

2023/2024 MPDG APPLICATION

Completing the I-95 Missing Move and Ramps to Quonset Business Park

Directing Freight Away from Local Roads

Program Name:	Multimodal Project Discretionary Grant Opportunity (MPDG)
Project Sponsor:	Rhode Island Department of Transportation (RIDOT)
Sponsor Address:	2 Capitol Hill, Providence, RI
Date Submitted:	August 21, 2023
Project Website:	http://www.dot.ri.gov/projects/MissingMove2022/

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Dear MPDG Review Team:

Rhode Island Department of Transportation (RIDOT) is partnering with the Quonset Development Corporation (QDC) to request $81 million in MPDG Grant funding support to support Completing the I-95 Missing Move and Quonset Connector Ramps. This $135 million project will complete the final link in Rhode Island's "missing move" between I-95 and RI-4 and construct three ramps providing direct freeway access from Quonset Business Park (QBP) to RI-403.

Improving infrastructure and creating jobs has been at the core of the RIDOT mission for the past seven years, which started with developing state-of-art project management practices and passage of the landmark 2016 RhodeWorks law.

Since then, RIDOT has committed time and resources to making unprecedented and accelerated progress in repairing the state's infrastructure. Now, despite the COVID-19 crisis, historic inflation, and new challenges every day, we're having another unprecedented year.

RIDOT immediately programmed the influx of $575 million in Infrastructure and Investment Jobs Act (IIJA) funding into its 10-year plan in February 2022 to accelerate more than 100 projects valued at $2 billion, starting them an average of four years sooner than originally planned. Because of RhodeWorks, RIDOT is confident it can deliver these projects at the highest quality, while minimizing disruption to the public and maintaining its excellent on-time and on-budget performance – which in the past quarter remained at nearly 100 percent.

Following the successful RhodeWorks playbook, the "Completing the I-95 Missing Move and Ramps to Quonset Business Park," project improves safety, generates economic benefits, reduces congestion, and will help eliminate supply chain bottlenecks by improving critical freight movements linking Rhode Island's busiest industrial park and port facility to the I-95 corridor in a more efficient and safe manner.

For our Department, it's not just about providing shovel-ready projects. With this MPDG grant application we have developed a shovel-worthy project, one that will move freight in a straight-forward, efficient manner to improve the lives of countless Rhode Islanders near this important highway corridor at I-95 and Route 4 in East Greenwich, Warwick and North Kingstown, RI.

RIDOT received a $4 million BUILD planning grant in 2020 to begin planning and engineering studies to support the I-95 'Missing Move' and Quonset Ramps Construction and determine its environmental feasibility. FHWA-RI has approved a categorical exclusion (CE) for the project and preliminary engineering is underway.

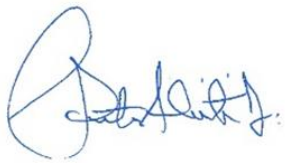
The continued prosperity of QDC is largely dependent on the success of this project because the more than 200 industrial and commercial businesses located in the Park, its 13,000 employees, and users of the Port of Davisville require a more direct connection to I-95 South. Located on former Navy base lands, the Park is also disjointed by a connection of local roads that are not conducive to heavy truck traffic. The ramps to the West Davisville district of the Park were not completed in the creation of Route 403 in 2008.

This project encompasses RhodeWorks' goals of improving public safety and stimulating economic growth by connecting the entire state to an employment center that affords many good-paying, often union, jobs. This project offers Rhode Island big-picture progress that will last long after the end of the slated 10 years of the State Transportation Improvement Program (STIP). It also brings quiet and safety to people living in

nearby affordable-housing, now on a heavy-truck route, and leverages the federal investment MPDG provides with matching funds from our partner and the state's transportation funds.

It is time to fully connect Quonset's businesses and other travelers in the southern portion of the state to I-95. The state's economic health and vitality depend on this MPDG award.

Sincerely,



Peter Alviti, Jr., P.E.

