	<b>\$4.10</b>	<b>\$12.11</b>
<b>Travel Delays</b>	<b>\$104.03</b>	<b>\$318.54</b>
<b>Maintenance Cost Savings</b>	<b>\$11.27</b>	<b>\$34.50</b>
<b>Emissions Cost Savings</b>	<b>\$0.04</b>	<b>\$0.13</b>
<b>Residual Value</b>	<b>\$3.58</b>	<b>\$20.77</b>
<b>TOTAL BENEFITS</b>	<b>\$123.02</b>	<b>\$386.05</b>

\*7 percent discount rate

Significant train traffic volume occurs at the crossing, primarily due to the industrial nature of US 90 and its proximity to two nearby railyards. Trains move between five to ten mph around the curved track on US 90. As a result, vehicles are often forced to queue for long periods when the crossing is occupied. Vehicles will no longer be impacted by delays and queuing congestion, allowing drivers and passengers to save substantial travel time after the construction of the grade separation. The estimate of travel time savings from reduced delays under the project is conservative, given that railroad crossing-related congestion in the project area and the surrounding roadway network were not considered.

In addition, because vehicles will no longer queue at the railroad crossing, the grade separation can be expected to reduce fuel-related emissions – yielding several environmental and health benefits. This project will also improve economic competitiveness and the mobility of people and goods, resulting from vehicle operating cost savings related to reduced idling. Furthermore, train operability will be enhanced due to the uninterrupted flow of trains passing through the crossing without vehicular collisions.

## XI. DOT STRATEGIC GOALS

The project furthers the DOT strategic goals to address climate change and sustainability impacts, improve equity and reduce barriers to opportunity, and advance quality jobs and workforce programs and inclusion.

### CLIMATE CHANGE AND SUSTAINABILITY IMPACTS

The US 90 grade separation will reduce, on average, 187 minutes per day of existing delay and 391 minutes per day of future delay. In addition to passenger vehicles, approximately 9 percent of vehicles along the crossing are freight trucks, helping further reduce emissions. Rail is the most fuel-efficient way to move freight over land, ahead of other modes of surface transportation when it comes to limiting its carbon footprint. Moving freight by train instead of truck reduced greenhouse gas emissions by up to 75 percent.<sup>29</sup> Furthermore, upgrading the US 90 highway-rail crossing to a grade separation will reduce greenhouse gas emissions caused by highway congestion by reducing fuel consumed and eliminating particulate matter emissions from drivers waiting for the train to pass.

### IMPROVE EQUITY AND REDUCE BARRIERS TO OPPORTUNITY

Residents within the surrounding area will be provided more direct and efficient access to employment opportunities by traveling along the US 90 corridor. The residents within the project area are economically and racially diverse.

### ADVANCE QUALITY JOBS AND WORKFORCE PROGRAMS

Texas has a very diverse work force and population with minorities accounting for over 95 percent of the population growth in Texas. Approximately 40 percent of the Texas population is Hispanic or Latino with approximately 13 percent of the state population as Black or African American alone.<sup>30</sup> The project supports existing and growing employers that provide approximately 2,901 jobs within a two-mile radius of the project.

The Highway Construction Workforce Partnership Strategic Workforce Development, a pilot program within Texas, works to increase the capacity and capability of the highway construction workforce.<sup>31</sup> The program intends to bring appropriate training and numerous job opportunities to the Texas community. The US 90 grade separation project may use this workforce program to ensure proper training and diversity within the project's construction.

## XII. PROJECT IMPLEMENTATION & MANAGEMENT

TxDOT is the lead applicant for delivering the US 90 Grade Separation Project. TxDOT's vision is to be a "forward-thinking leader delivering mobility, enabling economic opportunity, and enhancing the quality of life for all Texans."<sup>32</sup> As of August 2021, TxDOT has over 12,000 employees in 25 districts and its headquarters in Austin.<sup>33</sup> Approximately 40 percent of TxDOT's revenue comes from federal funds.

