

# The Wilcox Boulevard Bridge – River to Ridge Mobility Project



Submitted by:  
**City of Chattanooga, Tennessee**

**April 14, 2022**

# Additional Funding Sources

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Note: Supplemental information for this grant application is provided online. Document references within this application are hyperlinked, therefore clicking on the highlighted reference will take readers directly to the site.

Cover photo source: Google Earth Pro Image, 3/31/2022, Wilcox Boulevard Bridge, Chattanooga, Tennessee.

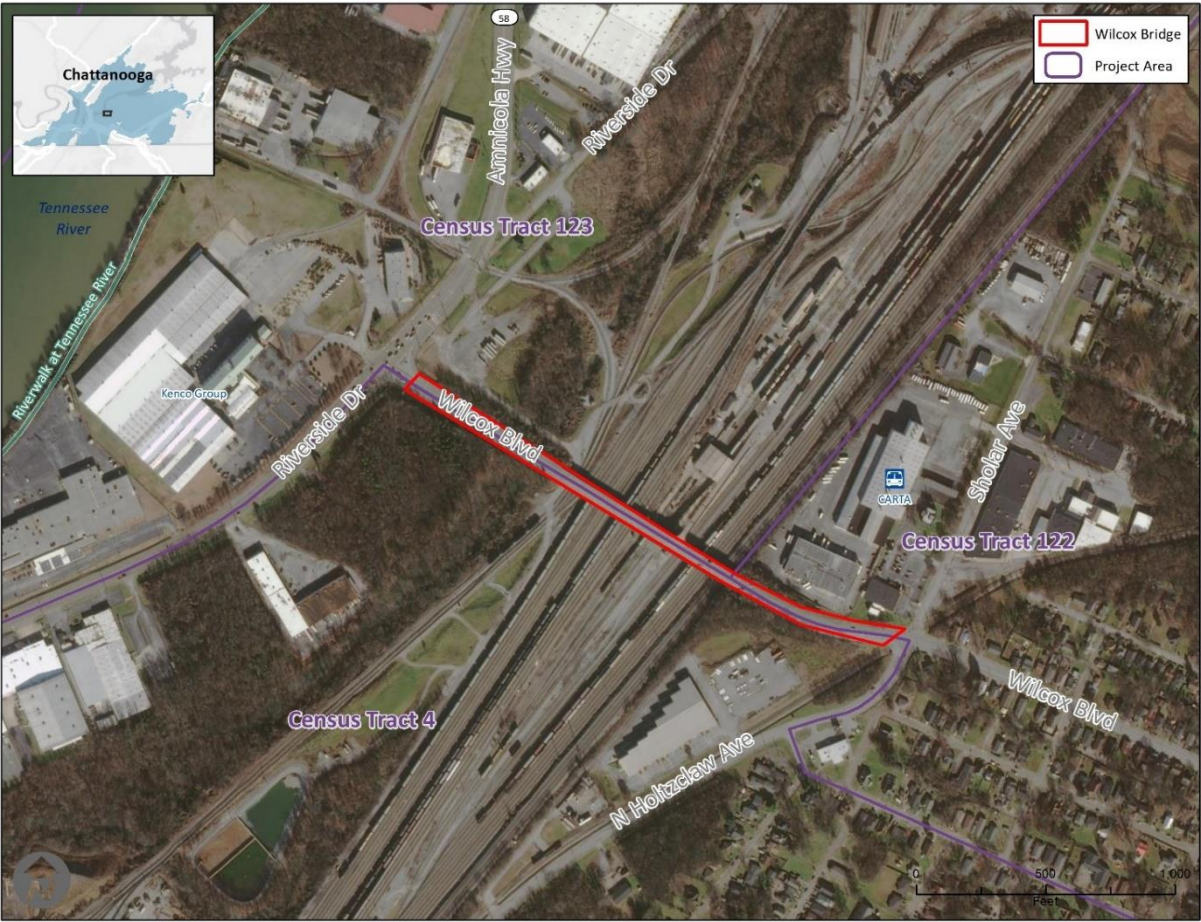
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# 2022 RAISE Project Information Form

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This form has been completed and is submitted as an attachment to this application.

# Application for Federal Assistance SF-424

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This form has been completed and is submitted as an attachment to this application.

# Federal Wage Rate Certification

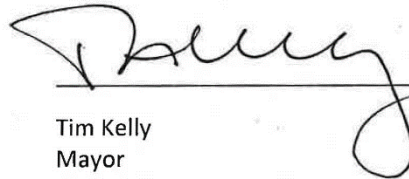
## Federal Wage Rate Certification

The City of Chattanooga, Tennessee certifies that it will comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code (Federal wage rate requirements), as required by the Recovery Act.

**FY 2022 RAISE Discretionary Grant Application  
Wilcox Boulevard Bridge – River to Ridge Mobility Project**

**FEDERAL WAGE RATE CERTIFICATION**

The undersigned agrees to comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code regarding Federal wage rate requirements; as required by the Consolidated and Further Continuing Appropriations Act, 2019.

A handwritten signature in black ink, appearing to read 'Tim Kelly', is written over a horizontal line.

Tim Kelly  
Mayor  
City of Chattanooga, Tennessee

April 14, 2022

# Letter from Mayor Tim Kelly



## City of Chattanooga

Mayor Tim Kelly

April 14, 2021

The Honorable Pete Buttigieg  
Secretary  
United States Department of Transportation  
1200 New Jersey Avenue SE  
Washington, DC 20509

Dear Secretary Buttigieg,

I am writing to express the City of Chattanooga's appreciation and enthusiasm for the opportunity to submit this RAISE grant request. The Wilcox Boulevard Bridge – River to Ridge Mobility Project is in the River to Ridge area of East Chattanooga—a historically Black community with a rich history. This area was one of the first incorporated African-American cities in the nation, and that legacy of independence, cultural vibrance, and optimism continues today.

As you'll see throughout the application materials, this project represents the restoration of a vital connection point for the residents of East Chattanooga, a key thoroughfare for our entire community, and an access point for one of our region's critical national freight assets and a supply chain hub for the country. That's why this application also reflects a historic and unprecedented series of partnerships between the State of Tennessee, the City of Chattanooga, two different railroad networks, and support from community entities and labor unions like the Iron Workers Local 704.

**This bridge replacement and mobility project will be transformative for our local and regional economy, will prioritize local labor, will connect a historically Black community to our beloved Chattanooga Riverwalk through a pedestrian walking path, will resolve clear and present safety concerns, and will bolster the logistics infrastructure that supports our national economy.**

Most of the neighborhoods surrounding this bridge replacement project are Historically Disadvantaged Communities and Areas of Persistent Poverty. This area of Chattanooga is constrained by natural and man-made barriers, Missionary Ridge on the east, South Chickamauga Creek to the north, I-24 on the south, and the Tennessee River and the DeButts Railyard to the west. The Wilcox Boulevard Bridge is the principal bridge over the railyard linking the River to Ridge neighborhoods to concentrations of employment, essential services, and Chattanooga State Community College all located west of the 32 tracks that run through the railyard.

This bridge is nearly 70 years old and is owned by Norfolk Southern railroad (NS). The City of Chattanooga owns Wilcox Boulevard which connects to the bridge on either end. The history behind these unusual circumstances isn't well known. The condition of this bridge has been a concern for years, NS made repairs on the bridge however it has been determined the bridge now needs to be replaced.

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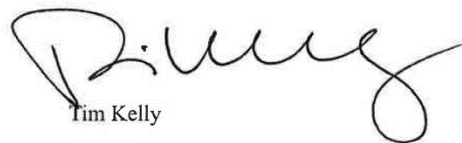
The Wilcox Bridge crosses the DeButts Railyard, a critical national freight asset owned by Norfolk Southern (NS) and the second largest classification yard in their system. The yard is used by NS and CSX Transportation (CSX). This yard is processing nearly 1,800 freight rail cars each day just below the Wilcox Bridge. Last year the condition of this bridge was rated Poor and, as a consequence, was load restricted. Today, our public transportation buses, emergency vehicles, and freight vehicles that serve a wide range of local businesses are no longer allowed to use the bridge and have to travel longer distances on congested highways and residential roads. Our greatest concern is how the condition of this bridge affects the people who live in the River to Ridge area.

For these reasons, and many others, we are respectfully requesting a RAISE grant of \$38 million to replace this bridge. As a demonstration of the vital community interests this bridge replacement represents, the City of Chattanooga and our partners—Norfolk Southern Railroad, Tennessee Department of Transportation, CSX Transportation, and Hamilton County—are contributing \$22 million to this project. While our application provides the technical details about this project, I want to underscore that this project will help shape the future of our entire community.

The future of the East Chattanooga community is bright and my administration will continue to invest in the area. This is a neighborhood associated with opportunity. We're renovating a formerly vacant building in the area to house a new Construction Career Center affiliated with the Tennessee College of Applied Technology. Private and non-profit developers are investing in new mixed-income housing and affordable homeownership opportunities leveraging new financing tools from the city. We have already committed over \$100 million for affordable housing over the next five years, which will continue to increase density along this key transit corridor.

By bringing this bridge back online with a full replacement, we can ensure this entire region is equipped to thrive. We appreciate the opportunity to apply for this grant and for the continued partnership and leadership of the U.S. Department of Transportation and the Biden-Harris administration, and look forward to this being favorably considered during your review.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tim Kelly', with a stylized, flowing script.

Tim Kelly

Mayor

City of Chattanooga

# Executive Summary

There is a large north-south divide between eastern and western neighborhoods in Chattanooga, particularly in the Historic River to Ridge communities. It is a manmade divide, the DeButts rail yard, that has helped drive commerce and industry in Chattanooga for nearly 70 years. The second largest classification yard in the Norfolk Southern system processes over 1,800 rail cars a day and helps keep freight moving to business and industry in many communities in the eastern United States.

The Wilcox Boulevard Bridge is the primary bridge crossing this divide enabling people living in the River to Ridge area and others to travel to Amnicola Highway to go downtown and other areas of the City. In 2021, the Tennessee Department of Transportation determined the Wilcox Boulevard Bridge was in “Poor” condition and weight restricted the bridge. Transit buses, fire trucks, and trucks carrying materials to the newly announced Nippon manufacturing facility could no longer use the bridge.

After careful study, replacing the bridge was determined to be the optimal solution and it also provided an opportunity to integrate input from residents shared during the River to Ridge Plan. The Wilcox Boulevard Bridge - River to Ridge Mobility Plan will replace the Wilcox Bridge and construct a pedestrian walkway and a multi-use path across the bridge. This design gives residents walking and biking access to the beloved Tennessee Riverwalk, nearby jobs on

Amnicola Highway, and is a low-cost mobility option for 18 percent of residents in the River to Ridge area who do not own a car.

The project will cost \$60,000,000. The City of Chattanooga is requesting \$38 million in RAISE grant funds and the City and its partners Norfolk Southern, Tennessee Department of Transportation, Hamilton County, and the Chattanooga Hamilton County Regional Planning Agency TPO are contributing \$22 million. This project is expected to provide an estimated benefit of \$1.76 for every \$1 spent on the project.

Of the eight census tracts in the River to Ridge area, seven are historically disadvantaged communities and areas of persistent poverty. A recent survey of residents about the bridge and improvements from the RAISE grants found 95% of those responding used the bridge regularly. However, 96% did not walk or bike on the bridge due to safety concerns. Asked why the bridge was important to the future of their neighborhood 69% said access to existing and future parks and open space, 65% said access to jobs. ([click here to download survey results](#))

When completed, this project will expand equitable access to jobs, parks and trails, and essential services and improve mobility that will help to continue the transformation of underserved communities in the River to Ridge area.



*“Working together creates a sense of community. Working together also enables us to develop the type of neighborhood we can all take pride in calling home. Therefore, we’re going to continue to speak up and be involved for the sake of community and each other.”*

*Dr. Everlena Holmes, Community Advocate,  
Glenwood Neighborhood Leader and  
Historic River to Ridge Advisory Committee*

# I. Project Description

## Project Overview

This project is located in the River to Ridge area of Chattanooga. Seven of the eight census tracts in this area are Historically Disadvantaged Communities and are also Areas of Persistent Poverty. In 1954 the construction of the DeButts Rail Yard created a large north-south divide between eastern and western neighborhoods in Chattanooga particularly in the River to Ridge area. There are few direct east-west road connections that cross this divide. These neighborhoods also struggle with man-made and natural barriers surrounding this area that impact their mobility. To the east is Missionary Ridge with its steep topography, north is South Chickamauga Creek, with one bridge crossing east of the DeButts rail yard, the Tennessee River and the Norfolk Southern (NS) Railroad complex constrain travel to the west, and I-24 is the southern boundary of this area. These physical constraints and the lack of connections across the rail yard limit efficient east-west travel for River to Ridge neighborhoods.

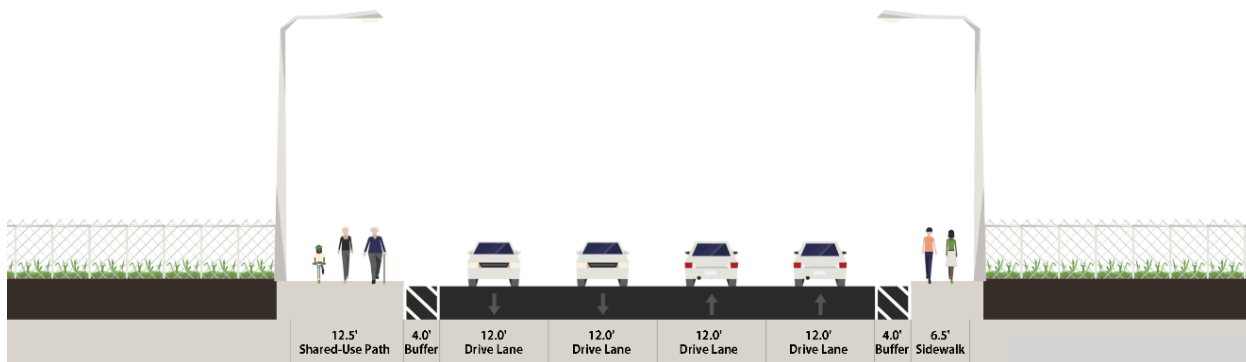
The Wilcox Boulevard Bridge is the primary connection across the rail yard linking these neighborhoods to concentrations of employment on Amnicola Highway and Riverside Drive, downtown, and north to jobs on Highway 153. Chattanooga residents in other neighborhoods use the Wilcox Bridge as well. This critical east-west

principal arterial carries 20,000 Average Annual Daily Traffic (AADT), one of the highest traffic volume corridors in this area.

During the 2021 TDOT inspection of this bridge, the condition was determined to be “Poor” and the structure was weight restricted. Chattanooga Area Regional Transportation Authority (CARTA) buses, fire trucks, and larger trucks serving businesses in the River to Ridge area can no longer use this bridge. The existing bridge does not provide non-motorized infrastructure for River to Ridge residents either, particularly critical to the 18 percent who do not own a car.

**The Wilcox Boulevard Bridge – River to Ridge Mobility Project** will replace the Wilcox Bridge with a new ADA compliant bridge that includes a 6.5’ pedestrian walkway, a 12.5’ multi-use path, 4-foot buffer between vehicles and walkers/bikers and two 12-foot lanes in each direction. The project will maintain freight movements in the Railyard below and limited vehicular traffic on two-lanes of the existing bridge during construction. The Bridge and Mobility Project will improve transportation connections for the 17 urban neighborhoods in the River to Ridge Area providing multimodal access to quality jobs, competitive services, and parks and natural areas.

### Wilcox Bridge Graphic Typical Section



Source: Alfred Benesch & Company

# Transportation Challenges Addressed by Project

## Safety Challenges:

- Deteriorating conditions on the Wilcox Boulevard Bridge impact safe transportation access for Historically Disadvantaged Communities (HDC), Areas of Persistent Poverty (APP), Environmental Justice populations, and all others who regularly drive on this bridge
- Weight limits on the bridge prevent emergency vehicles, transit buses, and larger trucks from using the bridge, impacting River to Ridge residents and businesses
- Bridge conditions impact the ramp access into DeButts yard used by 400 employees each day

## Transportation and Mobility Challenges:

- Lack of safe and ADA compliant pedestrian and bike infrastructure crossing the rail yard restricts access for residents to well-paying jobs, services, and parks and trails
- Limited transportation options can impact future private investment decisions affecting opportunities to leverage continued revitalization and redevelopment successes in these neighborhoods

## Environmental Sustainability

- Additional travel time and distance for travelers and transit buses increases transportation-related pollution
- Bridge conditions prohibit freight deliveries to Nippon brownfield redevelopment, shifting larger trucks to area residential streets

## Economic Competitiveness and Quality of Life

- Bridge conditions restrict transportation options for businesses in the River to Ridge area constraining economic development and future economic growth
- Lack of non-motorized transportation options limits equitable access to safe, healthy, convenient and affordable mobility, particularly for low-income zero vehicle households



## Project History

Railroads have been part of Chattanooga's history since the 1850s. When Norfolk Southern acquired Southern Railway the DeButts Railyard and Wilcox Boulevard Bridge were part of the acquisition. The existing Wilcox Bridge crosses the rail yard on two 820-foot-long bridges with a steel girder superstructure and concrete deck. The bridges are supported primarily by steel pile bents through the yard with concrete bents and abutments near the approaches. These structures are regularly inspected by the Tennessee Department of Transportation (TDOT), and since the early 1990's, they have been monitored more closely due to their deteriorating condition. At the present time the bridge is load restricted to 13 tons for two axle vehicles and 23 tons for vehicles with three or more axle and bridge inspections will be conducted more frequently in

the future. ([click link to view: TDOT 2021 Inspections Report and TDOT Weight Posting Requirement Letter](#))

As one of the busiest east-west connections for the City of Chattanooga, and the only National Highway System (NHS) route across the DeButts Yard, the reduction in load capacity poses major challenges for residents, businesses, and city services. The impact on residents who depend on the CARTA is significant for River to Ridge residents as they are more dependent on transit services to reach jobs and services. The CARTA offices and maintenance facility are located at the eastern end of the Wilcox Bridge near the intersection of Wilcox Boulevard and Sholar Avenue.

