



2023 RAISE GRANT APPLICATION

# Right-Sizing Route 37

## Improving Community Connectivity

Program Name: Rebuilding American Infrastructure with Sustainability and Equity (RAISE)  
Project Sponsor: Rhode Island Department of Transportation (RIDOT)  
Sponsor Address: 2 Capitol Hill, Providence, RI  
Date Submitted: February 28, 2023  
Project Website: <https://www.dot.ri.gov/projects/Route37RightSize/>



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# 1. Project Description

## Introduction

Rhode Island Department of Transportation (RIDOT) requests \$25 million from the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program to support **Right-Sizing Route 37: Improving Community Connectivity**, a surface transportation project that will leverage repairs on eight major bridges into a complete, multimodal transportation investment. This \$100 million project will complete a decade-long effort to restore Route 37 (RI-37), a critical urban freight corridor connecting interstates 95, 295, and US-1. This project will create opportunities for Rhode Island to realize its multimodal vision by:

- › Replacing and rehabilitating six bridges carrying RI-37 over local roads, arterials, and rail lines;
- › Decommissioning two bridges to reduce long-term maintenance costs and impervious surface;
- › Restructuring the interchange of RI-37 and US-1 to replace an overbuilt loop-ramp with an at-grade interchange to calm traffic, improve transit and pedestrian access, and reconnect wetlands;
- › Leveraging a bridge replacement over RI-2 to build a new structure ready for Light Rail Transit (LRT) or Bus Rapid Transit (BRT) options being evaluated by Rhode Island Public Transit Authority (RIPTA);
- › Installing Transit Signal Priority (TSP) at eight locations and queue jump lanes for buses; and
- › Constructing a new bicycle lane-to-separated path linking the Washington Secondary Bike Path directly to supermarkets, shopping centers, restaurants, and neighborhoods.

Collectively, these improvements will address safety and equity issues that limit mobility and connectivity at two critical intersections, and directly address all eight of the RAISE Merit Criteria.

Figure 1-1 Merit Criteria Implementation Strategies

Merit Criterion	Implementation Strategy
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Mitigate lane/roadway departure crashes by implementing high-friction surface treatment and enhanced curve delineation on ramps, and rumble strips along the Route 37 corridor.</li> <li>• Modify the RI-37 at US-1 interchange to improve safety for all users.</li> </ul>
<b>Environmental Sustainability</b>	<ul style="list-style-type: none"> <li>• Restore two acres of wetlands in Peat Bog, a freshwater priority wetland in Warwick, RI and improve water quality by removing pavement that discharges into the bog.</li> </ul>
<b>Quality of Life</b>	<ul style="list-style-type: none"> <li>• Connect non-motorized travelers to shared-use paths and sidewalks.</li> <li>• Improve transit reliability and access to daily destinations such as grocery stores and jobs by installing TSP and queue jump lanes at two critical intersections.</li> </ul>
<b>Mobility and Community Connectivity</b>	<ul style="list-style-type: none"> <li>• Install TSP at eight intersections and queue jump lanes at five intersections to improve transit reliability and reduce travel times.</li> <li>• Replace the New London Avenue Bridge (#624) with a new structure ready for high-capacity transit and complete streets enhancements.</li> </ul>
<b>Economic Competitiveness and Opportunity</b>	<ul style="list-style-type: none"> <li>• Reduce RIDOT right-of way to make additional land available for development.</li> <li>• Achieve a state of good repair along RI-37, a critical Urban Freight Corridor.</li> </ul>
<b>State of Good Repair</b>	<ul style="list-style-type: none"> <li>• Remove two bridges from RIDOT’s asset portfolio and replace or rehabilitate six additional bridges to restore state-of-good repair along RI-37.</li> </ul>
<b>Partnership and Collaboration</b>	<ul style="list-style-type: none"> <li>• Coordinate with the cities of Warwick and Cranston, RIPTA, and local employers to ensure equal access for underserved communities.</li> </ul>
<b>Innovation</b>	<ul style="list-style-type: none"> <li>• Minimize work zone impacts with real-time monitoring.</li> <li>• Deploy rapid bridge replacement methods for the Howard Avenue (#625) and strategic project phasing to minimize traffic disruptions along RI-37.</li> </ul>

## Statement of Work

### (a) Technical and Engineering Aspects of the Project

For the purpose of this application, the “Project” includes the start and completion of NEPA and other environmental reviews including permitting, stakeholder and public outreach, preliminary design completion, value engineering review, plan approvals, specifications, and refined cost estimates.

The Project will improve or replace six bridges along RI-37 and remove two bridges from RIDOT’s asset inventory to complete a three-phase effort to bring a State of Good Repair to this major connection in the commercial heart of Rhode Island. The technical aspects of this project include:

- › **State of Good Repair:** Replace four bridges; rehabilitate one bridge and one culvert; decommission and remove two bridges; and eliminate a pair of loop ramps linking RI-37 and US-1, replacing them with a series of at-grade signalized intersections;
- › **Environmental Sustainability:** With the removal of loop ramps connecting RI-37 to US-1, restore previously filled wetlands on the east side of US-1;
- › **Safety:** Install at-grade signalized intersections to reduce arterial speeds and better manage traffic growth on US-1. Upgrade traffic signal equipment to implement adaptive signal control; install rumble strips along RI-37 to reduce roadway departure crashes; and install high-friction surface treatment and enhanced curve delineation along 17 ramps along the RI-37 corridor;
- › **Transit Enhancements:** Install transit signal priority (TSP) at signalized intersections along US-1 and RI-2; provide queue jump lanes at the proposed intersection of RI-37 at US-1; replace the bridge carrying RI-37 over RI-2 and lengthen it to provide roadway width under the bridge to support future high-capacity transit expansion along RI-2, where [Light Rail Transit \(LRT\) and Bus Rapid Transit \(BRT\) options are under development by RIPTA](#);
- › **Pedestrian Facilities:** Enhance existing pedestrian crossings on US-1 and RI-2; install new crossings at the proposed RI-37 terminus at US-1 and on RI-2 at Chapel View Plaza;
- › **Cycling Facilities:** Develop bike connectivity from the [Washington Secondary Bike Path](#) to Meshanticut Valley Parkway; install a shared use path along Meshanticut Valley Parkway and RI-2 providing bike connectivity to Chapel View Plaza; and
- › **Economic Competitiveness:** Remove loop ramps and reduce right-of-way to make several new parcels available and right-size the width of RI-37 to repurpose land use for development.

### (b) Current Design Status

At this time, RIDOT has developed concepts for the proposed structural and roadway improvements and worked with the local stakeholders to get their feedback and support. This application includes letters of support from Governor Daniel J. McKee, the City of Warwick, the Rhode Island Division of Statewide Planning, the Rhode Island Turnpike and Bridge Authority (RITBA), the Rhode Island Public Transit Authority (RIPTA), the Central Rhode Island Chamber of Commerce, the American Council of Engineering Companies of Rhode Island (ACEC) and the Rhode Island Building and Trades Council. The project is also supported by all members of the Rhode Island Congressional Delegation.

Additional support letters are available [on the project website](#).

## (c) Transportation Challenges to be Addressed

### (i) Current and Future Deferred Maintenance

The primary purpose of this project is pursuing and maintaining a State of Good Repair on RI-37, one of the most important commercial corridors in Rhode Island linking two of the state's three most populous cities to I-95, I-295, Rhode Island T.F. Green International Airport (T.F. Green), and busy year-round shopping centers. The proposed project will address approximately 44,000 square feet of bridge deck in poor condition, including two structures that are currently posted for load and undergoing emergency repairs.

This project takes a forward-thinking approach to addressing maintenance needs by decommissioning two structures that are not providing value for mobility and connectivity. The Post Road Bridge (#638) (poor condition) is being removed in favor of an at-grade signalized intersection which will better manage traffic and vehicle speeds along US-1 into the future. The Howard Bridge (#625) is being removed because Power Road is under-utilized for travel and the bridge is located near a former State Cemetery. Rather than disturbing sensitive cultural resources, filling in the structure will offer a cost-effective and environmentally friendly solution.

### (ii) Vehicle-focused Design with Multimodal Gaps

Improving mobility, connectivity, and quality of life now and into the future by modernizing the transportation network is a primary purpose of this project. While the dense residential and commercial development in the study area lends itself to non-motorized and transit travel, those volumes are low and vehicle volumes are high. The state [Bicycle Mobility Plan](#) and [Transit Master Plan](#) each cite opportunities to improve operations, reliability, mobility, and connectivity. Many of those recommendations are incorporated into this project to support improved travel on all modes and growth in non-motorized and transit travel. In addition, this project provides a vital link to TF Green International Airport and its nearby MBTA commuter rail station.

### (iii) Multimodal Safety

Improving multimodal transportation safety is a primary purpose of this project. Currently, the study area is primarily traveled by personal vehicles, and the crash history speaks to that trend, with an estimated 285 crashes per year reported along RI-37. Regardless, the proposed project will introduce new facilities for pedestrians and cyclists including enhanced crosswalks, a shared use path, and bike markings, all of which is intended to improve safety for non-motorized travelers.

For vehicles, safety improvements are focused on the proposed at-grade intersection at the RI-37 terminus at US-1. This improvement eliminates a pair of loop ramps that have resulted in lane departure crashes. Proposed improvements include features to reduce speeds on the RI-37 approach and enhanced intersection warnings to give drivers improved context for the facility change from freeway to arterial road. Collectively, these improvements are expected to reduce fatal crashes by four per year.

### (iv) Oversized Transportation Footprint

Supporting economic development is a primary purpose of this project. Cranston, RI and Warwick, RI are the second and third largest cities in Rhode Island, respectively. As such, these two dense and growing areas are ripe for economic development. Right-sizing RI-37 means right-sizing the asset portfolio by eliminating redundant infrastructure but also means reducing the asset footprint. By reducing the transportation right-of-way, land can be made available for development in an area that is already densely developed addressing a demand for commercial and residential development. Areas to be made available include portions of the existing RI-37 at US-1 loop ramps and right-of-way along the length of RI-37.

## History & Context

### (a) Project History

Since 2017, RIDOT has invested \$170 million into other portions of the RI-37 Corridor. Two previous projects have repaired or replaced 20 deteriorated bridges and transformed the RI-37 interchanges with I-295 and Natick Avenue along the way to improve safety, reduce speeds, and keep a critical freight corridor open. Each of the first two phases received discretionary grant support, with the [Route 37 Safety Sweep](#) securing \$20 million from the TIGER Grant program in 2018 and [Opening the Cranston Canyon](#) receiving \$21.3 million in 2020. RIDOT engineers have utilized the last three years to devise this project, which will address the eight remaining structures on the corridor, many of which are among the most complex bridges supporting RI-37.

### (b) Transportation Network & Investment Context

This project will be the final, critical phase, completing the eight remaining bridges with 44,000 square feet of poor deck area and implementing improvements long identified in public plans that targeted this corridor for multimodal investments. **Right-Sizing Route 37: Improving Community Connectivity** will deliver on:

- › [Transit Forward RI 2040](#): The state's first Transit Master Plan (TMP) proposes investments along RI-2 and US-1, both of which are central components of this project. The TMP is a component of the state's Long Range Transportation Plan (LRTP) and adopted State Guide Plan element.
- › [Statewide Bicycle Mobility Plan](#): The 2020 (BMP) proposes bicycle infrastructure for a safe, connected network in Rhode Island, identifying potential bicycling investments to leverage the Washington Secondary Bike Path as a connective spine with improved perpendicular bikeways to provide links to communities along its alignment, including a link with RI-2 in Cranston.
- › [2022 Rhode Island State Freight and Goods Movement Plan \(Interim\)](#) : The 2022 "Freight Plan" identifies RI-37 as a critical Urban Freight Corridor, and the intersection of RI-37 and US-1 as a challenge due to congestion and trucks diverting through neighborhoods. This project eliminates the loop ramp and constructs a new signalized intersection to address these specific challenges.

