HOUSTON PUBLIC WORKS

West Belt Improvement Project (Phase 1) Narrative

CITY OF HOUSTON TEXAS

2022 Railroad Crossing Elimination Program Grant Application

Table of Contents

CITY OF HOUSTON

Sylvester Turner
Mayor

P.O. Box 1562
Houston, Texas 77251-1562

Telephone – Dial 311
www.houstontx.gov

October 7, 2022

The Honorable Pete Buttigieg
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Mr. Secretary,

I would like to thank Administrator Amit Bose and Deputy Administrator Jennifer Mitchell of the Federal Railroad Administration and their staff for their recent visit to Houston. During their visits, they listened to the community, met with City officials, and witnessed firsthand the challenges of having over 700 railroad crossings in the fourth largest city in the United State of America. Their visits were in response to the increased volume of submissions on the FRA's blocked crossing incident reporter as well as the advocacy of our representatives in Congress. I believe the U.S. Department of Transportation understands the urgency in eliminating the conflicts between the railroad tracks and our local roads. I am requesting $36.9 million in Railroad Crossing Elimination funds to ensure our ability to construct the West Belt Improvement Project (Phase I), which includes two railroad underpasses at Commerce Street/Navigation Boulevard and York Street in the East End neighborhood of Houston.

A study completed by the Gulf Coast Rail District (GCRD) in 2012 identified these two locations as critical for general purpose connectivity and as alternate routes for emergency responders. The Commerce Street/Navigation Boulevard underpass will provide direct access to downtown, the Dynamo Stadium, and Minute Maid Park. The York Street underpass will provide direct access to Interstate Highway 45, the Carnegie Tier 1 University of Houston, and Texas Southern University, an accredited Historically Black College and University (HBCU) institution. More than mobility for people driving in cars, the improvements reconnect communities by providing sidewalks and bike lanes which will make the area more accessible.

Since 2015, we have completed a public engagement process and received a determination from the Texas Department of Transportation that both underpasses are Categorial Exclusions under the National Environmental Policy Act of 1969. To get to this point, we have received funding through the Federal Highway Administration's Surface Transportation Program to prepare preliminary designs and environmentally clear the project and Congestion Mitigation and Air Quality (CMAQ) Program for construction. However, cost increases associated with the post-Hurricane Harvey requirement to design drainage systems using the National Oceanic and Atmospheric Administration's Atlas 14 rainfall standards, increased costs of right-of-way, and market inflation impacts on the costs of labor and materials leave the project with a sizeable funding gap. The City finds itself up against a fiscal year 2025 deadline to start construction on this critical project, which relies on having the necessary funds.

As our City logo prominently displays a train engine, we know and understand our history of development around the railroads that move in and out of the Port of Houston. Consequently, the East End has a web of railroad tracks that make travel through the area unreliable and unsafe. Stopped and slow-moving trains cut off roadway access impacting everything from emergency services to our children's ability to get to school. Imagine my horror viewing children climbing under a train stopped across a local road, so they can get to school on time.

After nearly a century of industrial activity, development on the east side of downtown is shifting towards residential and mixed-use development. The proximity to downtown makes it an ideal commuting distance for work and provides easy access to Houston's extensive arts and sports amenities. Addressing the safety, access, and noise issues associated with freight rail will support this community's transition into a more livable area.

In addition to the City of Houston application, I would like to express my support for Port of Houston Authority of Harris County's application for *Grade Separation to Improve Safety and Mobility of Goods: Port Design*. While outside of the City of Houston boundaries, I recognize the importance of this project to the region. The Port's $2.3 million planning grant application will allow them to design a key grade separation to improve mobility, increase safety, and reduce emission while continuing the significant economic benefits including job creation and support of petrochemical, manufacturing, and agricultural logistics.

I do not overlook the importance of the railroads to Houston and the region. We have the second largest rail footprint in North America behind Chicago. Programs like the Railroad Crossing Elimination Grant and the Consolidated Rail Infrastructure and Safety Improvement Program meet the needs of the railroad by creating sealed corridors, while meeting the mobility and connectivity needs of our residents. With over 700 crossings, we have a long way to go; therefore, in addition to the grant, I am requesting the FRA establish a program comparable to the Chicago Region Environmental and Transportation Efficient Program (CREATE) so with our state, regional, community, and railroad partners we can continue with strategic investments to accommodate our growing population and economic activity at the Port of Houston.

This project is long overdue. The City and GCRD have worked to move the project forward; however, without the ability to close the funding gap, the City will be unable to construct both underpasses. Thank you for your consideration for the West Belt Improvements Project.

Sincerely,

Sylvester Turner
Mayor

Project Cover Page

Project Title	West Belt Improvement Project (Phase I)
Applicant	City of Houston
Requested Funding	$ 36,916,200
Proposed Non-Federal Match	$ 9,228,968
Does some or all of the proposed Non-Federal Match for the total project cost consist of preliminary engineering costs incurred before project selection?	No.
Total Project Cost	$ 123,636,500
Was a Federal Grant Application Previously Submitted for this Project?	No.
City, State where the Project is Located	Houston, Texas
Congressional District where the Project is Located	US Congressional Districts 18 and 29 of Texas
Is this project identified in:	• The proposed project is supportive of the Texas Freight Mobility Plan completed in 2018. Section 11.2.15 (page 11-11) identifies support for strategies that "reduce the number of at-grade highway//rail crossings, improve the efficient movement of freight and increase the quality of life through reduced congestion and improved safety." page 11-11 • The project is identified as a proposed solution to reduce network challenges in the Texas Rail Plan completed in 2019 in Table 2-59 on page 2-162. • Both of these plans were completed in accordance with federal requirements under Section 70202(b)(9) and Chapter 227, respectively.
Is the Project Located in a Rural Area or on Tribal Land?	No.
Is the project eligible for a funding set-aside in Section B.1?	No.
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.	N/A
U.S. DOT Crossing Number(s) (if applicable).	288249R, 288129A, 288247C, 288247C, 288228X, 859517C, 288227R, 288226J
Is the Project located on real property owned by someone other than the applicant?	The project is located on City of Houston right-of way and Houston Belt & Terminal property, who is a partner to this application.

Project Summary

The West Belt Improvement Project (Phase 1) is the first phase of implementing a future 14,600-foot sealed rail corridor along the Houston Belt & Terminal Railroad's (HB&T) West Belt Subdivision. Phase 1 includes the construction of 4 underpasses and closure of 4 at-grade crossings to eliminate 7 existing at-grade crossings and reconstruct one underpass to current standards. When completed, Phase 1 will have an opportunity to create a 9,000-foot sealed corridor and quiet zone.

Project Funding

The West Belt Improvement Project (Phase 1) is a project that has been in critical need of funding for more than ten years. The project received initial federal funding through the Greater Houston region's MPO, the Houston-Galveston Area Council (H-GAC), in the 2015 Transportation Improvement Program (TIP) from an application submitted by the Gulf Coast Rail District (GCRD), a partner to this project. However, due to other area projects and continued development, the project was required to evolve to be comprehensive and meet the needs of railroad operations and the community. HB&T has committed a total of $1.25 million toward the development and construction of this project. Of that total amount, HB&T has spent, to date, $458,667 on environmental documentation resulting in a Categorical Exclusion for the project. The remaining $791,332 is allocated as a match to this project. This funding request is for the remaining gap of $46,145,168 with an 80% federal share of $36,916,200 as detailed in the project funding table below. This federal share represents 30% of the total project cost. All component costs in **Figure 1** include an estimated fee to develop final design and estimated construction costs in FY22 dollars. Additional cost and funding details are included in the Statement of Work (page 34).

Applicant Eligibility

The project applicant is the City of Houston, a home rule municipality in the State of Texas. The West Belt Improvement Project (Phase 1) is located entirely within the City of Houston's boundaries and is therefore eligible under the Railroad Crossing Elimination Program under 49 U.S.C. 22909, Section 22305 of the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117–58, November 15, 2021).

Figure 1: Phase 1 Proposed Project Funding Table

Task/Component #	Task Name/Component	Cost	Percentage of Total Cost*
1	Commerce/Navigation Underpasses & Corridor Updates	$ 65,023,700	
2	York Underpasses & York/Sampson Corridor Updates	$ 58,612,800	
Total Project Cost		$ 123,636,500	100%
Federal Funds Received from Previous Grant (Houston-Galveston Area Council TIP Funds)		$ 61,400,000	50%
Federal Funding Request Under this NOFO		$ 36,916,200	30%
Local Match (cash) Under this NOFO Local Match (cash) Under Previous Grant Total Local Match (cash)		$ 9,228,968 $ 15,300,000 $ 24,528,968	20%
Portion of Non-Federal Funding from the Private Sector - Houston Belt & Terminal		$ 791,332	1%
Portion of Total Project Costs Spent in a Rural Area or on Tribal Lands		0	
Pending Federal Funding Requests		0	

*Percentage of Total Cost rounded up.

Project Details

About the Project

The West Belt Improvement Project (Phase 1) is the first iteration of implementing a future 14,600-foot sealed rail corridor along the Houston Belt & Terminal Railroad (HB&T) owned West Belt Subdivision (**Figure 2**). Phase 1 includes the construction of four underpasses to replace three at-grade crossings and the closure of four at-grade crossings. In total, seven at-grade roadway-rail crossings will be eliminated (**Figure 3**). When completed, the **West Belt Improvement Project (Phase 1) will have an opportunity to create a 9,000-foot sealed corridor and quiet zone** between Runnels Street and Leeland Street.

The existing Navigation Boulevard underpass, built in 1936, will be rebuilt to accommodate through movements of both Navigation Boulevard and Commerce Street, creating a new, needed east-west connection along Commerce Street. The two new underpasses include a signalized intersection between Commerce Street and Navigation Boulevard within the underpasses. The Commerce/Navigation underpasses include high-comfort infrastructure for people walking and bicycling and require the removal of the existing at-grade crossing at Hutchins Street.

Along York Street, two underpasses will be constructed to allow for through vehicular movements from Harrisburg Boulevard to Polk Street. Currently, York Street traverses two at-grade crossings, one across the Union Pacific (UP) Galveston Subdivision and one across the West Belt Subdivision. To support the north-south vehicular movement, York Street will be converted from one-way operations to two-way operations from Polk Street north to Navigation Boulevard. Sampson Street, York Street's one-way pair, will also be converted to two-way operations.

The York Street underpasses will include high-comfort facilities for people walking and bicycling. The underpasses also support transit operations and reliability of METRO's 29 Cullen Hirsch Bus Route. Three at-grade crossings will be removed to support the York underpasses: Milby Street, McKinney Street, and Sampson Street at the West Belt Subdivision.

These planned improvements are supported by two existing grade separations along the West Belt within the East End. Today, the Harrisburg Boulevard and Polk Street underpasses provide critical east-west connectivity within the community.