### *Wilcox Boulevard Bridge from the DeButts Rail yard*



Source: Alfred Benesch & Company

## The Solution

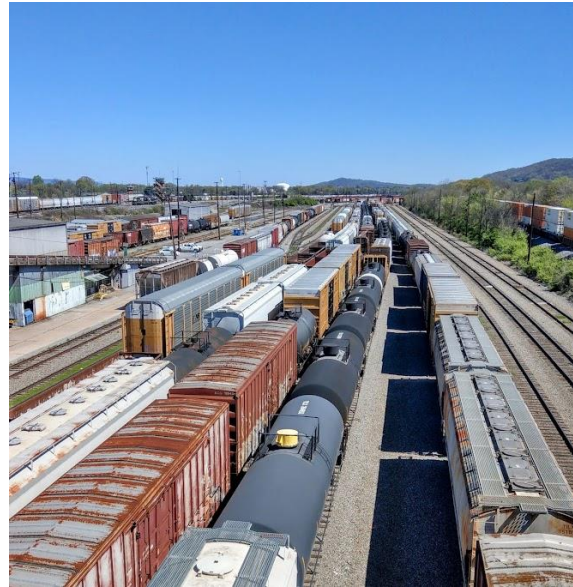
Although there were previous discussions about the future of the Wilcox Bridge, the 2021 TDOT inspection report accelerated the need to determine the best solution. The City of Chattanooga procured the services of Alfred Benesch & Company (Benesch), a nationally recognized bridge design firm with experience evaluating and designing challenging railroad

bridge structures. ([click here to view the “Wilcox Boulevard Bridge Technical Study”](#)) Working in concert with the City, NS, and CSX Transportation (CSX), Benesch completed a technical study of bridge conditions and identified potential options to improve the bridge. Ultimately, replacing the Wilcox bridge was recommended. Replacing the bridge with a

new structure that meets current design and safety standards will also provide River to Ridge residents with a 75-year bridge and something they never had before, a safe pedestrian walkway and a multi-use path to access areas west of the rail yard.

The new bridge will have the structural integrity to support CARTA buses, emergency vehicles, increased vehicular traffic, and multimodal freight to support future economic activity in the River to Ridge neighborhoods. Providing ADA compliant mobility options enables local residents to walk or bike to the Tennessee Riverwalk Trail and the South Chickamauga Creek Trail and to a network of greenways. ([click here to view Riverwalk Trail and South Chickamauga Creek Trail maps](#))

A safe pedestrian walkway and multi-use path gives residents in River to Ridge neighborhoods the option to walk or bike to jobs in the Amnicola Highway business park or downtown Chattanooga and the new bridge creates



Source: Katie Snyder, City of Chattanooga Transportation Engineer

opportunities for residents to use non-motorized options to attend technical and college courses at Chattanooga State Community College.

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## Technical and Engineering Aspects of Project

The replacement of Wilcox Boulevard Bridge is a complex and challenging construction project. Based on NS data for 2022, the DeButts yard is currently processing an average of 1,800 rail cars per day.<sup>1</sup> This volume of freight activity limits potential substructure types and locations. It also reduces the number of construction techniques that are available to erect bridge elements without causing a significant disruption to yard operations.

The existing bridge structures have 17 spans crossing the rail yard. To construct a new substructure in these same locations today would create significant track disruptions, outages, or require extensive track relocations, and no room exists for such relocations. As a result, the City and NS have agreed that the new bridge will have fewer supports in order to minimize or eliminate disruptions to rail traffic during

construction of the new bridge. This strategy will also improve construction access, safety, and reduce the need for coordination and overall risk to the project budget and schedule. The new bridge will be a four span structure utilizing steel welded plate girders. The total superstructure depth will need to be increased when compared with the existing structure due to the increased span lengths in the proposed configuration. The additional superstructure depth will require a vertical grade raise of Wilcox Boulevard. The traditional erection of the new superstructure with cranes will not be possible without causing major disruptions to the freight movement through DeButts Yard. The existing bridge cannot be utilized to support cranes due to its diminished load capacity. Because of this, an innovative launching technique is proposed for the new bridge superstructure. The superstructure will be erected full width in

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<sup>1</sup> “DeButts Yard – Chattanooga, TN,” Norfolk Southern Corporation

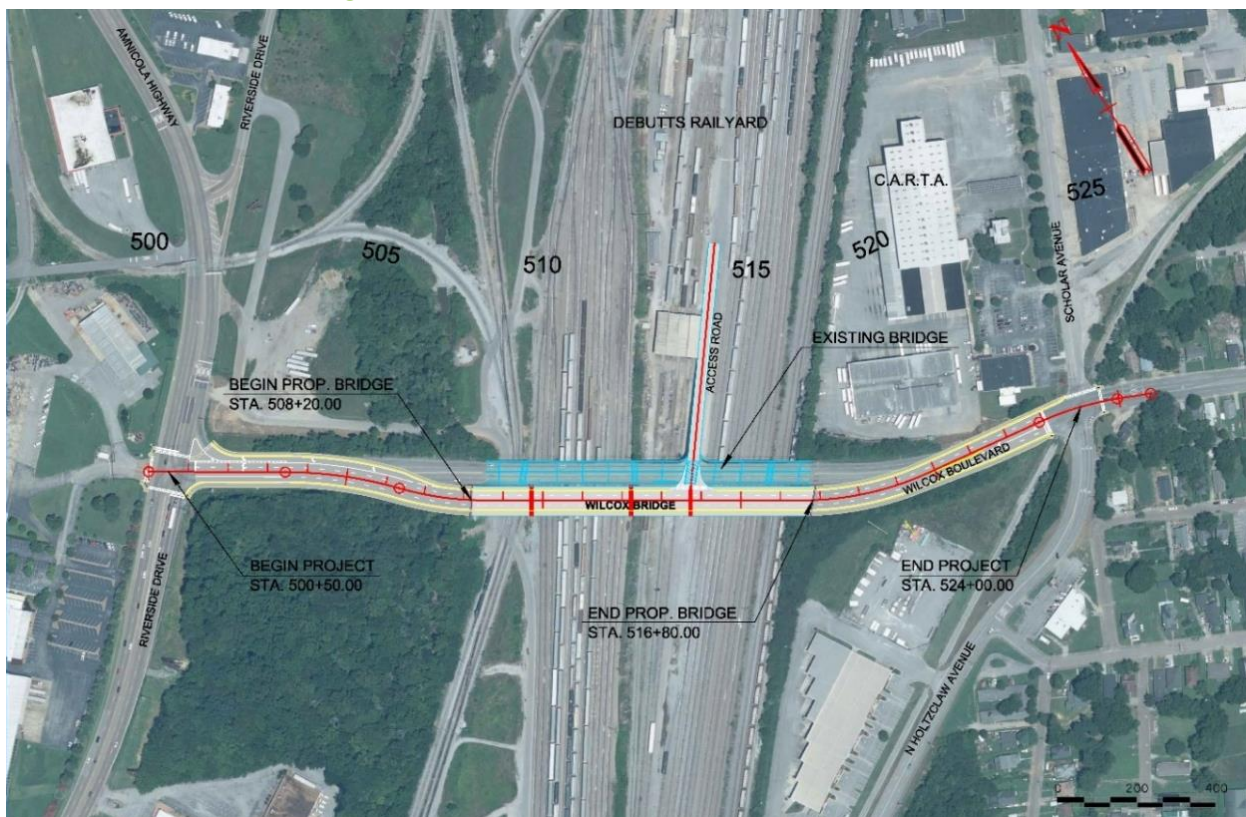


incremental segments from one end of the bridge. The assembled superstructure segments would then be pushed longitudinally from the assembly end to the first substructure. A launching nose will be attached to the leading segment which will assist in lifting the mass of the girders as they are launched forward onto the landing pier.

Stabilizing weight distribution cables may also be utilized to provide longitudinal support along the launched length. Once a segment has landed

on the first support, another full width superstructure segment can be added to the launching end to then advance the superstructure longitudinally to the next support. This process would repeat until the superstructure has been completely launched from one end of the new bridge to the other. Once the steel beams have been successfully installed, the bridge deck can be installed using more traditional techniques with containment to prevent fouling the tracks below. It is expected that concrete will be placed using hydraulic pumping.

### Wilcox Boulevard Bridge Map, Amnicola to Holtzclaw



Source: Alfred Benesch & Company

## Project to be Constructed

The proposed bridge will be a 4-span, 860-foot-long, steel girder bridge with an out-to-out width of 78'-0". The bridge will convey two, 12-foot travel lanes in each direction.

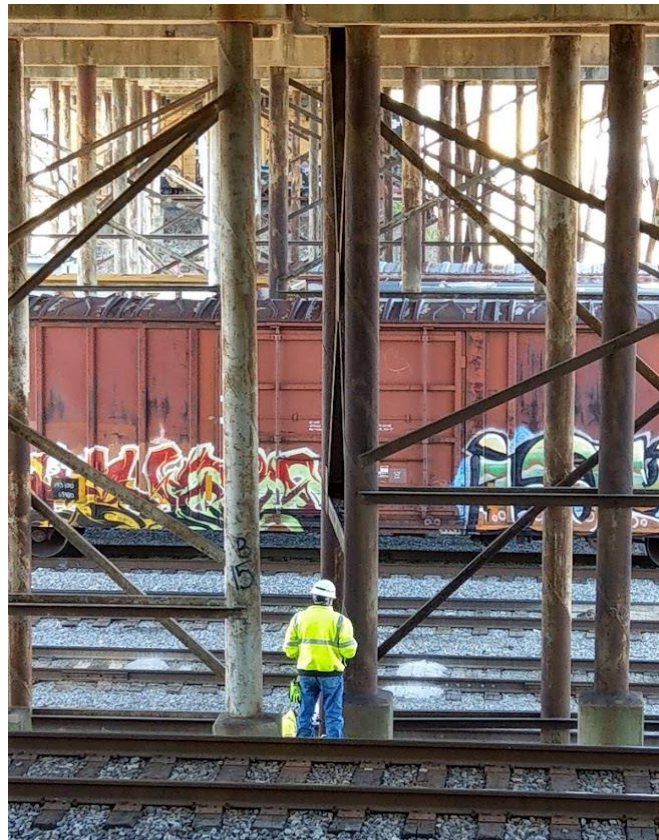
Substructures are expected to be conventional concrete abutments and multi-column bents.

The bridge and roadway approaches will be realigned and widened to accommodate traffic in both the eastbound and westbound directions. The new ADA compliant bridge will include a 6.5-foot pedestrian walkway and 12.5-foot-wide multi-use path each with a 4-foot buffer separating the traffic lanes from the active transportation facilities connecting to Riverside Drive and to N. Holtzclaw/Sholar Avenue. This infrastructure will be situated behind a raised curb. All design elements are proposed to meet or exceed the FHWA's Controlling Criteria which has been adopted statewide by TDOT and shown in their standard drawings.

## Current Project Design Status

The project Concept Plan will be approved by the City of Chattanooga and NS by May 2, 2022. The Concept plan approval is a significant milestone required to progress the plans and signifies the railroad's formal concurrence with the layout and construction methodology within the DeButts Yard. Thirty percent plans will be submitted to The City of Chattanooga and NS in November of 2022. Roadway design and 60 percent bridge plans will be completed by October 5, 2023, with final plans with TDOT review and approval will be finalized and ready for construction by August 2025. Construction is to be completed by August 2028.

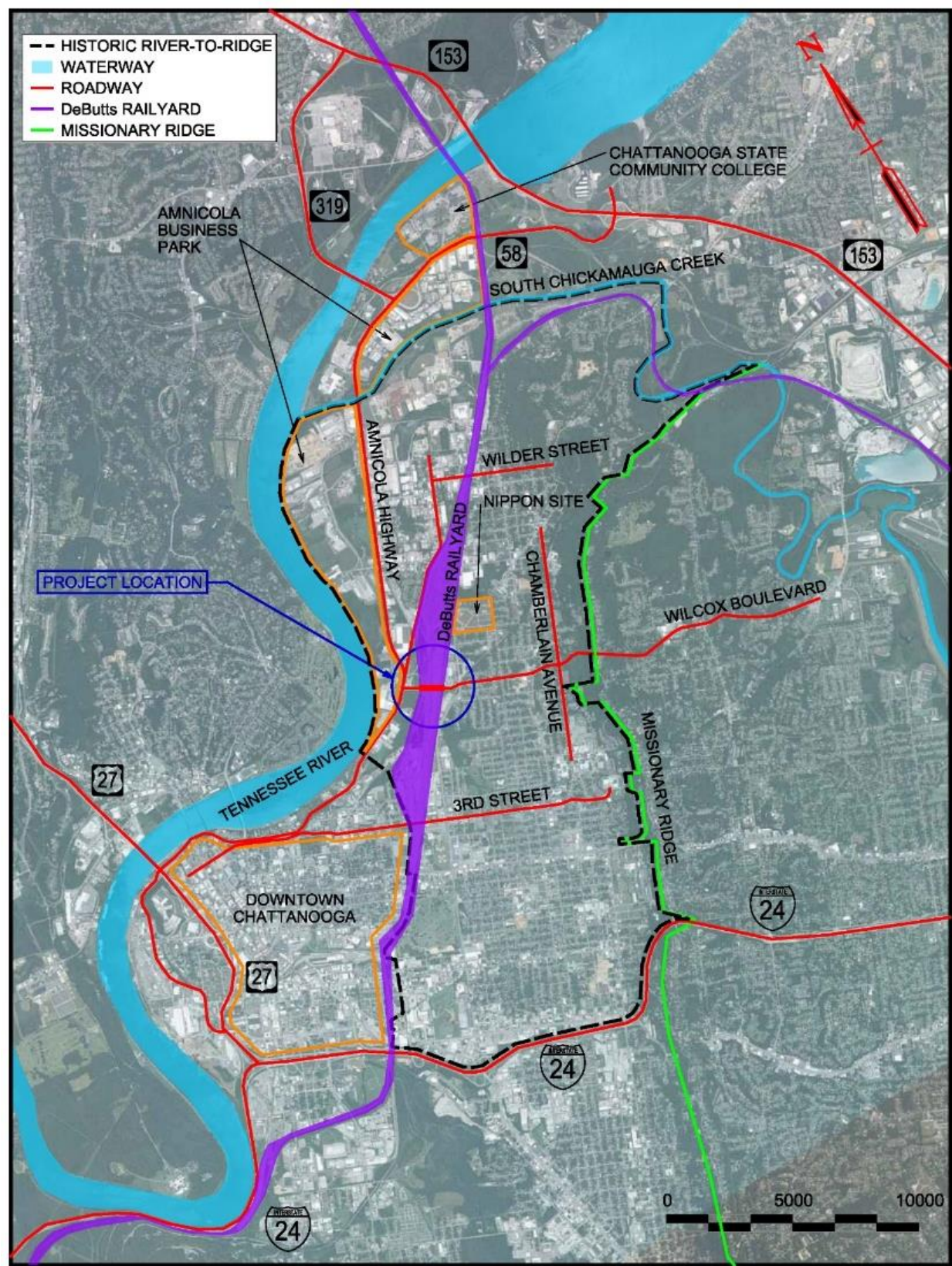
### Wilcox Bridge from DeButts Rail Yard



Source: Katie Snyder, City of Chattanooga Transportation Engineer



# II. Project Location





# Chattanooga, Tennessee

- Wilcox Bridge project is within 3 census tracts: 4, 122, and 123 that are Historically Disadvantaged Communities (HDC) and Areas of Persistent Poverty (APP)
- The River to Ridge project area is within census tracts: 4, 11, 12, 13, 14, 26, 122, 123
- Historically Disadvantaged Community (HDC) census tracts: 4, 11, 13, 14, 26, 122, 123
- Areas of Persistent Poverty (APP) census tracts: 4, 11, 12, 13, 26, 122, 123
- Opportunity Zone census tracts: 4 and 123
- Choice Housing census tracts: 26,13,11,12,4,122

## Downtown Chattanooga



Source: Warren McLelland Photography, provided by Chattanooga Tourism Co.

The Wilcox Boulevard Bridge and River to Ridge Mobility Project is in East Chattanooga. Wilcox Boulevard terminates at Amnicola Highway (highway 58) and at Shallowford Road. The existing Wilcox Boulevard Bridge connects to Wilcox Boulevard as shown on the Project Location Map. The project is on Wilcox Boulevard from Amnicola Highway to North Holtzclaw Avenue.

Chattanooga's 181,099<sup>2</sup> residents live in an urbanized area (UA – 15805) with a metropolitan area population of 566,153.<sup>3</sup> Seeing the city today, a visitor would be startled to learn that in the 1950s and 60s pollution was so high, the city was once unceremoniously referred to as the “Dirtiest City in America” by broadcaster Walker Cronkite.

The transformation of Chattanooga is inspirational. Driven by a committed and engaged community effort that began with Vision 2000 involving hundreds of

public meetings and listening sessions, people from every neighborhood in the city came together to define a new future and determine the work they had to do to achieve it. Today Chattanooga continues to place a high value on community involvement by engaging neighborhoods throughout the city.