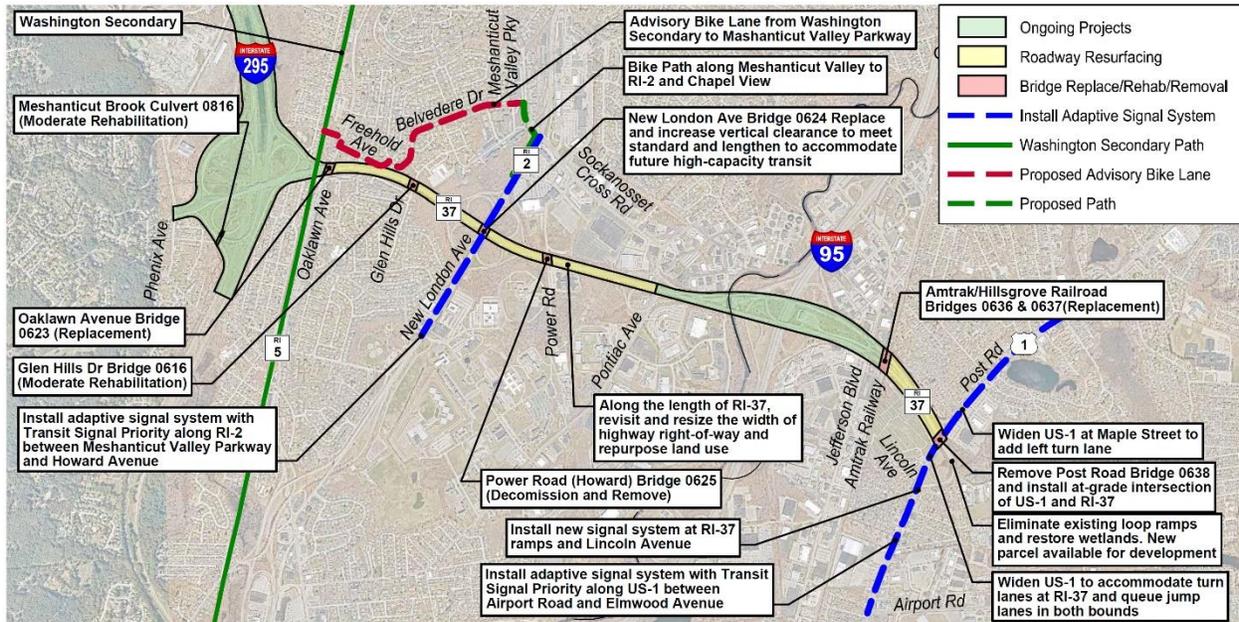
## Project Location

Located in the heart of Cranston, Rhode Island, RI-37 is 3.47-mile highway that provides a critical east-west connection between the cities of Warwick and Cranston. Beginning in Cranston at the intersection with Natick Avenue, RI-37 crosses over I-295 and I-95, ending at the intersection with US-1 in Warwick. The route was originally constructed in 1960 and today carries more than 43,000 vehicles per day. RI-37 provides connections to the MBTA Commuter Rail station and air terminal at Rhode Island T.F. Green Airport, located just a few miles from the project area. The airport reported 2.9 million passengers for fiscal year 2022, up from 1.9 million in 2021. In 2022, over 61,000 passengers boarded or off-boarded MBTA commuter rail trains at T.F. Green. A 2.5-mile stretch of RI-37 including five bridges in this project is identified in the State's 2022 Interim Freight Plan as a critical Urban Freight Corridor.

### (a) Area of Persistent Poverty and Urbanized Area

This project is not located within a census tract defined by USDOT as an Area of Persistent Poverty. The City of Cranston and City of Warwick are both located within the Providence, RI—MA urbanized area. The map below provides a summary of the proposed improvements within the Project Study Area.

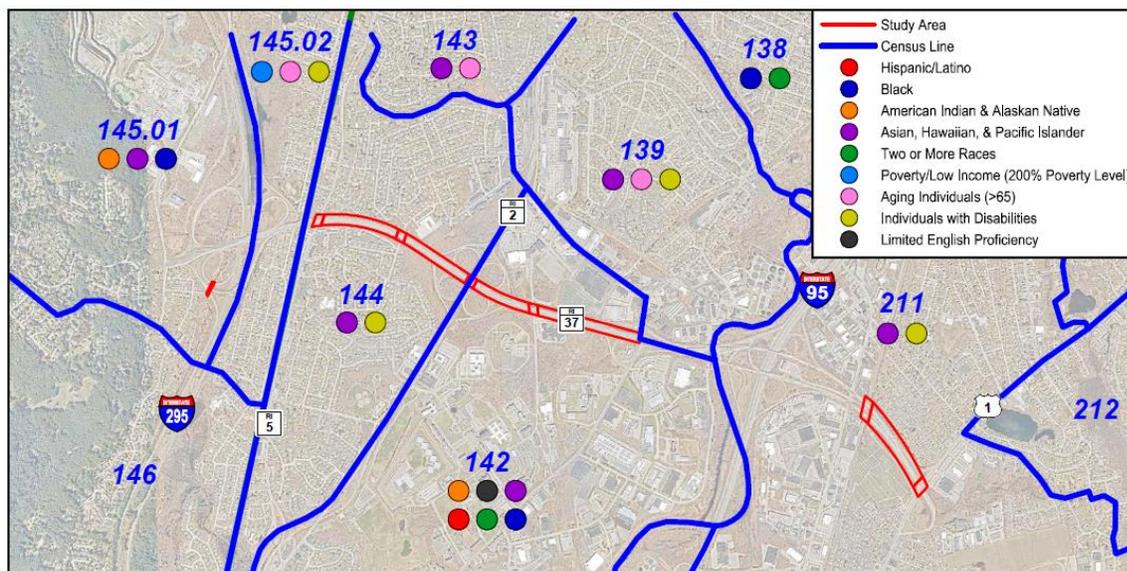
Figure 1-2 Project Improvements Summary



**(b) Historically Disadvantaged Community**

This project is not located in an area that meets the federal definition of an historically disadvantaged community. However, FHWA's [Historically Disadvantaged Mapping Tool](#) shows disadvantages in two affected census tracts. In tract 144, health disadvantages are identified, and, in tract 142, equity disadvantages are present. This project expands pedestrian and bicycle facility access to address these challenges. The project area is also home to Special Population Groups (SPG) identified in the state's [Transportation Equity Benefits Analysis \(TEBA\)](#) and illustrated in the map below.

Figure 1-3 Special Population Groups Transportation Equity Benefits Analysis (TEBA)



# 2. Project Budget

## Budget Overview

Rhode Island Department of Transportation (RIDOT) requests \$25 million from the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program to support **Right-Sizing Route 37: Improving Community Connectivity**, a surface transportation project that will leverage repairs on eight major bridges into a complete, multimodal, sustainable transportation investment. This \$100 million project will complete a decade-long effort to restore Rhode Island Route 37 (RI-37), a critical urban freight corridor connecting interstates 95, 295, and US-1.

Broadly, this project seeks to complete a decade long effort to restore RI-37 to a state of good repair while making strategic improvements at critical intersections to make ready for future transit and complete streets enhancements. The specific technical aspects of this project include:

- › **State of Good Repair:** Replace four bridges; rehabilitate one bridge and one culvert; decommission and remove two bridges; and eliminate a pair of loop ramps linking RI-37 and US-1, replacing them with a series of at-grade signalized intersections;
- › **Environmental Sustainability:** With the removal of loop ramps connecting RI-37 to US-1, restore previously filled wetlands on the east side of US-1;
- › **Safety:** Install at-grade signalized intersections to reduce arterial speeds and better manage traffic growth on US-1. Upgrade traffic signal equipment to implement adaptive signal control; install rumble strips along RI-37 to reduce roadway departure crashes; and install high-friction surface treatment and enhanced curve delineation along 17 ramps along the RI-37 corridor;
- › **Transit Enhancements:** Install transit signal priority (TSP) at signalized intersections along US-1 and RI-2; provide queue jump lanes at the proposed intersection of RI-37 at US-1; replace the bridge carrying RI-37 over RI-2 and lengthen it to provide roadway width under the bridge to support future high-capacity transit expansion along RI-2, where [Light Rail Transit \(LRT\) and Bus Rapid Transit \(BRT\) options are under development by RIPTA](#);
- › **Pedestrian Facilities:** Enhance existing pedestrian crossings on US-1 and RI-2; install new crossings at the proposed RI-37 terminus at US-1 and on RI-2 at Chapel View Plaza;
- › **Cycling Facilities:** Develop bike connectivity from the Washington Secondary Bike Path to Meshanticut Valley Parkway; install a shared use path along Meshanticut Valley Parkway and RI-2 providing bike connectivity to Chapel View Plaza; and
- › **Economic Competitiveness:** Remove loop ramps and reduce right-of-way to make several new parcels available and right-size the width of RI-37 to repurpose land use for development.

Taken together, these improvements will address immediate maintenance and safety issues while simultaneously advancing the long-term goals for robust transit and active transportation infrastructure along this critical corridor in the heart of Rhode Island.

**(a) Costs for the FY 2023 RAISE Project**

Since 2020, RIDOT has spent approximately \$200,000 on preliminary design, traffic analysis, and environmental review. The future eligible cost of this project is estimated to be \$100,000,000.

**(b) FY 2023 RAISE Grant Funding Request**

RIDOT is requesting \$25 Million from the RAISE Grant Program’s FFY2023 funds.

**(c) Source and Amount of Project Funds**

Figure 2-1 shows the proposed source and amount of all funds to be used for eligible project costs.

Figure 2-1 Source of Funds

Funding Source	Total Funding (\$)
RAISE Funds	\$25,000,000
Other Federal Funds	\$55,000,000
Non-Federal Funds	\$20,000,000
<b>Total Project Cost:</b>	<b>\$100,000,000</b>

The Other Federal Funds will be derived from a combination of Title 23 Formula Funding and Bridge Formula Program Funding for eligible expenses. If this project receives a RAISE grant, RIDOT will amend the STIP to shift funds programmed for this project to other needs in the program.

**(d) Amount, Nature, and Source of Non-Federal Match**

This project will require \$20 million in non-federal match, which will be derived from Rhode Island Capital Plan funds, also known as RICAP.

**(e) Documentation of Funding Commitments**

Funding is committed to this project in [Rhode Island's FFY2022-2031 STIP](#), TIP ID 3301. The currently approved version of the STIP identifies \$53 million total funding for this project beginning in FFY2024. The project is currently financed with 80 percent federal formula funding and 20 percent non-federal match.

If this project is awarded the requested RAISE grant support, RIDOT will immediately revise the STIP to make design funds available and restructure the financing of the project to include RAISE funds and any additional other funding required to fulfill the project’s budget obligations. RIDOT would follow the process outlined on the following page to secure funding from other commitments in the program. If this project does not receive RAISE grant support, RIDOT will value engineer the project to reduce costs and seek alternative financing.

**(f) Budget Allocation by Census Tracts and Urbanized Areas**

Figure 2-2 Project Budget by Census Tract

Census Tract	Project Costs per Census Tract
211	\$ 41,796,890.45
142	\$ 20,906,357.56
144	\$ 35,051,627.96
145.01	\$ 2,245,124.03
<b>Total Project Cost:</b>	<b>\$ 100,000,000.00</b>

## How All Project Funds May Be Used

Apart from the requested RAISE Grant, no funding for this project requires satisfying any unique conditions. The figure below shows how all project funds may be used.

Figure 2-3 Project Budget by Phase and Task

Phase	Task	FFY	Expected Cost (\$)	Contingency (\$)	Total (\$)
Design	Preliminary Engineering	2023	\$ 550,000.00	\$ 60,000.00	\$ 610,000.00
Design	Design, Year 1	2024	\$ 2,100,000.00	\$ 315,000.00	\$ 2,415,000.00
Design	Design, Year 2	2025	\$ 2,500,000.00	\$ 375,000.00	\$ 2,875,000.00
Construction	Construction, Year 1	2026	\$ 28,200,000.00	\$ 2,700,000.00	\$ 30,900,000.00
Construction	Construction, Year 2	2027	\$ 33,750,000.00	\$ 3,350,000.00	\$ 37,100,000.00
Construction	Construction, Year 3	2028	\$ 21,900,000.00	\$ 2,500,000.00	\$ 24,400,000.00
Other	Punchlist & Closeout	2029	\$ 1,500,000.00	\$ 200,000.00	\$ 1,700,000.00
<b>Total</b>			<b>\$ 90,500,000.00</b>	<b>\$ 9,500,000.00</b>	<b>\$ 100,000,000.00</b>

RIDOT develops “Green Sheets” for projects as early in the process as possible to delineate estimated expenditures on projects by category. These documents are used as the basis for initial project development and updated by RIDOT Project Managers throughout the lifecycle of a project to ensure that both the overall budget and individual budget categories stay on track. Estimated spending figures in each category are developed from historical project data collected from investments of similar size and scope. The figure below illustrates the anticipated Green Sheet for this project.

Figure 2-4 Project Budget “Green Sheet” by Budget Item

Phase	Item	Estimated Expenditure
Design	Consultant - Design	\$ 5,000,000.00
Design	RIDOT In-House Staff	\$ 300,000.00
Design	RIDOT Planning Staff	\$ 200,000.00
Design	Right of Way Easements/Acquisitions	\$ 300,000.00
Design	Utility - Design	\$ 100,000.00
Construction	Contractor	\$ 9,200,000.00
Construction	Utility - Construction	\$ 700,000.00
Construction	Police Detail	\$ 2,100,000.00
Construction	Consultant - Construction	\$ 1,100,000.00
Construction	RIDOT Construction Staff	\$ 7,300,000.00
Construction	RIDOT Materials Staff / Subs	\$ 1,200,000.00
Construction	Third Party Consultant	\$ 1,300,000.00
Construction	Contingency	\$ 9,500,000.00
Other	RIDOT Project Manager	\$ 700,000.00
Other	RIDOT Other Labor	\$ 300,000.00
Other	Miscellaneous	\$ 700,000.00
<b>Total</b>		<b>\$ 100,000,000.00</b>

### (a) Planning to Address Potential Cost Overruns

The funding requested for this project is expected to support all construction tasks listed above. If, however, the preliminary engineering, design, or bid processes reveal that the project is likely to run short on funding, RIDOT will deploy a three-step plan to address cost overruns:

- › **Convene an Internal Value Engineering Committee** – RIDOT’s Planning, Project Management, and Construction staff include experienced engineers with decades of experience. The Department has found success in the past convening interdivisional staff to brainstorm ideas for reducing costs, maximizing the value of transportation dollars, and determining a stable path forward. The Value Engineering Team would be deployed here to weigh options and define the additional need. RIDOT’s Value Engineering Policy requires a Value Engineering Analysis for projects with an estimated total project cost of \$50 million dollars or more. This analysis is a systemic process of review and analysis of the project by a multidisciplinary team or persons not involved in project that provides recommendations for:
  - Providing the needed functions safely, reliably, efficiently, and at the lowest overall cost;
  - Improving the value and quality of the project; and
  - Reducing the time to complete the project.