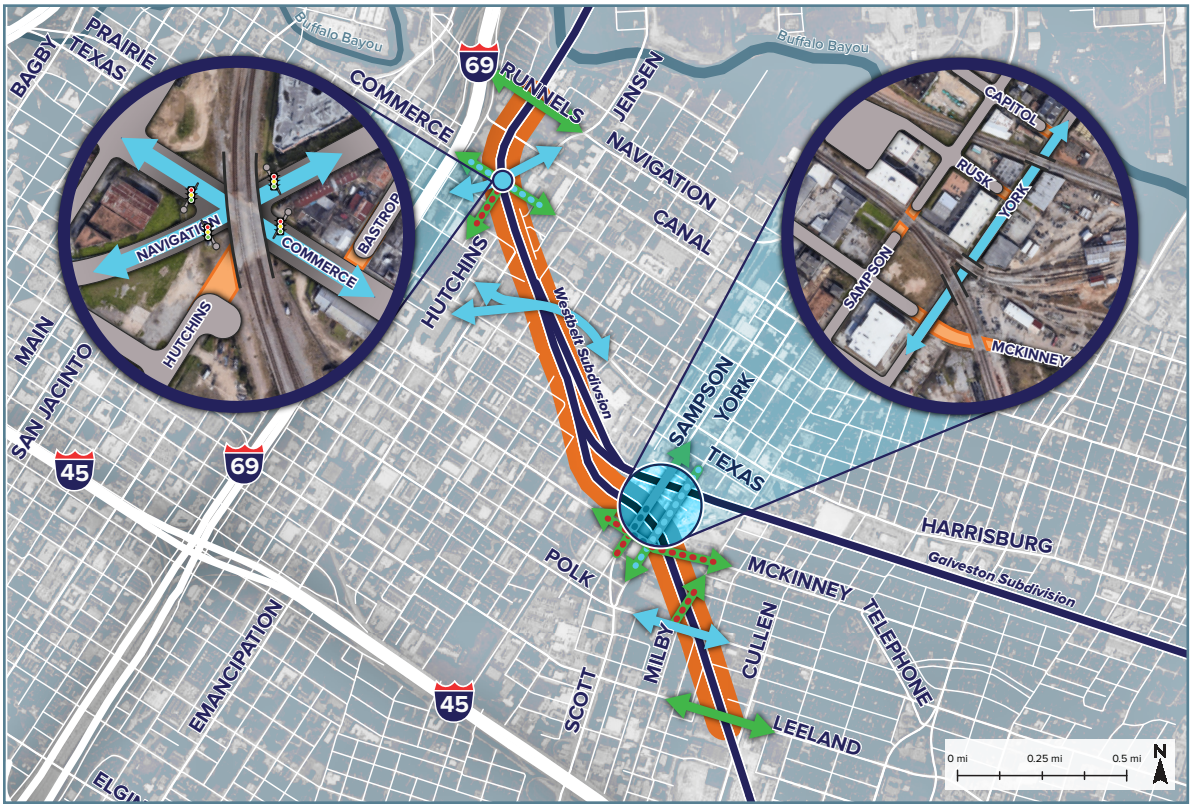


Figure 2: West Belt Improvement Project (Phase 1) Project Map

Project History and Partners

The West Belt Subdivision is an approximately nine-mile, double-track rail line that runs just a few blocks east of Downtown Houston. Currently, the West Belt Subdivision has fourteen at-grade crossings with the street grid that inhibit access/egress to major rail yards. Train stoppages block numerous roads simultaneously, creating first responder and general mobility delays.

2007: *Project Inception*

According to the 2007 Texas Department of Transportation's (TxDOT) *Houston Region Freight Study*, the West Belt averages 65 to 75 trains daily, depending upon location. The study recommended a set of rail capacity improvements, including creating a sealed freight rail corridor by eliminating all at-grade rail crossings on the West Belt Subdivision between Leeland Street and railroad Tower 26 near Lyons Avenue just north of IH-10, a distance of nearly three miles. This longer length of the sealed corridor would prevent blocking the local street network for significant periods, as occurs today.

2012: *Corridor Feasibility Study*

Building off the 2007 TxDOT study, in 2012, the Gulf Coast Rail District (GCRD) conducted the *Houston Belt & Terminal Railroad's (HB&T) West Belt Improvement Study*. The plan recommended potential underpasses at Commerce & Navigation, Sampson, and York; either an overpass or underpass at Leeland & Cullen; and closures at Hutchins, McKinney, and Milby.

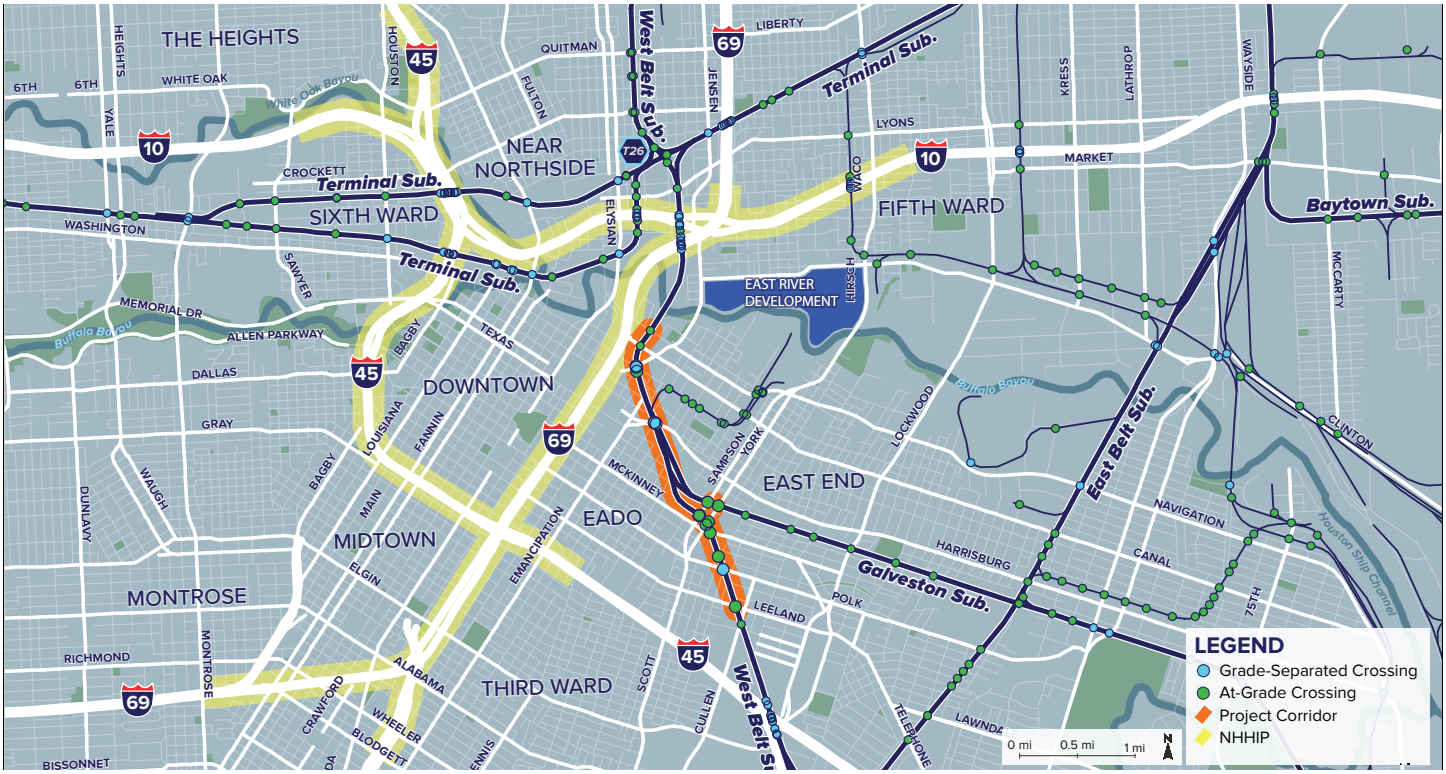
In 2012, H-GAC and the East End District (EED) further developed recommendations for the roadway network surrounding the proposed York underpasses in the *East End Mobility Study*.

2015: *Phase 1 Design Refinement & TIP*

In 2015, the GCRD built upon the H-GAC/EED's 2012 study by developing Conceptual Designs and cost estimates for the Commerce/Navigation underpasses and the York underpasses. These two locations were prioritized as a Phase 1 implementation strategy and identified as priority improvements due to their viability and positive impact on the community. A key change between the 2012 and 2015 recommendations was the evolution of the design for the Sampson/York area, specifically the elimination of the Sampson Street underpass and the conversion of Sampson Street and York Street to two-way operations to support the planned two York underpasses.

The *2015 GCRD West Belt Improvements Conceptual Design* led to a successful application for the 2015 H-GAC Transportation Improvement Program (TIP), securing $61.4 million in funding for this transformative project. The TIP application was supported by data, including a Texas A&M Transportation Institute (TTI) *Benefit Analysis*

Figure 3: Project Location Map



Memo (**Appendix A**) based on a traffic impedance model of the rail corridor and roadway network highlighting the benefits of delay reduction along the corridor.

The York underpasses were submitted for environmental review in September 2015 and received NEPA clearance through a Categorical Exclusion in 2017. The Commerce/ Navigation underpasses received the same NEPA clearance in August 2019.

2015 - 2021: *Regional Multimodal Planning*

Since 2015 several other stakeholders have contributed to planning for these projects, such as Harris County. In 2020, Harris County Precinct One Commissioner's district developed a bikeway concept for Commerce Street that would tie into the Commerce/Navigation Underpasses. The proposed approach would utilize the intersection to resolve a transition from one-way to two-way street operations between Downtown and the East End. This would greatly simplify intersection operations, improving capacity and multimodal safety. The revised design would be easier to integrate into the proposed changes to the street network proposed by *TXDOT's North Houston Highway Improvement Project* (NHHIP).

In 2019, TxDOT released *updated design schematics* for the NHHIP that will redesign, realign, and rebuild IH-45 on the east side of Downtown Houston, along the existing alignment of IH-69/US 59 on the west side. The new schematic proposed converting St. Emanuel Street (which runs north-south and is a block west of the Commerce at-grade rail crossing) from a two-way street to a one-way frontage road, shifting 40-feet west of St. Emanuel's centerline, extending St. Emanuel north of Commerce, and closing the existing at-grade rail crossing of Runnels Street at the West Belt. These recommendations posed a constraint on grades for the proposed Commerce Underpass that required revision of the 2015 GCRD conceptual design. The NHHIP proposed removal of the at-grade crossings of Runnels Street and Nance Street would lengthen the sealed rail corridor associated with the West Belt Improvement Project by an additional 4,400 feet to the northern extent at Lyons Avenue.

The 2021 *Greater Eastwood Livable Centers Study* developed a design concept for Sampson and York Streets that supports future two-way operations along both corridors. The Sampson and York corridors would better connect people to transit and provide a high comfort bikeway spine for the East End separated from multiple freight rail crossings. This plan details that closing Sampson Street allows for a safe, neighborhood street that works in conjunction with York Street to provide safe mobility options and increased multimodal connectivity in the area impacted by the proposed grade separation along York Street. The 2021 *East End Bike Plan* built on these recommendations and provided a detailed concept of the Sampson/York at Navigation intersection as a key transition point from two-way to one-way operations.

The *TIRZ 23 Mobility Assessment* in 2021 recommended reconstructing Commerce Street from the West Belt Subdivision to the Harrisburg Trail with on-street dedicated bike lanes.

2021 Beaumont-Houston Region Freight Study

The *Beaumont-Houston Region Freight Study* is an update to the 2007 Houston Region Freight Study and is focused on potential improvements related to railroad capacity and roadway-railroad crossings. The York Street and Commerce Street grade separations are identified in the document as proposed projects and are key components to realize broader improvements.

2022: *Development and Funding Request for West Belt Improvement Project (Phase 1)*

This 2022 application has built upon the 2015 GCRD *West Belt Improvements Conceptual Design* by incorporating key recommendations from regional multimodal plans. Schematic design refinements were conducted to modify the 2015 design to account for the NHHIP. In addition, the York underpasses were refined to reduce potential impacts on adjacent properties. Design refinements contemplate a future triple track along the corridor along with fiscal adjustments to FY22 dollars for all project components.