<sup>2</sup> U.S. Census Data, 2020

<sup>3</sup> U.S. Census Bureau, 2019, American Community Survey 5-year estimate

# The Project Area

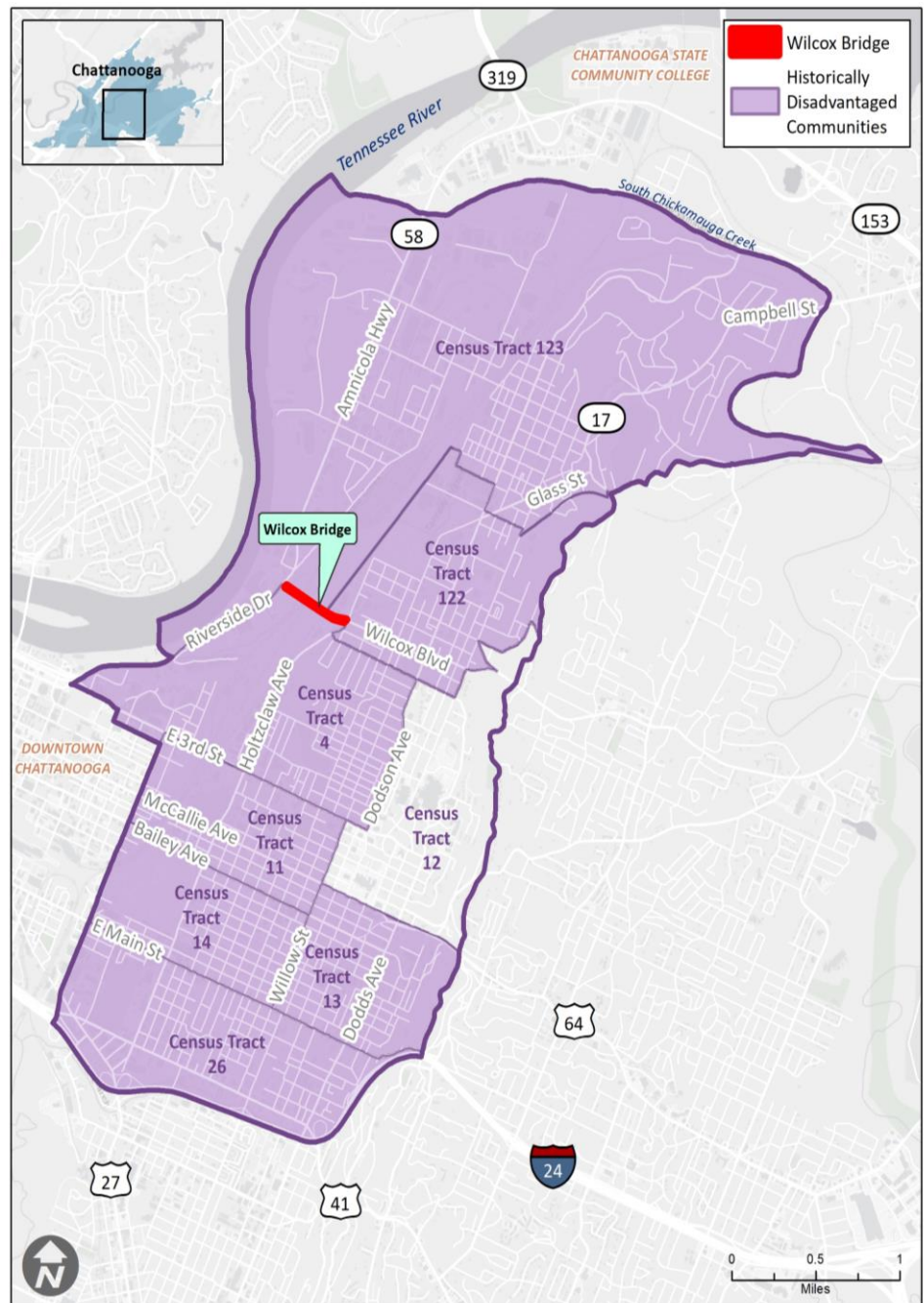
The River to Ridge neighborhoods have a proud heritage and a unique history. People who have lived here for many years want to preserve the institutions and history “that shaped the African-American culture of these

communities” while balancing opportunities to revitalize and redevelop areas that continue to face challenges.<sup>4</sup> There is additional information about the history of these neighborhoods in the River to Ridge Area Vision and Plan. ([click here to view the plan](#))

The River to Ridge Area has a population of 22,345, 75.1 percent of residents are minorities and the majority of residents, 67 percent, are African American.<sup>5</sup> Although these neighborhoods have faced many challenges in the past, residents are encouraged about the future.

Nippon Paint and Coatings is redeveloping the Harriet Tubman brownfield site 3 blocks from the Wilcox Bridge project, This is largest manufacturing investment in this area in over 100 years. A new Construction Career Center in a previously abandoned elementary school will deliver specialized training for the construction trades industry. A local businessman has opened a Save A Lot grocery store in the neighborhood near Dodson and Glass Street. All-Good Coffee Shop and Used Books on Glass St. is becoming a gathering place tapping into several generations of their family who live here. New affordable housing investments are under construction in almost every neighborhood in the River to Ridge Area.

## Historically Disadvantaged Communities



<sup>4</sup> “Historic River-To-Ridge Area Plan”, Chattanooga-Hamilton County Regional Planning Agency, September 2020

<sup>5</sup> American Community Survey and 2016 U.S. Census



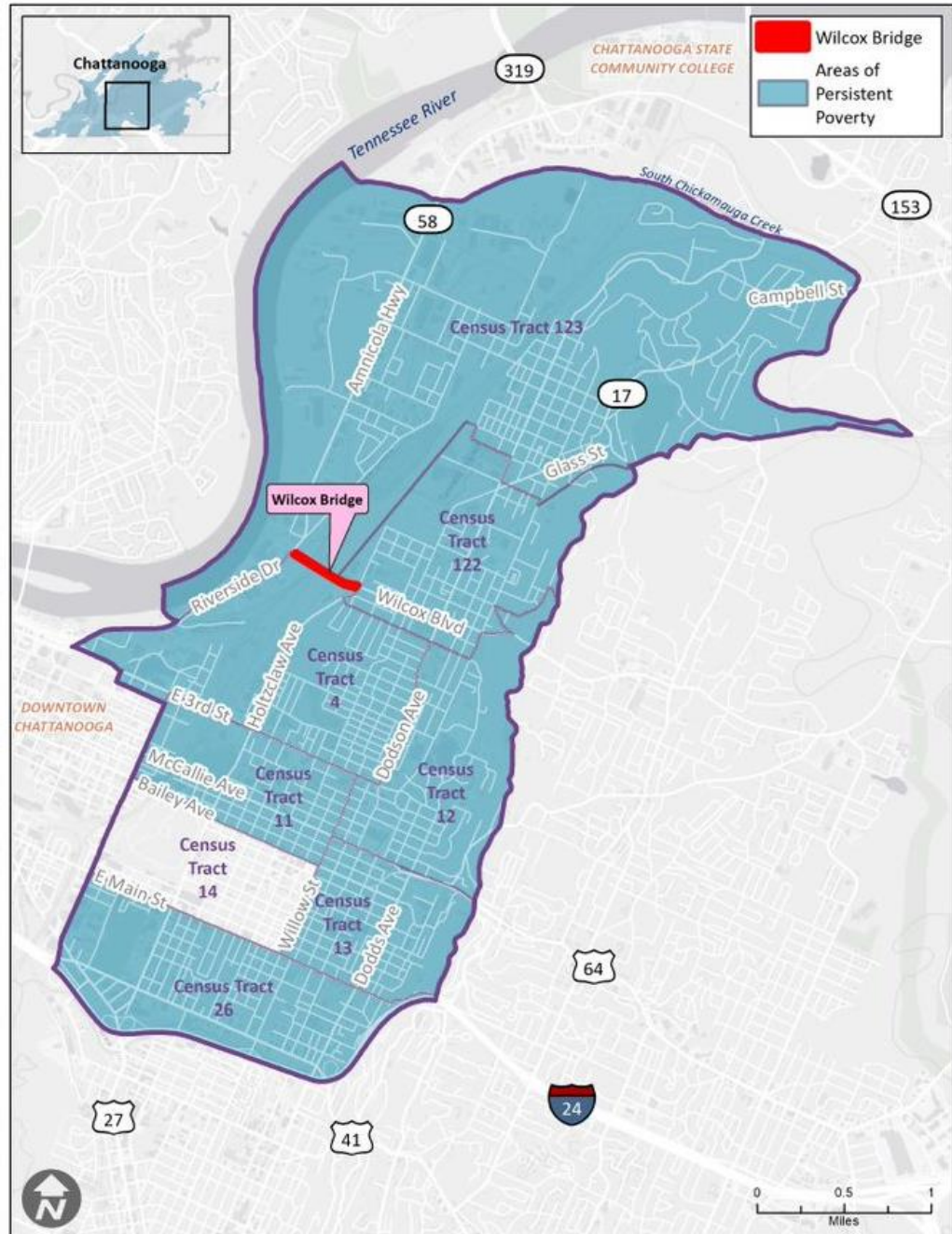
# Wilcox Boulevard Bridge and Mobility Project

The Wilcox Boulevard Bridge and Mobility project in East Chattanooga. The Bridge is the primary access crossing the DeButts railyard providing access to jobs, services and park facilities. The project, shown on page 8, is located on Wilcox Boulevard.

The bridge is owned by Norfolk Southern Railroad and Wilcox Boulevard is owned by the City of Chattanooga. A portion of the roadway, from Holtzclaw Avenue at Third Street to Wilcox Boulevard west across the bridge to Amnicola Highway is on the National Highway System

The proposed project will replace this Bridge, construct a pedestrian walkway and a multi-use path from Amnicola Highway to Holtzclaw Avenue with crosswalks to existing sidewalks. The City plans to develop a pedestrian/bike connection from Amnicola Highway at Wilcox Boulevard to the Riverwalk along the Tennessee River west of the River of Ridge neighborhoods.

## River to Ridge Areas of Persistent Poverty





# III. Grant Funds, Sources, and Uses of Project Funds

In 2021 concerns over the condition of the Wilcox Boulevard Bridge promoted the City of Chattanooga to commit \$500,000 of local city funds to conduct a technical study of the bridge, begin NEPA studies, and initial design for the bridge. The initial TIP shows the locally funded \$500,000. Funds from the City will be used to pay Wilcox Bridge project expenses incurred up through the obligation of the RAISE grant.

The City of Chattanooga is requesting \$38,000,000 in RAISE funds for the Wilcox Bridge-River to Ridge Mobility Project. The total eligible project budget is \$60,000,000. The City of Chattanooga and their Partners: Norfolk Southern, Tennessee Department of Transportation, Hamilton County, and the Chattanooga Hamilton County Regional TPO have committed \$22,000,000 for this project. There are no conditions or restrictions affecting the use of these funds for this project.

The project cost estimate is based on 15% design. Benesch developed the technical study for the City and began the preliminary engineering and NEPA phases in early 2021. Working with NS and CSX, Benesch developed a 15% design concept that met the needs of the project and requirements of the railroads. Based on their recent experience on the I-240 ABC bridge replacement in Memphis and input from the railroads, the project cost estimate was developed. The City has agreed to pay for costs that exceed the eligible project budget.

The tables below show the eligible project budget and major construction activities, funding sources by category and construction activity, and the individual funding sources and amount by category and construction activity. Copies of non-federal funding commitment letters are included in Appendix B.

## Project Budget Breakdown

Major Construction Activity	Total Project Cost	Estimated City Funds Expended Prior to Obligation of RAISE Grant	Eligible RAISE Project Budget
NEPA & PE	\$2,250,000	\$500,000	\$1,750,000
ROW (Acquisition & Services)	\$100,000	\$0	\$100,000
Final Design	\$2,250,000	\$0	\$2,250,000
Construction	\$43,650,000	\$0	\$43,650,000
Utility Relocation	\$2,400,000	\$0	\$2,400,000
CEI/Design Review	\$5,000,000	\$0	\$5,000,000
Contingency	\$4,850,000	\$0	\$4,850,000
<b>Total</b>	<b>\$60,500,000</b>	<b>\$500,000</b>	<b>\$60,000,000</b>

## Federal vs non-Federal Breakdown

Major Construction Activity	Total Eligible Budget	Non-Federal		RAISE		Other Federal	
		Dollars	Percent	Dollars	Percent	Dollars	Percent
NEPA & PE	\$1,750,000	\$1,700,500	97%	\$0	0%	\$49,500	3%
ROW (Acquisition & Services)	\$100,000	\$0	0%	\$0	0%	\$100,000	100%
Final Design	\$2,250,000	\$1,125,000	50%	\$0	0%	\$1,125,000	50%
Construction	\$43,650,000	\$5,674,500	13%	\$37,000,000	85%	\$975,500	2%
Utility Relocation	\$2,400,000	\$650,000	27%	\$1,000,000	42%	\$750,000	31%
CEI/Design Review	\$5,000,000	\$3,000,000	60%	\$0	0%	\$2,000,000	40%
Contingency	\$4,850,000	\$2,850,000	59%	\$0	0%	\$2,000,000	41%
<b>Total</b>	<b>\$60,000,000</b>	<b>\$15,000,000</b>	<b>25%</b>	<b>\$38,000,000</b>	<b>63%</b>	<b>\$7,000,000</b>	<b>12%</b>

## Construction Activity by Funding Category

Funding Category	Percent of Total	Funding Source	Eligible Project Budget
NEPA & PE			\$1,750,000
Non-Federal	91%	City of Chattanooga Capital Funds	\$300,000
		Hamilton County	\$0
		STBG Match	\$400,000
		NHPP Match	\$500,000
		NS Capital Funds	\$400,000
Raise Grant	0%		\$0
Federal	9%	CHCRPA-TPO STBG Funds	\$150,000
		TDOT NHPP Funds	
ROW (Acquisition & Services)			\$100,000
Non-Federal	0%	City of Chattanooga Capital Funds	\$0
		Hamilton County	\$0
		STBG Match	\$0
		NHPP Match	\$0
		NS Capital Funds	\$0
Raise Grant	0%		\$0
Federal	100%	CHCRPA-TPO STBG Funds	\$100,000
		TDOT NHPP Funds	\$0
Final Design			\$2,250,000
Non-Federal	61%	City of Chattanooga Capital Funds	\$500,000
		Hamilton County	\$0
		STBG Match	\$0
		NHPP Match	\$0
		NS Capital Funds	\$875,000
Raise Grant	0%		\$0
Federal	39%	CHCRPA-TPO STBG Funds	\$875,000
		TDOT NHPP Funds	\$0
Construction			\$43,650,000
Non-Federal	13%	City of Chattanooga Capital Funds	\$650,000
		Hamilton County	\$100,000
		STBG Match	\$0
		NHPP Match	\$50,000
		NS Capital Funds	\$4,725,000
Raise Grant	85%		\$37,000,000
Federal	3%	CHCRPA-TPO STBG Funds	\$875,000
		TDOT NHPP Funds	\$250,000
Utility Relocation			\$2,400,000
Non-Federal	27%	City of Chattanooga Capital Funds	\$650,000
		Hamilton County	\$0
		STBG Match	\$0
		NHPP Match	\$0
		NS Capital Funds	\$0
Raise Grant	42%		\$1,000,000
Federal	31%	CHCRPA-TPO STBG Funds	\$0
		TDOT NHPP Funds	\$750,000
CEI/Design Review			\$5,000,000
Non-Federal	60%	City of Chattanooga Capital Funds	\$0
		Hamilton County	\$0
		STBG Match	\$0
		NHPP Match	\$0
		NS Capital Funds	\$3,000,000
Raise Grant	0%		\$0
Federal	40%	CHCRPA-TPO STBG Funds	\$0
		TDOT NHPP Funds	\$2,000,000
Contingency			\$4,850,000
Non-Federal	59%	City of Chattanooga Capital Funds	\$1,400,000
		Hamilton County	\$0
		STBG Match	\$0
		NHPP Match	\$450,000
		NS Capital Funds	\$1,000,000
Raise Grant	0%		\$0
Federal	41%	CHCRPA-TPO STBG Funds	\$0
		TDOT NHPP Funds	\$2,000,000
TOTAL			\$60,000,000

## IV. Merit Criteria

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### Safety

Improving safety for all bridge users and developing non-motorized transportation options for residents in the River to Ridge neighborhoods is one of the primary purposes for this project. Given current bridge conditions and the lack of active transportation facilities the bridge increases the vulnerability of people living in this area and reduces equitable transportation services.

The existing bridge has a 3-foot sidewalk along the southern side of the bridge. Bicyclists must share the road with vehicular traffic. The proposed new bridge will be constructed to meet current standards protecting pedestrians, vehicles, transit, and freight traffic from risks. The bridge will provide access to non-motorized mobility options for River to Ridge residents. Additional safety improvements include pedestrian railings, lighting on the bridge, and a protective fence along both sides of the bridge.

Pedestrian signals and pushbuttons will be installed at the signalized intersections with Wilcox Boulevard at Amnicola Highway and at Holtzclaw Avenue for additional safety. Adding pedestrian signals and modifying phasing at signalized intersections is proven to reduce pedestrian crashes by 10-15%.<sup>6</sup> The City plans to install Gridsmart traffic signal detection equipment at the Wilcox-Amnicola intersection.

The new bridge will transform this section of Wilcox Boulevard into a complete street, one of the Safer Roads initiatives outlined in the National Roadway Safety Strategy. The proposed sidewalk and shared-use path allow for separation between motorized and non-motorized users, which are the safest and most comfortable accommodations for pedestrians and bicyclists of all ability levels.