The Value Engineering analysis will be done during the scoping and preliminary design phase (10%) in order to produce the maximum benefit to the project. This will allow the proposed Value Engineering recommendations to be accepted and incorporated into the project design without conflicting or adversely impacting the project’s development or construction schedule. The Value Engineering analysis will be facilitated by a Certified Value Specialist (as certified by SAVE International) with experience in Value Methodology.

- › **Apply Proven Prioritization Processes** – RIDOT’s [2022 Transportation Asset Management Plan \(TAMP\)](#) defines key processes for Risk Analysis, Project Prioritization, and Investment Strategies. Once the additional financial need is understood, RIDOT would apply these tools to re-prioritize the other investments in the Capital Program with the goal of identifying potential opportunities to shift funds away from other planned projects to fill the void in this one.
- › **Pursue Opportunities for Additional Funding** – In recent years, RIDOT has developed a tested strategy for securing additional funds for major projects. Since 2015, RIDOT has secured more than a dozen discretionary grants totaling \$245 million, issued GARVEE bonds, secured State Revenue Bonds, and received \$186 million in August Redistribution. In the event of a major cost overrun, RIDOT would deploy a combination of these tools to secure the required funding. The Department invites opportunities for innovative financing and would entertain all avenues to make the project whole and secure sufficient financing to proceed with construction.

Given RIDOT’s familiarity with the project area, the amount of preliminary work completed to prepare this application, and the contingencies included in the budget shown above, RIDOT is confident that the budget information presented here will ensure that sufficient funding can be obtained to complete this project.

# 3. Merit Criteria

## Project Overview

This project completes a three-phase effort to restore RI-37 to a state of good repair while creating opportunities for Rhode Island to realize its multimodal vision for transportation. This project will create opportunities for Rhode Island to realize its multimodal vision by:

- › Replacing and rehabilitating six bridges carrying RI-37 over local roads, arterials, and rail lines;
- › Decommissioning two bridges to reduce long-term maintenance costs and impervious surface;
- › Restructuring the interchange of RI-37 and US-1 to replace an overbuilt loop ramp with an at-grade interchange to calm traffic, improve transit and pedestrian access, and reconnect wetlands;
- › Leveraging a bridge replacement over RI-2 to install a new structure ready for Light Rail Transit (LRT) or Bus Rapid Transit (BRT) [options being evaluated](#) by Rhode Island Public Transit Authority (RIPTA) ;
- › Installing Transit Signal Priority (TSP) at eight locations and queue jump lanes for buses; and
- › Constructing a new bicycle lane-to-separated path linking the Washington Secondary Bike Path directly to supermarkets, shopping centers, restaurants, and neighborhoods.

Collectively, these improvements will immediately address safety and equity issues that limit mobility and connectivity at two critical intersections and will make three critical routes in the heart of Rhode Island ready for future multimodal enhancements. **This project also directly addresses all eight of the 2023 RAISE Merit Criteria.**

### (a) Safety

Safety is a primary purpose of this project. While many investments have been made in this critical corridor over the last decade, the project seeks to address both localized and comprehensive safety needs as a final step to close out a final phase of construction on the RI-37 corridor.

#### (i) Protect Non-Motorized Travelers from Safety Risks

RI-37 provides valuable east-west connectivity for vehicles. In this study area, RI-37 intersects with RI-2 in the west and intersects with US-1 in the east. Each of these arterials provides valuable north-south connectivity for all modes. The RI-37 bridges over both RI-2 and US-1 are structurally deficient and in need of replacement which this project will leverage into two opportunities for multimodal enhancements.

RI-2 more broadly has been identified as an opportunity for complete streets improvements along the length of the corridor. A study to review and conceptualize this opportunity is being advanced independent of this grant. This grant seeks to advance a first segment of the future complete street solution to improve non-motorized connectivity to Chapel View Shopping Plaza (Chapel View), which is a significant resource for residents for basic commercial needs such as a grocery store. There is no existing bike connection to Chapel View Plaza short of sharing RI-2 with vehicles at present.

This project would directly address this challenge by providing a shared use path along the west side of RI-2 from Chapel View Plaza to Meshanticut Valley Parkway and Belvedere Drive, a densely populated suburban neighborhood. Ultimately, this provides an off-road or low volume connection to the Washington Secondary Bike Path, a regional bikeway connection. This improvement also includes an enhanced,

signalized pedestrian crossing at the existing signalized intersection of RI-2 at Chapel View. These enhancements will improve road safety for all users.

Additionally, RIPTA has identified this corridor as a candidate for High-Capacity Transit and will be studying the approach to implementing that through a [RAISE-funded study](#). The RI-37 bridge over RI-2 is the narrowest cross-section on RI-2. While the RIPTA study is still in progress, lengthening the bridge over RI-2 will support the RIPTA proposal to expand transit presence on the corridor. Collectively, these initial complete streets improvements will be supportive of future transit expansion.

The RI-37 bridge over US-1 will be removed and replaced with at-grade signalized intersections which will better manage projected future demand, reduce operating speeds on US-1 in line with posted speed limits, and provide opportunities for traffic control to support pedestrian crossings. To support transit while managing general traffic speeds, this project proposes queue jump lanes on US-1 at RI-37 and transit signal priority at all traffic signals on US-1 from Elmwood Avenue to Airport Road.

Locally, Jefferson Boulevard provides the third major north-south connection and commercial corridor. For pedestrians and cyclists, Lincoln Avenue provides the most efficient connection to Jefferson Boulevard. Therefore, enhancing the signalized intersection of US-1 at Lincoln Avenue will provide valuable improvements to non-motorized safety. These improvements support **Safe Roads** and **Safe Speeds**.

**(ii) Reduce Fatalities & Serious Injuries**

Crash data were queried from the RIDOT crash database between January 2015 and December 2021. The query returned over 1,750 crashes with the historic average annual crashes by severity summarized in Figure 3-1. The crashes are summarized by KABCO Injury Severity scale.

Figure 3-1 Average Annual Crashes by Severity

Severity	Count
K—Killed	0.5
A—Incapacitating	3.2
B—Non-Incapacitating	8.7
C—Possible Injury	76.9
O—No Injury	195.7
<b>Average Annual Crashes</b>	<b>285</b>

Using FHWA Crash Modification Factors and Proven Safety Countermeasures as a guide, the proposed project includes safety countermeasures that align with historic crash trends including angle crashes and crashes involving nonmotorized travelers.

Safety improvements that were analyzed in the Benefit-Cost Analysis include corridor-wide improvements to the RI-37 corridor and include localized improvements at the RI-37 at US-1 interchange.

RI-37 has a history of lane/roadway departure crashes. Crash Modification Factors (CMFs) for inside and outside shoulder rumble strips will reduce approximately seven fatal/injury crashes per year. High-friction surface treatment on interchange ramps throughout the corridor (17 locations) will reduce approximately 39 crashes per year.

Reviewing RI-37 at US-1 interchange using predictive safety modeling showed the potential for crashes to increase by six property damage only (no injury) crashes each year, and to decrease by four fatal/injury crashes each year. Several countermeasures will be applied to mitigate this predicted hazard.

- › **Modern Traffic Signal Design:** This project will include modern traffic signal design elements such as flashing yellow arrows, retroreflective signal backplates, and modern traffic signal cabinet and controller technology capable of supporting transit signal priority and adaptive signal control.

- › **Dynamic Signaling:** Adaptive signal control is becoming a common tool for reducing intersection delay and improving progression by using real-time data to dynamically adjust the allocation of green time at an intersection and improve traffic management.
- › **Conflict Detection and Mitigation:** An intersection warning system of enhanced signage and detection technology will improve driver awareness of conflicting vehicles and reduce intersection crashes. Such systems are designed to provide warnings about intersection conflicts, extended queues, and wrong way driving events.

The Modern Traffic Signal Design and Dynamic Signaling elements are proposed along US-1 and RI-2 as best practices.

### (iii) Incorporate the National Roadway Safety Strategy

The National Roadway Safety Strategy is an important guiding document for safety decision-making at RIDOT. In 2022 Rhode Island adopted an updated [Strategic Highway Safety Plan](#) which emphasizes the importance of the Safe System Approach as a guiding principle for decision-making. The elements of Safe Roads and Safe Speeds will be improved through this Project.

- › **Safe Roads:** The proposed improvements will improve road safety for all users by constructing a shared use path, enhancing pedestrian crossings at all signalized intersections, and reducing driver delay on each corridor through modern traffic signal hardware and adaptive signal timings.
- › **Safe Speeds:** Installing an at-grade intersection at RI-37 and US-1 will better manage speeds on all routes, reducing free flow speeds closer to the posted speed limit.
- › **Post-Crash Care:** Addressing maintenance needs on RI-37 bridges, particularly those in Poor Condition, eliminates a vulnerability in the transportation network. Currently Bridges #637 and 638 are weight restricted to five tons. Should that condition continue to deteriorate, more restrictive weight restrictions could be necessary, adversely impacting freight and emergency vehicles. Constraints on emergency vehicle movements negatively impacts residents of the surrounding communities.

### (b) Environmental Sustainability

**Right-Sizing Route 37: Improving Community Connectivity**, supports enhancements that will reduce greenhouse gas emissions (GHG) to align with the State's goal of net-zero carbon emissions in 2050, implement transportation-efficient land use and design to improve active transportation and transit to connect communities, and restore vital wetlands originally destroyed when RI-37 was constructed in 1960.

#### (i) Reducing Greenhouse Gas Emissions

RIDOT's asset management objectives include defending the transportation infrastructure against the effects climate change and cutting carbon emissions in the transportation sector. Rhode Island's General Assembly passed the [2021 Act on Climate](#), which directs the state to develop a plan to reduce air emissions to net-zero by 2050. The plan will be updated every five years and will address environmental injustices, public health inequities and a fair employment transition as fossil-fuel jobs are replaced by green energy jobs.

This project will reduce GHGs by 364 metric tons per year relative to the no-build scenario by improving road usage efficiency. The project includes construction of a shared use path along the west side of RI-2 from Chapel View Plaza along Meshanticut Valley Parkway to Belvedere Drive, a densely populated suburban neighborhood, incentivizing active transportation in the region and providing zero-emissions alternatives to automotive travel. This project will promote environmental sustainability by reducing congestion-related emissions, improving traffic flows, and incentivizing sustainable development along US-1 and RI-2.

## (ii) Implementing Transportation-Efficient Land Use and Design

RI-37 intersects with two densely populated suburban mixed-use neighborhoods at RI-2 and US-1. These arterials provide valuable north-south connectivity for all modes, and the replacement of the two structurally deficient bridges at RI-2 and US-1 provide excellent opportunities for multimodal enhancements. These enhancements will promote active transportation and transit, which could have a positive impact on air quality and overall environmental sustainability by limiting traffic and congestion in residential areas and providing a more direct route for freight. These bridge replacements will reduce the State's right-of-way, thereby freeing up land for development, including more walkable neighborhoods or commercial centers.

RIDOT has completed a preliminary environmental justice review of the project area with a 1-mile buffer zone. A complete Title VI Environmental Review will be conducted during design. However, based on the results of the EJSscreen report (available on the [project website](#)) this project is not expected to have adverse impacts on any environmental justice population groups.

## (iii) Restoring Wetlands

This project will avoid adverse environmental impacts, and more importantly will reverse negative impacts to wetlands associated with the initial construction of RI-37 in 1960. Water quality will be addressed following the requirements from the Stormwater Consent Decree between RIDOT, USDOJ, and USEPA in coordination with Stormwater Management, Design, and Installation rules.

The budget for this project includes \$1 million to support stormwater and drainage enhancements, including moderate rehabilitation of the Meshanticut Brook Culvert (#816) to address crack repairs and basic maintenance. All drainage will be flushed and cleaned, and several catch basins will be repaired or replaced on each of the six bridges.

Most notably, the removal of Post Road Bridge (#638) will restore approximately two acres of Peat Bog, located in the Pawtuxet River Mainstream Sub watershed, which is designated as a freshwater wetland of particular importance in the [City of Warwick's Comprehensive Plan](#).

## (c) Quality of Life

As part of the replacement of two structurally deficient bridges at RI-2 and US-1, RIDOT is upgrading infrastructure with an eye toward improving Quality of Life by expanding active transportation and travel choices, improving transit reliability, and promoting economic development by reducing right-of-way.

### (i) Increasing Affordable Transportation by Expanding Active Transportation

This project centers around eight bridges along RI-37. Six bridges will be rehabilitated or replaced, and two bridges in poor condition will be decommissioned. Both RI-2 and US-1 connect densely populated suburban neighborhoods to daily destinations, including grocery stores, schools, and jobs.