Community engagement during the 2015 GCRD Conceptual Design development highlighted concerns from the public about the impact of changing travel patterns on their neighborhood streets. This application also includes an updated 2022 *Traffic Analysis Memo* developed to understand the impacts on the local street grid from this project. The *2022 Traffic Analysis Memo*, included in **Appendix B**, indicates the ability of the roadway network to absorb changes to travel patterns and increase people's movement by incorporating high-comfort pedestrian and bicycle facilities. Overall, network delay decreases in the build conditions.

Several regional entities have supported and developed the West Belt Improvement Project (Phase 1) to address the impacts of crossing trains blocking key city streets. Over the last 15 years, this collaborative effort has resulted in grade separation projects that will benefit safety, mobility, the environment, emergency services, and the local economy.

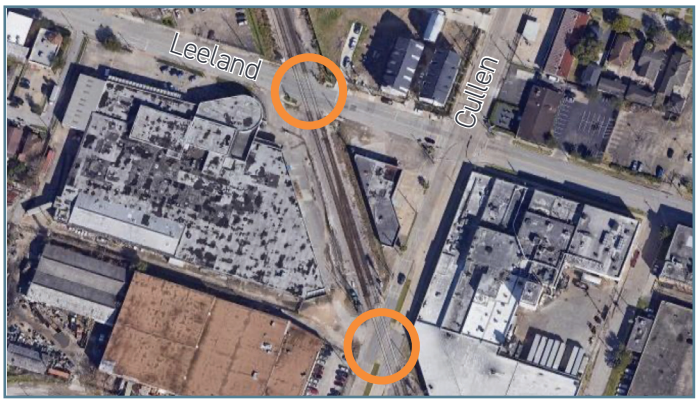
Phase II Coordinating Projects

The proposed West Belt Improvement Project is identified as Phase I as there are other coordinating projects that will be constructed in future years that will build on the improvements made in this project. Without this project, the other improvements are less impactful and cannot accomplish a sealed corridor for the West Belt Subdivision. The Phase II coordinating projects are:

- Quadrant-gates at Leeland and Cullen Streets
- Closure of Runnels Street
- Grade separation at Nance Street
- McKinney pedestrian bridge

Quadrant-gates at Leeland and Cullen Streets

To support the creation of a quiet zone south of Runnels Street and complement the two planned underpasses in the Phase 1 project, four-quadrant gate enhancements are planned with City of Houston funding at the existing Leeland Street and Cullen Boulevard crossings. The construction of grade separations along these corridors would involve logistical challenges, disruptions to community connectivity, impacts on adjacent properties, and high estimated cost. The four-quadrant gates at these two intersections will improve safety at the crossings and facilitate the potential to develop an expanded quiet zone to the south approximately 2.9 miles to the next at-grade crossing at Griggs Street.



Leeland/Cullen Intersections. Source: 2022 Map Data

Runnels Street and Nance Street Improvements

The NHHIP project includes the closure of Runnels Street and construction of a grade separated crossing at Nance Street. This future project will be fully funded by TxDOT and extend the sealed corridor north from Runnels Street to Lyons Avenue, south of Tower 26.

McKinney Pedestrian Bridge

The community has repeatedly expressed a desire to maintain connectivity along McKinney Street for people walking and bicycling. A pedestrian bridge along McKinney Street is proposed to be a future project to maintain east-west connectivity for people walking and bicycling. This recommendation is an expansion of the 2015 GCRD Conceptual Design. The City will continue to coordinate with the community regarding this potential project as an option and priority for the future after the West Belt Improvement Project (Phase 1) is constructed.

Challenges and Outcomes

Eliminating Delay and Idling at Crossings

This stretch of the West Belt Subdivision averages approximately 30 trains per day in today's economic and operating environment, with rail freight volumes only expected to increase along with associated delays to crossing road users. Today, first responders and other road users traveling in the East End regularly experience significant delays from blocked crossings. The 2015 *TTI Benefit Analysis Memo* of the West Belt Corridor Phase I Project estimates total costs from vehicle delays at intersections proposed for removal of at-grade crossings to be $97.2 million from 2015 through 2040, in addition to $12.7 million of lost fuel. This cost reflects high societal impacts resulting from existing and future rail activity, which is expected to increase by 43% from 2007 to 2035, according to the 2013 *H-GAC Regional Goods Movement Study*.

This project provides new grade separations at Commerce Street and York Street and enhances the existing grade separation of Navigation Boulevard. By eliminating seven at-grade railroad crossings (Commerce Street, Hutchins Street, Sampson Street, two along York Street, McKinney Street, and Milby Street), this project will provide reliable access for emergency vehicles and other road users. In addition to the two streets that will be grade separated along the West Belt Subdivision, crossings at Hutchins Street, Sampson Street, McKinney Street, and Milby Street will also be closed. The existing at-grade crossings at

Runnels Street and Nance Street are also proposed to be closed as part of TxDOT's NHHIP, further extending the sealed corridor. In total, six at-grade crossings will be eliminated on the West Belt Subdivision and one at-grade crossing along the Galveston Subdivision, which will reduce traffic delays.

Improved Train Movement

Adjacent roadways along the East Belt Subdivision and the Glidden Subdivision, which connect directly to the West Belt, are subject to longer blockages as railroad disruptions radiate throughout the system.

The Houston West Belt Sealed Corridor project will create a 9,000-foot sealed corridor train slot from Runnels Street to Leeland Street that will enhance train movement in the Houston region, enabling train dispatchers options in the corridor to improve fluidity. This flexibility will increase the resiliency of the Houston rail network in the event of network disruptions, resulting in fewer delays to road users and faster resolution of disruptions to the rail network.

Mitigating Flooding Impacts

During major storm events, key intersections at and around rail crossings become impassable due to flooding. Improved drainage will be brought to current standards as part of construction of the grade separations, resulting in reduced flooding and more reliable access to emergency vehicles and others during storm events. The existing Navigation underpass was built in 1936 without a pump or any detention. Upgrading the design of this underpass allows for enhanced flooding mitigation along Navigation Boulevard and Commerce Street.

The City of Houston is taking action on climate change and addressing resiliency through the adopted *Climate Action Plan* and *Resilient Houston Plan*. These plans work together to create climate resiliency by focusing on mitigation and adaptation to ensure the City can thrive in the face of increasing challenges in the future and create equitable opportunity for residences and businesses. The West Belt Improvement Project (Phase 1) will help the City transform existing infrastructure as part of a larger effort to prepare for future climate impacts.

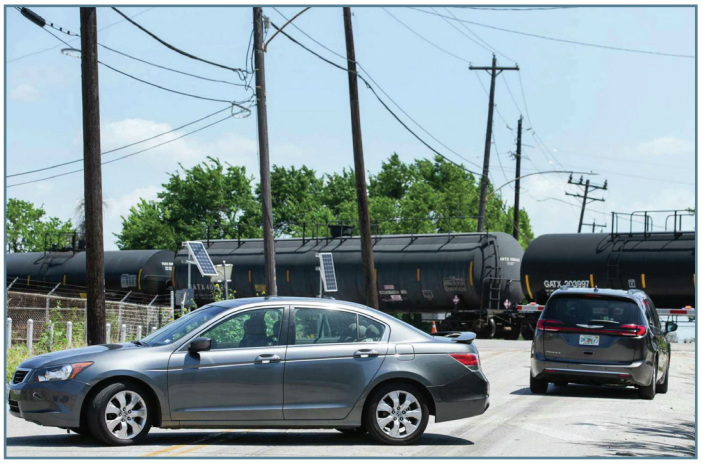
Eliminating Rail/Vehicle Interactions

Construction of the grade separations will remove rail/vehicle interactions, eliminating the potential for future crashes. The 2015 TTI estimate of the value of crash reductions resulting from removing seven grade crossings along the West Belt over 25 years from 2015 to 2040 is $1.4 million.

Creating a Quiet Zone

The proposed grade separations are located in a rapidly redeveloping area east of Downtown Houston where train horns disrupt residents. The combination of adjacent closures and grade separations would allow for the potential creation of a quiet zone in the East End, supporting the higher density, walkable development that is coming to the area. Additional safety upgrades at Leeland Street and Cullen Boulevard could extend the quiet zone for four miles, removing train horn noise for nearly 15,000 households located along the West Belt.

Video shows a pedestrian climbing over a stopped train


Vehicles turning around due to a stopped train

About the Community

The proposed project section of the West Belt is located east of downtown Houston in Congressional Districts 18 and 29 within the East Downtown, Second Ward, and Greater Eastwood neighborhoods, otherwise known as parts of the "East End." **This area is diverse with a rich cultural history and is also a qualified Environmental Justice (EJ) community** (**Figures 4** and **5**).

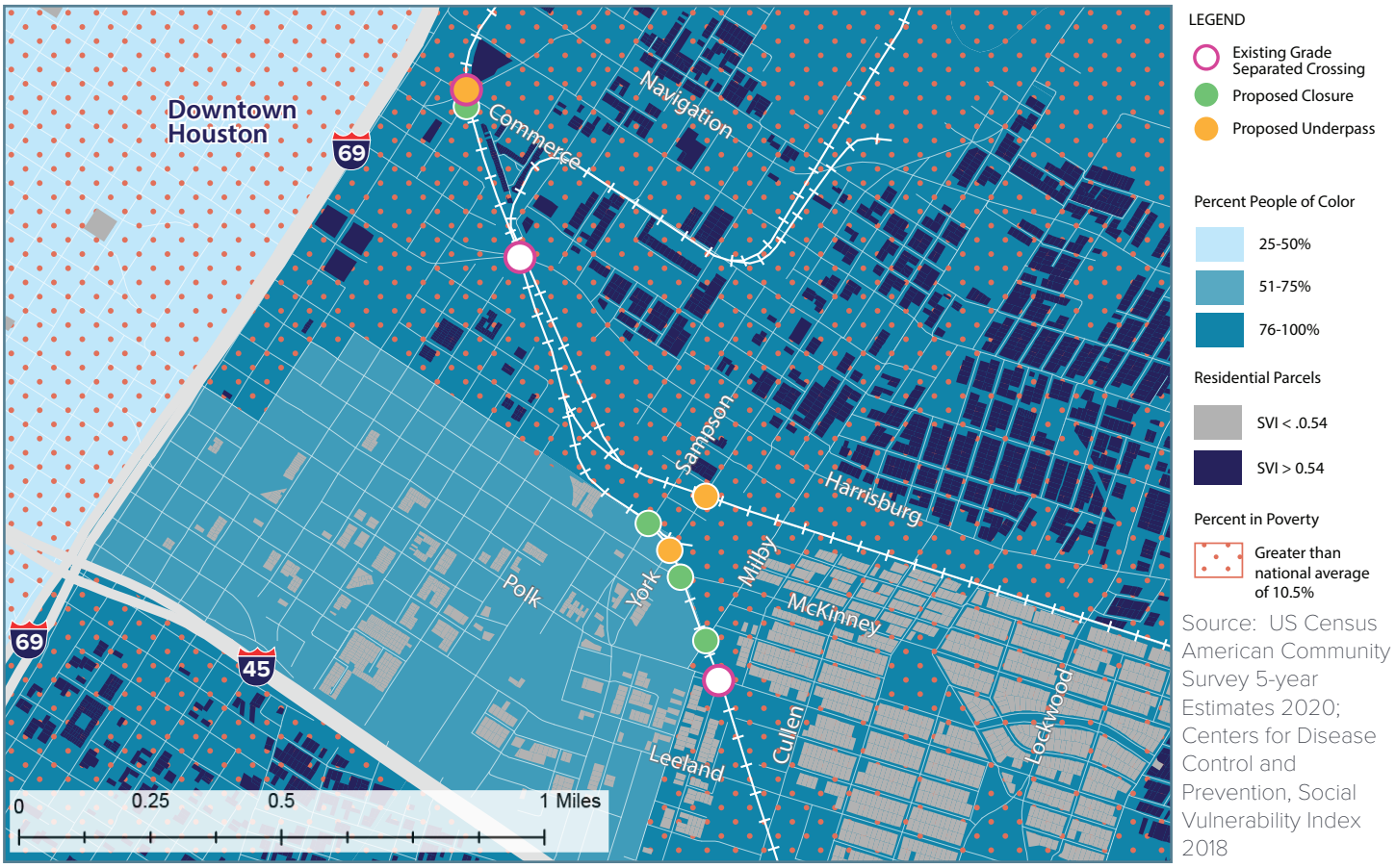
Beginning in the 1920s, the East End attracted thousands of Asian and Hispanic immigrants for the promise of work along the Houston Ship Channel. Today, **the study area has grown to support 18,308 residents, 78% of which are people of color**, compared to a statewide average of nearly 60% and a national average of 40%. The study area also sustains a higher than average share of low-income people, while residents are half as likely to have a high school education compared with national peers. The majority non-white population, combined with the higher-than average proportion of low-income individuals and low educational attainment, indicates a community particularly vulnerable to environmental hazards and poor health outcomes.