The Chattanooga-Hamilton County RPA travel demand model was used to evaluate how traffic

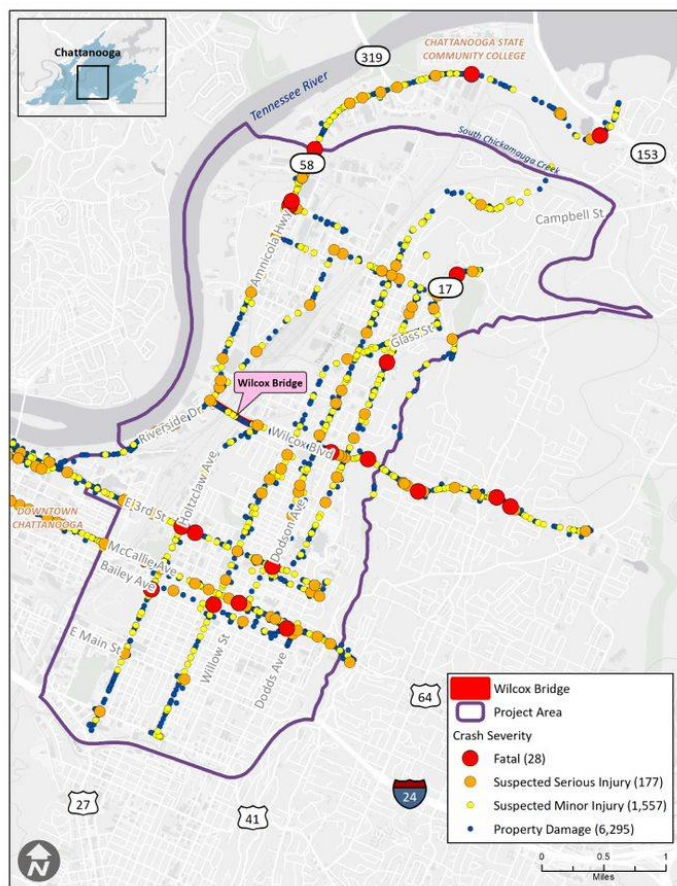
volumes on the roadways in the River to Ridge area would change if the Wilcox Boulevard bridge were not available. The model showed an estimated increase of 3,000 vehicles per day along East 3<sup>rd</sup> Street, 2,000 more vehicles per day along Wilder Street, and other smaller diversions of traffic along routes including McCallie Avenue, Bailey Avenue, and East Main Street. Due to their lower functional classifications, the mobility of these alternative routes is lower and additional traffic will have a more significant impact on congestion and delays. The additional congestion, in turn, leads to higher concentration of air pollutants affecting the health of HDC and APP neighborhoods.

There are three hospitals in the River to Ridge area, accessed via East 3<sup>rd</sup> Street and McCallie Avenue. If the Wilcox Boulevard Bridge became inoperable, the additional traffic on East 3<sup>rd</sup> Street and McCallie Avenue will generate additional congestion on these essential medical corridors potentially increasing the time it takes to reach care in an emergency.

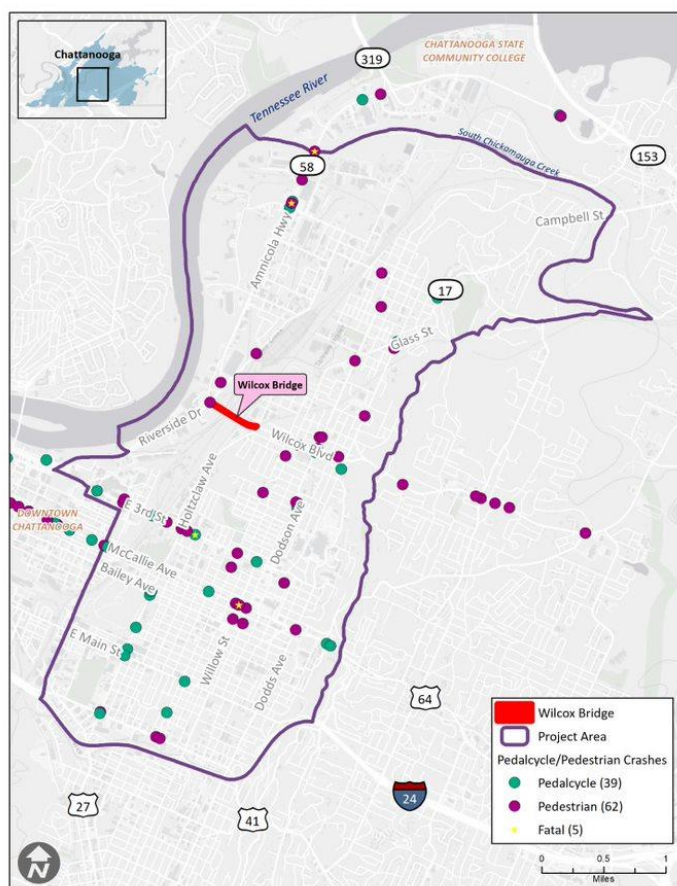
Recent crash data from 2015-2021 shows crashes along the bridge have been primarily property damage or minor injury crashes. However, based on travel demand model data, the alternative routes that drivers would divert to if the bridge were closed (Orchard Knob Avenue, Dodson Avenue, East 3<sup>rd</sup> Street, and McCallie Avenue) show a much higher occurrences of more severe crash types. Crash data indicates that between North Holtzclaw Avenue and Dodson Avenue, McCallie Avenue there have been 2 fatal crashes and 13 severe injury crashes and 4 fatal crashes and 13 serious injury crashes on East 3<sup>rd</sup> Street. The diversion of vehicles to these routes will increase the probability of crashes on these roadways because of the increased exposure rate.

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<sup>6</sup> <https://www.cmfclearinghouse.org/results.cfm?qst=pedestrian>



**River to Ridge  
Crashes by Severity  
(2015-2021)**



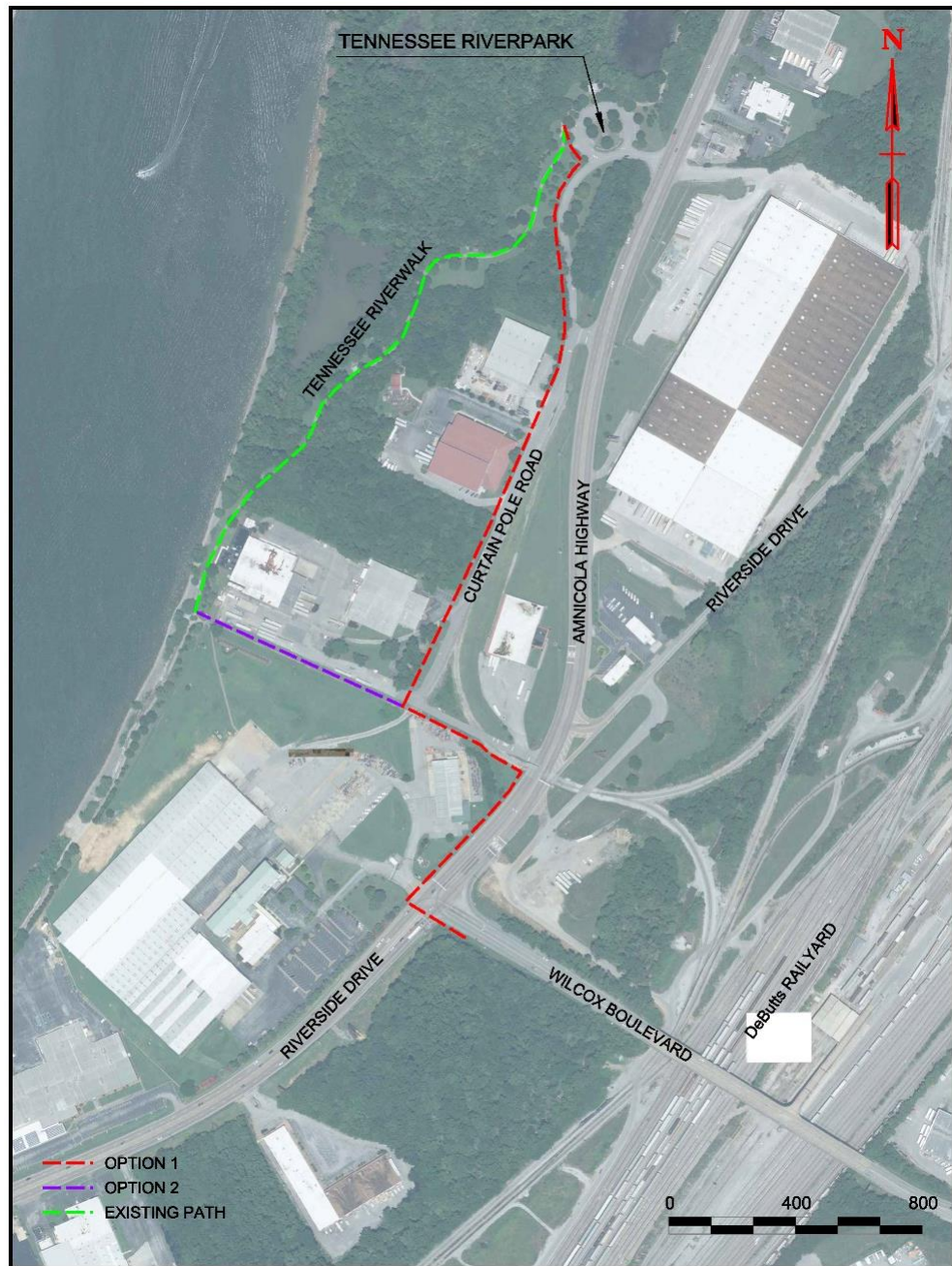
**River to Ridge  
Bicycle and Pedestrian  
Crashes (2015-2021)**



# Environmental Sustainability

The Wilcox Boulevard Bridge – River to Ridge Mobility Project will comply with the Federal Flood Risk Management Standard established with EO 11988. The new bridge will promote environment sustainability by providing zero-emission transportation options improving equitable transportation for minority and low-income people living in the area. Those trips will reduce vehicle miles traveled and support the City’s Climate Action Plan. The proposed Wilcox Boulevard Bridge will support lower-carbon travel modes and provide River to Ridge residents safe access to walk or bike to the Tennessee Riverwalk and the South Chickamauga Creek Greenway linking to other trails and greenways. The accompanying figure shows the two options being evaluated by the city for a new path connecting the pedestrian facilities on the new bridge to the Tennessee Riverwalk.

## Planned Pedestrian Path from Wilcox Bridge to Tennessee Riverwalk



## Chattanooga Climate Action Plan

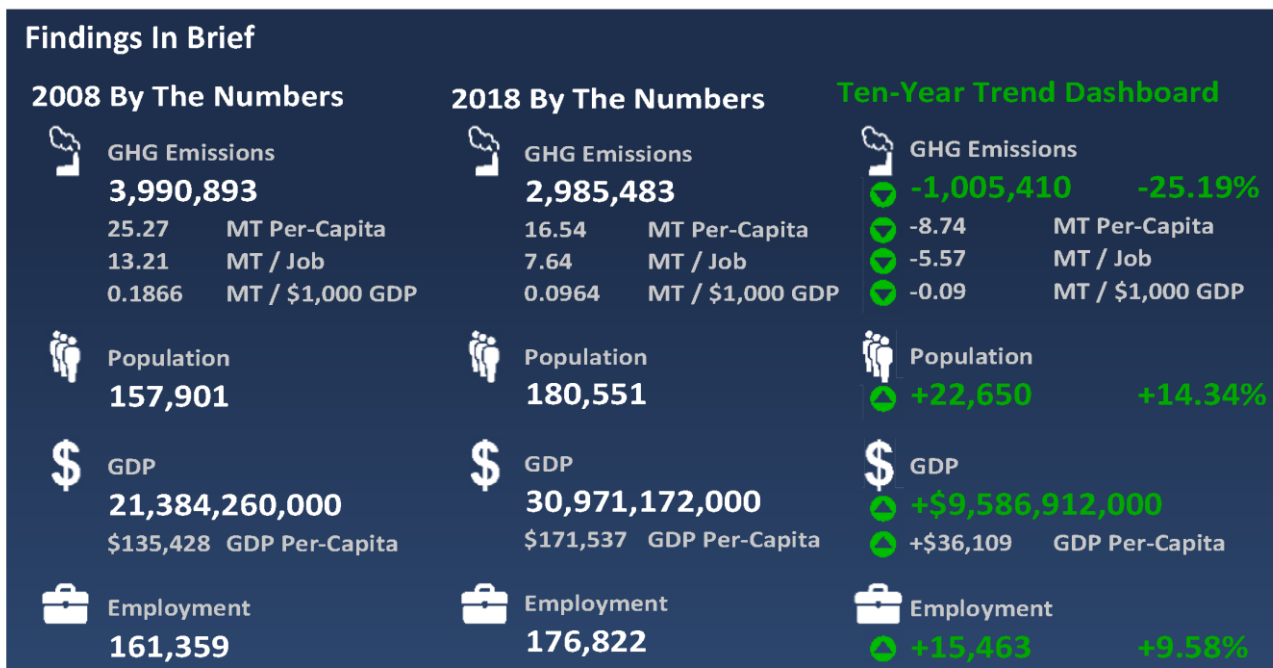
In 1969 Chattanooga's air quality was labeled the worst in the nation by the EPA.<sup>7</sup> By 2006, Chattanooga produced 3.99 million metric tons of greenhouse gases, a 25% increase from 1996 levels. The City passed its first climate action plan in 2009 ([click here to view Chattanooga Climate Action Plan](#)) and a decade later, Chattanooga's greenhouse gas emissions have decreased by 2.99 million metric tons, down 25 percent. Per capita emissions dropped 35 percent, from 25.27 MT to 16.54 MT per capita.

Despite fears that environmental gains would come at the expense of the economy, GDP increased by \$9.59 billion.<sup>8</sup> ([click here to view link "Chattanooga Greenhouse Gas Inventory"](#))

The City adopted a target of reducing GHG emission to 80 percent of the 1990 levels by 2050. Transportation related GHG account for about a third of the community's total GHG emissions per year. Between 2008 and 2018, community wide VMT rose 12.9 percent while the GHG emissions from

transportation increased by 8.7 percent.<sup>9</sup>

The City of Chattanooga continues to work towards responsible land use and transportation efficient designs. The River to Ridge plan builds on community values discovered through a robust public engagement process. The initial plan draft of a new community climate plan, "Integrated Community Sustainability Plan", was released in June 2021.



Source: "City of Chattanooga Community Greenhouse Gas Inventory", June 2020, prepared by City of Chattanooga, GreenSpace, and Pale Blue Dot, Inc., page 15.

<sup>7</sup> "2009 Chattanooga Climate Action Plan" submitted by Chattanooga Green Committee, January 2009

<sup>8</sup> The American Ledger. Emissions Drop in Chattanooga, TN. 2011.

<sup>9</sup> City of Chattanooga Community Greenhouse Gas Inventory. June 2020.

The Wilcox Boulevard Bridge project supports the following Chattanooga Climate Action Plan goals:

- **Decrease community VMT** – Due to the load restrictions on Wilcox Bridge, heavier vehicles must take alternative routes not designed for truck traffic. If the bridge is not replaced it will eventually be closed diverting 20,000 vehicles to other roads and increasing VMT and transportation-related emissions.

- **Promote and develop alternative transportation and related infrastructure** - The City initiated a shared bike program and will install a bike share center near the CARTA office to support alternative transportation options for residents in the River to Ridge neighborhoods.



Source: Chattanooga Bike Co.

- **Continue to develop pedestrian and bicycle facilities as a viable means of transportation** – The project includes a multi-use path and pedestrian walkway. The inclusion of these pedestrian and bicycle facilities will spur additional multimodal facility improvements to extend the network connecting with other parks and greenways in the River to Ridge area. ([click here to view maps](#))

## Chattanooga Equity Plan

The City of Chattanooga's Equity Plan, [One Chattanooga](#), was completed in October 2021. ([click here to view the "One Chattanooga Strategic Plan"](#)) This broad vision and plan was developed through discussions with community residents, institutions, and community organizations to help guide the City and align initiatives and priorities toward achieving a more equitable Chattanooga. This plan establishes measurable metrics that define success so the community helping to drive changes for a better future will know when improvements are achieved.

The Wilcox Bridge - River to Ridge Mobility project supports this plan, specifically the priorities identified to *Improve Local Infrastructure* and *Catalyze the Resurgence of the Black Middle Class*. This project will make important investments in an historically disadvantaged community through a project that

was identified in the Historic River to Ridge Area Plan. Area residents attended over 29 meetings during this planning process and their vision for connected communities with access to parks and greenways, employment centers, schools, and safe transportation options changed this project from just a bridge project to a mobility project.

***"Chattanooga's future will be shaped by us—all of us—and we can choose whether to accept the fate of a divided city, or to take the bold steps necessary to realize One Chattanooga together."***

*Mayor Tim Kelly  
City of Chattanooga*



## Environmental Justice Tools

The Wilcox Boulevard Bridge project used environmental justice tools to understand and address potential adverse impacts from the project to disadvantaged communities. The analysis includes a review of available EJSCREEN data within one mile of the Wilcox Bridge. While disadvantaged communities have

been identified, it is not anticipated that the project will have disproportionate adverse environmental impacts on these communities. The project will serve to replace a critical connection and improve mobility for the community.

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## Avoids Adverse Environmental Impacts

The bridge does not cross the floodplain, but Wilcox Boulevard west of the bridge crosses Citico Creek. An extension of the box culvert

would be necessary but would not result in impacts to the existing floodplain.