The New London Avenue Bridge (#624) and the intersection with RI-37 at RI-2 more broadly have been identified as an opportunity for complete streets improvements along the length of the corridor. This grant seeks to advance a complete streets solution to improve non-motorized connectivity to Chapel View Shopping Plaza—a significant resource for residents including grocery stores and commercial offices—by:

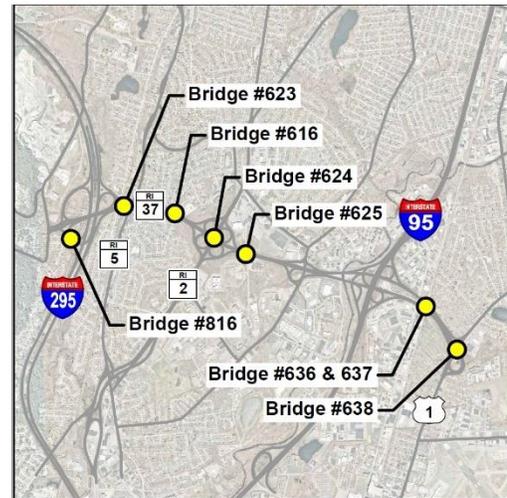
- › **Providing a shared use path** along the west side of RI-2 from Chapel View Plaza to Meshanticut Valley Parkway to Belvedere Drive, where an off-road or low volume connection would follow local roads to the Washington Secondary Bike Path, a regional bikeway connection slated for resurfacing;

- › **Enhancing signalized pedestrian crossings** at the existing signalized intersection of RI-2 and Chapel View Plaza—where there is no existing bike connection short of sharing a busy divided arterial with vehicles—to improve road safety for all users; and
- › **Upgrading signals at five intersections with TSP and Adaptive Signal technologies**, including queue jump lanes at all signals on US-1 from Elmwood Avenue to Airport Road. These improvements will make transit more reliable and efficient on RIPTA Route # 1, the second busiest route in the state, and provide more viable transit options for residents living and working along US-1.

## (ii) Improving Access to Daily Destinations

RI-37 also provides access to some of the largest commercial centers in Rhode Island. RI-2 is a large commercial district that includes a 300-acre complex of more than 100 state institutions including the Departments of Behavioral Health, Developmental Disabilities and Hospitals (BHDDH), Labor and Training (DLT), Corrections (DOC), Motor Vehicles (DMV), and the Office of the Attorney General (RIAG). More than 2,300 state employees commute to this complex and thousands of visitors access it via all modes of transportation daily. RI-37 also provides access to Garden City Center, which has over 500,000 square feet of retail and office space and is home to more than 60 retail stores, nine restaurants, and 26 offices. Chapel View Center is another mixed-use property nearby with 45 types of commercial businesses, office spaces, restaurants, and condominiums. This project will complete the restoration of RI-37, ensuring that this critical connection to transportation and commerce meets the demands of the 21<sup>st</sup> century.

Figure 3-2 Project Bridge Repair Map



This project makes significant improvements to active transportation and transit opportunities by replacing the bridges at RI-2 New London Avenue (#624) and US-1 (#638), ultimately making it easier for Rhode Islanders to access everyday destinations like grocery stores, jobs, and healthcare.

The replaced New London Avenue Bridge (#624) will be 143 feet in length as opposed to its current 103 feet, which will allow for the construction of high-capacity transit along the roadway, which is currently being studied by RIPTA through a separate RAISE Grant. If realized, this would dramatically increase accessibility to retail, jobs, and healthcare in Cranston. This project also includes construction of a shared-use path along the west side of RI-2 connecting Chapel View Plaza to the densely populated residential neighborhoods nearby. This non-motorized access to a critical commercial center is vital for the community.

At the east end of RI-37, through the removal of the Post Road Bridge (#638), a new, at grade intersection will include installation of TSP, queue jump lanes, and adaptive signals along five intersections on US-1, which will make transit more reliable for residents and improve access to daily destinations.

Finally, the remaining work along six additional bridges included in this project will restore a critical east-west connection in the center of the state, which will improve reliability and efficiency for all modes. Collectively, these improvements will provide new opportunities for non-motorized transportation, improved transit reliability, enhanced connectivity to T.F Green and the MBTA Commuter rail, and expanded access to a variety of daily destinations in the second and third most populous cities in Rhode Island.

### (iii) Improving Public Health through Active Transportation Opportunities

The proposed shared use path along the west side of RI-2 from Chapel View Plaza up to Meshanticut Valley Parkway to Belvedere Drive, would link this densely populated suburban neighborhood to a major commercial district via a completely new mode. The proposed bicycle improvements will encourage multimodal connectivity in one of the densest parts of the country and put an existing publicly owned right-of-way to a productive use.

This first segment of a future complete street solution will encourage further investment in surrounding neighborhoods and improve public health by providing a safe, reliable active transportation mode for residents. According to a 2014 article in [The International Journal of Behavioral Nutrition and Physical Activity](#), bicycling reduces the rate of all-cause mortality by ten percent, a larger reduction than other forms of physical activity. With the significant population of aging adults in the area, the addition of bicycle infrastructure could yield significant health benefits, including longer lives.

### (d) Improves Mobility and Community Connectivity

Improving Mobility and Community Connectivity is the primary purpose of this project. According to the [Statewide Bicycle Mobility Plan](#), older adults over 65 years of age increasingly rely on non-motorized transportation, as do populations with limited-English proficiency, low-income, minority, and limited-ability populations. The 2021 Rhode Island Transportation Equity Benefit Analysis (TEBA), which used data from the 2019 American Community Survey (ACS) identifies, 7,099 aging, 1,710 limited-English proficiency, 5,179 low-income, 6,670 minority, and 4,200 limited-ability individuals residing within the limits of the project.

Two key elements of this project are [1] reimagining of the intersection of RI-37 and US-1, and [2] lengthening the New London Avenue Bridge (#624) to accommodate future mass transit. These elements represent an estimated \$42.3 million of this \$100 million dollar project, and primarily focus on improving safety for non-motorized pedestrians and making complete streets improvements along RI-2 by improving bridge infrastructure to allow for future transit enhancements.

In addition, the construction of a bike lane and separated shared-use path to connect the Washington Secondary Bike Path will provide direct, safe, and non-motorized access to this important retail center. These investments will position Rhode Island to make future, more robust investments to improve transit and active transportation along this busy commercial region, and will facilitate easier, more accessible access to vital intermodal hubs like T.F Green Airport, which includes an MBTA station providing access to Boston.

### (i) Improving System-Wide Connectivity

RI-37 intersects with RI-2 in Cranston and US-1 in Warwick, two of the more critical commercial roadways in Rhode Island. This project will directly address both intersections, making them more safe, accessible, and aligned with complete streets and transit goals.

The new, at-grade intersection at US-1 and RI-37 will include an upgrade of five signals to include transit signal priority (TSP) and adaptive signal technologies. This route is identified as a Key Corridor in the [Transit Forward RI 2040: 2019 State of the System](#) report. Key Corridors are those routes with RIPTA's highest ridership and those with frequent service (20 minutes or better). RIPTA Route #1, which connects Warwick to Providence on US-1 is RIPTA's second- highest ridership route and has been identified as one of five priority corridors for TSP expansion as it has poor transit reliability – particularly on the segment between Elmwood Avenue and US-1. The installation of TSP at five signals will address one of RIPTA's priority

corridors and will improve reliability and reduce travel time for passengers. The installation of a queue jump at the new RI-37 and US-1 intersection will provide similar benefits for reliability, with an estimated five to fifteen percent savings in travel time at the intersection. This first queue jump will be a critical step in implementing the long-range vision for this critical transit corridor.

Figure 3-3 TSP in Action, Downtown Providence

### Transit Signal Priority

*Transit Signal Priority is a traffic control tool that provides transit vehicles with additional green time at a signal to promote progression. When a bus approaches an intersection the signal can extend green time to ensure that bus clears the light. This improvement will improve travel reliability for transit vehicles.*

*RIPTA has experienced an average reduction of travel time of 10 minutes, with an 8% faster travel time for passengers on its R-Line since installing TSP in 2014.*



One of the signature projects proposed in the state's [Transit Master Plan](#) is a high-capacity transit service – either light rail or bus rapid transit – between the cities of Central Falls and Warwick. This corridor includes the stretch of RI-2 within the study area of this application. While the proposed transit service is being studied under a separate RAISE grant by the RIPTA, this Project by RIDOT has the opportunity to make design decisions in anticipation of a future enhanced service regardless of mode. The replacement of the New London Avenue Bridge (#624) includes lengthening the bridge from 103 feet to 143 feet, which would allow for development of future high-capacity transit along RI-2. By eliminating horizontal pinch points now, the state will be well-positioned to accommodate fixed guideway transit in the future.

### (ii) Increasing Accessibility for Non-Motorized Travelers

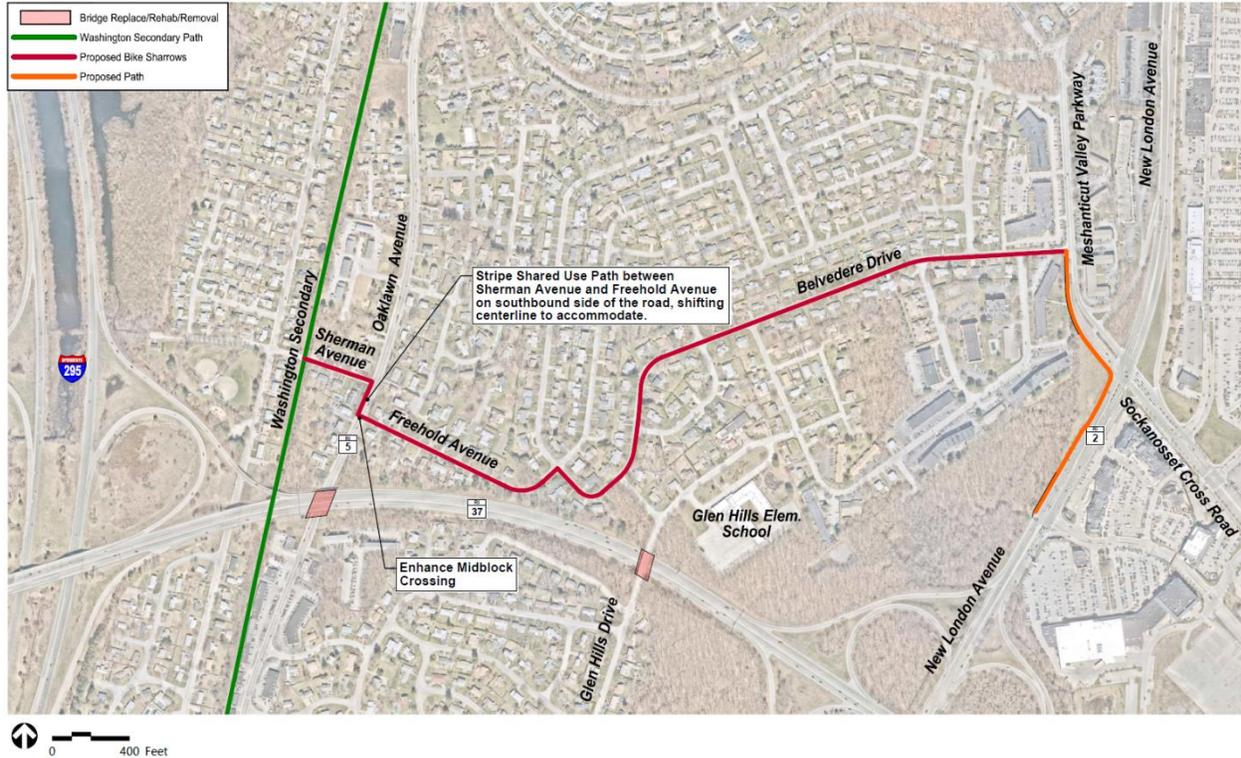
In addition to replacing the RI-37 bridge over RI-2 and lengthening the span to accommodate future transit [enhancements currently being studied by the Rhode Island Public Transit Authority \(RIPTA\)](#), this project includes the installation of an advisory bike lane, separated bike lanes, a shared-use path, and new safe crossing treatments to connect the existing Washington Secondary Bike Path (19 miles long, connecting five cities and towns) with Garden City Center and Chapel View Center, which combined have over 100 retail stores including Whole Foods Market, offices, and restaurants.

By providing convenient and safe access to these retail hubs for bicyclists and pedestrians, RIDOT is partnering with the City of Cranston to expand its active transportation network, provide multimodal access to these important commercial spaces, and encourage economic development.

Through this project, RIDOT will be taking a critical first step toward transforming the mid-century, car focused RI-37 into a dynamic roadway that is ready made for future transit and complete streets improvements. Addressing asset management needs with an eye toward building capacity for robust transit and non-

motorized transportation alternatives demonstrates an innovative approach to improving mobility and community connectivity in a primarily automobile-centric state. By embedding this capacity into its current asset management philosophy, RIDOT is making Rhode Island’s roadways ready to meet the needs of 21<sup>st</sup> century users.

Figure 3-4 Shared-Use Path and Bicycle Lane Concept Map



**(e) Economic Competitiveness and Opportunity**  
**(i) Promoting Long-Term Economic Growth**

RI-37 is an essential freeway connector, including a 2.5-mile portion between I-295 and US-1 that was identified as a critical Urban freight corridor in the 2022 Rhode Island State Freight and Goods Movement Plan (Interim). With over 43,000 vehicles daily, RI-37 functions as a vital east-west connection between the cities of Cranston and Warwick, both of which are important centers for retail and commercial activities.