Figure 4: EJ Characteristics Table

Variable	Project Area	TX Avg.	USA Avg.
People of Color	78%	46%	40%
Low Income	40%	34%	31%
Less Than High School Education	24%	16%	12%

Despite the area's challenges and proximity to heavy industry, the community continues to grow in population and build upon its cultural identity. **Within 1/2 mile of the project extent, more than 30% of the land area is commercial, followed by residential property making up more than 17%** of the land area. Significant development in the area is planned and beginning to occur. Less than a mile from the Commerce Street/ Navigation Boulevard Underpasses and just over 1.3 miles from the York Street Underpasses, a 150-acre, 60-block, multi-phase mixed-use community known as the "East River" is planned along Buffalo Bayou. Beginning construction in late 2023, the project will draw thousands of new residents and visitors from across the city.

Figure 5: EJ & Social Vulnerability Map



Source: US Census American Community Survey 5-year Estimates 2020; Centers for Disease Control and Prevention, Social Vulnerability Index 2018

Additionally, the NHHIP will significantly change the existing network and will impact overall mobility in this community and throughout the region. Some corridors that connect the East End to Downtown Houston will be severed resulting in reduced connectivity and reliance on other corridors, such as Commerce Street and Navigation Boulevard. However, through the NHHIP project, removal of the at-grade grade crossings of Runnels Street and Nance Street will enhance the West Belt Improvement Project by expanding the distance between crossings, allowing for a sealed corridor and quiet zone. It is estimated that the NHHIP will also result in development changes in the area and lead to an increase in growth.

Who Benefits

People Using All Modes of Travel

People walking, biking, driving, and riding transit will benefit from the West Belt Improvement Project due to reduced delays and increased travel time reliability. Eliminating conflicts between rail and other modes of transportation also increases the safety of all road users. The area around the project contains many existing multimodal options with more connections planned.

The nearby destinations of Minute Maid Park and BBVA Compass Stadium will see visitors experiencing reduced delays due to the Commerce/Navigation grade separation. Similarly, the York underpasses will reduce wait times for staff and parents of students attending nearby schools, Dora B. Lantrip Elementary and the High School for Law and Justice, and shoppers at the neighborhood Kroger grocery store.

Transit riders will benefit from reduced delays and an improved ride on the METRO 29 Cullen Hirsch bus route. In addition, north-south bikeway connectivity will improve between Downtown, the East End, and Buffalo Bayou. The future Bus Rapid Transit (BRT) station at Lockwood and Telephone, currently in design, will also improve transit accessibility (**Figure 6**).

Residents

The potential creation of a railroad quiet zone by sealing the West Belt corridor would benefit local residents by eliminating noise pollution created by train horns in advance of crossings. Residents will experience improved quality of life, increased home values, and reliable mobility options.

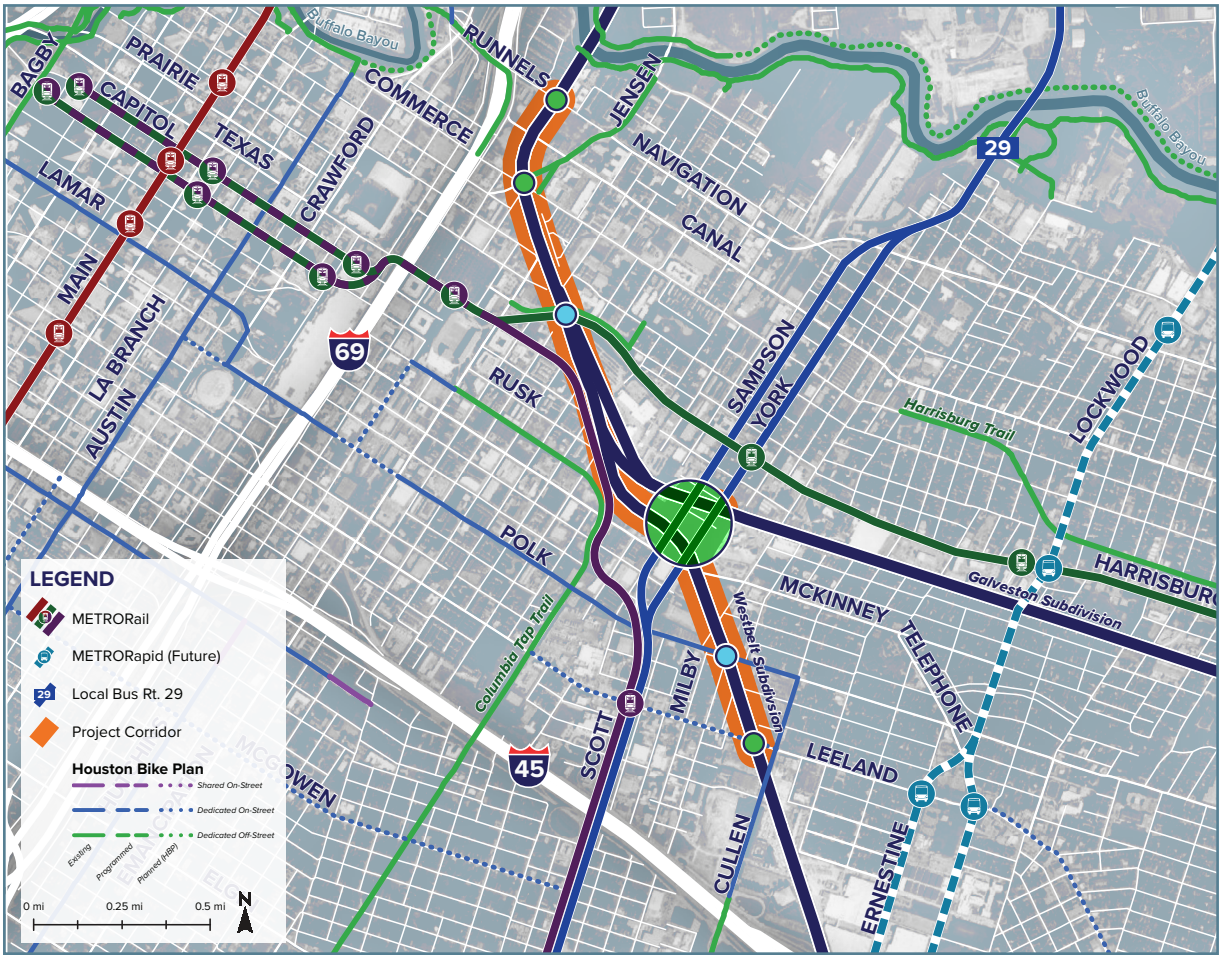


Figure 6: Area Multimodal Map

Local Businesses

Local businesses that experience disruptions to customers or delivery of supplies due to delays at at-grade crossings will benefit from reduced delays and increased reliability upon eliminating these crossings. Reduced noise from a newly created quiet zone and reduced exhaust from idling cars will make local businesses more attractive to customers.

Emergency Services

Rail activity blocking key crossings will no longer delay law enforcement, fire and rescue services, and emergency medical services.

Non-rail Freight Businesses

Businesses with freight currently traveling by truck or smaller vehicles across the West Belt corridor will benefit from reduced delays and increased reliability due to the provision of new grade-separated crossings. Additionally, the improved access will increase area businesses' economic viability and sustainability.

Railroad Operators

Railroad operators of the West Belt Rail corridor will benefit from creating a 9,000-foot sealed corridor that will enable train stoppages in the event of disruptions to the rail network without blocking at-grade crossings for long periods. Railroad operators also benefit from increased safety due to the elimination of conflicts between rail and other modes of transportation at existing at-grade crossings.

Substantial right-of-way is not required to construct the West Belt Improvement Project (Phase 1), and no takings will be required. Construction is estimated to have minimal impacts on residents or local businesses. Further reducing or eliminating right-of-way acquisition and impacts, specifically impacts to access, will be prioritized during Final Design.

Proposed Performance Measures

This West Belt Improvement Project will result in meaningful, measurable benefits. The following performance measures are proposed as a part of this grant request and are further detailed in the Performance Measures section of the Statement of Work (page 35). These proposed performance measures are consistent with this project's goals, outcomes, and benefits, as described in this narrative section. Some performance measures may need to be updated upon award of this grant to ensure consistency in measurement for the baseline.

- Crash incidents at grade crossings
- Crash incidents on corridors with removed at-grade grade crossings
- Vehicle delay on the surrounding street network
- Emergency vehicle reroutes/detours due to train blockages

A bicyclist waits at a rail crossing with no infrastructure for safe walking or biking

Vehicles wait at a crossing along the West Belt

Project Details

The West Belt Sealed Corridor Phase 1 project is the first phase of implementing a future 14,600-foot sealed rail corridor along the West Belt Subdivision. Phase 1 includes the construction of three underpasses to replace three at-grade crossings and the closure of four proximate at-grade crossings. In total, six at-grade roadway-rail crossings will be eliminated. When completed, Phase 1 will create a 9,000-foot sealed corridor and the opportunity for a quiet zone between Runnels Street and Leeland Street as well as:

- Decrease the potential for train and vehicle collisions & improves safety by eliminating vehicles crossing railroad tracks
- Eliminate vehicles stopping at railroad crossings and reduce overall vehicular delay
- Decrease vehicle idling at crossings which results in improvements to air quality due to a reduction of vehicle emissions
- Provide a safer route for pedestrians and bicyclists
- Provide a faster, more reliable route for emergency responders allowing for more consistent emergency vehicle response times
- Reduce impact of rail activity on adjacent area by providing two more reliable connections across the West Belt Subdivision
- Allow for a railroad quiet zone from Runnels to Leeland, a 9,000-foot corridor
- Be a critical step in developing a sealed corridor from Lyons Avenue to Leeland Street to support, a future 14,600-foot corridor
- Be a critical step in developing a future 5-mile-long quiet zone that would remove train horn noise for nearly 15,000 households located along the West Belt

There are two project components included within West Belt Improvement Project Phase 1:

1. Commerce Street/Navigation Boulevard Underpasses and Corridor Updates
2. York Underpasses & Sampson/York Corridor Updates

Component 1: *Commerce/Navigation Underpasses and Corridor Updates*

Today, Navigation Boulevard is grade separated at the West Belt via a low-clearance, below-standard underpass constructed in 1936, while Commerce Street intersects the West Belt at an at-grade crossing. Navigation Boulevard is a Major Thoroughfare and a key corridor within the area. The existing underpass provides critical connectivity between Downtown Houston and the Second Ward community. It also connects to one of the few north-south bridges over Buffalo Bayou East.