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## Quality of Life

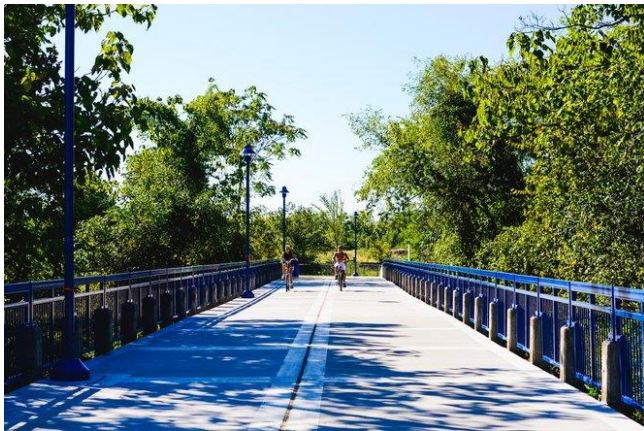
- Project increases affordable and accessible transportation options for residents in the River to Ridge neighborhoods providing safe low-cost active transportation alternatives to reach employment centers, services, education and training opportunities, and commercial areas offering a wider range of goods at more competitive prices
- Proactively addresses racial equity and barriers to opportunity, including automobile dependence as a form of barrier
- Increases transportation choice for residents in the River to Ridge area who are underserved by the current auto-centric transportation system

This project will improve the quality of life for River to Ridge residents. Eighty-eight percent of the River to Ridge neighborhoods qualify as historically disadvantaged communities and areas of persistent poverty. The Wilcox Boulevard Bridge – River to Ridge Mobility Project provides low-cost transportation options for residents east of the DeButts rail yard that can help people reach well-paying jobs downtown and on Amnicola Highway and have the option to walk or bike to Chattanooga State Community College. During the River to Ridge planning meetings, businesses spoke about well-paying jobs available at their companies and the problems that residents in the area faced to get to these businesses. The project increases transportation mode choices and will create a more equitable future for River to Ridge neighborhoods.

The DeButts rail yard is a physical barrier for these communities. The condition of the Wilcox Bridge and lack of east-west pedestrian and bicycle facilities limits their affordable transportation options. If this bridge were closed due to conditions or failure, the rail yard would become a more significant barrier. The next closest crossing options are the Wilder Street bridge two miles to the north or the East 3<sup>rd</sup> Street bridge one mile south. The Wilder Street bridge is also in poor condition and needs to be rebuilt. The East 3<sup>rd</sup> Street bridge is already congested and diverting traffic to an already congested corridor will compound the transportation challenges facing these neighborhoods.

*“An important long-term strategy for the Avondale neighborhood is connecting Avondale to the Riverwalk. This project will construct a pedestrian walkway and multi-use path that will let people in our community get to the Tennessee River without having to drive. The Wilcox Bridge is at our front door, now we’ll have more ways to take advantage of the wonderful Riverwalk.”*

*Ken Smith,  
Avondale Neighborhood Leader*



Source: Chattanooga Tourism Co.

During the River to Ridge Area Plan community visioning process four top issues identified by this community demonstrated the importance of walk-able and bike-able neighborhood connections to these residents:

- Redevelop walkable commercial centers, as opposed to drive-up strip commercial
- Improve existing parks and connect them to centers, schools, employment center and neighborhoods with greenways
- Create a Safe Pedestrian Realm with ample sidewalks, pedestrian crossings, streetscapes and protected bike lanes

- Provide safe and efficient options for transportation to services and jobs

This project supports racial and economic equity by reducing barriers to opportunities and expanding transportation options (see zero vehicle household information on page 22)

CARTA currently provides 13 transit routes in the River to Ridge area. The headways vary from 15 minutes to one hour. As a result of the load limit on Wilcox Boulevard Bridge, CARTA buses use Holtzclaw to 3rd Street and several other local streets to reach downtown and other routes. CARTA officials noted this adds an extra 5-10 minutes daily for every bus at the beginning and ending of each driver’s shift even though there are no fixed routes that use the bridge.

Mobility choices are important to developers evaluating River to Ridge neighborhoods for future mixed-income and affordable housing development. Housing studies have shown the value of active transportation assets to housing development. Fifty percent of U.S. residents say walkability is a high priority when they consider where they want to live.<sup>10</sup> Recent housing developments in the River to Ridge neighborhoods reflect the importance of access to mobility choices. A local developer, Ethan Collier, has acquired a 10-block site in the River to Ridge area and is partnering with Chattanooga Neighborhood Enterprise (CNE) and the Benwood Foundation to redevelop an abandoned textile mill brownfield site south of Main Street



Source: Chattanooga Tourism Co.

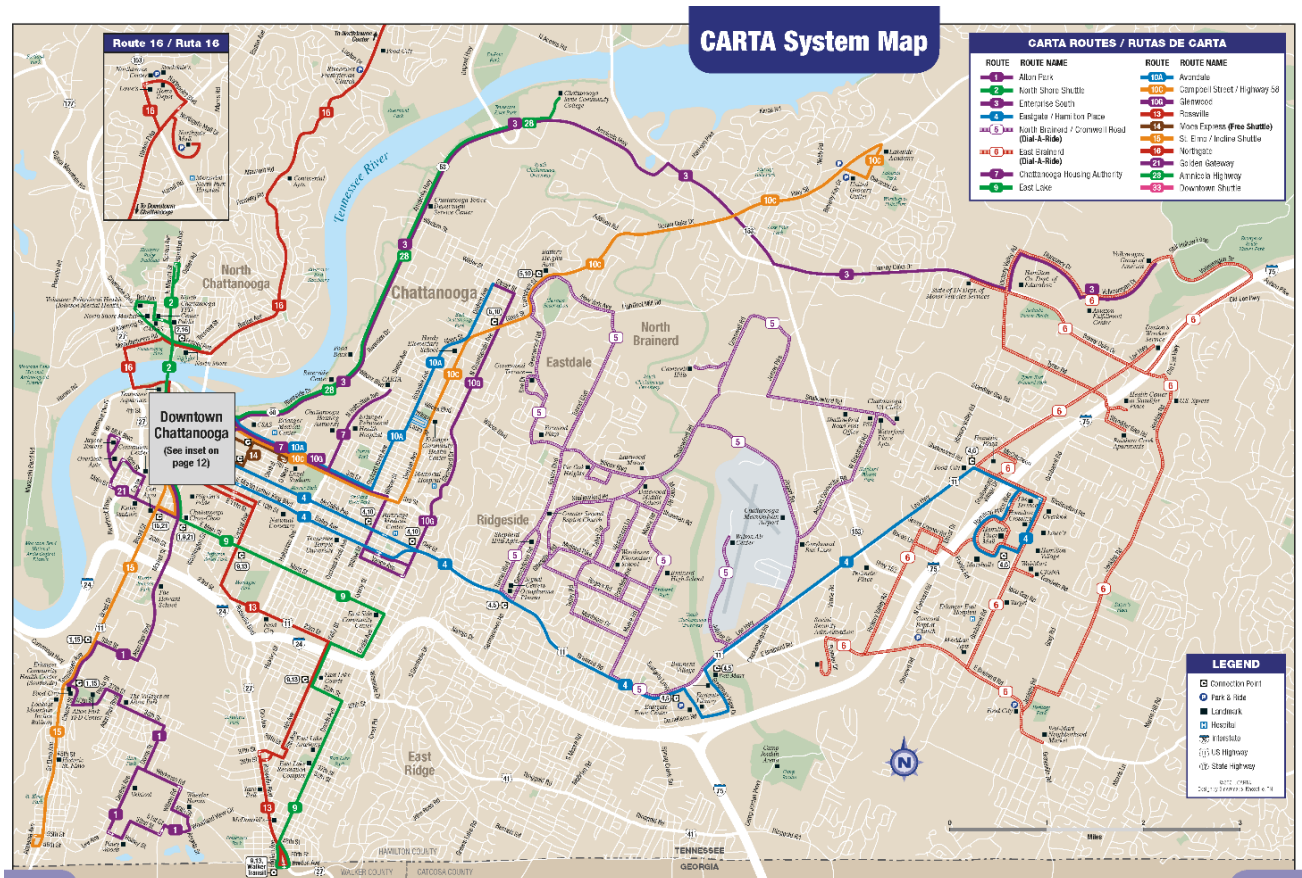
<sup>10</sup> “America in 2015”, Urban Land Institute

at East 18<sup>th</sup> Street. The proposed development is located on a CARTA bus route with access to pedestrian and bike infrastructure. At least 20% of the housing will be available to low-and-moderate income homebuyers and CNE will build multifamily units targeted for households with 50% to 80% of the median income in the city.

If the Wilcox Bridge is not replaced and ultimately is closed, the diversion of traffic along north/south streets like Holtzclaw, Orchard Knob, and Dodson would be a detriment to the “bikeability” of these routes affecting the

mobility options that could impact phases of this brownfield redevelopment. The bike facilities map shows the existing and planned bike facilities for the River to Ridge area. ([click here to view maps](#)) The map indicates the only roadway with a planned separation from traffic is on Orchard Knob Avenue between East 3rd Street and Wilcox Boulevard. The bike lanes on the other roads have the bike land adjacent to the travel lane or bicyclists haring a travel land with vehicles. If more traffic were added to these roads because of traffic diverting from Wilcox Bridge, cyclists would be less inclined to use these routes.

## CARTA Bus Routes



Source: Chattanooga Area Regional Transportation Authority (CARTA) website, <https://www.gocarta.org/wp-content/uploads/2021/08/systemmap-08.15.21.pdf>



# Mobility and Community Connectivity

- Project will provide affordable transportation choices for underserved, overburdened and disadvantaged communities
- Non-motorized travel options to access areas west of the DeButts yard increases the accessibility of all users of the project particularly zero-vehicle households
- Project provides improved access to work and recreation opportunities for residents without a car

Mobility and connectivity are essential for neighborhoods to fully engage within their community and society. The HDC and APP communities in the River to Ridge neighborhoods do not have safe non-motorized access to Riverside Drive, Amnicola Highway, or downtown limiting their transportation options to businesses and services in those key areas.

The lack of active transportation connections is a significant barrier to opportunity for zero-vehicles households living in in HDC and APP neighborhoods. Over 18 percent of the

households in the River to Ridge neighborhoods have no vehicle available compared to the 5.9 percent for Chattanooga and 6.5 percent within Hamilton County.<sup>11</sup>

As a result of the lower vehicle availability, the residents of the River to Ridge communities make significantly more work trips via transit and carpooling. CARTA is developing additional River to Ridge neighborhood shuttles from Glass Street to help residents get to jobs at businesses on Amnicola Highway and downtown and to Chattanooga State Community College. City of Chattanooga Public Works is utilizing a TDOT Multimodal Access Grant to create 5 mobility hubs in the area with enhanced bus stops and bike sharing stations to better connect the River to Ridge neighborhoods to each other and to other areas of the city.

The inclusion of new pedestrian and bicycle facilities on the new bridge will spur additional multimodal facility improvements as the network begins to expand through the River to Ridge area.

## Vehicle Availability by Household

	Hamilton County		Chattanooga MSA		River to Ridge	
	Number	Percent	Number	Percent	Number	Percent
No vehicle	9,407	6.5%	12,986	5.9%	1,608	18.4%
1 vehicle	49,824	34.3%	70,239	32.0%	4,077	46.6%
2 vehicles	54,358	37.4%	83,364	38.0%	1,884	21.5%
3 or more vehicles	31,624	21.7%	52,574	24.0%	1,175	13.4%
Total	145,213	100%	219,166	100%	8,744	100%

Source: American Community Survey, 2019 5-year data

## Transportation Choice by Household

	Hamilton County	Chattanooga MSA	River to Ridge
Drive Alone	81.6%	80.1%	64.6%
Carpool	8.7%	9.2%	15.9%
Public Transportation	1.1%	2.2%	9.5%
Walk	1.8%	2.5%	2.0%
Bicycle	0.3%	0.5%	1.3%

Source: American Community Survey, 2019 5-year data

<sup>11</sup> US Census, American Community Survey, 2019 5-year data

# Economic Competitiveness and Opportunity

This project will ensure 400 Norfolk Southern rail yard employees have reliable access to their jobs in the DeButts rail yard. These employees, both agreement and non-agreement, have significant skills and are essential to operating this freight rail facility. The yard handles a range of commodities, but 72 percent of the materials moving through this yard are agricultural products, chemicals, and metals and construction materials used by manufacturing and processing businesses primarily in the eastern United States.<sup>12</sup> The access ramp from the Wilcox Bridge into the yard is also used to transport critical parts and materials used in the car repair shop and mechanical facilities.

If the Wilcox bridge is not replaced conditions on the bridge will force additional load restrictions and ultimately result in its closure in the next few years. This would require construction of another bridge and yard access ramp, which is reflected in the BCA, with an estimated cost of \$20 million.<sup>13</sup> Accelerated bridge construction (ABC) methods will not be an option for this construction. Using conventional construction methods for construction of this bridge and access ramp into the DeButts yard will require an estimated 18 months to complete during which time traffic through the DeButts yard would be maintained.

The replacement of the Wilcox Bridge will allow for increased traffic speeds, currently set at 35 MPH due to bridge conditions, and support emergency vehicles, transit buses, and trucks moving materials and finished goods for businesses east of the rail yard. The new bridge will provide non-motorized transportation options for River to Ridge residents giving them reliable and timely access to employment and job opportunities west of the rail yard. For example,

with pedestrian and bicycle access residents can reach:

Amnicola Highway Businesses	Distance to Company	
	WITH Wilcox Bridge	WITHOUT Wilcox Bridge
American Display and Fixtures	0.24 miles	3.68 miles
Kenco Logistics	0.07 miles	3.51 miles
LJT Steel	0.75 miles	4.19 miles
Cardinal Health	0.65 miles	4.09 miles

Source: CDM Smith route distance estimation using Google Aerial Maps, 2022

Nippon is investing \$80 million to redevelop a brownfield site 3 blocks from the bridge. The company's trucking companies planned on utilizing Wilcox Boulevard to Amnicola Highway. When the load restrictions on the bridge occurred after this commitment was made, Nippon has remained committed to this project. The company committed to create 150 jobs, with wages from \$13 - \$31 per hour and an average wage of \$22.63 per hour.

The additional transportation costs incurred by Nippon due to bridge restrictions was estimated based on the number of inbound and outbound trucks per day into this facility once it is in operation. An analysis was conducted to determine the additional transportation costs due to the existing bridge restrictions. Assuming 250 days of truck operations per year for 6 years and additional mileage and truck user costs, the additional transportation costs for Nippon are estimated at \$2,240,000 annually or \$13.4 million over 6 years when the bridge will hopefully be replaced.<sup>14</sup>

<sup>12</sup> Information provided by NS Corporation

<sup>13</sup> Estimated cost of new access road bridge for DeButts yard assuming convention construction, prepared by Benesch 3-22-2022.

<sup>14</sup> Analysis conducted by CDM Smith Traffic Engineers using information provided by Nippon and ATRI motor carrier costs

## State of Good Repair

This bridge is in “Poor” condition and load restrictions currently prevent essential vehicles from using the bridge. Although repairs have been made in the past by NS, the bridge is rapidly approaching the end of its useful life. Required annual repairs to remove the posted load rating and allow access by emergency vehicles will cost \$1.3 million annually and the bridge will still need to be replaced in less than 10 years.<sup>15</sup> These repairs do not address the transportation vulnerabilities of this bridge; they merely postpone them leaving residents and businesses wondering about the safety and equity of the bridge and when it will be posted again or closed. This threatens the existing transportation network; mobility and quality of life of the HDC, APP, and Environmental Justice populations in this area; the community’s economic growth; and



reliable operations of the DeButts rail yard and its impact on the national freight network.

Based on the technical study, the City of Chattanooga and NS determined the best option was to replace the bridge and eliminate this detrimental barrier to area residents and freight operations. Replacing the bridge and providing non-motorized facilities long desired by area residents provides a bridge with a 75-year life span.

The infrastructure constructed through this RAISE grant request will meet TDOT’s Transportation Asset Management Plan requirements ensuring the new bridge and highway infrastructure meets state standards and will be maintained in a state of good repair for the future.

Ownership of the new bridge will be transferred to the City of Chattanooga, and it will be added to the regular inspection cycle for City-owned bridges and inspected by TDOT on a 2-year schedule. Maintenance and any future required repairs will be programmed and performed by the City of Chattanooga. The bridge will also benefit from the new City of Chattanooga Bridge Management Program that includes a proactive approach to regular maintenance work related to structures to ensure they are kept in a state of good repair.

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## Partnership and Collaboration

The Wilcox Boulevard Bridge - River to Ridge Mobility Project is a collaborative effort to improve mobility, economic competitiveness, environmental sustainability, and advance equity in Chattanooga. This project benefits from public and private partners working together with the River to Ridge residents to ensure the Wilcox Boulevard Bridge - River to Ridge Mobility project reflects the goals of the neighborhoods, the City and County, TDOT and NS and CSX.

*([click here to view Historic River to Ridge Area 3 Plan document](#))*

The River to Ridge area’s focus on safe transportation and opportunities to walk or bike to jobs, parks, and services was clearly articulated in the River to Ridge Community Vision and Plan in neighborhood meetings, workshops, feedback sessions and surveys residents defined the future they wanted for their neighborhoods. In the River

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<sup>15</sup> “Wilcox Boulevard Bridge over NS DeButts Rail Yard”, Benesch & Company, August 24, 2021”



### River to Ridge Advisory Meeting



Source: Chattanooga-Hamilton County Regional Planning Agency

to Ridge Area Plan the community identified six primary focus areas listed in the **Quality of Life** section of the application, four reflected their desire for walkable, bikeable, connected communities and facilities.

As the City of Chattanooga and their partners began assessing options for the Wilcox Bridge, input from the community was an important consideration and resulted in a project that is more than a bridge for vehicles. With the addition of the bike-ped facilities included in this project residents have a new option to truly enjoying a live-work-play environment close to their homes.

This project has been developed by a diverse group of partners including the residents of the River to Ridge neighborhoods, City of Chattanooga leaders and departments, Hamilton County leaders, regional agencies including

Chattanooga Chamber of Commerce and the Greater Chattanooga Economic Partnership, CHCRPA and the TPO, CARTA, and of course TDOT along with private entities including NS and CSX. The commitment of these partners to address a challenging situation and move quickly to determine the best solution is a testament to the value of partnership.