Director

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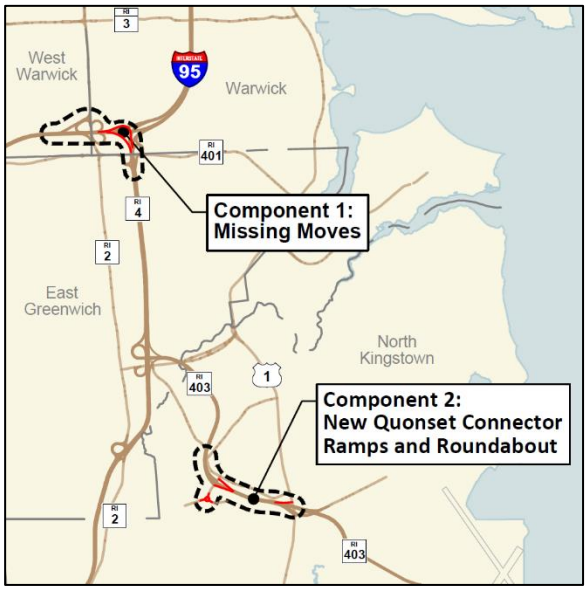
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1. Project Description

A. Introduction

Figure 1-1 Project Study Area



Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the Multimodal Project Discretionary Grant (MPDG) Program to support **Completing the I-95 Missing Move and Ramps to Quonset Business Park.** This $135 million project is a public-private partnership to construct several critical connections for freight movement in Southern New England.

As the name suggests, this project is about completing unfinished plans. Spanning three towns in central Rhode Island, this project has two components linked by a three-mile stretch of RI Route 4 (RI-4), a limited-access freeway and essential north-south connection for 63,000 daily vehicles.

Component 1 will complete the "Missing Movements" between Interstate 95 (I-95) and RI-4 to create a direct freeway connection at one of the busiest junctions in the state while removing traffic from local roads.

Component 2 will construct three ramps to service RI Route 403 (RI-403) which were deferred during initial construction in 2008, expanding access to Quonset Business Park (QBP) and improving safety in nearby neighborhoods.

This project will directly address all six of the Project Outcome Criteria identified in the Notice of Funding Opportunity (NOFO) as shown in the figure below.

Figure 1-2 Project Outcome Criteria Implementation Strategies

Project Outcome Criteria	Implementation Strategy
Safety	› Congestion will be alleviated by removing traffic from local roads › High-friction surface treatments will reduce roadway departures
State of Good Repair	› Construction of new ramps, bridges, roads, guardrail, and signals › Alleviation of congestion on local roads will reduce wear and tear
Economic Impacts, Freight Movement, & Job Creation	› Freight operations will improve by addressing a Top-20 bottleneck in the state › Travel time savings will reduce traffic delays by thousands of hours each year
Climate Change, Resiliency, and Environment	› Reduction of greenhouse gas emissions by up to 500 tons per year › Strengthening an emergency evacuation route
Equity, Multimodal Operations, and Quality of Life	› Benefits to low-income areas, historically disadvantaged communities, and areas of persistent poverty by reducing local traffic, improving air quality, and improving travel time reliability › Improving access to QBP and creation of high-quality jobs
Innovation Areas: Technology, Project Delivery, Financing	› Modernization of Intelligent Transportation Systems infrastructure › Accelerated delivery using design-build procurement

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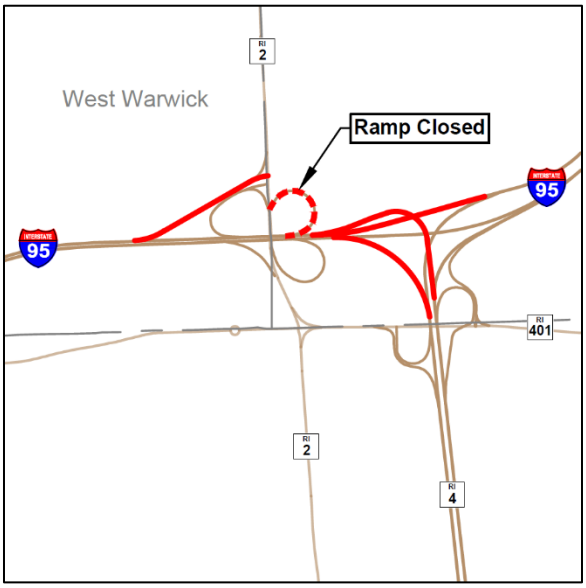
B. Statement of Work

(1) Technical and Engineering Aspects of the Project

(A) Component 1, The Missing Moves

The primary focus of this project is the installation of two "missing moves" between I-95 and RI-4 in the City of Warwick and the Towns of East Greenwich, and West Warwick, Rhode Island. One ramp will use a new bridge overpass to link RI-4 North to I-95 South. The other will use existing right-of-way for an at-grade link between I-95 North to RI-4 South. To accommodate the new structures, 0.7 miles of I-95 will shift south, and the existing ramp from RI-2 North to I-95 South will be removed. Geometry improvements will allow a single bidirectional ramp to link I-95 South and RI-2.