US-1 in Warwick provides direct connectivity from RI-37 to Rhode Island T.F. Green. The Rhode Island Airport Corporation (RIAC) is actively working on a runway expansion project to provide increased capacity for larger planes, along with a \$100M cargo operations facility, and access to City Centre Warwick, a proposed 100 acre transit-oriented development surrounding T.F. Green.

The 2022 Freight and Goods Movement Plan identified the US-1 northbound ramp to RI-37 as a challenge due to “heavy volume of trucks and other vehicles heading to RI-37 westbound from [US-1] northbound back up down the ramp onto [US-1]. Trucks divert through surrounding neighborhoods for access to RI-37.” The Plan outlines two challenges:

1. Congestion and delays in freight travel between T.F. Green and RI-37; and
2. Negative impacts of freight travel through surrounding neighborhoods.

Improving freight connectivity improves access to national, and ultimately, global freight markets. By removing the loop ramp system and replacing it with signalized intersections there is greater flexibility to manage traffic movement so that approaches supporting freight movement can be prioritized to reduce delays. An adaptive traffic signal system will further prioritize traffic movement to shift in response to real-time demand. Freight movements can be prioritized during surges, and other vehicle movements can be prioritized during their respective demand peaks. These improvements will improve travel time reliability for all road users.

The additional freight benefit to removing the loop ramp system is improved connectivity from the RI-37 terminus to Airport Road and T.F. Green. Additionally, [a 12-acre warehouse is under construction between Wyoming Avenue and Commerce Way](#), which will benefit from this connectivity. These improvements will improve connectivity between trucking and T.F. Green Airport, improving intermodal freight mobility.

In addition to improving freight mobility, the proposed cargo facility at T.F. Green, located within a half-mile of the new at-grade intersection at RI-37 and US-1 will also expand employment opportunities in the City of Warwick. The 131,000 square-foot freight facility would increase Fedex and UPS cargo traffic from five planes per day to six or seven per day and provide modern space for cargo sorting operations in this growing freight hub for the northeast.

This project will also improve access to job opportunities in Cranston. The replacement of the New London Avenue Bridge (#624) and the construction of a shared-use path providing safe access to Garden City and Chapel View, will provide better connectivity to many employment opportunities in Cranston, including the proposed [TopGolf Facility](#), which will create 400 jobs in the city.

Beyond improvements to freight movements, this project will promote robust job growth, particularly for historically underrepresented groups. RIDOT's initial estimates show that this project will generate \$6 Million in job creation benefits. RIDOT is expanding its Highway Construction Workforce Partnership (HCWP) pilot to proactively address workforce development challenges under its partnership with the nonprofit [Building Futures](#), which operates a nationally recognized quality pre-apprenticeship program(s) for underrepresented populations. RIDOT's State Transportation Employment Program (STEP) provides well-prepared diverse candidates for Registered Apprenticeship employment.

In addition to its partnership with [Building Futures](#), RIDOT takes additional steps to engage historically underrepresented groups in its projects. RIDOT's Contractor Compliance Program ensures that federally funded construction contracts meet equal employment opportunity and affirmative action requirements. RIDOT prohibits prime contractors and their subcontractors working on Federal-aid construction contracts from discriminating on the basis of race, color, religion, sex, national origin, age, or disability in their employment and contracting practices. RIDOT's primary contractors are signatory to collective-bargaining agreements with the member unions of the Rhode Island Building & Construction Trades Council (RIBCTC).

## **(ii) Repurposed Right-Of-Way**

This project involves "right-sizing" the RI-37 corridor in several ways. With the decommissioning and removal of the RI-37 bridge over US-1 and the pair of connecting ramps between RI-37 and US-1, a parcel of land along the eastern side of US-1 becomes available for development. A segment along the northeastern edge of the parcel is proposed for wetland restoration. Potential concepts for future land use could include mixed use development supportive of transit-orientated design.

Second, the decommissioning of the Howard Bridge (#625) over Power Road will allow the width of the RI-37 right-of-way to be revisited for opportunities to open additional land area supportive of nearby land use.

## (f) State of Good Repair

RIDOT has been taking a systematic and data-driven approach to state of good repair since the adoption of the [RhodeWorks law](#) in 2016. This project continues to uphold a state of good repair as a primary purpose. The following sections describe key challenges and how the proposed project will address them.

## (i) Restore and Modernize Core Infrastructure Assets

A fiscally constrained program of asset management projects has led RIDOT to incrementally address decades of insufficient maintenance along RI-37. Prior grant-funded efforts, Safety Sweep and Cranston Canyon, have addressed substantial maintenance backlog in the most heavily traveled segments. This final effort seeks to meaningfully address the remaining deferred maintenance on the corridor and employ modern safety enhancements along the length of the corridor as the final step to close-out a decade of improvements. While the prior investment in this corridor has yielded considerable benefits, as a system, poor condition (structurally deficient) bridges will keep RI-37 vulnerable to disruption.

Figure 3-5 Inspection Photo, Bridge #624



This project seeks to restore a state of good repair to RI-37 while eliminating antiquated infrastructure and modernizing designs to meet the current needs.

- › **The New London Avenue Bridge (#624)** is in poor condition. Inspection photos reveal significant spalling with exposed rebar on both abutments. In addition, the underclearance does not meet the current standard, increasing the likelihood of bridge strikes. This project will leverage the need to replace this critical bridge and raise it to meet the standard underclearance. Additionally, to support a future vision for RI-2 passing under the bridge, the structure will be lengthened to allow for a wider roadway cross-section on RI-2 that could support future dedicated transit. This aligns with [the high-capacity transit vision that RIPTA is studying](#). This decision supports modern, multimodal travel needs.
- › **The Hillsgrove Railroad (Amtrak) Bridges (#636 and #637)** are in poor condition and need immediate improvements. This pair of bridges is weight restricted and undergoing emergency repairs to avoid more substantive restrictions. Funding to expedite meaningful improvements at these locations will address the most vulnerable infrastructure on this key travel and freight corridor.
- › **The Post Road Bridge (#638)** is in poor condition and is proposed to be demolished through this project and replaced with at-grade intersections with modern signal control technology (adaptive signal control) that will improve the management of traffic for decades into the future. Additionally, this design better manages surges in traffic demand on US-1, demand on various approaches, and controls speeds on the arterial.

## (ii) Reduce Construction and Maintenance Burdens

This project will reduce construction and maintenance burdens by eliminating assets. The Howard Bridge (#625) over Power Road and the RI-37 bridge over US-1 will both be removed. Howard Bridge (#625) will be demolished and filled, and the Power Road connection severed. This is less costly than rehabilitating the bridge in the present, has fewer cultural resource impacts than rehabilitation due to the location of the bridge relative to the former State Cemetery, and eliminates maintenance in the future.

The RI-37 bridge over US-1 will also be demolished and removed. This bridge will be replaced by signalized at-grade intersections, so there is a shift in future maintenance needs, however, the cost to maintain traffic signals is orders of magnitude lower than maintaining a structure. The proposed intersections will be constructed substantially off-line, meaning there should be minimal disruption to traffic during construction whereas a full bridge replacement would shift traffic and potentially close lanes for an extended duration of time.

Figure 3-6 Inspection Photo, Bridge #638



## (iii) Improve Condition and Safety within the Existing Footprint

All safety and structural improvements proposed in this project within the existing transportation footprint, including the three largest changes to the corridor:

- › The New London Avenue Bridge (#624) will be lengthened; however, this adds no new mileage to RI-37, does not result in additional land disturbance, and does not add lanes to RI-37.
- › The footprint of Power Road shrinks slightly due to the lost connectivity under RI-37, but the potential to eliminate the segment of Power Road north of RI-37 becomes viable.
- › The RI-37 bridge over US-1, currently supported by a pair of loop ramps on the east side of US-1 which are no longer needed under the proposed condition. This land will be repurposed to restore wetlands and made available for development.

Overall, the condition and safety improvements proposed through this project will reduce the size of the transportation footprint in the Study Area and restore important environmental resources in the process.

## (g) Partnership and Collaboration

RIDOT will engage diverse communities to ensure that equity and ownership concerns are considered, particularly among disadvantaged communities. The project is being coordinated with other states partners, including the cities of Warwick and Cranston for greater economic development in this commercial and mixed-income residential area near public transportation, walkable neighborhoods, water and waste infrastructure, power, and electric utilities.

This project directly advances goals outlined in the Comprehensive Plan for Warwick, and supports goals outlined in the Transit Master Plan and Bicycle Mobility Plan as well. In Warwick, the new intersection at RI-37 and US-1 will reclaim wetlands in the Peat Bog, identified in [Warwick's Comprehensive Plan](#) as a

priority freshwater wetland (Page 4.10). The plan also identifies the US-1 corridor as an area that could diversify Warwick's housing stock through deployment of mixed-use zoning (Page 7.14). Finally, the plan recommends investing in infrastructure along US-1 to further Warwick's goal of attracting and retaining businesses in emerging economic base industries (Page 8.17). By reducing the highway right-of-way, this project makes additional land available to support Warwick's long-term land and economic development strategies.

RIDOT is the lead applicant for this RAISE grant and tasked with completing the project outlined herein. The Department will coordinate with local officials to mitigate the possible impacts of construction on city streets and traffic flows. FHWA-RI will act as a monitoring entity in the process, ensuring that the necessary steps are taken leading up to and during construction to guarantee that applicable guidelines are being followed.

RIDOT will develop a specific outreach strategy for this project, as it does for the whole program. The stakeholders for each new project and the potential EJ impacts are listed during project planning and scoping. Prior to a construction season, the Project Management Outreach Team and the project managers meet to review the upcoming project scopes and limits to develop the outreach strategy and schedule for that year.

RIDOT will engage diverse communities to ensure that equity concerns are considered. The outreach team will chart any EJ impacts within the project limits, schedule public and stakeholder meetings, create a project website, send weekly email updates, and assign outreach personnel to respond to stakeholder issues. RIDOT also networks with established business and neighborhood associations throughout all 39 Cities and Towns, regional and statewide entities, Chambers of Commerce, and the Governor's Commission on Disabilities to facilitate other notifications throughout the life of a project.

RIDOT's Office of Civil Rights (OCR) recently revised the Department's Disadvantaged Business Enterprise (DBE) and On-the-Job Training (OJT) goals to be more inclusive and more widely used. The goals are based upon potential subcontracting opportunities and include but are not limited to, contract value, duration of contract, and training opportunities available for minorities, women, and disadvantaged individuals. Additionally, state regulations require RIDOT to assign all state funded contracts a Minority Business Enterprise (MBE) contract goal. This grant project will support apprenticeships for high-quality, good paying jobs and workforce development through the acclaimed "[Building Futures RI](#)" apprenticeship program.

## (h) Innovation

### (i) Innovative Technologies

This project proposes several innovative transportation technologies. The proposed technologies generally fall into two buckets: safety countermeasures and modernizing data collection and travel management. Safety countermeasures intended to mitigate potential increases in crashes at the reconfigured US-1 interchange include:

- › **Dynamic Signaling:** As the Merit Criteria narrative explains, this project will incorporate cabinet upgrades, and timing improvements throughout the project area.
- › **Conflict Detection and Mitigation:** Warning system of enhanced signage and detection will improve driver awareness of conflicting vehicles, reduce intersection crashes, and detect wrong-way driving. At the reconfigured RI-37 and US-1 intersection, RIDOT will install a wrong-way driving detection system at reconfigured RI-37 at US-1 interchange.

RIDOT's Transportation Management Center (TMC) plays a key role in traffic and incident management at RIDOT. The TMC analyzed the project area to identify potential ITS improvements. As a result, this project will include the following specific improvements:

- › **Improved Monitoring and Data Collection:** RIDOT will rehabilitate and/or replace existing cameras at four locations on RI-37 and will install a new camera and traffic data collection station at the I-95/ RI-37 interchange to collect traffic counts and display travel times. Cameras will be upgraded at the following locations:
  - RI-37 west at I-295 (Exit 1);
  - RI-37 east at RI-2 (Exit 2); RI-37 east at Pontiac Avenue (Exit 3); and
  - RI-37 west at US-1 (Exit 5).
  
- › **Work Zone Data Exchange (WZDx):** To help minimize the project's impacts on traveler reliability and safety, this project includes the deployment of several work zone intelligent transportation systems (ITSs). These systems will, at minimum:
  - Provide CCTV camera coverage of the roadway areas expected to experience substantial traffic queuing because of the project work zones;
  - Provide real-time traffic monitoring and intelligent detour/routing systems to minimize work zone disruptions; and
  - Require that the Contractor establish and maintain a publicly accessible data feed(s) conforming to the latest WZDx specifications during the life of the project.

These systems will provide the RIDOT TMC and other project stakeholders (e.g., local police and fire agencies) with improved situational awareness and ability to respond quickly and efficiently to any traffic incident that may occur in the vicinity of the project, as well as provide road users with improved information regarding lane closures, all in near-to-real-time. The project ITSs could be critical in mitigating traveler delays and in ensuring safe access from the roadside sites near the bridge, including a school bussing service provider and other large businesses just to the west of the bridge, and a local Fire/EMS station to the east.