Some of these partners have demonstrated their strong commitment by providing funding to support this project. The following partners have committed funds for the USDOT RAISE Grant funds:

- City of Chattanooga
- Tennessee Department of Transportation
- Hamilton County
- Chattanooga Hamilton County Regional Planning Agency Transportation Planning Organization
- Norfolk Southern Railroad

As the project moves forward the City will ensure additional opportunities for community engagement and ensure residents from HDC, APP and environmental justice communities remain engaged and are heard. This input will help to identify gateway features, art that reflects the historic character of this area, and bridge lighting. The community support for this project is reflected in the Letters of Support for the RAISE Grant application received from local residents, businesses, and institutions. ([click here to view Letters of Support](#))

### River to Ridge Public Meeting



Source: Chattanooga Hamilton County Regional Planning Agency

# Innovation

## Innovative Technologies and Delivery

The DeButts Railyard contains two mainline tracks (one for NS and one for CSX) and 27 switching tracks. This yard is a critical transportation hub for NS and CSX. Due to the essential nature of this rail operation and the significant number of train movements per day, the use of Accelerated Bridge Construction (ABC) methods will be necessary to construct this very complex project.

With clearances below restricted by train movements, and the roadway profile above limited by site constraints, the new Wilcox Boulevard Bridge structure needs to address these constraints and be constructed quickly to avoid significant delays for the traveling public and rail yard operations. ABC construction uses innovative planning, design, materials, and construction methods to meaningfully:

- reduce construction time,
- improve safety for bridge construction workers, employees in the rail yard, and minimizes safety impacts to the public traveling on the existing bridge during the construction period<sup>16</sup>
- reduce the societal mobility impacts to the River to Ridge neighborhoods

The project will limit delay by minimizing the number of supporting substructures and constructing them in an accelerated manner. The decision was made to construct the bridge off-alignment and utilizing a bridge launching method to facilitate the construction of the bridge while minimizing track outage and allowing vehicular traffic on the existing bridge during construction. In discussions with both railroads,

this method would minimize the overall construction duration by as much as 50%. To complete the work will require a launching pit with estimated dimensions of 400ft x 80ft to pre-construct each bridge span prior to launching. This work will be completed in a span-by-span increment with the largest launching segment at more than 300ft and nearly 1.5 million pounds.

The Tennessee Department of Transportation (TDOT) has committed to deliver this project on behalf of the City of Chattanooga, serving as agent for the City. The City of Chattanooga has gladly accepted TDOT's offer. TDOT has also committed to provide \$5 million for the project through National Highway Performance Program (NHPP) funds. This exceptional partnership will help to expedite this project to a successful delivery well in advance of the September 2031 deadline. Taking advantage of TDOT's expertise and experience with other complex railroad bridge projects, NEPA and their knowledge of federal requirements.

As the project development process continues, TDOT will evaluate the most appropriate contracting mechanism for construction. The Construction Division has indicated that CM/GC could be a potential delivery method for this project. TDOT has successfully completed several complex projects similar in nature to the Wilcox Bridge Project using this alternate delivery approach. This team approach forms a partnership with the Department, the Designer, and the Contractor allowing early identification and mitigation of risk, incorporation of innovative practices to reduce construction time, a streamlining of the design process and ultimately a project that adheres to the budget.

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<sup>16</sup> "Accelerated Bridge Construction", Federal Highway Administration, U.S. DOT, April 13, 2021

## V. Project Readiness

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The Tennessee Department of Transportation (TDOT) will fully deliver this project as agent for the City of Chattanooga. The partners including NS and CSX will continue to work together

throughout this project. Construction on the project will begin by August 2025 and be completed by August 2028. The City of Chattanooga has agreed to fund cost overruns.

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## Environmental Risk

The Environmental Risk Assessment has determined that this type of project and the impacts associated with the construction of this facility would fall under FHWA's criteria for a Categorical Exclusion (CE) – C (28) Bridge rehabilitation, reconstruction, or replacement. The environmental review, project coordination, and agency approvals are anticipated to be completed by March 8, 2023, before the June 30, 2026, deadline to obligate the RAISE funds. TDOT has not issued a final concurrence; however, coordination has been initiated and will be ongoing throughout project development.

Early coordination letters to local stakeholders and agency letters are being prepared for transmittal. A Phase 1 ESA will be conducted along and adjacent to the proposed Wilcox Boulevard bridge project, focusing on hazardous materials and petroleum usage, storage, and disposal areas. This review will also include historical records and data identified within the study area. Ecology and other environmentally sensitive areas are being reviewed and reports will be completed based on responses from the early coordination letters. Based on preliminary findings, there are no potentially eligible resources, archaeological or historic sites identified within the Area of Potential Effect (APE).

Once the technical studies are completed, the CE document will be submitted to TDOT's

Environmental Division for their review. A General Aquatic Resource Alteration Permit from TDEC and a Nationwide Permit 14 from the USACE may be required but will not delay the project schedule. There are no additional federal approvals anticipated or coordination activities that would exceed the average duration that have been established for the NEPA process.

TDOT will deliver this project on behalf of and as the agent for the City of Chattanooga. The City would retain creative control over the aesthetic features and work closely with the River to Ridge residents. The initial targeted public outreach will focus on the residents and businesses adjacent to the Wilcox Boulevard corridor using project information mailings, surveys, and project status information.

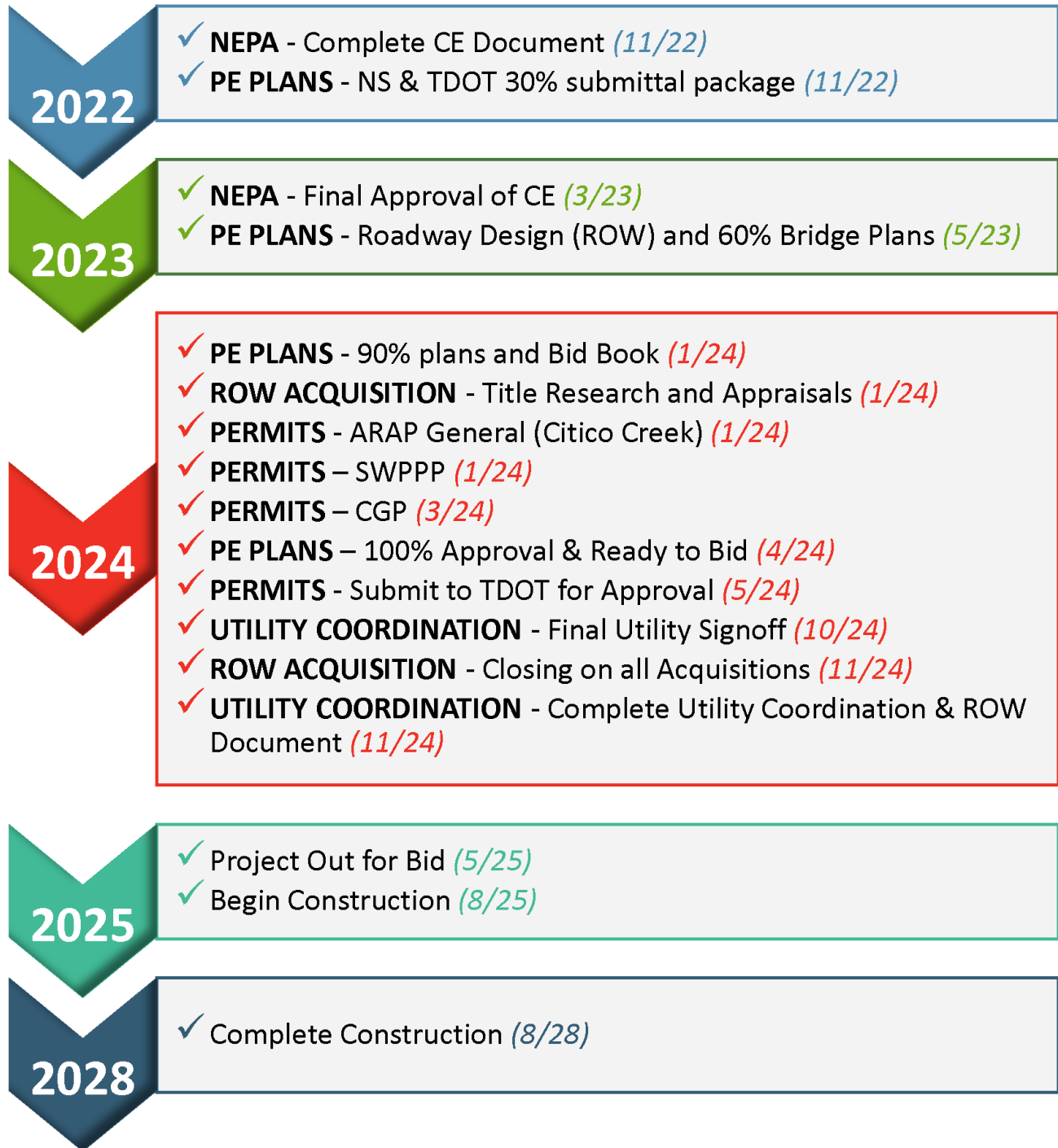
The City will conduct additional community outreach and engagement to ensure area residents have a voice in this project. The HDC, APP, and environmental justice communities will be actively involved in these meetings to ensure their concerns are heard.

TDOT will complete the environmental review process for this project. Final completion and approval of the CE document is expected by March 8, 2023.



*A detailed project schedule included below has been developed by Benesch, a highly experienced railroad bridge design firm.*

## Project Schedule



## Required Approvals and Permits

The time required to submit and secure the approvals and permits listed below have been incorporated into the project schedule. The City and TDOT do not anticipate the approvals or permits requiring additional time beyond what is included in the project schedule.

- City of Chattanooga Land Disturbing Permit
- General Construction Permit
- National Pollutant Discharge Elimination System Permit
- Easement Permits
- Land Disturbing Permit TDOT
- Approval of air-right from NS RR during ROW phase
- NS required approval for 30% package, 60% package, 90% package and 100% package submittals following the NS public project manual. NSRR will issue an Authorization to Proceed to Construction to proceed to bid phase.
- General ARAP Permit (Citico Creek) may be required from Tennessee Department of Environment and Conservation (TDEC)
- CGP General Permit with Storm Water Pollution Prevention Plan from TDEC

- Nationwide Permit 14 Non-Notification General Permit (No-Submittal Required) coordination with United States Army Corp of Engineers
- Review Floodplain with City to verify no impacts to Zone AE for Citico Creek (backwaters of Tennessee River; No Federal Emergency Management Agency Submittal Anticipated)

### State and Local Approvals

This project is currently programmed in the TIP and will be updated in the new TIP cycle.

### Federal Transportation Requirements Affecting State and Local Planning

This project has been programmed in the TIP and will be updated in the new TPO TIP cycle.

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## Assessment of Project Risks and Mitigation Strategies

The City of Chattanooga, TDOT, NS and CSX have worked together to determine the best design and construction methods to deliver this bridge expeditiously, safely, and meet the quality requirements established by these partners.

There is less than one-acre of right-of-way to be acquired for this project. The project falls under FHWA's criteria for a Categorical Exclusion (CE) – C (28) Bridge rehabilitation, reconstruction, or replacement. The project presents no significant challenges for acquisition or NEPA.

Benesch, has successfully designed numerous long-span and complex bridges using Accelerated Bridge Construction (ABC) techniques, similar to those anticipated for this project. Benesch has vast experience designing bridge replacements for Class I railroads and public entities working with these railroads. Benesch was the prime engineer for the MemFix4 project which replaced two interstate overpass bridges, one railroad bridge, and retrofitted a fourth utilizing ABC techniques. The MemFix4 project required TDOT to replace a busy NS railroad bridge crossing over I-240. This NS bridge replacement utilized complex

ABC techniques which include a bridge slide, a concept proposed for this project.

TDOT has extensive expertise in quickly progressing this project from grant award to construction and technical experience with complex bridge and rail bridge projects and ABC

construction techniques. TDOT will evaluate the most appropriate contracting mechanism for construction. TDOT has successfully completed several complex projects similar in nature to the Wilcox Bridge Project utilizing the alternate delivery approach of Construction Manager/General Contractor (CM/GC).

## VI. Benefit Cost Analysis Summary

The benefit-cost analysis (BCA) evaluates replacing the existing Wilcox Bridge, which traverses the DeButts Railyard, and provides a vital railyard access ramp. The bridge is at the end of its functional life. Currently, the bridge is under a 13-ton vehicle weight restriction (excludes truck, bus, and fire/ emergency vehicles), and if not replaced will be further weight restricted, and closed to all vehicles in year 2025. The bridge provides a principal arterial linking Wilcox Boulevard from Riverside Drive to Shallowford Road that connects the River to Ridge community and the City of Chattanooga. The railyard access ramp from the bridge provides employee and truck access to the 31 rail tracks (28 NSR tracks and 3 CSXT tracks) beneath the bridge.

### Overview, Alternatives, and Benefit Types

Current Status/Baseline and Problem	Alternative Change to Baseline	Benefit Types
The soon to be decommissioned bridge provides local arterial connectivity between the River to Ridge community and vital railyard access (employee and freight).	Replace the existing bridge and railyard access ramp with a new updated facility including a 6.5' westbound sidewalk and a 12.5' eastbound multi-use path (vs. a single 4' sidewalk on existing eastbound structure).	Bridge replacement avoids travel disbenefits (e.g., distance, time, safety, and emission savings) and the need for alternative railyard access costs associated with bridge closure.

The BCA starts in 2023 with planning, and engineering services (through 2025), followed by 2026 to 2028 construction, and a 30-year operating horizon thereafter, monetizing estimates in 2020\$ and summarized in standard metrics such as a benefit-cost ratio (BCR), net present value (NPV), internal rate of return (IRR), payback period, etc.

*Conclusions* – Discounting the estimated capital costs and 30-year travel efficiency benefits at 7% discounting (3% for CO2) yields \$72.1 million net benefits and \$40.9 million net costs, resulting in a positive \$31.2 million NPV, equating to a 1.76 BCR, and payback period by 2037.

*Major Factors/Sensitivities* – Capital costs are a major assumption, especially with the early timing and lower net discounting. On the benefits-side, the major determinates are the VHT-related time savings, VMT-related benefits (VOC, safety, and emissions), and alternative railyard access cost-savings.

Net Present Components	
Net Present Benefits	\$72.1
Net Present Costs	<del>-\$40.9</del>
Net Present Value (NPV)	\$31.2
Other Summary Metrics	
Benefit-Cost Ratio (BCR)	1.76
Internal Rate of Return (IRR)	None
Payback Period	2037



# Appendix A.

## Detailed Benefit Cost Analysis Methodology

The Excel spreadsheet which contains applicable information and calculations regarding this Benefit-Cost Analysis was submitted as an attachment to this application (*filename Wilcox Blvd Bridge, Chattanooga TN - BCA Spreadsheet.xlsx*)

### Approach

**Introduction** – This benefit-cost analysis (BCA) evaluates replacing the existing 820-foot (0.16 mile) Wilcox Bridge on Wilcox Boulevard, which traverses the DeButts Railyard, and provides a vital railyard access ramp. The bridge is at the end of its functional life. Currently, the bridge is under a 13-ton vehicle weight restriction (excludes truck, bus, and fire/emergency vehicles), and without replacement additional load restrictions will result in closure to all vehicles on or before 2025.

The bridge is part of a 0.45-mile section of Wilcox Boulevard, a principal arterial from Riverside Drive to Shallowford Road that connects the River to Ridge community and the City of Chattanooga. The ramp from the bridge provides employee and truck access to the 31 rail tracks (28 NSR and 3 CSXT) beneath the bridge.

The BCA compares benefits of traffic diversion and avoids new railyard access costs under a bridge closure no-build scenario to the net lifecycle costs of building, operating, and maintaining the facility. The analysis follows RAISE BCA guidance and recommended values.<sup>17</sup> These and other sources/materials are provided in the accompanying workbook.

**No-Build Alternative** – Reflects 2025 bridge closure with traffic detour to the 3rd Street bridge (1.1 miles south) and the Wilder Street bridge (1.6 miles north) and requires private sector railroad development of a new railyard access.

**Build Alternative** – Replaces the current bridge including a railyard access ramp. Bridge replacement eliminates rerouted traffic disbenefits that arise under the no-build alternative, which generates network travel efficiencies (i.e., travel time, distance savings). The bridge replacement also eliminates the need for a separate railyard access bridge. Implementation costs span 6-years (2023-2028).

**Table A-1: Overview, Alternatives, and Benefit Types**

Current Status/Baseline and Problem	Alternative Change to Baseline	Benefit Types
The soon to be decommissioned bridge provides local arterial connectivity between the River to Ridge community and vital railyard access (employee and freight).	Replace the existing bridge and railyard access ramp with a new updated facility including a 6.5' westbound sidewalk and a 12.5' eastbound multi-use path (vs. a single 4' sidewalk on existing eastbound structure).	Bridge replacement avoids travel disbenefits (e.g., distance, time, safety, and emission savings) and the need for alternative railyard access costs associated with bridge closure.

<sup>17</sup> <https://www.transportation.gov/office-policy/transportation-policy/benefit-cost-analysis-guidance-discretionary-grant-programs-0>

*Basic Parameters* – The BCA starts in 2023 with PE and ROW through 2025, followed-by a 2026 to 2028 capital construction timeframe, and a subsequent 30-year operating horizon. Costs and benefits are evaluated in 2020\$ and discounted at 7% (except CO2 at 3%), per USDOT guidelines, and summarized in standard BCA metrics such as a benefit-cost ratio (BCR), net present value (NPV), internal rate of return (IRR), payback period, etc. The following table summarizes the significance of the various cost and benefit categories as enumerated in the following subsections.