Commerce Street is a Major Collector that contributes to connectivity throughout the Second Ward and East End communities and to downtown Houston west of IH-69/US 59. Depressing Commerce Street allows for improved east-west connectivity and an alternate route for emergency responders. Commerce Street, from Colby Street to IH-69/US 59 across the West Belt Subdivision at-grade crossing, is on the Vision Zero Houston High Injury Network (HIN). The HIN represents 6% of Houston streets that account for 60% of traffic deaths and serious injuries.

The West Belt Improvement Project (Phase 1) includes the reconstruction of Navigation Boulevard and Commerce Street as underpasses with an intersection within the underpasses, as shown in **Figure 7**. Rebuilding the underpass upgrades the existing Navigation Boulevard connection while providing a new, critical, east-west connection along Commerce Street. Connecting Navigation Boulevard with Commerce Street provides an additional connection within the roadway network. The underpasses will include high-comfort infrastructure, to be finalized through community engagement in final design, for people walking and bicycling. The most recent plans from the 2020 Harris County Preston Commerce Bikeway Concept proposed a cycle track along Commerce Street to connect to the downtown Houston bicycle network.

The construction of the Commerce/Navigation underpasses requires the removal of the existing at-grade crossing at Hutchins Street. Construction of the underpasses will require using a shoofly bridge while continuing to allow for railroad operations at these underpasses. The Statement of Work provides more details on the means of construction for this project component to ensure continued operations of the West Belt Subdivision.

Figure 7: 2015 Visualizations of Commerce/ Navigation Underpasses

PROPOSED VIEW OF THE COMMERCE ST. AND NAVIGATION BLVD INTERSECTION LOOKING EAST

PROPOSED VIEW OF THE COMMERCE ST. AND NAVIGATION BLVD INTERSECTION LOOKING SOUTHWEST

PROPOSED VIEW ALONG COMMERCE ST. LOOKING WEST

Source: Gulf Coast Rail District, 2015 *(http://www.gcrd.net/docs/Nav-Comm_Conceptual.pdf)*

Preliminary design plans include a pump station and detention pond; the existing 1936 underpass has neither. This updated design provides an opportunity to reduce stormwater impacts along the roadway network and provide a safe and reliable corridor connection for the community. In addition, plans include a 5-foot wide utility corridor, including new public utility infrastructure.

The 2019 updated design schematic of the North Houston Highway Improvement Program (NHHIP) required modifications to the 2015 conceptual design. This was due to the proposed conversion of St. Emanuel (which runs north-south and is a block west of the Commerce at-grade rail crossing) from a two-way street to a one-way frontage road, a shift 40 feet west of St. Emanuel's centerline, an extension of St. Emanuel north of Commerce, and a closure of the existing at-grade rail crossing of Runnels Street at the West Belt. These recommendations posed a constraint on grades for the proposed Commerce Underpass that required revision of the 2015 GCRD Conceptual Design. This 2022 endeavor has updated the 2015 preliminary schematic design and cost estimates to account for these changes; however, final design will ensure compatibility between the NHHIP project and the future Commerce Street underpass.

The NHHIP proposed removal of the at-grade crossings at Runnels Street and Nance Street would lengthen the sealed rail corridor associated with the West Belt Improvement Project by an additional 4,400 feet to the northern extent of Lyons Avenue. While the closure of Runnels benefits the West Belt Subdivision, it also emphasizes the importance of separating Commerce Street to strengthen east-west connectivity and consistent, safe access between Downtown Houston and the Second Ward/East End community.

Component 2: *York Underpasses & Sampson/ York Corridor Updates*

York Street is a critical north-south corridor within the East End District. The corridor operates along with Sampson Street as a one-way pair. The one-way operations of Sampson Street and York Street extend 1.1 miles between Navigation Boulevard and Polk Street. North of Navigation Boulevard, the corridor changes its name to Hirsch Road at Buffalo Bayou. South of Polk Street, the corridor changes its name to Scott Street.

Today, Sampson Street is a four-lane southbound Major Collector, and York Street is a four-lane northbound Major Thoroughfare. Both corridors have excess capacity, as presented in the *2022 Traffic Analysis Memo*. Over the past ten years, multiple studies have recommended

converting both corridors to two-way operations and reallocating space to better serve all modes safely through high-comfort multimodal facilities. These community-supported plans include the *2012 East End Mobility Study*, the *2015 Fifth Ward/Buffalo Bayou, East End Livable Centers Study*, the *2021 Greater Eastwood Livable Center Study*, and the *2021 East End Bike Plan*.

Two-way conversion and reallocation of space to serve community needs better aligns with the 2015 GCRD Conceptual Design development that recommends grade-separating York Street while closing the at-grade crossing of Sampson Street at the West Belt Subdivision (**Figure 8**). The West Belt Improvement Project (Phase 1) will redesign York Street into a two-way corridor with two underpasses to allow vehicular movement along the corridor from Harrisburg Boulevard to Polk Street. Currently, York Street traverses two at-grade crossings, one across the Union Pacific Galveston Subdivision and one across the West Belt Subdivision. Three at-grade crossings will be removed to support the York Street underpasses: Milby Street, McKinney Street, and Sampson Street at the West Belt Subdivision.

The project component includes re-striping both Sampson Street and York Street between Navigation Boulevard and Polk Street to support the conversion from one-way to two-way operations. All traffic signals will be modified to support two-way operations. Converting Sampson Street and York Street to two-way operations increases access for adjacent land owners and mitigates the anticipated impacts to access from the York underpasses.

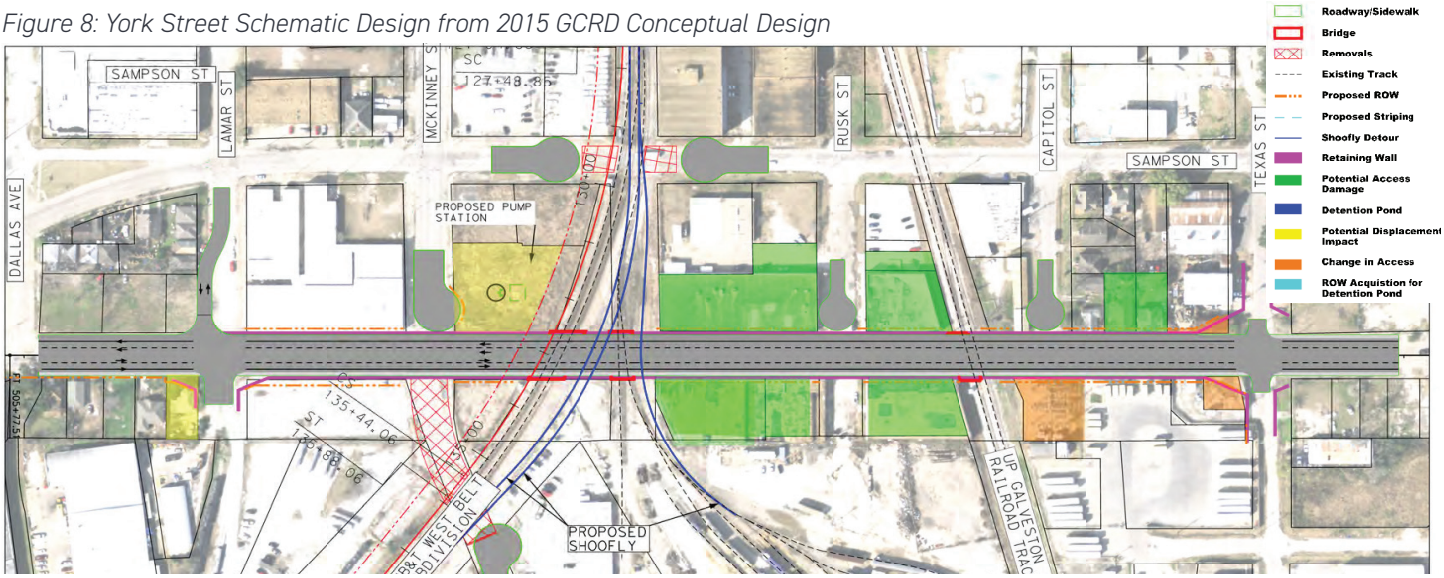
Re-striping the corridors provides a critical opportunity to right-size both roadways by reallocating pavement to better support all modes for safety and align with community needs and expectations. The reduction of rail crossings within the East End community will impact how residents move around. The York Street underpasses are a critical connection to mitigate the loss of access from other at-grade crossings. To ensure the community's needs are best served, the project must include retrofit of both Sampson Street and York Street from Navigation Boulevard to Polk Street to support access and connectivity.

The York underpasses also support improved transit operations and reliability of METRO's 29 Cullen Hirsch Bus Route. Today, delays at the four at-grade crossings along Sampson Street and York Street to traverse both the West Belt Subdivision and UP Galveston Subdivision greatly impact transit service and reliability.

The underpasses will include high-comfort facilities for people walking and bicycling. Previous planning efforts have recommended a variety of likely cross-sections for York Street and Sampson Street. This 2022 endeavor has updated the 2015 design to account for recent plans; however, final design and community outreach will finalize the York Street underpass cross-section. In addition to updating concepts, this 2022 effort has explored reducing the width of the cross-section of the underpass to reduce impacts on adjacent land uses.

The York underpasses also include constructing a pump station and detention pond in compliance with the City of Houston's stormwater requirements. In addition, plans include a 5-foot wide utility corridor, including new public utility infrastructure.

Figure 8: York Street Schematic Design from 2015 GCRD Conceptual Design



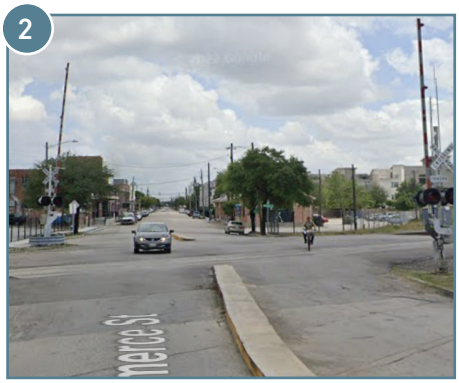
Source: Gulf Coast Rail District, 2015 *(http://www.gcrd.net/docs/YorkStreet_Conceptual.pdf)*

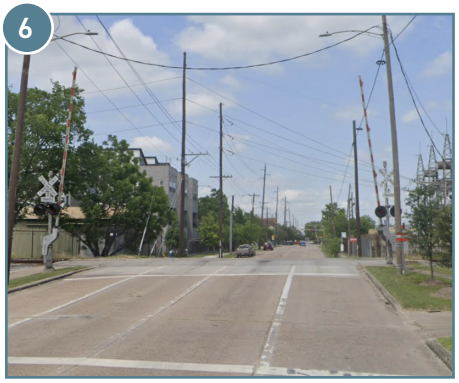
Project Location and Grade Crossing Information

The West Belt Improvement Project (Phase 1) will be constructed in the 18th and 29th Congressional Districts of Texas, represented by Congresswoman Sheila Jackson Lee and Congresswoman Sylvia Garcia, respectively. Using DOT National Grade Crossing Inventory information, **Figure 9** provides the latitude and longitude locations and all other requested crossing detail for each at-grade crossing that this project is proposing to be grade separated or closed. Photos below correspond with the crossing number in the table for reference.