<sup>29</sup> <https://www.aar.org/wp-content/uploads/2021/02/AAR-Freight-Rail-Climate-Change-Fact-Sheet.pdf>

<sup>30</sup> US Census

<sup>31</sup> [https://www.fhwa.dot.gov/innovativeprograms/pdfs/centers/workforce\\_dev/FHWA\\_WDCO\\_HCWP\\_Pilot\\_Survey\\_Metrics\\_TX.pdf](https://www.fhwa.dot.gov/innovativeprograms/pdfs/centers/workforce_dev/FHWA_WDCO_HCWP_Pilot_Survey_Metrics_TX.pdf)

<sup>32</sup> <https://www.txdot.gov/content/txdotreimagine/us/en/home/about/leadership/mission.html>

<sup>33</sup> <https://ftp.txdot.gov/pub/txdot-info/fin/popular-annual-financial-report-21.pdf>

TxDOT has been awarded several USDOT discretionary grants in recent years. **Table 9** summarizes TxDOT awarded USDOT discretionary grants since 2015.

**Table 9:** TxDOT Discretionary Grants Awarded from 2015 to Present

<b>USDOT PROGRAM</b>	<b>AWARD AMOUNT</b>	<b>AWARD YEAR</b>	<b>LOCATION</b>	<b>PROJECT TYPE</b>
<b>RAISE</b>	<b>\$25,000,000</b>	<b>2022</b>	<b>Statewide</b>	<b>Active Transportation</b>
<b>RAISE</b>	<b>\$12,000,000</b>	<b>2021</b>	<b>Dallas</b>	<b>Bike &amp; Pedestrian</b>
<b>INFRA</b>	<b>\$50,000,000</b>	<b>2021</b>	<b>Gainesville</b>	<b>Roadway Improvements</b>
<b>CRISI</b>	<b>\$1,451,250</b>	<b>2020</b>	<b>Hutto</b>	<b>Grade Crossing Improvements</b>
<b>BUILD</b>	<b>\$25,000,000</b>	<b>2020</b>	<b>Odessa/Midland</b>	<b>Interchange Improvements</b>
<b>BUILD</b>	<b>\$25,000,000</b>	<b>2018</b>	<b>Winkler County</b>	<b>Grade Separation</b>
<b>BUILD</b>	<b>\$25,000,000</b>	<b>2018</b>	<b>Glasscock &amp; Reagan Counties</b>	<b>Roadway Improvements &amp; Grade Separation</b>
<b>INFRA</b>	<b>\$65,000,000</b>	<b>2018</b>	<b>Tarrant County</b>	<b>Roadway Improvements</b>
<b>ATCMTD</b>	<b>\$6,850,000</b>	<b>2018</b>	<b>I-10 Corridor</b>	<b>Truck Parking Availability System</b>
<b>ATCMTD</b>	<b>\$6,090,221</b>	<b>2017</b>	<b>Statewide</b>	<b>Freight Technology</b>
<b>FASTLANE</b>	<b>\$7,000,000</b>	<b>2017</b>	<b>Presidio County</b>	<b>Railroad Improvements</b>
<b>ATCMTD</b>	<b>\$8,900,000</b>	<b>2016</b>	<b>Houston</b>	<b>ITS Improvements</b>
<b>TIGER</b>	<b>\$20,802,400</b>	<b>2015</b>	<b>Statewide</b>	<b>Transit</b>

TxDOT has extensive experience overseeing similar projects for intersection and highway-rail grade crossing improvements. TxDOT will implement the project while working closely with funding partners. A project management plan will be in place to lead the proposed project's implementation, including the mitigation of project risks. TxDOT is well versed in project delivery from contracting, oversight, and change order management.



Outlined in **Table 10**, TxDOT identified the following potential project risks and associated mitigation measures. Risks vary from agreements, approvals, and construction elements.