**Table A-2: Cost and Benefit Types**

Type	Description	Significance
Costs	P/E, Construction	High
Benefits	Road User	High
	Time	High
	Vehicle Operating. Cost	Medium
	Safety	Medium
	Emissions (NOX, PM2.5, SOX, CO2)	Low
Benefits	Railyard Access	Medium
Benefits	Agency - Residual Value	Low

Differential construction lifecycle costs (between build and no-build scenarios) are compared against the expected net societal benefits stemming from the bridge replacement. Societal benefits reflect travel efficiency-related cost savings (travel time, vehicle operations, safety, and emissions), and avoids the need for railyard access bridge to the current staging area.

*Railyard Access* – The current Wilcox Bridge provides an essential access ramp to the middle of the 31 railyard tracks used by both employees and freight movements. The proposed bridge replacement would provide similar and improved access. However, bridge closure in year 2025 without a replacement would significantly impact NSR and CSXT operations and necessitate alternative railyard access. Few access options are available and are costly, including a privately constructed railyard access bridge. Such need/costs would be avoided with the proposed bridge reconstruction, so such cost-savings are considered a benefit. The sensitivity analysis considers BCA metrics without the railyard access bridge.

## Project Facility Costs

*Bridge Implementation Capital Costs* – Costs shown below are in year 2020\$ values and would span six years (2023-2028). The \$56.75 million includes PE (\$3.78 million, 7%) over the initial three years (2023-2024) and right-of-way (\$0.09 million, 0.2%) in years 2023-2024. Construction and CEI span three years (2026-2028) with construction totaling \$48.16 million (85%) and CEI totaling \$4.72 million (8%).

**Table A-3: Annual Bridge Capital Cost Summary by Type (\$2020, millions)**

Year	P/E	ROW	Const.	CEI	Total	Discounted
2023	\$0.47	\$0.00	\$0.00	\$0.00	\$0.47	\$0.44
2024	\$1.65	\$0.00	\$0.00	\$0.00	\$1.65	\$1.44
2025	\$1.65	\$0.09	\$0.00	\$0.00	\$1.75	\$1.43
2026	\$0.00	\$0.00	\$14.45	\$1.42	\$15.86	\$12.10
2027	\$0.00	\$0.00	\$15.89	\$1.56	\$17.45	\$12.44
2028	\$0.00	\$0.00	\$17.82	\$1.75	\$19.57	\$13.04
Total	\$3.78	\$0.09	\$48.16	\$4.72	\$56.75	\$40.89

**Railyard Access Capital Costs** – No-build alternative railyard access costs shown below would occur in years 2023-2024. These costs reflect the private sector railroads’ need to access the railyard since the Wilcox bridge access ramp would not be accessible. The bridge over the railyard (\$9.35 million) and the ramp bridge (\$4.90 million) comprises the primary expenditures (\$14.24 million, 75%). Other costs include railroad coordination, roadway approach, and design/CEI fees totaling \$4.78 million (25%).

**Table A-4: Railyard Access Capital Costs (2020\$, millions)**

Description	Total
Design Fee	\$1.29
Railroad Coordination	\$1.03
Roadway Approach Work	\$0.85
Bridge Over Yard with Launch	\$9.35
Ramp Bridge to Yard	\$4.90
CEI Fee	\$1.61
Total	\$19.02

## Benefit Analysis Assumptions

Assumptions regarding daily traffic volume, vehicle occupancy, unit costs, etc. are discussed below. All tables are provided in the accompanying BCA Excel workbook.

**Traffic User Volumes** – The 2019 Chattanooga travel demand model (TDM)<sup>18</sup> estimated base year and future average daily volumes (years 2019 and 2050, respectively) by vehicle type (passenger and commercial), per Table A-5. Year 2050 daily network vehicle-miles travelled (VMT) savings of 5,302 and vehicle-hours of delay (VHD)<sup>19</sup> savings of 556, suggest a congested slight speed increase of (0.03%). Daily travel VMT and VHT savings are annualized via a 365 days/year assumption. Interim/unmodeled years were interpolated based on the CAGR<sup>20</sup>.

**Table A-5: Summary Daily TDM Metrics - by Alternative, and Model Year**

	Vehicle Miles Traveled		Vehicle Hours of Delay	
	2019	2050	2019	2050
Alternative				
No-Build (E+C) w/o Bridge	14,030,038	17,049,135	119,022	283,394
Build (E+C) w/Bridge	14,021,084	17,043,833	118,867	282,838
Change				
Total	-8,954	-5,302	-155	-556
Percent	-0.06%	-0.03%	-0.13%	-0.20%

**Benefit Assumptions** – Time, vehicle-operating, accident, and emission cost-saving benefits were developed based on USDOT BCA guidance<sup>21</sup>. Values and factors used include average vehicle occupancy, values per hour, VOC/mile, etc.

**Safety** – Tennessee accident rates and VMT were applied to USDOT rates by severity type to estimate an average accident cost of \$0.351 per VMT, as summarized below.

<sup>18</sup> Chattanooga-Hamilton County Regional Planning Association (CHCRPA) [Modeling – CHCRPA](#)

<sup>19</sup> Commonly referred to as Vehicle Hours Traveled (VHT) savings

<sup>20</sup> Compound annual growth rates

<sup>21</sup> [Benefit-Cost Analysis Guidance for Discretionary Grant Programs | US Department of Transportation](#)



**Table A-6: Safety Factors**

Tennessee 2019	per 100m			2020\$/VMT
	Crashes	VMT	USDOT	
Fatalities	1,069	1.290	\$12,837,400	\$0.166
Injuries	48,543	58.562	\$302,600	\$0.177
PDO	155,272	187.318	\$4,600	\$0.009
VMT (millions)	82,892			
Summary Cost/VMT				\$0.351

*Emissions* – Emissions were quantified and monetized by type (NOX, PM2.5, SOX, and CO2) for three vehicle classifications (PV, SUT, MUT).<sup>22</sup> Historically declining grams per-VMT emission factors (EPA) were extrapolated for future years, expecting a continued decline. These factors and costs were applied to annual VMT changes, per BCA Guidelines. First and last year emission factors and costs are summarized by emission and vehicle types in table below.

**Table A-7: Emission Factors and Costs by Vehicle Type**

Emissions by Vehicle Type	Grams/VMT		2020\$/Metric Ton		2020\$/VMT	
	2027	2056	2027	2056	2027	2055
Passenger Vehicles						
NOX	0.063	0.001	\$17,700	\$18,100	\$0.0011	\$0.0000
PM2.5	0.008	0.005	\$854,000	\$867,600	\$0.0068	\$0.0040
SOX	0.001	0.000	\$48,200	\$49,100	\$0.0001	\$0.0000
Non-CO2 Subtotal					\$0.0080	\$0.0041
CO2	180.1	24.8	\$61	\$85	\$0.0110	\$0.0021
Single Unit Trucks						
NOX	0.573	0.042	\$17,700	\$18,100	\$0.0101	\$0.0008
PM2.5	0.021	0.006	\$854,000	\$867,600	\$0.0179	\$0.0048
SOX	0.001	0.000	\$48,200	\$49,100	\$0.0001	\$0.0000
Non-CO2 Subtotal					\$0.0281	\$0.0056
CO2	668.4	45.8	\$61	\$85	\$0.0408	\$0.0039
Multi-Unit Trucks						
NOX	2.396	0.209	\$17,700	\$18,100	\$0.0424	\$0.0038
PM2.5	0.041	0.012	\$854,000	\$867,600	\$0.0350	\$0.0104
SOX	0.001	0.000	\$48,200	\$49,100	\$0.0001	\$0.0000
Non-CO2 Subtotal					\$0.0775	\$0.0142
CO2	1,078.7	310.4	\$61	\$85	\$0.0658	\$0.0264

*Railyard Access Benefits* –The total \$19.02 million in cost-saving benefits are split across the two years of implementation (years 2023-2024) if the Wilcox Bridge was not replaced.

## Project Benefits

The unit costs savings are applied to annual VMT and VHT travel benefits to monetize savings by type (time, vehicle operations, safety, and emissions). These travel benefits, railyard access benefits, and residual value benefits are summarized below.

<sup>22</sup> Passenger vehicle, single-unit-trucks, and multi-unit-trucks

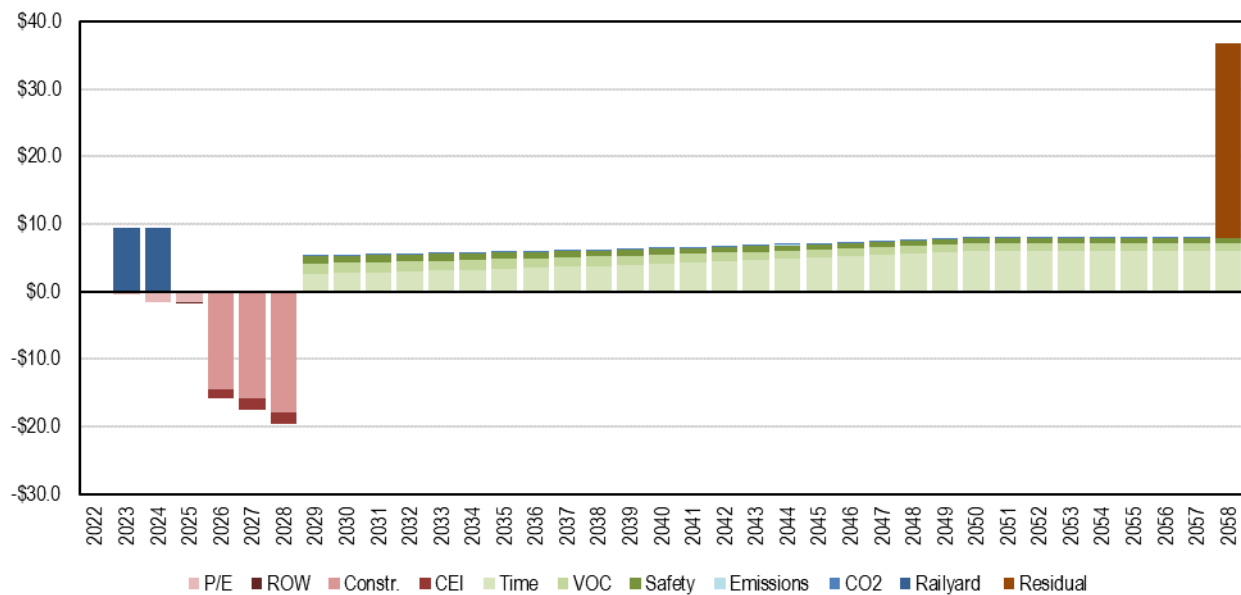
**Table A-8: Annual Travel Efficiency Benefits (2020\$, millions)**

Year				Emissions		Railyard		Total
	Time	VOC	Safety	Non-CO2	CO2	Access	Residual	
2023	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9.51	\$0.00	\$9.51
2024	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9.51	\$0.00	\$9.51
2025	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2026	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2027	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2028	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2029	\$2.62	\$1.55	\$1.02	\$0.06	\$0.06	\$0.00	\$0.00	\$5.31
2030	\$2.73	\$1.53	\$1.01	\$0.05	\$0.06	\$0.00	\$0.00	\$5.38
2031	\$2.85	\$1.52	\$0.99	\$0.05	\$0.05	\$0.00	\$0.00	\$5.46
2032	\$2.97	\$1.50	\$0.98	\$0.05	\$0.05	\$0.00	\$0.00	\$5.54
2033	\$3.09	\$1.48	\$0.97	\$0.04	\$0.05	\$0.00	\$0.00	\$5.63
2034	\$3.22	\$1.46	\$0.95	\$0.04	\$0.05	\$0.00	\$0.00	\$5.72
2035	\$3.36	\$1.44	\$0.94	\$0.04	\$0.04	\$0.00	\$0.00	\$5.82
2036	\$3.50	\$1.42	\$0.92	\$0.03	\$0.04	\$0.00	\$0.00	\$5.92
2037	\$3.64	\$1.40	\$0.91	\$0.03	\$0.04	\$0.00	\$0.00	\$6.02
2038	\$3.79	\$1.38	\$0.89	\$0.03	\$0.04	\$0.00	\$0.00	\$6.13
2039	\$3.95	\$1.36	\$0.87	\$0.03	\$0.04	\$0.00	\$0.00	\$6.25
2040	\$4.11	\$1.34	\$0.86	\$0.03	\$0.03	\$0.00	\$0.00	\$6.37
2041	\$4.28	\$1.32	\$0.84	\$0.02	\$0.03	\$0.00	\$0.00	\$6.50
2042	\$4.45	\$1.30	\$0.82	\$0.02	\$0.03	\$0.00	\$0.00	\$6.63
2043	\$4.63	\$1.28	\$0.81	\$0.02	\$0.03	\$0.00	\$0.00	\$6.77
2044	\$4.82	\$1.25	\$0.79	\$0.02	\$0.03	\$0.00	\$0.00	\$6.91
2045	\$5.02	\$1.23	\$0.77	\$0.02	\$0.03	\$0.00	\$0.00	\$7.06
2046	\$5.22	\$1.21	\$0.75	\$0.02	\$0.03	\$0.00	\$0.00	\$7.22
2047	\$5.43	\$1.18	\$0.74	\$0.02	\$0.02	\$0.00	\$0.00	\$7.39
2048	\$5.64	\$1.16	\$0.72	\$0.02	\$0.02	\$0.00	\$0.00	\$7.56
2049	\$5.87	\$1.13	\$0.70	\$0.02	\$0.02	\$0.00	\$0.00	\$7.74
2050	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2051	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2052	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2053	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2054	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2055	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2056	\$6.10	\$1.11	\$0.68	\$0.01	\$0.02	\$0.00	\$0.00	\$7.92
2057	\$6.10	\$1.11	\$0.68	\$0.01	\$0.01	\$0.00	\$0.00	\$7.91
2058	\$6.10	\$1.11	\$0.68	\$0.01	\$0.01	\$0.00	\$28.90	\$36.81
Total	\$140.08	\$38.44	\$24.37	\$0.76	\$0.94	\$19.02	\$28.90	\$252.51

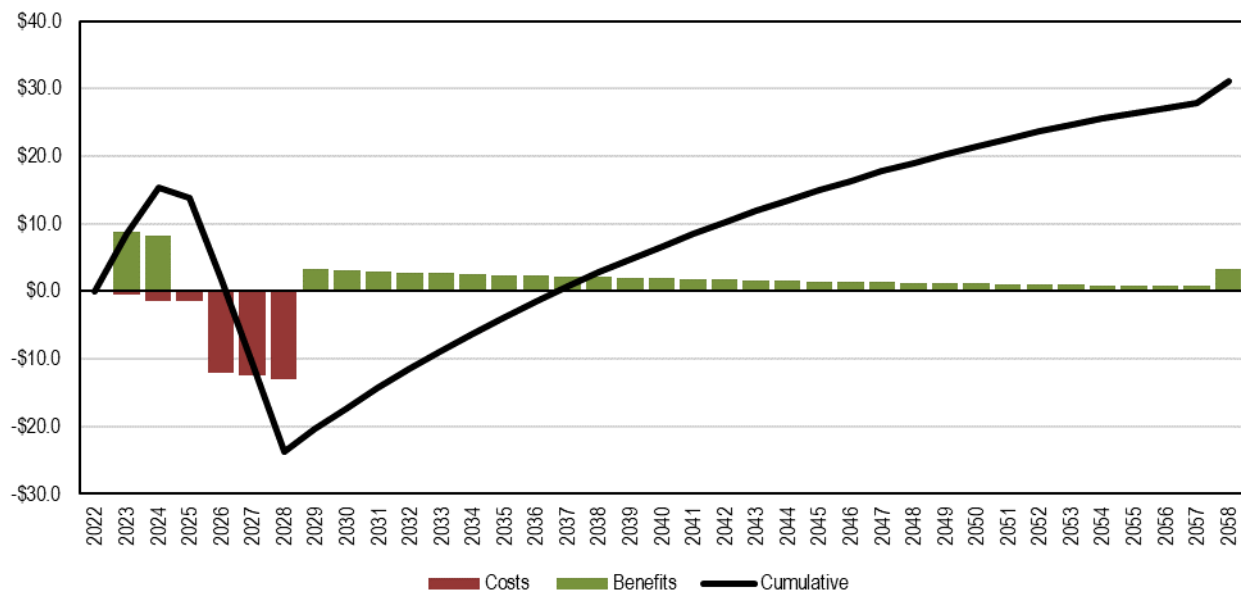
## BCA Summary

*Conclusions* – Discounting the estimated capital costs and 30-year travel benefits at 7% discounting (3% for CO<sub>2</sub>) yields \$72.1 million in net benefits versus \$40.9 million in net costs, resulting in a positive \$31.5 million NPV, equating to a 1.76 BCR, and a payback period by 2037, as summarized below. Annual undiscounted benefits and costs are graphed by type in Figures A-1 and A-2. Summary annual discounted benefits and costs are graphed in the second figure, which shows the annual cumulative total project value breaking-even in year 2037.

**Figure A-1: Annual Benefits and Costs by Type (2020\$)**



**Figure A-2: Discounted Annual Benefits and Costs (2020\$)**





*Major Factors/Sensitivities* – Capital costs are a major assumption, especially with the early timing and lower net discounting. On the benefits-side, major discounted benefits include VHT time-related benefits (32.9 million, 46%), VMT-related benefits (\$19.4 million, 27%),<sup>23</sup> and railyard access (17.2 million, 24%).

*BCR Range and Confidence Rating* – A 1.76 BCR falls within the BCR 1.5 to 2.0 range prescribed in the USDOT grant preparation material. A “high” confidence rating could be assigned to the analysis process. Even excluding the railyard access benefits generates a favorable BCR of 1.34.