Figure 9: Crossing Information Table

Crossing	Location: Latitude, Longitude	Owner	Primary Operator	Subdivision	DOT Crossing Inventory #	Roadway Name	Recommendation
1	29.757741, -95.34936	Houston Belt & Terminal Railway	Union Pacific	West Belt	288249R	Navigation Boulevard	Rebuild Underpass
2	29.75766, -95.349352	Houston Belt & Terminal Railway	Union Pacific	West Belt	288129A	Commerce Street	Underpass
3	29.9295370, -95.6417690	Houston Belt & Terminal Railway	Union Pacific	West Belt	288247C	Hutchins Street	Close
4	29.7452351, -95.3438149	Houston Belt & Terminal Railway	Union Pacific	West Belt	288229E	Sampson Street	Close
5	29.7444783, -95.3431613	Houston Belt & Terminal Railway	Union Pacific	West Belt	288228X	York Street	Underpass
6	29.7459719, -95.341959	Union Pacific	Union Pacific	Galveston	859517C	York Street	Underpass
7	29.743779, -95.342762	Houston Belt & Terminal Railway	Union Pacific	West Belt	288227R	McKinney Street	Close
8	29.741873, -95.342065	Houston Belt & Terminal Railway	Union Pacific	West Belt	288226J	Milby Street	Close





All Images Source: Map data 2022, Google

Project Benefits & Selection Criteria

As the West Belt Improvement Project (Phase 1) has evolved over the years, multiple analyses have been conducted to understand the myriad of potential benefits and impacts to the community and freight rail movement. This section presents the benefits as identified in these analyses. Overall, this project meets and exceeds the criteria required for the Railroad Crossing Elimination Program. The West Belt Improvement Project (Phase 1) is an important project to implement at a local, regional, and even larger scale as the West Belt Subdivision is a crucial freight line for regional and national goods movement and located in the center of a thriving, growing community.

Benefits Evaluation

The West Belt Improvement Project will result in a significant number of benefits to the surrounding community and region. This section provides qualitative and/or quantitative information pertaining to each of the following benefits:

- Improves Safety
- Improves Mobility of People and Goods
- Environment & Community Health Improvements
- Improves Access to Emergency Services
- Improves Access to Communities
- Provides Economic Benefit
- Uses Contracting Incentives to Employ Local Labor

The project's benefits are staggering, particularly when factoring in the surrounding community, regional freight tonnage, and the significant number of at-grade crossings that will be closed. As such, this project also meets each selection criteria that align with the US DOT's Strategic Goals. Following a discussion of the benefits, a summary of how this project meets each selection criteria is provided (pages 23-24). Much of the selection criteria overlap with one or more benefits. **Figure 10** below cross-references the benefits by category with the type of supporting data and information (pages 16 - 23) and the selection criteria (pages 23-24):

- Secondary benefits: expected to occur or be facilitated by improvements to the overall network or changes in the community due to this project.
- Qualitative benefits: attributable directly to the project and may include data, but not quantified through analysis.
- Quantitative benefits: attributable directly to the project and quantified through data analysis or calculations to show a level of benefit.

Figure 10: Benefits & Selection Criteria Cross-Reference Table

Benefit Category	Benefit Type	Associated DOT Strategic Goals & Selection Criteria
Improves Safety	●	• Safety • Eliminating Crossings and Making Corridor-wide Improvements
Improves Mobility of People and Goods	● ●	• Equitable Economic Strength & Improving Core Assets • Transformation of Our Nation's Transportation Infrastructure • Eliminating Crossings and Making Corridor-wide Improvements
Environment & Community Health Improvements	● ● ●	• Equity & Barriers to Opportunity • Climate Change & Sustainability • Eliminating Crossings and Making Corridor-wide Improvements
Improves Access to Emergency Services	●	• Safety
Improves Access to Communities	● ●	• Equity and Barriers to Opportunity
Provides Economic Benefit	● ●	• Equitable Economic Strength & Improving Core Assets • Equity and Barriers to Opportunity • Transformation of Our Nation's Transportation Infrastructure
Incentives to Employ Local Labor	●	• Equitable Economic Strength & Improving Core Assets • Equity and Barriers to Opportunity

Safety

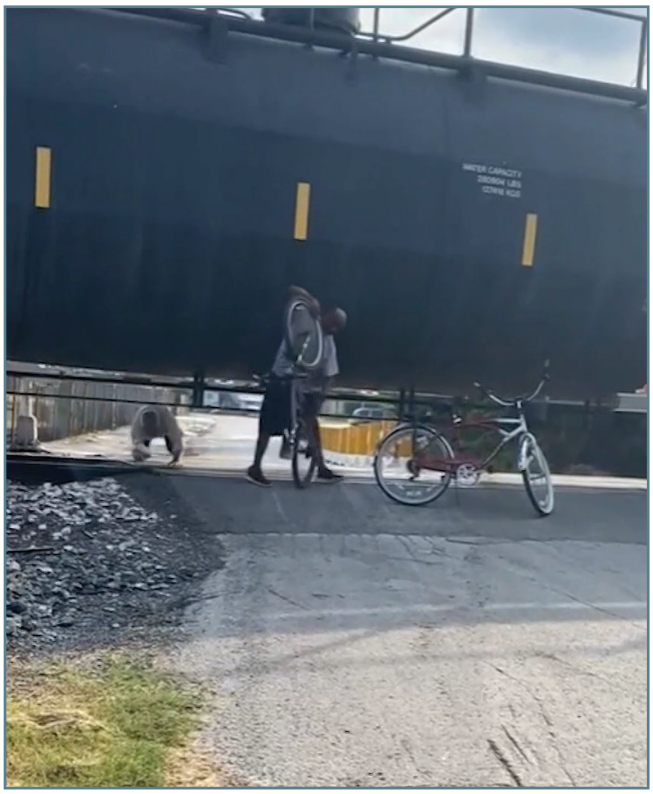
The improvements in the West Belt Improvement Project (Phase 1) will result in safety benefits to railroad operators and users of all modes of transportation due to grade separation and upgraded pedestrian and bicycle accommodations at the crossings.

In the last seven years (2015–2021), **two pedestrian-rail crashes occurred on the West Belt Subdivision: one in 2015 at Commerce Street and another in 2017 at Sampson Street**. Both crashes resulted in injury to the pedestrians. In coming years, growing freight traffic (including rail cars carrying hazardous materials) may increase the likelihood of these crash events. The proposed project eliminates these two crossings where recent crashes occurred and several nearby at-grade crossings with grade separation and street closures, thereby preventing future conflicts between users.

A 2015 TTI analysis calculated **crash reduction benefits associated with eliminating seven crossings to be $1.4 million from 2015 through 2050**. Project improvements will likely prevent other non-rail crashes as well. According to the TxDOT CRIS database and FRA crash data from **2017–2021, 105 crashes occurred within 500 feet of the existing at-grade crossings** that this project will improve (**Figures 11, 12 and 13**). Three of these crashes resulted in serious injury, and seven rear-end crashes, which can be caused by vehicles slowing down at railroad tracks at differing speeds, were recorded. These improvements may prevent future rear-end and severe crashes along the corridor.

Safety benefits are especially significant for pedestrians and bicyclists due to the improved active transportation infrastructure proposed as part of the project. The number of people walking and biking in the vicinity of the project area is expected to grow as the area densifies and develops, thereby raising the risk of more crashes with vulnerable road users in a no-build scenario. **In the last five years (2017–2021) there were two crashes involving vulnerable road users, one pedestrian and one cyclist,** that occurred within 500 feet of at-grade crossings proposed for improvement in this project. Both crashes were reported to have suspected minor injury.

The **planned high-comfort bikeways and sidewalks will increase the safety of the most vulnerable road users**. This project's elimination of long delays brought about by blocked crossings will also mitigate unsafe attempts by people walking and biking to cross the tracks illegally. People frustrated by blocked crossings occasionally climb over or under stopped trains, an act with obvious risks to their safety if the train begins moving. The elimination of at-grade crossings will prevent this unsafe behavior.



People pull their bikes underneath a stopped train

A vehicle turns around at a stopped train blocking an intersection

Traffic is stopped as a train passes across Sampson Street

Addressing safety in this area is particularly important due to the high/very high ranking in the **FEMA National Risk Index** of the two census tracts in which the project is located. The Census tract 48201310100 score is **36.66 (Very High)** and Census tract 48201310300 score is **26.75 (Relatively High)** compared to the Texas average of 21.69 and the national average of 16.91. The community's exposure in the project area to natural hazards, high social vulnerability, and low community resilience underscore the need to invest in their safety to improve community resilience and reduce social vulnerability.

In addition to natural hazards, hazardous materials movement along the rail corridor is a concern for safety in the community. Hazardous material rail carload tonnage has increased over the past decade in the Houston region and is expected to continue to grow. While rail is an effective means of transport for these materials, there are **approximately 90,000 residents in the Protective Action Distance of the project** with population continuing to increase. Creating a sealed corridor will **reduce risk to the community by decreasing the potential for incidents that involve hazardous materials**. As hazardous materials are a large portion of cargo due to the number of refineries in the Houston region, the proposed project will significantly diminish the risk of a hazardous materials incident.

Figure 11: Crash Severity by Injury

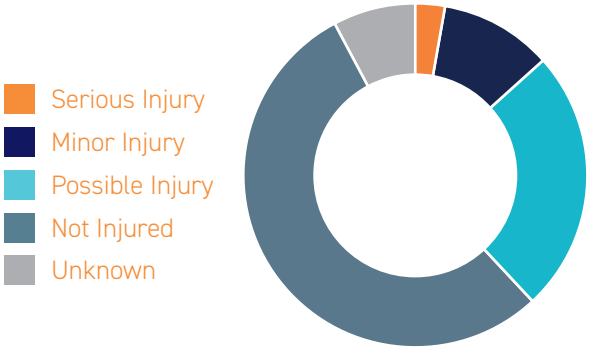
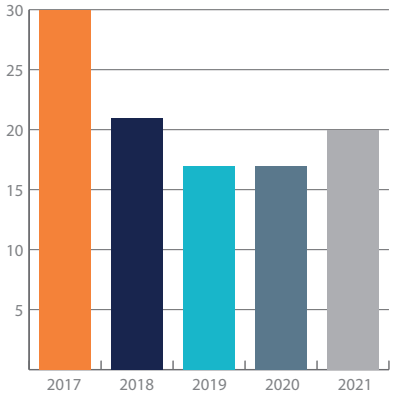


Figure 12: Crashes at Project Intersections by Year



- There were 105 vehicle crashes in the last five years ending in 2017.
- The US FRA reported two crashes at a railroad crossings in the last seven years.
- The proposed safety interventions are likely to reduce crashes with severe injury by 75% in the future.

Figure 13: Crashes within 500' of Proposed At-Grade Intersection Improvements

A significant number of crashes occur at or near the rail line, indicating a need for design improvements to address safety and accessibility.

Improves Mobility of People & Goods

The Houston West Belt Implementation Project will reduce delays for people traveling across the West Belt Subdivision. Roadway data collected by GCRD in 2014 and 2015 along the West Belt shows regular blockages of 20 minutes at some West Belt Subdivision crossings, and a 2015 TTI analysis calculated the **average road user delay on the West Belt Subdivision to be 7 minutes 21 seconds, higher than the Terminal Subdivision by nearly two and one-half minutes and higher than the Glidden Subdivision by almost three and one-half minutes**. Grade separation will eliminate these delays and improve the mobility of people and goods. Current analysis comparing projected 2042 PM Peak Hour delays in a build vs. no-build scenario shows a total delay time reduction of nearly two-thirds (64%) at analyzed intersections due to project improvements.