## (ii) Innovative Project Delivery

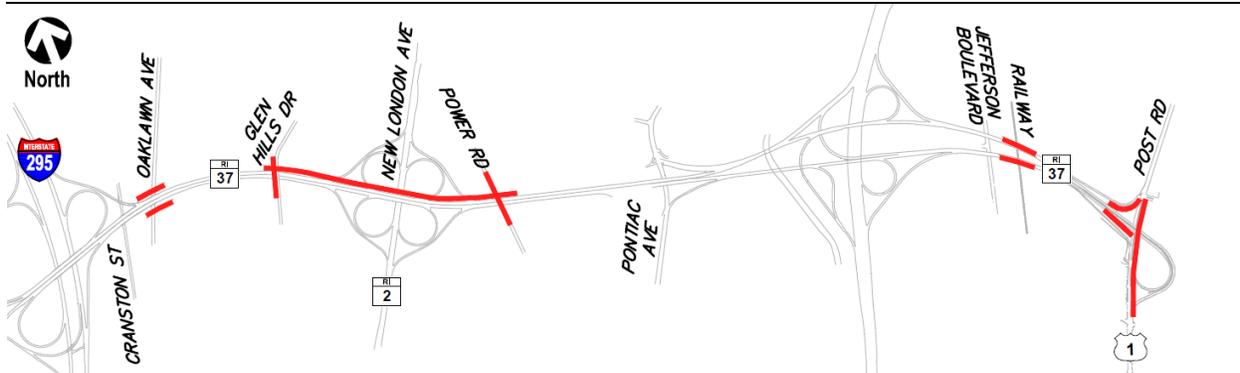
Through the planning and programming of this project, RIDOT has been preparing for the permitting necessary for this final RI-37 project. The lessons learned and innovative solutions identified through the Safety Sweep and Cranston Canyon projects will result in an efficient environmental documentation and review process supporting accelerated project delivery. The unique environmental/cultural permitting challenge that this project faces is the historic State Cemetery partially located under the RI-37 right-of-way, primarily in the vicinity of Howard Bridge (#625), however, there is some uncertainty of exact locations. To minimize project and future disturbances in this sensitive location, this project seeks to decommission and remove the Howard Bridge (#625). The existing bridge opening will be filled, and the structure demolished. This is proposed to be a rapid construction over the course of two weekends. By focusing on filling this area rather than disturbing the earth for further construction, this project seeks to minimize ground disturbance now and eliminate any future need for routine maintenance result in additional ground disturbance.

A second structure identified for rapid construction is the Oaklawn Avenue Bridge (#623). The southern half of this bridge can be completed using Accelerated Bridge Construction (ABC) methods. There is sufficient area within the ROW to construct a large portion of the bridge adjacent to the existing bridge. During phase one of construction, the northern half of the bridge will be prepared for self-propelled modular transporter (SPMT) construction, which will be completed in phase three. The northern half of this bridge will be completed using conventional construction methods.

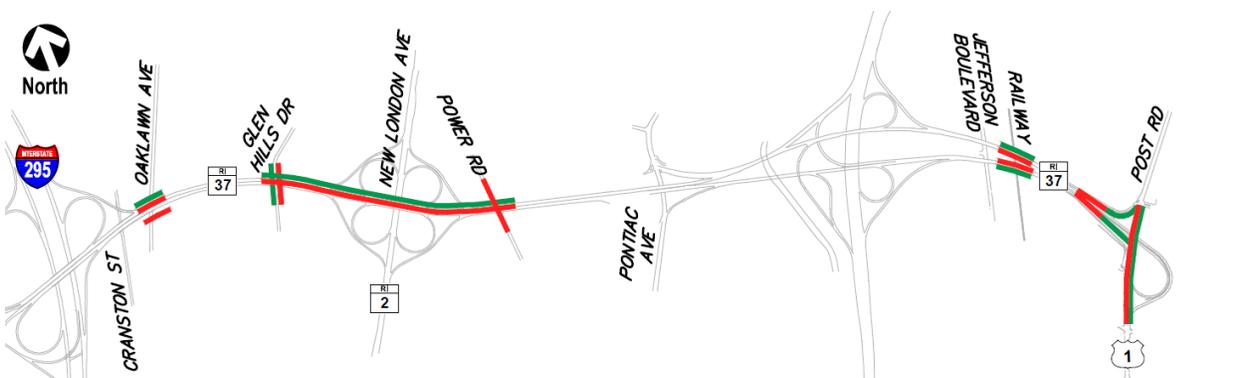
### (iii) Innovative Construction Phasing

In addition to deploying innovative technologies and project delivery methods, this project also features a detailed construction phasing schedule that will minimize disruptions to traffic flows while delivering the project in a more efficient manner. This phasing will be monitored at the TMC in real-time to ensure its continued efficacy. Maintaining traffic flows for the 43,000 vehicles who traverse RI-37 daily will be critical, especially at the intersections of RI-37 and RI-2 and RI-37 and US-1. Figure 3-7 below details the proposed phasing at these two locations.

Figure 3-7 Construction Phasing



**Phase 1:** Construction will address the outer edges of RI-37 in both major work zones—at the eastern terminus of RI-37 with US-1, and at the interchange with RI-2. The outside lanes on RI-37 west will be reconstructed between Power Road and Glen Hills Drive, across RI-5/Oaklawn Avenue, and over Amtrak’s Northeast Corridor. At US-1, new approaches to RI-37 will be constructed within existing ROW near the ramps to be demolished in Phase 2. An additional lane will also be constructed on US-1 to maintain traffic. The Oaklawn Avenue (#623) bridge will be prepared for self-propelled modular transporter (SPMT) construction.



**Phase 2:** Construction will shift to the inside lanes on RI-37 westbound and advance construction on bridges spanning RI-5, Glen Hills Drive, and Power Road, the last of which will be readied for filling in Phase 3. At US-1, the new off-ramps will be connected to RI-37 along with new turning lanes in both directions for traffic on Post Road. Over the NEC, interior lane construction will proceed, shifting traffic to the rebuilt outer lanes.

Figure 3-7 Construction Phasing



**Phase 3:** SPMT construction at RI-5 will complete, requiring a single weekend closure. Interior lanes on RI-37 eastbound will be repaired, using lane splits to accommodate traffic. The Howard Bridge (#625) will be demolished and filled. At US-1, the Post Road Bridge (#638) will be demolished during the weekends along with the vacated interchange ramps. This final phase will also include construction of the proposed bicycle lane and shared path linking the Washington Secondary Bike Path to Chapel View.

#### (iv) Innovative Financing

RIDOT has a history of embracing innovative financing methods. Previous grant awarded projects have included financing from public-private partnerships, GARVEE Bonds, Motor Fuel Revenue Bonds, and local support. The financing for this project does not currently include any innovative methods, but RIDOT would welcome the opportunity to incorporate innovative methods prior to authorizing construction.

# 4. Project Readiness

## Overview

### (a) Detailed Project Schedule

RIDOT has developed the schedule below based on a presumed announcement of RAISE Grant support within approximately six months of the submission of this application. This schedule is based on a design-bid-build procurement process. RIDOT is confident that the concepts and phasing proposals described below and detailed graphically in the Merit Criteria/Innovative Project Delivery section of this application will provide Scoping and Design teams with a strong basis for technical concepts. If this project receives RAISE grant support, RIDOT will move quickly through the permitting and approval processes required to reach construction prior to the obligation deadline of September 30, 2027.

Figure 4-1 Detail Project Schedule Showing Major Project Milestones

Milestone	Start Date	Completion Date
Planning Approvals (STIP)	May 27, 2021	September 9, 2021
Pre-Scoping & Design Study	December 20, 2022	March 15, 2023
Public Involvement & Stakeholder Engagement	January 2, 2023	October 21, 2028
RAISE Grant Funding Request	February 28, 2023	June 28, 2023
Scoping & Preliminary Design (Up to 30%)	March 16, 2023	April 1, 2024
Partnership Agreements	March 16, 2023	April 1, 2024
State & Local Planning Approvals	April 26, 2023	August 24, 2023
Federal Environmental Approvals (NEPA, Section 106)	June 25, 2023	October 6, 2023
Railroad Coordination (Amtrak)	June 25, 2023	November 24, 2025
Value Engineering Review	August 24, 2023	November 24, 2025
Final Design	April 2, 2024	November 24, 2025
State/Local Environmental Permitting Approvals	September 1, 2024	December 31, 2024
Right of Way Acquisition and Easements	September 1, 2024	December 31, 2024
Plans, Specifications, & Estimates (PS&E) Approval	November 24, 2025	January 8, 2026
Procurement – Advertising for Construction Bids	<b>January 8, 2026</b>	
Construction Notice-to-Proceed (NTP)	<b>May 20, 2026</b>	
Construction Phase 1	May 20, 2026	April 30, 2027
Construction Phase 2	April 30, 2027	January 31, 2028
Construction Phase 3	January 31, 2028	October 21, 2028
Substantial Completion	<b>October 21, 2028</b>	
Punchlist & Closeout	October 21, 2028	October 21, 2031

### (i) Construction Phase 1: Reconstructing Outside Lanes

The first phase of construction will address the outer edges of Route 37 in both major work zones—at the eastern terminus of RI-37 with US-1, and at the interchange with RI-2. The outside lanes of RI-37 westbound will be reconstructed between Power Road and Glen Hills Drive, across RI-5/Oaklawn Avenue, and over Amtrak’s Northeast Corridor. At US-1, new approaches to RI-37 will be constructed within existing ROW near the ramps to be demolished in Phase 2. An additional lane will be constructed on US-1 to maintain traffic. The Oaklawn Avenue bridge (#623) will be prepared for self-propelled modular transporter (SPMT) construction.

## (ii) Construction Phase 2: Building Connections

Phase 2 will shift construction to the inside lanes on RI-37 westbound and advance construction on bridges spanning RI-5, Glen Hills Drive, and Power Road, the last of which will be readied for filling in Phase 3. At US-1, the new off-ramps will be connected to RI-37 along with new turning lanes in both directions for traffic on US-1. Over the NEC, interior lane construction will proceed, shifting traffic to the rebuilt outer lanes.

## (iii) Construction Phase 3: Moving Bridges, Ramps, and Lanes

During the final phase of construction, the SPMT construction at RI-5 will complete, requiring a single weekend closure. Interior lanes on RI-37 eastbound will be repaired, using lane splits to accommodate traffic. The Howard Bridge (#625) will be demolished and filled. At US-1, bridge #638 will be demolished during the weekends along with the vacated interchange ramps. This final phase will also include construction of the proposed bicycle lane and shared path linking the Washington Secondary to Chapel View.

## (b) Environmental Risk

### (i) Required Approvals

#### (1) Environmental Permits and Reviews

##### A. NEPA

Based on a preliminary review, the project is likely to qualify for a Categorical Exclusion (CE) as the project will not have significant individual or cumulative impacts to the interests protected by the National Environmental Policy Act (NEPA). The work included in this project aligns with the following CE-eligible activities under 23 CFR § 771.117 (c):

- › **Item 26:** Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes or parking lanes; and
- › **Item 28:** Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.

It is anticipated that the project will occur within the operational right-of-way and will not significantly impact social, economic, or sensitive environmental resources such as floodplains, wetlands, endangered species, wildlife habitat, historic and archaeological sites, parklands, air quality, noise, right-of-way, minority or low-income populations, travel patterns, or environmental grounds.

##### B. Reviews, permits approvals from other agencies

The project will be required to follow the requirements from the Stormwater Consent Decree among RIDOT, USDOJ, and USEPA in coordination with Stormwater Management, Design, and Installation rules. The project will be reviewed for state and federal permitting requirements including, but not limited to:

- › Section 7 Consultation under the Endangered Species Act (ESA) as administered by the U.S. Fish and Wildlife Service (USFWS);
- › Clean Water Act Section 404 as administered by the U.S. Army Corp of Engineers (may include Programmatic General Permit (PGP));
- › Clean Water Act Section 401 administered by the Rhode Island Department of Environmental Management under the Water Quality Certification Program;
- › RIDEM Freshwater Wetlands Program as a Preliminary Determination Application or Application to Alter Freshwater Wetlands; and
- › RIDEM Rhode Island Pollutant Discharge Elimination System (RIPDES) Program Construction General Permit (due to an anticipated soil disturbance >1 acre).

RIDOT's Cultural Resources Unit (CRU) has reviewed the project area for potential Section 106 mitigation. The project is adjacent to three known historic cemeteries (CR060, CR107, and WK011) which are protected under the Rhode Island Historic Preservation Act (Rhode Island General Laws 42-45-1 et seq. and 23-18-1 et seq.) as well as local ordinances.

The State Institution Almshouse Cemetery #1 (RI Cemetery ID CR060) is sited south of the parking facility at 100 Sockanosset Cross Road in Cranston within the RI State RI-37 boundary and right-of-way (ROW). Burials in the ROW were identified during investigations conducted by the Public Archaeological Laboratory in 2006 and 2012. These burials were excavated and reinterred elsewhere. Due to the potential for the identification of additional human burials, an Unanticipated Discovers Plan should be adopted in the event previously unidentified archaeological remains are discovered, which may be affected by the undertaking.

Based in the proposed activities, it appears the Section 106 process can be completed under the Programmatic Agreement for Minor Transportation projects. Any work beyond the limits of the existing scope of work, existing roadway, or below existing road base will require additional CRU review for an archaeological survey and standard Section 106 process to evaluate potential impacts to historic properties. RIDOT does not expect this project to have any Section 4(f) impacts.