**Table 10: Potential Risks and Mitigation Strategies**

<b>Risk</b>	<b>Description</b>	<b>Mitigation Strategy</b>
<b>RAILROAD AGREEMENTS</b>	<b>Obtaining railroad agreements in a timely manner. This could impact construction schedule.</b>	<b>There is a dedicated railroad liaison engaged with the project design from TxDOT. The project will be set to span the entire width of the UPRR ROW to minimize the impact to the railroad.</b>
<b>LOCAL AGREEMENT</b>	<b>Obtaining a resolution for closing Waco Street.</b>	<b>Engage with local partners and stakeholders within Dayton on the value of closure for safety. Seek alternative designs for an expanded grade separation to serve Waco Street.</b>
<b>ENVIRONMENTAL PERMITS &amp; APPROVALS</b>	<b>Clean Air Act, Section 4(f) of the Department of Transportation Act, Section 7 of the Endangered Species Act, and Section 106 of the National Historic Preservation Act.</b>	<b>Categorical Exclusion (CE) process is underway, and any permitting timeframe is anticipated in the project schedule.</b>
<b>RIGHT-OF-WAY ACQUISITIONS &amp; UTILITY RELOCATIONS</b>	<b>Acquiring the necessary ROW prior to construction.</b>	<b>All construction will occur within existing ROW. Utility relocation will be coordinated prior to construction.</b>
<b>ROADWAY DESIGN STANDARDS</b>	<b>Meeting or upgrading existing roadway geometrics to current design standards.</b>	<b>Geometric issues have been addressed. 60 percent design, as shown in the schematic, meets current design standards.</b>
<b>FLOODPLAIN IMPACTS</b>	<b>Floodplain/Floodway impacts triggering the Letter of Map Revision (LOMR) / Conditional Letter of Map Revision (CLOMR) process.</b>	<b>Project design team will analyze existing floodplain conditions to understand potential impacts of the proposed project. All bridges will be lengthened to meet or exceed the existing bridge openings to obtain a certificate of no-rise from all floodplain administrators.</b>
<b>CONSTRUCTION FUNDING</b>	<b>Not securing adequate construction funding.</b>	<b>Funding package is being developed but is dependent on several sources, including federal RCE, state, and local funding. The project is included within the Texas STIP and H-GAC TIP.</b>

During the term of the grant or cooperative agreement, TxDOT, as the FRA grantee, will submit the following to maintain conformance with federal requirements:

- Progress reports quarterly (FRA Quarterly Progress Report)
- Federal financial reports quarterly (Federal Financial Report – SF-425)
- Final report on or before the end of the period of performance (Final Performance Report)

All grant agreement terms and conditions will be followed by TxDOT and included as flow-down requirements in any sub-agreements required to implement the project.

### XIII. ENVIRONMENTAL READINESS

The project qualifies as a Categorical Exclusion (CE) under one or more of the CEs listed in 23 Part 771.116(c) with the expected completion by June 2023. TxDOT commenced the CE process after the 60 percent schematic design submittal. Before December 16, 2019, the FHWA reviewed and approved the documents prepared under NEPA. On December 16, 2014, TxDOT assumed responsibility for reviewing and approving certain assigned NEPA environmental documents, including those required for this project. TxDOT oversees overall project development through the NEPA assignment program granted by the Surface Transportation Project Delivery Program. TxDOT will seek concurrence from FRA on the NEPA document that is underway in a coordinated and comprehensive manner. The selected alternative is subject to change if local stakeholders determine to maintain access at Waco Street, which would impact the project design.

TxDOT is not anticipating additional environmental permits. However, some form of railroad agreement with UPRR and a resolution from the City of Dayton to fully clear the project will be required for construction.

All environmental information is attached in **Appendix C** and includes project area data, CE Classification Request Form, Environmental Constraints Map, and Purpose and Need Statement.

***The Texas Department of Transportation respectfully submits this grant application for the new Railroad Crossing Elimination Grant Program administered by the Federal Railroad Administration. TxDOT looks forward to advancing this project through the next stage in the project development lifecycle.***

# APPENDIX

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## **APPENDIX A: FUNDING COMMITMENT LETTERS AND LETTERS OF SUPPORT**

## **APPENDIX B: GRANT AGREEMENT ATTACHMENTS**

Attachment 2: Statement of Work

Attachment 3: Schedule

Attachment 4: Budget

Attachment 5: Performance Measures

## **APPENDIX C: ENVIRONMENTAL COMPLIANCE DOCUMENTATION**

## **APPENDIX D: PROJECT SCHEMATIC PLAN AND PROFILE SHEETS**

## **APPENDIX E: USDOT CROSSING INVENTORY**





# APPENDIX A

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# APPENDIX B

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**Attachment 2: Statement of Work**

**Attachment 3: Schedule**

**Attachment 4: Budget**

**Attachment 5: Performance Measures**

# APPENDIX C

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# APPENDIX D

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# APPENDIX E

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