The unpredictability of train delays results in some road users avoiding at-grade crossings when planning trips, resulting in decreased connectivity between trip origins and destinations on either side of the railroad. Beyond reducing delays, creating a sealed corridor with underpasses will eliminate some barriers that the existing at-grade crossings pose. The other roadway closures of existing at-grade crossings will work together with the underpasses to improve overall reliability. The proposed underpasses at York Street and Commerce Street will also significantly improve existing substandard pedestrian and bicycle facilities, thereby breaking down barriers in the active transportation network.

The 29 Cullen, which crosses the West Belt Subdivision at York Street and Sampson Street, has among the worst on-time performance of any METRO bus route, with an average on-time performance of 66.7% in FY2021. Grade-separating York Street and closing Sampson Street at the West Belt Subdivision will improve bus reliability and travel times significantly, not just for riders of the 29 Cullen but also for riders of connecting bus routes. Transit riders will benefit from reduced delays and an improved ride on the 29 Cullen bus route. Fewer delays will increase the likelihood that multi-route riders will successfully make their connections, so improvements to reliability for the 29 Cullen will positively impact the entire METRO system.

Freight currently traveling by truck or smaller vehicles across the West Belt corridor will also benefit from reduced delays and increased reliability from the Houston West Belt Improvement Project. The nearby Port of Houston and other local manufacturing generate significant goods movement activity in the area, with trucks comprising 4.2% of traffic volumes in the vicinity of the Commerce Street and York Street at-grade crossings, not including additional smaller delivery vehicles. Reduced delays and improved reliability of this freight will provide time and cost savings to local businesses receiving the freight and to the people and companies delivering it.

The project also **benefits the future mobility of rail cargo by building an abutment structure that will allow the future development of a third track by HB&T**. This future third track would improve railway operations and facilitate the more efficient movement of freight in the Houston region.

Pedestrians climb over trains stopped on the tracks

According to community-collected data from the Eastwood Civic Association, one-third of all the trains traveling across Eastwood stop for 10 minutes or more, delaying drivers for a high of almost 88 hours in November and a low of 45 hours in April.

Source: Houston Chronicle "Fed up with stalled trains, East End Drivers are tracking the delays themselves. Now, the city is too." Dug Begley, May 12, 2022

Environment & Community Health Improvements

The West Belt Improvement Project will improve environmental quality and community health by enhancing air quality, improving resiliency, reducing noise, improving community health outcomes, and positively impacting the project area's quality of life.

Reduced Emissions

As the West Belt is a heavily used rail corridor in a growing part of Houston just east of Downtown with a variety of surrounding land uses, there is a significant amount of travel that must cross the West Belt daily. The *2022 Traffic Analysis Memo* projects the vehicle queue delay from the Build scenario to be 50% less in the AM peak and 60% less in the PM peak than the No Build scenario. This translates to a **reduction in total hours of delay by 23% in the AM peak and by 61% in the PM peak, a savings of 71 and 170 daily hours for each respective peak period** (**Appendix B**).

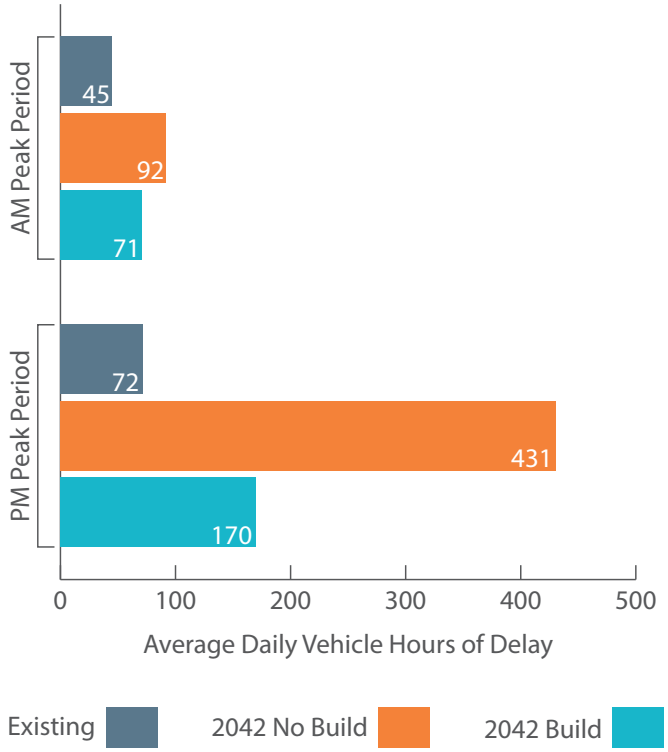
The grade separations and closures are projected to reduce vehicle idling resulting in improved air quality from reduced emissions of Nitrogen Oxides (NOx), Volatile Organic Compounds (VOC), and Carbon Dioxide (CO2) reductions. According to the 2015 *Benefit Analysis*, implementation of the proposed project is projected to reduce, over 30 years (**Appendix A**):

- 144 tons of NOx,
- 26.1 tons of VOC, and
- 84,291 M tons of CO2.

Additionally, the 2015 Benefits Analysis projects that **6,760,000 gallons of fuel consumption will be saved from reduced vehicle delay**. Given the expanded project scope and development since 2015, these reduced emissions and fuel consumption savings are expected to grow due to increased multimodal travel and reduced delay along a greater number of corridors.

Moving freight by rail is a fuel-efficient method of transporting across land, with railroads being three-to-four times more fuel-efficient than trucks, on average. As the West Belt Improvement Project (Phase 1) will provide the opportunity to increase capacity along the rail corridor in the future, this project expects to further reduce greenhouse gas emissions.

Figure 14: AM and PM Peak Period Delay by Scenario



Traffic backed up at an intersection

Community Health

More than 18,308 people living within a half mile of the West Belt project stand to gain quality of life benefits primarily through the potential for improved health outcomes associated with noise and air pollution reduction. Unlike its industrial past, the community has transitioned to a primarily residential and commercial neighborhood. In its current form, the railroad has become incompatible with its surrounding land use, creating a host of health challenges to overcome.

Sound sleep is a crucial component of a healthy lifestyle and is essential in maintaining proper growth, learning, memory, and emotional resilience. Noise exposure is a growing public health concern across the globe. Negative impacts of noise exposure can range from a slight annoyance to severe health outcomes resulting from sleep deprivation. In 2018, the Second Ward neighborhood, located between Sampson Street and Navigation Boulevard adjacent to the West Belt, **ranked among the worst 25% of U.S. neighborhoods for insufficient sleep**. Similarly, the Greater Eastwood neighborhood, straddling the West Belt between Sampson Street and Cullen Boulevard, reports higher than average rates of insufficient sleep compared to U.S. neighborhoods.[1] The improvements associated with this project would allow for an extension of a quiet zone for an additional four miles touching both of these neighborhoods, thereby reducing disruption of residents' sleep.

In addition to the high rates of insufficient sleep, the surrounding area also sees comparatively high levels of chemicals and particulate matter released from idling vehicles. Compared to the United States, the **study area is in the top 80th–90th percentile in diesel particulate matter release and the top 89th percentile for particulate matter (PM) release**.[2] The high emissions of these toxins raise concern due to the causal association between particulate matter and cardiovascular disease (e.g., stroke) determined by the Environmental Protection Agency and the suspected causal relationship between particulate matter and adverse respiratory effects (e.g., asthma).[3]

A key variable in the development or severity of disease associated with particulate matter is the length of time a given person is exposed and the age at which exposure occurs.[3] A relatively low percentage of older adults within the study area skews the population younger than that of the United States. As a younger than average community, worsening pollution could have longer-term impacts as the relatively younger population ages.

Poor health outcomes also come with associated financial stress. Within Second Ward and the Greater Eastwood neighborhoods adjacent to the West Belt, **more than 42% of adults do not have health insurance. Compared to the national average of 13%, the study area falls within the worst 25% of neighborhoods nationally for uninsured adults**.[1]

The community is uniquely at-risk for preventable diseases, which are associated with idling vehicles caused by stalled trains at intersections. The improvements to the crossings would alleviate risk factors for disease, improve quality of life, and help a community with low health insurance rates reduce health care costs.

Improves Access to Emergency Services

Grade separation along the West Belt Subdivision will result in law enforcement, fire, rescue services, and emergency medical services no longer being delayed by trains blocking key crossings. Several emergency service stations are located near the proposed Commerce and York grade separations: one fire station and one police station are within a mile of the Commerce Street grade crossing, while two fire stations and one police station are within a mile of the York Street grade separation.

Houston Fire Chief Samuel Peña said in a May 2022 Houston Chronicle article that blocked crossings are a concern for fire and ambulance response and that **Houston Fire Department crews have logged 3,200 detours since 2019**. "We try to get to the scene as quickly as we can, but a lot of times, we can't anticipate when the train is going to be blocking the most direct access route," Peña commented in a January 2022 interview with ABC13. The West Belt Improvement Project will alleviate such issues with emergency response delays at Commerce Street and York Street.

1. *Centers for Disease Control and Prevention, PLACES local health data, 2018*
2. 2022 Traffic Analysis Memo
3. Environmental Projection Agency. 2012. Provisional Assessment of Recent Studies on Health Effects of Particulate Matter Exposure

Improves Access to Communities

Currently, the West Belt cuts through the Greater East End creating a barrier between Downtown Houston and the entire eastern section of the City. The movement of people and goods across the barrier prevents predictable transportation through the area and isolates several communities from resources within short distances and across the city.

Key community destinations and businesses that the proposed improvements will unlock are concentrated around the Commerce Street and York Street underpasses. The Commerce Street underpass is a critical connection between the East End and Downtown Houston. Commerce serves as a gateway into Second Ward, home to destinations like:

- The Navigation Esplanade (East End Farmers Market)
- Pulse Healthcare System-East Downtown Clinic
- Settegast Park
- Baylor College of Medicine Biotech Academy
- Houston Maritime Center and Museum (and)
- SEARCH Homeless Services

Providing unobstructed access from Second Ward into Downtown opens up more easily accessible jobs, high-frequency transit, and entertainment like Minute Maid Park, The George R. Brown Convention Center, and the Theater District.

The York Street underpasses create a critical north-south corridor, connecting the Greater Eastwood community to Second Ward. Mobility options are unlocked between the halves of the area providing access to destinations like:

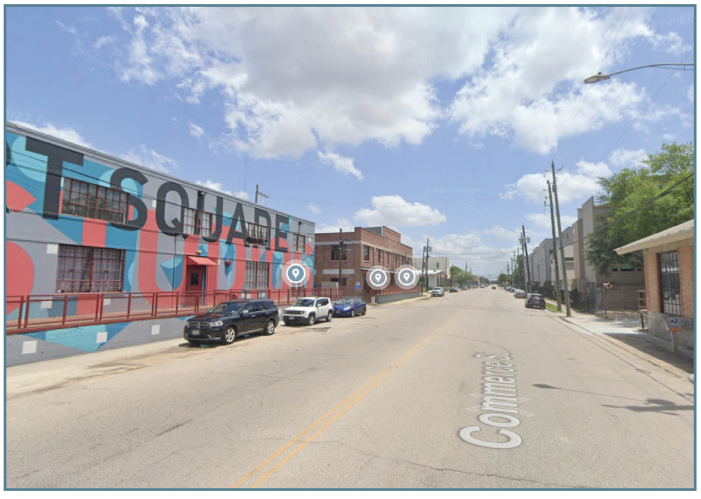
- METRO Green Line (light rail)
- Super Happy Fun Land (a local concert venue)
- High School for Law and Justice
- Houston Community College
- Clinica Guadalupe (and)
- East End Backyard (beer garden)

The variety of destinations available in one segment of the communities, but not others, demonstrate the opportunity for community cohesion and access to high-frequency transit following grade separation.