#### C. Environmental Studies and Other Documents

A Corridor Land Use Evaluation (CLUE) will be performed to identify properties along the project alignment that may be a potential source of contamination to any excavation areas. If there are environmental concerns, a more rigorous investigation under a Phase 1 Site Assessment will be required.

#### D. Discussions with DOT Field Offices Regarding Compliance

RIDOT will work closely with FHWA-RI throughout the NEPA review process to ensure that the project meets all federal requirements and proceeds on schedule.

#### E. Right of Way

All right-of-way required to complete this project is either owned by the State already, or in use for transportation purposes. A small easement may be required to accommodate the shared-use path on RI-2.

#### F. Public Engagement

RIDOT will provide multiple opportunities for the public to comment on the project in accordance with 23 CFR 771.105(c). These requirements will be followed carefully by the Department, with support from FHWA and relevant community stakeholders. RIDOT will continue to engage with local stakeholders throughout the life of this project.

### (2) State and Local Approvals

#### A. STIP Funding and Approval

Bridge Group 51C—RI-37 C-4, TIPID 3301 is included in the State Transportation Improvement Program (STIP), approved by the Metropolitan Planning Organization (MPO)—the Rhode Island State Planning Council—on September 9, 2021, and amended January 18, 2023.

#### B. Broad Public Support

This project enjoys broad public support, including endorsements from the Rhode Island Congressional Delegation, Governor Daniel J. McKee, the City of Warwick, the Rhode Island Division of Statewide Planning,

the Rhode Island Turnpike and Bridge Authority (RITBA), the Rhode Island Public Transit Authority (RIPTA), the Central Rhode Island Chamber of Commerce, the American Council of Engineering Companies of Rhode Island (ACEC) and the Rhode Island Building and Trades Council. Additional support letters are included on the [project website](#).

### **(3) Federal Transportation Requirements Affecting State and Local Planning**

This project is included in the STIP, and it directly supports the objectives of several other state, metropolitan, and local planning documents, including the [Rhode Island Freight Goods and Movement Plan](#) Operational Efficiency objective.

The project is also supporting the state's Long-Range Transportation Plan (LRTP) goals by increasing operational efficiency through maintaining the highway and bridge network in a safe, attractive, and less congested condition.

Safe and efficient transportation is a top concern of the state, as outlined in the LRTP planning for the next 30 years. RIDOT's [Transportation Asset Management Plan](#) mandates asset management principles and guides how STIP projects are prioritized, focusing on State of Good Repair (SOGR). The project also is supported by the state's [Transit Master Plan](#) and its call for traffic signal priority along the 1 Eddy/Hope/Benefit Route, and the state [Bicycle Mobility Plan](#), which lists the area as a key corridor for creating connections in Warwick.

#### **(ii) Assessment of Project Risks and Mitigation Strategies**

The most significant risk to this project is the disruption of traffic flows on RI-37, US-1, and RI-2, which has the potential to impact traffic flows in both directions on I-95 and I-295 due to queuing along exit ramps. During peak hours, RI-37 is frequently used by commuters coming off both I-95 and I-295.

As described in the Project Scope, Schedule, and Statement of work sections, this project will utilize lane shifts during the bridge construction phase to limit traffic disruptions. Over approximately 260 days, lane closures to accommodate bridge work are expected, but RIDOT will work with contractors and local stakeholders to minimize traffic impacts.

#### **(c) Technical Capacity**

##### **(i) Prior experience with Federal Discretionary Grant Programs**

RIDOT is familiar with the demands of securing, utilizing, and reporting on federal discretionary grants. The Department began aggressively pursuing Federal grants in 2016 and has been awarded 13 grants since then totaling more than \$244 Million. Notable recent grant awards include \$60 Million for the I-95 Northbound Providence Viaduct, and \$65 Million to reconstruct RI-146. A robust Department with experienced Project Managers, Engineers, and Planners, RIDOT is well-equipped to deploy discretionary grant funds in a timely fashion, ensuring that all funds will be obligated prior to the September 30, 2027 deadline.

##### **(ii) Compliance With Civil Rights and Title VI Requirements**

RIDOT effectuates its nondiscrimination commitment in projects for the construction and maintenance of multimodal transportation infrastructure through its Title VI/Nondiscrimination Program. Pursuant to [Title VI of the Civil Rights Act of 1964](#) and 23 CFR 200.9 (b)(11), RIDOT's [FHWA Title VI Implementation Plan](#) and [FTA Title VI Program Plan](#) outlines the Department's operating procedures, policies, and practices to ensure compliance with nondiscrimination requirements, and of providing its transportation practitioners,

subrecipients, contractors, and consultants with guidance on how to adhere to Title VI principles in their daily planning, implementation, monitoring, evaluation and enforcement operations.

### **(iii) Right-of-Way**

All components of this project will be constructed within existing RIDOT-owned right-of-way. Any real property and right-of-way acquisition will be completed in a timely manner in accordance with 49 CFR 24, 23 CFR 710, and other applicable legal requirements.

### **(iv) Engineering and Design Studies and Activities**

RIDOT has a planning contract with Vanasse Hangen Brustlin, Inc. (VHB) to advance preliminary engineering, traffic analysis, and readiness assessment for this project. This effort will advance all elements of the project design to a level sufficient for RIDOT to advertise the project as a design-bid-build contract. Ongoing work includes the development of plans, specifications, and estimates tantamount to a 10 percent design.

### **(v) Development of Design Criteria and Basis of Design**

The basis of the design is the rehabilitation or replacement of six bridges, and the demolition of an additional two bridges along RI-37 to complete a decade long effort to restore RI-37 to a state of good repair. The design is also intended to address safety issues at the intersection of RI-37 and US-1 through removal of the Post Road Bridge (#638) and construction of a new at-grade intersection. The design addresses a need to make ready for future high-capacity transit along RI-2 with the replacement of the New London Avenue Bridge (#624). Finally, the design includes construction of new active transportation infrastructure along RI-2 to connect to Chapel View Shopping Center.

### **(vi) Basis for the Cost Estimate**

As shown in the Project Budget, RIDOT estimates that the total future cost of the project will be \$100,000,000. It is derived from a quantity-level estimate completed by RIDOT in consultation with supporting consultant Vanasse Hangen Brustlin, Inc. (VHB). This estimate includes the cost of design, construction, and a \$9.5 Million contingency fund. The base construction cost for the project will be approximately \$83.85 Million.

### **(vii) Scope, Schedule, and Budget Risk Mitigation**

RIDOT carefully monitors project budgets and schedules from conception to completion. The scoping team performs a peer review to ensure the original project scope is maintained at least once during final design and more frequently during complex projects. RIDOT reviews project statuses and schedules at monthly meetings, and schedules and budgets are published in [RIDOT's Quarterly Report](#), the key tool to inform the public on the status of each project, and ensure RIDOT's on-time and on-budget targets are being met.

### **(d) Financial Completeness Assessment**

Information related to Financial Completeness can be found in the Project Budget file of this application.

# 5. Benefit-Cost Analysis

## Narrative

### Overview

Rhode Island Department of Transportation (RIDOT) requests \$25 million from the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program to support **Right-Sizing Route 37: Improving Community Connectivity**, a surface transportation project that will leverage repairs on eight major bridges into a complete, multimodal, sustainable transportation investment. This \$100 million project will complete a decade-long effort to restore Rhode Island Route 37 (RI-37), a critical urban freight corridor connecting interstates 95, 295, and US-1.

Broadly, this project seeks to complete a decade long effort to restore RI-37 to a state of good repair while making strategic improvements at critical intersections to make ready for future transit and complete streets enhancements. The specific technical aspects of this project include:

- › **State of Good Repair:** Replace four bridges; rehabilitate one bridge and one culvert; decommission and remove two bridges; and eliminate a pair of loop ramps linking RI-37 and US-1, replacing them with a series of at-grade signalized intersections.
- › **Environmental Sustainability:** With the removal of loop ramps connecting RI-37 to US-1, restore previously filled wetlands on the east side of US-1.
- › **Safety:** Install at-grade signalized intersections to reduce arterial speeds and better manage traffic growth on US-1. Upgrade traffic signal equipment to implement adaptive signal control; install rumble strips along RI-37 to reduce roadway departure crashes; and install high-friction surface treatment and enhanced curve delineation along 17 ramps along the RI-37 corridor.
- › **Transit Enhancements:** Install transit signal priority (TSP) at signalized intersections along US-1 and RI-2; provide queue jump lanes at the proposed intersection of RI-37 at US-1; replace the bridge carrying RI-37 over RI-2 and lengthen it to provide roadway width under the bridge to support future high-capacity transit expansion along RI-2, where [Light Rail Transit \(LRT\) and Bus Rapid Transit \(BRT\) options are under development by RIPTA](#).
- › **Pedestrian Facilities:** Enhance existing pedestrian crossings on US-1 and RI-2; install new crossings at the proposed RI-37 terminus at US-1 and on RI-2 at Chapel View Plaza.
- › **Cycling Facilities:** Develop bike connectivity from the Washington Secondary Bike Path to Meshanticut Valley Parkway; install a shared use path along Meshanticut Valley Parkway and RI-2 providing bike connectivity to Chapel View Plaza.
- › **Economic Competitiveness:** Remove loop ramps and reduce right-of-way to make several new parcels available and right-size the width of RI-37 to repurpose land use for development.

Taken together, these improvements will address immediate maintenance and safety issues while simultaneously advancing the long-term goals for robust transit and active transportation infrastructure along this critical corridor in the heart of Rhode Island.

## Findings

Rightsizing Route 37 has a favorable benefit-cost ratio of 1.17, and a net present value of \$14.05 million. It is therefore a cost-effective investment. The Benefit-Cost Analysis shows that this project generates safety, emissions, and travel time savings, in addition to foregone cost savings totaling \$84 million over 30 years. While not easily quantified, the project also provides enhancements to pedestrian and cycling facilities, provides improvements that will be supportive of more reliable transit operations through the Study Area, and opens up opportunities for high-capacity transit enhancements that are currently under study. Complete calculations are included in Appendix A and the BCA spreadsheet.

Figure 5-1 Benefit-Cost Analysis Summary

Item	Value
<b>Project Benefits Evaluation Period</b>	30
<b>Primary Discount Rate:</b>	7%
<b>Alternative Discount Rate:</b>	3%
<b>Present Value Benefit (7%):</b>	\$95,203,704.86
<b>Present Value Cost (7%):</b>	\$76,109,662.78
<b>Project Benefit-Cost Ratio (7%):</b>	<b>1.17</b>
<b>Net Present Value (NPV) (7%)</b>	\$14,054,611.78

### (a) Spatial Extents

To accurately align the scope of benefits with the scope of the proposed project two different spatial extents were used in the evaluation of project benefits.

- › Full Study Area Extents (Figure 5-2) – The Safety benefits were reviewed on a project-wide basis with Crash Modification Factors (CMFs) applied to the scope of crashes in the recent history specific to the given Safety Issue. Foregone cost benefits are applied by structure as appropriate.
- › RI-37 at US-1 Interchange Sub-area (Figure 5-3) – Transitioning the RI-37 at US-1 interchange to an at-grade intersection has unique safety, travel time, and emissions benefits. This narrower study area, RI-37 at US-1 Interchange Sub-area, was modeled for each of those elements of the BCA.

Figure 5-2 Full Study Area Extents

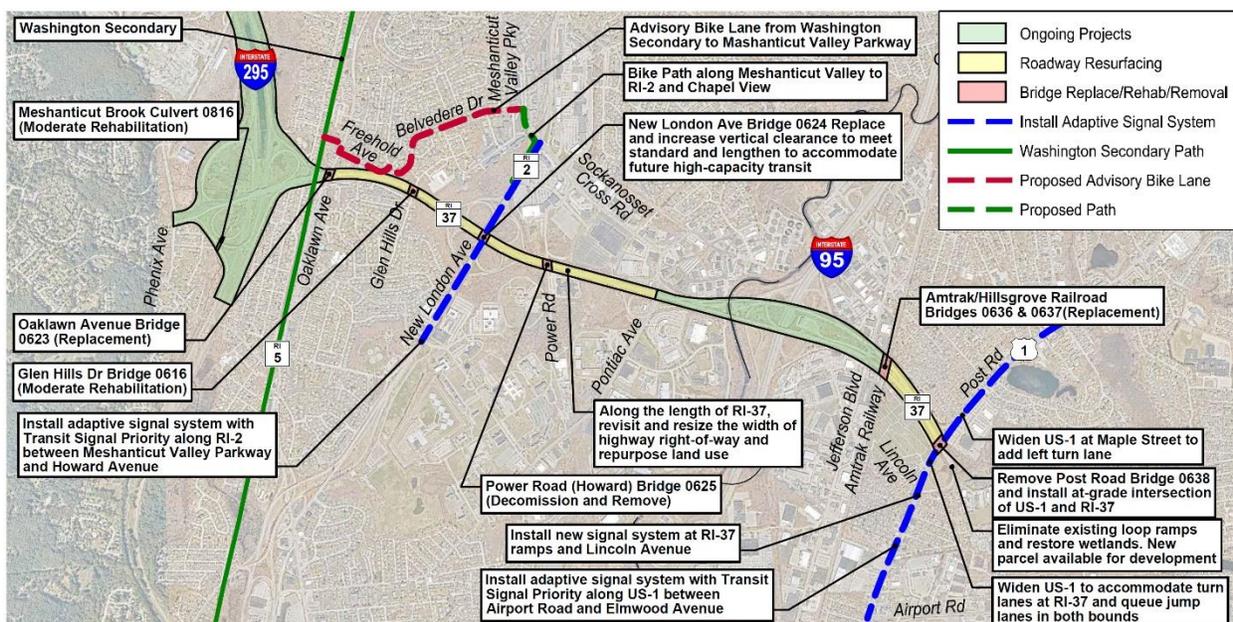


Figure 5-3 Route 37 at US-1 Interchange Sub-area



## (b) Assumptions and Methodology

### (i) Baseline

The assumptions and methodology used to produce this analysis are detailed in the attached BCA. In general, this analysis compares the proposed alternative to a baseline/no-build scenario in which all roadway geometry would remain unchanged. No facility expansions or enhancements are included in the baseline.