*Merit Criteria* – Of the eight merit criteria identified in the USDOT grant materials, a number are directly quantified and incorporated into the BCA, a few are indirectly quantified, and a couple are not directly pertinent to this BCA. Directly quantified and monetized benefits pertain to merit criteria: Safety (VMT reduction-related), Environmental Sustainability (VMT-emissions), Mobility and Community Connectivity (improved River to Ridge access to downtown Chattanooga), Economic Competitiveness and Opportunity (increased travel reliability and faster travel time). Quality of Life is also improved for the River to Ridge residents (downtown connectivity and emergency response times). Partnership and Collaboration and Innovation merit criteria are not quantifiable or monetizable within a BCA paradigm.

**Table A-9: BCA Summary (2020\$)**

Net Present Benefits (millions)		
Time	\$32.9	45.7%
VOC	\$11.3	15.7%
Safety	\$7.3	10.1%
Emissions	\$0.3	0.4%
CO2	\$0.6	0.8%
Railyard Access	\$17.2	23.9%
Residual	<u>\$2.5</u>	<u>3.5%</u>
Total	\$72.1	100.0%
Net Present Costs (millions)		-\$40.9
Summary Metrics		
Net Present Value (NPV, millions)	\$31.2	
Benefit-Cost Ratio (BCR)	1.76	
Internal Rate of Return (IRR)	None	
Payback Period	2037	
Breakeven Annual Benefits (millions)	\$4.9	

<sup>23</sup> VOC, safety, and emissions cost-savings

**Table A-10: Annual Benefits and Costs by Type, and Discounting (2020\$, millions)**

Years				Capital	Benefits								Total	Discounting	
Cap.	Ops.	Proj.	Cal.	Subtotal	Time	VOC	Safety	Emissions	CO2	Railyard	Residual	Subtotal	Total	7.0%	Total
0	0	0	2022	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	1.000	\$0.0
1	0	1	2023	-\$0.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$9.5	\$0.0	\$9.5	\$9.0	0.935	\$8.4
2	0	2	2024	-\$1.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$9.5	\$0.0	\$9.5	\$7.9	0.873	\$6.9
3	0	3	2025	-\$1.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	-\$1.7	0.816	-\$1.4
4	0	4	2026	-\$15.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	-\$15.9	0.763	-\$12.1
5	0	5	2027	-\$17.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	-\$17.5	0.713	-\$12.4
6	0	6	2028	-\$19.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	-\$19.6	0.666	-\$13.0
0	1	7	2029	\$0.0	\$2.6	\$1.6	\$1.0	\$0.1	\$0.1	\$0.0	\$0.0	\$5.3	\$5.3	0.623	\$3.3
0	2	8	2030	\$0.0	\$2.7	\$1.5	\$1.0	\$0.1	\$0.1	\$0.0	\$0.0	\$5.4	\$5.4	0.582	\$3.1
0	3	9	2031	\$0.0	\$2.8	\$1.5	\$1.0	\$0.0	\$0.1	\$0.0	\$0.0	\$5.5	\$5.5	0.544	\$3.0
0	4	10	2032	\$0.0	\$3.0	\$1.5	\$1.0	\$0.0	\$0.1	\$0.0	\$0.0	\$5.5	\$5.5	0.508	\$2.8
0	5	11	2033	\$0.0	\$3.1	\$1.5	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$5.6	\$5.6	0.475	\$2.7
0	6	12	2034	\$0.0	\$3.2	\$1.5	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$5.7	\$5.7	0.444	\$2.6
0	7	13	2035	\$0.0	\$3.4	\$1.4	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$5.8	\$5.8	0.415	\$2.4
0	8	14	2036	\$0.0	\$3.5	\$1.4	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$5.9	\$5.9	0.388	\$2.3
0	9	15	2037	\$0.0	\$3.6	\$1.4	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$6.0	\$6.0	0.362	\$2.2
0	10	16	2038	\$0.0	\$3.8	\$1.4	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$6.1	\$6.1	0.339	\$2.1
0	11	17	2039	\$0.0	\$3.9	\$1.4	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$6.2	\$6.2	0.317	\$2.0
0	12	18	2040	\$0.0	\$4.1	\$1.3	\$0.9	\$0.0	\$0.0	\$0.0	\$0.0	\$6.4	\$6.4	0.296	\$1.9
0	13	19	2041	\$0.0	\$4.3	\$1.3	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$6.5	\$6.5	0.277	\$1.8
0	14	20	2042	\$0.0	\$4.5	\$1.3	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$6.6	\$6.6	0.258	\$1.7
0	15	21	2043	\$0.0	\$4.6	\$1.3	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$6.8	\$6.8	0.242	\$1.6
0	16	22	2044	\$0.0	\$4.8	\$1.3	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$6.9	\$6.9	0.226	\$1.6
0	17	23	2045	\$0.0	\$5.0	\$1.2	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$7.1	\$7.1	0.211	\$1.5
0	18	24	2046	\$0.0	\$5.2	\$1.2	\$0.8	\$0.0	\$0.0	\$0.0	\$0.0	\$7.2	\$7.2	0.197	\$1.4
0	19	25	2047	\$0.0	\$5.4	\$1.2	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.4	\$7.4	0.184	\$1.4
0	20	26	2048	\$0.0	\$5.6	\$1.2	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.6	\$7.6	0.172	\$1.3
0	21	27	2049	\$0.0	\$5.9	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.7	\$7.7	0.161	\$1.3
0	22	28	2050	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.150	\$1.2
0	23	29	2051	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.141	\$1.1
0	24	30	2052	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.131	\$1.0
0	25	31	2053	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.123	\$1.0
0	26	32	2054	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.115	\$0.9
0	27	33	2055	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.107	\$0.9
0	28	34	2056	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.100	\$0.8
0	29	35	2057	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.0	\$7.9	\$7.9	0.094	\$0.7
0	30	36	2058	\$0.0	\$6.1	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$28.9	\$36.8	\$36.8	0.088	\$3.2

## Appendix B.

# Letters of Funding Commitment

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- City of Chattanooga
- Tennessee Department of Transportation
- Hamilton County
- Norfolk Southern Corporation





# City of Chattanooga

Mayor Tim Kelly

April 8, 2022

Secretary, Pete Buttigieg  
United States Department of Transportation  
1200 New Jersey Avenue SE  
Washington D. C. 20590

Subject: FY 2022 USDOT RAISE Grant Application submitted by the  
City of Chattanooga, Tennessee

Dear Secretary Buttigieg:

**The City of Chattanooga has committed \$4.95 million to the Wilcox Boulevard Bridge – River to Ridge Mobility Project.** In 2021, the City committed \$500,000 to fund a technical study of the bridge to determine next steps and funds to begin the NEPA and design process for this project.

We understand that funds expended prior to the obligation of the RAISE grant are not eligible project funds, but these funds are reflected in our total project costs. The remaining \$4.9 million from the City of Chattanooga are committed to this RAISE project and provided from local City funds.

We are very proud of the collaborative funding package we've been able to assemble for this RAISE grant and appreciate your consideration of our application.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Kelly", is written over a large, stylized, light-colored "X" or "Z" mark.

Mayor Tim Kelly  
City of Chattanooga

101 East 11th Street • Chattanooga, Tennessee 37402  
(423) 643-7800 • Fax: (423) 643-7817 • EMAIL: [mayor@chattanooga.gov](mailto:mayor@chattanooga.gov)



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**COMMISSIONER'S OFFICE**  
SUITE 700, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402  
(615) 741-2848

**JOSEPH GALBATO, III**  
INTERIM COMMISSIONER

**BILL LEE**  
GOVERNOR

April 8, 2022

The Honorable Pete Buttigieg  
Secretary  
United States Department of Transportation  
1200 New Jersey Avenue SE  
Washington, DC 20590

Re: City of Chattanooga Wilcox Bridge 2022 RAISE Grant Application

Dear Mr. Secretary:

Please accept this letter of support for the City of Chattanooga, Tennessee's Wilcox Bridge replacement grant application through the RAISE Discretionary Grant Program.

This proposed construction project would replace the existing Wilcox Boulevard Bridge, which is a designated National Highway System (NHS) route that crosses the DeButts Railyard. The bridge has been weight restricted due to its current condition, and as a result, emergency vehicles, transit buses, and many trucks serving the railyard and area businesses can no longer use this infrastructure.

The Tennessee Department of Transportation (TDOT) is proposing to deliver the project on behalf of the City, serving as the agent for the City. The City is the RAISE applicant. TDOT is also providing \$5 million in funding toward the project through National Highway Performance Program (NHPP) funds.

Immediate benefits of this project include the following:

- Provides mobility connections for nearby Census tracts deemed as Areas of Persistent Poverty and addresses the negative impacts of truck traffic having to drive thru these communities given current weight restrictions of the existing bridge,
- Establishes a more secure connection for the nearby Chattanooga Area Regional Transportation Authority (CARTA) maintenance facility and connects vital CARTA bus routes, and
- Mitigates safety concerns and provides proper loading for a bridge in poor condition.

As the project development process continues, the Department will evaluate the most appropriate contracting mechanism for construction. TDOT has successfully completed several complex projects similar in nature to the Wilcox Bridge Project utilizing the alternate delivery approach of Construction Manager/General Contractor (CM/GC).

This delivery method involves the contractor throughout the design phase as well as the construction phase of the project. This team approach forms a partnership with the Department, the Designer, and the Contractor allowing early identification and mitigation of risk, incorporation of innovative practices to reduce construction time, a streamlining of the design process and ultimately a project that adheres to the budget.

Thank you for making this opportunity available to communities such as Chattanooga. This project would be consistent with efforts to maintain and improve National Highway System routes in Tennessee in a way that promotes safety, preservation of existing infrastructure, sustainability, transportation equity, and economic development. The Tennessee Department of Transportation appreciates your favorable consideration of the City of Chattanooga's application.

Respectfully,



Joseph Galbato, III  
Interim Commissioner

CC: Paul Degges, Deputy Commissioner, Bureau of Engineering  
Preston Elliott, Deputy Commissioner, Bureau of Environment & Planning  
Tim Kelly, Mayor, City of Chattanooga





**HAMILTON COUNTY, TENNESSEE**  
**OFFICE OF THE COUNTY MAYOR**  
**JIM M. COPPINGER**

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

Tuesday, April 5, 2022

Dear Secretary Buttigieg:

I am writing to express the support of Hamilton County for the 2022 RAISE Grant application for the replacement of the Wilcox Boulevard Bridge – River to Ridge Mobility Project. Wilcox Bridge is an important thoroughfare in Hamilton County and an essential connection point for several communities in our community.

Due to the age and condition of the bridge, replacement is a high priority for several community partners, and we are prepared to fully support the City of Chattanooga and the Tennessee Department of Transportation as they work to secure this grant and, ultimately, bring a critical piece of infrastructure for our community online.

I work closely with Mayor Tim Kelly at the City of Chattanooga on a wide range of projects and initiatives, and our strong partnership is one of the cornerstones of our region's success. In that spirit, pending legislative approval, we are committed to supporting the replacement project with a \$100,000 commitment for investments to connect our local communities, through the bridge replacement, with pedestrian walkways to the Chattanooga Riverwalk. The riverwalk has been an essential public partnership and by not only replacing the bridge at Wilcox Boulevard, but also expanding pedestrian access to a key public asset, we are bringing new life to an important part of Hamilton County.

We appreciate being a part of this partnership and look forward to seeing it favorably considered during your review.

Sincerely,

A handwritten signature in blue ink that reads "Jim M. Coppinger".

Jim Coppinger  
Hamilton County Mayor

625 GEORGIA AVENUE, SUITE 208 • CHATTANOOGA, TN 37402 • PHONE (423) 209-6100 • FAX (423) 209-6101



Norfolk Southern Corporation  
650 West Peachtree Street NW, Box 45  
Atlanta, Georgia 30308

**Edward F. Boyle, Jr.**  
Vice President - Engineering  
404/877-8310

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

Atlanta - April 1, 2022

Dear Secretary Buttigieg:

I am writing to express Norfolk Southern Railway Company's (NSR) support for the 2022 RAISE Grant Application for the replacement of the Wilcox Boulevard Bridge which crosses NSR's mainline tracks and DeButts Yard and also a CSX Transportation (CSXT) mainline track, near downtown Chattanooga, TN.

Due to age, condition, and configuration, the replacement of this bridge is a high priority for the City of Chattanooga, the State of Tennessee, and the railroads. We are working collaboratively with both the City and TNDOT to make sure this project receives priority for project review, preliminary engineering, and associated railroad approvals, to ensure a timely and successful replacement project.

This project requires an unequalled amount of cooperation and coordination between NSR, CSXT, the bridge engineering team, the bridge contractor, the City, and TNDOT. The NSR DeButts Yard is one of four (4) major Classification Yards on the NSR system. Everyday this yard handles a wide variety of commodities including Agricultural projects, Chemicals and Metals, Construction Materials, and general merchandise. The traffic moving through Chattanooga connects the Gulf Coast states, New Orleans, and Memphis with the rest of the NSR network. Chattanooga processes approximately 24% or 1,600 of the 7,000 cars processed every day on the NSR network. The Importance of this yard to our nation's freight network and the supply chains NSR supports cannot be underestimated.

In addition to community connectivity, the Wilcox Boulevard Bridge also provides the only ingress and egress into numerous parts of the interior working facilities of DeButts Yard, including our car repair shop, mechanical facilities, and other yard offices. Maintaining this access is critical. Because of this, and the extensive daily rail activity that occurs under the existing bridge, a new-build replacement bridge is warranted. NSR believes it is extremely important to have USDOT's financial support for this true public private partnership between the railroads, TNDOT, and the City of Chattanooga. Through this letter NSR is committing support for a railroad contribution of up to \$10.0 MM toward the replacement of the Wilcox Boulevard Bridge, as reflected in the project budget that accompanies the grant application narrative. The parties have also agreed that after completion of the new Wilcox Boulevard Bridge the City of Chattanooga will take full ownership of the new structure.

We appreciate being a part of this true partnership and look forward to it being favorably considered during your review.

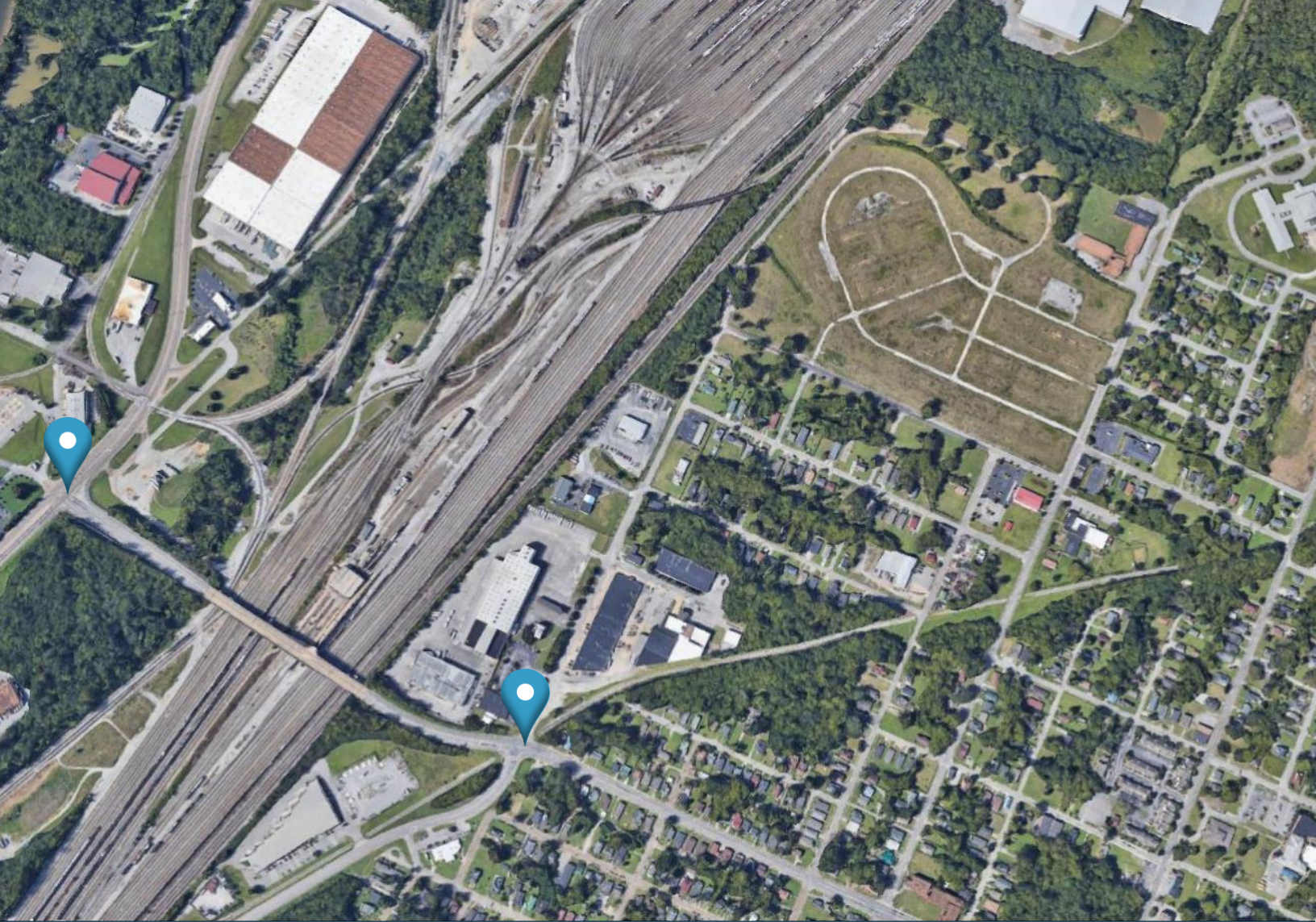
Sincerely,

A handwritten signature in black ink that reads 'E. F. Boyle, Jr.' with a stylized flourish at the end.

Edward F. Boyle, Jr.  
Vice President - Engineering

Operating Subsidiary: Norfolk Southern Railway Company





Submitted by:  
**City of Chattanooga, Tennessee**