In both the Commerce Street and York Street grade separations, access to light rail transit is made more readily and safely available for residents, workers, and visitors. This access to transit widens the scope of opportunity for residents within the area to take advantage of transit and access larger parts of the city. As a result, more persons with disabilities, seniors, and younger residents will have increased options to get around.

The scope of possibility also opens for hike and bike trail connectivity as the “East River” development is anticipated to break ground in late 2023. The project will include a state-of-the-art bikeway providing access to Downtown Houston and connecting to several of the city’s newest bikeways.

The underpasses do more than connect destinations. They would provide access to critical mobility options that would open up opportunities for jobs, services, recreation, and connection across the city.



View of Commerce Street residences and businesses looking east from the proposed underpass

View of the METRORail station and High School for Law and Justice south of the proposed York Street underpass

Residents and business owners in Houston's East End and Fifth Ward communities vented their frustration Thursday over stopped trains blocking major intersections, creating traffic jams as drivers wait – sometimes over an hour – for a train to clear the crossing.
"People really want to be able to shop and live and eat and work in a neighborhood where they can move around freely and that's hard to do when trains are blocking for hours and hours at a time."

Source: Click2Houston "Business owners in Houston's East End, Fifth Ward say stalled trains are costing them money," Brandon Walker, April 22, 2022.

...Segundo Coffee Lab sits in between two main railroad tracks. She said often both tracks will have stopped trains blocking the road for hours at a time. "We have people that are here, they come and stop and get a cup of coffee and then they can't leave because they're stuck," Gil said. "Or, we have phone calls, 'Hey, I'm coming in from out of town but I don't know how to get around or I can't get into your coffee shop.' Or, 'Oh my god, I wanted to come by yesterday but I couldn't because of the train.' Or, the fact that our employees can't even get to open the doors because the train is stuck there."

Source: KHOU ", Stopped trains in Houston create more than just delays," David Gonzalez, February 4, 2022

"I'm on company time," Torres said while stalled at a railroad crossing. "And it's costing them to have to sit here you know. But it's always like this. It's just a big hot mess."

The same train that blocked Torres at Hirsch and Cline for 35 to 40 minutes, is the same one Chantel McHenry has been timing from her home. "It's been here for almost an hour and a half and who knows when it will leave." McHenry said the train traffic is a safety and mobility issue. She said she'd like to see a crossing arm installed at the railroad crossing near her home to reduce trains blowing their loud horns to announce their presence.

Source: Click2Houston "Stalled trains become daily occurrence," Taisha Walker, June 17, 2022

Provides Economic Benefit

The West Belt Improvement Project (Phase 1) improves one of two primary north-south rail lines through Houston connecting to the region's ports. In a November 2013 presentation, Union Pacific indicated that the focus of its business has shifted to the Southern region and north-south movements. In particular, Houston is in a central location for key bulk commodities that move by rail and increasing trade with Mexico. This is evidenced by Texas being a top exporting state for more than 15 years, and the nearby Port of Houston has ranking first in foreign tonnage for nearly 20 years. The Port of Houston handled almost 285 million short tons of cargo in 2019, making it the tonnage powerhouse of the U.S. port industry. Of the cargo handled, domestic cargo accounted for just around 75 million short tons, while some 210 million short tons of foreign cargo were handled.

The 2007 TxDOT *Houston Region Freight Study* recommended the West Belt Improvements project to enhance rail capacity and has recommended the proposed improvements in the Texas Freight Mobility Plan. The Union Pacific Railroad has indicated that movements to and from Mexico are driving southern region growth, and all products moving north-south through Houston travel along the West Belt Subdivision or the Terminal Subdivision. The creation of the 9,000-foot unimpeded track segment resulting from the seven crossing closures will enable railroads to move the large unit trains associated with current energy activity through this densely developed part of the Houston region.

Beyond the immense economic benefits from freight capacity and efficient movement of goods, there is also a significant economic benefit to the local economy. Local access to businesses and travel reliability for deliveries to businesses will be improved through this project, thus enabling small businesses to continue to operate and provide reliable goods and services to the community. Additionally, by creating a sealed corridor, the noise and environmental impacts of the significant freight movement will be mitigated and can result in higher property values for the community, which can increase property tax revenues for the City and overall community economic health.

Contracting Incentives to Employ Local Labor

The City of Houston is committed to ensuring racial equity in delivering and implementing the West Belt Improvement Project. The City has conducted racial equity disparity studies, revealing significant systemic disparities in all procurement levels. To remediate these disparities, the City implemented comprehensive contracting measures, including Hire Houston First and Pay or Play. These City policies aim to level the playing field in its procurement practices. Core functions that advance the mission of racial equity in hiring includes City certifications of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), LGBT Business Enterprises (LGBTBE), Disadvantaged Business Enterprises (DBE), and Persons with Disabilities Business Enterprises (PDBE). In fiscal year 2021, HPW awarded $897 million, of which $237 million or 26.5% was awarded to certified Small/Minority/Women-Owned Business Enterprises. These efforts earned Houston Public Works (HPW) recognition as the City Department of the Year at the Champions of Diversity Awards

Selection Criteria

Information in the previous section detailed the many benefits of the project. This section presents and confirms the myriad of ways that the project meets all of the DOT's Strategic Goals. Each selection criteria is presented below with a short narrative.

Safety

By removing seven at-grade crossings and replacing a substandard underpass that will result in a sealed corridor in a densely populated and heavily traveled part of Houston, the project will foster a safe network for people driving, biking, and walking as well as freight truck traffic. The Houston region is a major port, freight truck and rail hub, with traffic freight and general mobility traffic both projected to continue to grow in the future. Eliminating these crossings will significantly reduce crashes in the area and provide safe options for people of all modes to travel and access destinations.

Equitable Economic Strength and Improving Core Assets

The West Belt Improvement Project (Phase 1) is a cornerstone to facilitating future economic growth in Houston's rail freight and goods movement. By providing a sealed corridor, the project mitigates potential delays in the system due to crashes or other potential safety hazards that must be inspected. Additionally, by preserving the capacity for a future third track, this project allows the freight system to grow as needed and provides additional jobs associated with increased goods movement by rail.

Equity and Barriers to Opportunity

While focused on freight movement and safety, this project will have a meaningful impact on all transportation users in the surrounding community. Removal of at-grade crossings and the associated corridor improvements will allow more people to travel safely and reliably by all modes. The East End community, City of Houston, and METRO are all investing in infrastructure to facilitate more walking, biking, and transit use. This project will reinforce those investments and make it easier for people to have affordable transportation options for local and regional travel to destinations, including jobs, education, recreation, shopping, and more.

Houston, and especially the Second Ward and East End communities, is diverse with people of all races, incomes, education levels, and various languages spoken at home. This project will build on previous and affiliated efforts that support access to jobs, improving quality of life, and ensuring equal access and engagement opportunities for all. Through many previous efforts, disproportionately impacted community members have been targeted for inclusion and consistently identified the problems of these at-grade crossings as a top issue to be mitigated in the community.

Climate Change and Sustainability

The project will add to Houston's efforts to address climate change and improve resiliency by reducing emissions, which are significant contributors of greenhouse gas emissions. Furthermore, as trains are more environmentally-friendly and produce fewer emissions than freight trucks, maintaining the current amount of freight tonnage and supporting future increases will also aid in addressing climate change.

Flooding is a significant impact in both Houston and this particular community. This project will improve the drainage of the corridor and associated roadways to meet current standards, as the systems now are historic and sub-standard, and incorporate infrastructure, such as pumps, that exceed the current needs to address potential future changes.

Transformation of Our Nation's Transportation Infrastructure

The Houston West Belt corridor is a key part of the freight rail network. This project supports the existing, significant freight needs along the corridor and aids in ensuring that goods movement is prioritized while supporting all transportation needs and modes. Additionally, as the project will be built to accommodate a future third track, it supports increased capacity where there is high demand and freight congestion today and trends that show the demand continuing to grow in the future. Overall, the grade separations and associated improvements will facilitate reduced maintenance costs over time and improve the overall state of good repair along the corridor.

Eliminating Crossings and Making Corridor-wide Improvements

The West Belt Improvement Project (Phase 1) is an exemplary effort that highlights the opportunity to meet freight and community needs that exist now and in the future by eliminating seven at-grade crossings as Phase 1 of an even more significant sealed corridor in Houston. This project enables previously constructed and future grade separations to work together as a system that prioritizes the needs of the community without sacrificing economic growth. This project also reinforces the high level of freight in the Houston region that is essential to the city, state, and nation. Without Phase 1 of the West Belt Improvement Project, other future projects are not at a significant enough scale to make meaningful changes for the railroads or the community.

Geographic Diversity

This project is located in Houston, Texas, one of the largest and most diverse cities in the country, with a congested and growing rail network. As multiple partners have been working to address and fund the needs for the past ten years, the project has been developed to comprehensively address the needs and leverage local funding. Federal funding to fill the gap and get this project implemented will be transformational to Houston's East End community and the region.

Jasmine Giron, the principal of McReynolds Middle School, said she and her staff watch the tracks closely during dismissal time to make sure students don't try to clear the tracks by passing between railcars. Giron said safety is a top concern of hers. "Students possibly being injured or dying from crawling through the train tracks. I do the best I can to make sure my students don't go that way, but it's hard to do that for an hour."

Source: Click2Houston "Business owners in Houston's East End, Fifth Ward say stalled trains are costing them money," Brandon Walker, April 22, 2022.

"We have about 900 instances each year. In 2021, we had over 1,300 instances in which our emergency crews had to reroute because they were being blocked by a stopped train," Houston Fire Chief Sam Peña said.

Source: KHOU ", Stopped trains in Houston create more than just delays," David Gonzalez, February 4, 2022

Implementation

Project Implementation & Management

The City of Houston is prepared to work in partnership with FRA as the responsible entity for facilitating coordination of all necessary activities and project implementation. Upon award of the Project, the City of Houston will monitor and evaluate the Project's progress through regular meetings scheduled throughout the Project Performance Period as identified in the Statement of Work. Included in the project coordination and management will be the following activities at a minimum:

- Participate in a project kickoff meeting with FRA
- Procure qualified consultant(s)/contractor(s) to perform required Project work
- Hold regularly scheduled Project meetings with FRA and other project funding partners and stakeholders as applicable
- Inspect and approve work through implementation to completion
- Review and approve invoices as appropriate for completed work to ensure budget is maintained
- Perform Project close-out audit to ensure contractual compliance and issue close-out report
- Submit to FRA all required Project deliverables and documentation on-time and according to schedule, including periodic receipts and invoices
- Comply with all FRA Project reporting requirements, including project status of project task and percent complete as well as any changes to the project and reason(s) for said changes and updated versions of Detailed Project Work Plan, Budget, and Schedule

Environmental Readiness

The York underpasses was submitted for environmental review in September 2015 and received NEPA clearance through a Categorical Exclusion in 2017. The Commerce/ Navigation underpasses received NEPA clearance through a Categorical Exclusion in August 2019.

As the projects have received continued support and have had initial design started, the City does not anticipate any additional environmental documentation to be necessary.

The Categorical Exclusion documentation is provided in **Appendix C**.

Project Readiness

This project has been under a state of development and refinement since initial federal Surface Transportation Program funding was awarded from H-GAC in the 2015 TIP. This project is at a current state where it is supported by the community and multiple partners, and ready to move into final design and construction as soon as the gap funding requested in this Railroad Crossing Elimination Program application is awarded. This project is crucial to the City of Houston and the community. The City and its partners are ready to move forward expeditiously if awarded funding through this Program to ensure full project initiation and construction are timely.

Images of the West Belt Subdivision from the Gulf Coast Rail District