Each of these technical reviews is documented in Appendix A of this application with additional technical content for Safety (Appendix A-1), Travel Time (Appendix A-2), and Emissions (Appendix A-3).

Key assumptions for this analysis include:

- › **Safety:** recent crash history is considered representative of the future crashes over the planning horizon, and a correlated to roadway volume.
- › **Safety:** Application of Crash Modification Factors (CMFs) is the preferred methodology, however, in the case of the interchange reconstruction use of [ISATe, the Highway Safety Manual \(HSM\) crash prediction model](#) is an appropriate surrogate. The national default model was applied and outcomes applied to the relevant crash history.
- › **Travel Time:** VISSIM Microsimulation software was used to model the 2023 Existing and future 2028 No Build, 2058 No Build, 2028 Build, and 2058 Build Conditions.
- › **Travel Time:** The modeled travel time results are limited to the smaller sub-study area, not the wider project area. While speed reductions in the future No Build Condition may spill back on RI-37 EB and into the upstream interchange, those impacts are not included in this model.
- › **Travel Time:** While the RI-37 study area supports a high volume of commuter, commercial, and freight traffic year-round and on all days of the week, this analysis conservatively assumes that benefits are only accrued on weekdays.
- › **Emissions:** Emission factors for the study area were developed using the Motor Vehicle Emission Simulator model (MOVES3) developed by the US Environmental Protection Agency.
- › **Emissions:** Emissions were analyzed for the first five years of operation (2028-2032) and the design year (2058). Analyses were conducted for the No Build and Build alternatives to determine the emissions reduction associated with the Project.
- › **Emissions:** The emission factors represent the corresponding year of the traffic modeling. The factors were derived by calculating a seasonal average during the evening peak hour with a representative vehicle mix.
- › **Foregone Costs:** This review emphasizes the importance of funding bridge decommissioning to eliminate the future routine maintenance needs to keep the structures open, ensuring safety of structures.

This project will generate significant benefits for **Safety, Travel Time Savings, Emissions, Foregone Costs, and Repurposed Right-of-Way**. The table below summarizes the primary project benefits. Calculations are documented in the Benefit-Cost Analysis Calculations spreadsheet.

Figure 5-4 Summary of Project Benefits

Parameter	Baseline Scenario (No RAISE Funding)	Preferred Action Scenario (With RAISE Funding)
<b>Safety</b>	<ul style="list-style-type: none"> <li>Project limited to structural maintenance, no substantive safety enhancements.</li> </ul>	<ul style="list-style-type: none"> <li>RI-37 and US-1 at-grade intersection with appropriate intersection safety enhancements</li> <li>High friction surface treatment</li> <li>Rumble stripes with recessed pavement markers and enhanced curve delineation</li> </ul>
<b>Travel Time</b>	<ul style="list-style-type: none"> <li>Within the RI-37 at US-1 interchange, existing traffic conditions continue to deteriorate increasing travel delay over time.</li> </ul>	<ul style="list-style-type: none"> <li>Signalized at-grade intersection can better manage traffic in future years. Impact is negligible in the near-term, however and reduces travel delay in future years.</li> </ul>
<b>Emissions</b>	<ul style="list-style-type: none"> <li>Within the RI-37 at US-1 interchange, emissions continue to grow as vehicle delays increase in the future as traffic operations deteriorate.</li> </ul>	<ul style="list-style-type: none"> <li>Improved traffic management results in reductions in emissions primarily in future years.</li> </ul>
<b>Foregone Cost</b>	<ul style="list-style-type: none"> <li>Bridge 636 – full replacement (incremental over 30 years)</li> <li>Bridge 637 – full replacement (incremental over 30 years)</li> <li>Bridge 625 – 2028 Full Replacement</li> <li>Bridge 638 – 2025 Full Replacement</li> <li>Bridge 625 - 30-year Maintenance (washing, joint &amp; membrane replacements, coating &amp; patching, steel repairs, minor rehabilitation)</li> <li>Bridge 638 - 30-year Maintenance (washing, joint replacements, coating &amp; patching, steel repairs, minor rehabilitation)</li> </ul>	<ul style="list-style-type: none"> <li>Bridge 636– Full Replacement</li> <li>Bridge 637 – Full Replacement</li> <li>Bridge 625 – Decommission and Remove</li> <li>Bridge 638 – Decommission and remove, install at-grade intersection.</li> </ul>
<b>Repurposed Right-of-Way</b>	<ul style="list-style-type: none"> <li>No changes to the transportation footprint</li> </ul>	<ul style="list-style-type: none"> <li>By eliminating Bridge 638 for RI-37 over US-1, the pair of supporting loop ramps is decommissioned and a parcel valued at approximately \$3M is made available.</li> </ul>

## (ii) Data Sources

Key sources of data used to project outcomes include but are not limited to:

- › 2022 RIDOT traffic count data;
- › RIDOT crash data from January 1, 2015, to December 31, 2021 (complete 2022 data were not readily available for this application);
- › Highway Safety Manual ISATe default model and results;
- › VISSIM Microsimulation results;
- › Motor Vehicle Emissions Simulator (MOVES3) model; and
- › RIDOT Office of Bridge Engineering construction and maintenance costs in current dollars.

### (iii) Key Input Parameters

In addition to the Data Sources listed, all key input parameters in this analysis are taken from USDOT's "Benefit-Cost Analysis Guidance for Discretionary Grant Programs," January 2023, unless otherwise noted. Safety benefit calculations utilize Crash Modification Factor Clearinghouse (CMF) inputs.

### (c) Project Benefits

This project generates a range of quantified benefits to the state and local communities by directly addressing several baseline challenges with targeted interventions.

To ensure project benefits were not overstated and the highest standard of transparency was maintained, RIDOT and supporting consultants Vanasse Hangen Brustlin, Inc. (VHB) made several enhancements to the benefit-cost analysis preparation process. The enhancements were made in direct response to feedback from USDOT in debriefs of recently submitted grant applications, which included a critique that RIDOT's future BCAs would benefit from additional supporting documentation to improve transparency.

First, the team was deliberately conservative in its assumptions supporting the BCA. While the study area experiences heavy traffic year-round, the number of affected days for the travel time savings calculation was assumed to be 270, rather than a year-round 365-day calculation. Due to the presence of Garden City and Chapel View, the area does experience heavy weekend traffic, but the projections are deliberately more conservative for the purposes of this analysis.

Second, this benefit-cost analysis is accompanied by several supporting technical analysis appended to this narrative to elaborate on assumptions made, methodological considerations, data utilized, scenario assessments, analysis results, model calibrations, and more. They are:

- › **Appendix A – Benefit Cost Analysis:** The calculations spreadsheet is reproduced here for easy reference. Each benefit and cost associated with the project is summarized and backup calculations are included. Each backup tab includes, at a minimum, a statement of the Assumptions, methodology, Baseline, Sources of Data, and Key Input Parameters, pursuant to the latest BCA guidance from USDOT (January 2023).
- › **Appendix A-1 – Safety:** This technical memo explains and documents the strategies and methodologies deployed to estimate safety issues, accident counts, and proposed interventions throughout the Study Area. It identifies, explains, and justifies the use of selected Crash Modification Factors (CMFs) and supplies calculations utilized to arrive at data inputs for the master BCA spreadsheet.
- › **Appendix A-2 – Travel Time:** This technical memo documents the methodologies and assumptions used in the development of the VISSIM microsimulation model for the project and provides documentation of the model results. Data collection, model calibration, and travel time segment comparisons are discussed.
- › **Appendix A-3 – Emissions:** This technical memo documents the air quality study undertaken for the project, including a detailed mesoscale analysis over six selected years within the benefits period.
- › **Appendix A-4 – Infrastructure Maintenance Plans:** RIDOT is committed to preserving and maintaining the state's infrastructure, and that commitment starts before a major rehabilitation project like this one even begins. This memo provides historical grounding for anticipated future maintenance costs on the roads and bridges in this project to ensure accurate figures are included over the analysis period in the BCA.

The baseline challenges of this project, proposed adjustments to the baseline, and anticipated benefits are summarized in **Error! Reference source not found.** below.

Figure 5-5 Summary of Baseline Challenges, Changes, and Impacts

Baseline Challenge	Change to Baseline	Impacts
<p><b>Safety</b> History of Lane/Roadway Departure crashes</p>	<p>Safety countermeasures geared toward mitigating lane/roadway departures crashes: High-friction surface treatment, improved curve delineation, and rumble strips.</p>	<p>High-friction surface treatment, curve delineation, and rumble strips yield substantial benefits of reducing 40 crashes annually.</p>
<p><b>Safety</b> History of Lane/Roadway Departure crashes</p>	<p>Major reconfiguration of RI-37 at US-1 interchange.</p>	<p>The interchange reconfiguration is predicted to reduce fatal &amp; injury crashes by about 4 annually but could increase property damage only crashes by six annually. Additionally, design elements, such as roadway alignment for speed control, are included in the proposed project, however, not represented in the Safety analysis.</p>
<p><b>Emissions</b> Travel times and congestion are predicted to grow in future years.</p>	<p>Remove Post Road Bridge (#638) and construct an at-grade, signalized intersection.</p>	<p>In future years the proposed alternative can better manage higher traffic volume with a net reduction in greenhouse gas emissions valued at \$1,116,388.18.</p>
<p><b>Travel Time</b> Travel times and congestion are predicted to grow in future years.</p>	<p>Remove Post Road Bridge (#638) and construct an at-grade, signalized intersection.</p>	<p>In the near-term, the signalized intersection slows operations compared to the Existing Condition. In future years, the proposed alternative can better manage higher traffic volume with an average daily reduction in delay of 120 hours daily. <i>Note this reduction in delay is aggregated over the RI- 37 at US-1 sub-study area. Appendix A-1 details changes in travel time on specific facilities.</i></p>
<p><b>Travel Time</b> US-1 is congested with travel reliability challenges for personal vehicles and transit vehicles.  This is one of the highest traveled roadways in the state by RIPTA riders carrying Route 1 and Route 20.</p>	<p>Install transit signal priority and queue jump lanes.</p>	<p>While not a quantified benefit in the Benefit-Cost Analysis, transit operations and reliability along US-1 improve with queue jump lanes and transit signal priority.</p>
<p><b>Foregone Costs</b> Oversized asset portfolio</p>	<p>Decommission Post Road Bridge (#638) and Howard Bridge (#625)</p>	<p>Eliminates on average \$266,000 in maintenance costs annually over 30 years.</p>
<p><b>Transit Facility Benefits</b> Transit Facility benefits are not proposed due to right-of-way limitations</p>	<p>No change to baseline</p>	<p>No impacts as a result of this project. This project eliminates roadway constraints to future high-capacity transit improvements through RIPTA.</p>
<p><b>Pedestrian Facility Benefits</b> Both US-1 and RI-2 are vehicle-focused corridors.</p>	<p>Enhanced signalized pedestrian crossings will be provided at intersections along US-1 and RI-2</p>	<p>The estimated number of existing pedestrians benefiting is 200 pedestrians annually.</p>

Figure 5-5 Summary of Baseline Challenges, Changes, and Impacts

Baseline Challenge	Change to Baseline	Impacts
<b>Cycling Facility Benefits</b> Both US-1 and RI-2 are vehicle-focused corridors.	Bicycle connectivity will be established between the Washington Secondary Bike Path and Chapel View Shopping Plaza which provides commercial amenities including grocery store, bank, and medical offices.	While not a quantified benefit in the Benefit-Cost Analysis, new bike facilities and connectivity will induce bike trips not currently observed on RI-2.
<b>Mortality Reduction Benefits</b> Both US-1 and RI-2 are vehicle-focused corridors.	See Pedestrian Facility and Cycling Facility Benefits above.	While not a quantified benefit in the Benefit-Cost Analysis, new bike facilities and connectivity and improved pedestrian crossings will facilitate active transportation by area residents.

### (d) Project Costs

The costs associated with this project are:

- > The \$100 million future eligible construction and design cost;
- > Anticipated work zone costs totaling \$0.84 million; and
- > Lifecycle management costs over the service life of the proposed assets.

RIDOT has conservatively estimated that traffic delays will double during construction to avoid overstating the projected B-C ratio for both components.

Detailed budget information can be found in the Project Budget section of this application including a budget by phase and a separate budget by item type, tracked internally by RIDOT from a project’s conception to completion.