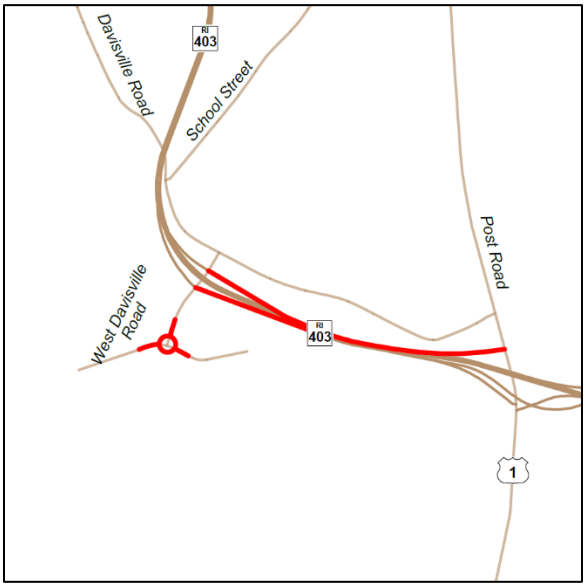
Figure 1-3 Component 1 Details



(B) Component 2, The Quonset Connector Ramps

Component 2 of this project will construct three ramps on RI-403 in North Kingstown to connect the main portion of Quonset Business Park (QBP) to its West Davisville District via limited-access highway. The ramps will allow heavy trucks and freight traffic freeway access without using local roads. One ramp will link US-1 to RI-403, and two others will connect RI-403 to West Davisville. Component 2 will also construct a roundabout south of RI-403 at Compass Circle. **QDC has committed $2 million to support this project, included in the $27 million non-federal share.**

Figure 1-4 Component 2 Details



(2) Current Design Status

Preliminary engineering and environmental feasibility have been completed for the project. Since RIDOT's last MPDG application in 2022, several critical items have advanced, including:

- Completion of the National Environmental Policy Act (NEPA) process, including Section 106 and 4(f) processes, and the approval of the Categorical Exclusion, for both project components;
- Procurement of a design consultant to advance design to procure a design-build team;
- Completion of a noise study for Component 2 (not required for Component 1);
- Advancement of a base technical concept including utility design, survey and wetland flagging; and
- Approval of a design exception to retain the existing conditions on I-95 South.

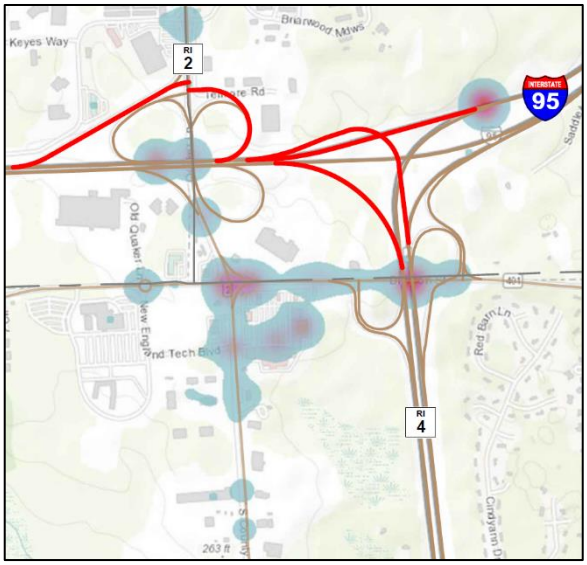
Due to page limit restrictions in this section, additional details describing the proposed delivery methods for this project are included in the **Project Outcome Criteria** portion of this application.

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(3) Transportation Challenges to be Addressed

(A) Congestion and Safety at the I-95 Exchange

Figure 1-5 Component 1 Crash Heat Map



There are two "missing moves" between I-95 and RI-4. Vehicles on RI-4 North cannot reach I-95 South, and vehicles on I-95 North cannot reach RI-4 South without exiting the highway and traveling on RI-401 (Division Street) and RI-2, urban arterial roadways which provide access to a mix of large retail, commercial, industrial, office, and academic developments. The volume of traffic generated by vehicles completing the missing links from I-95 to RI-4 using the RI-2 and RI-401 corridor imposes increased congestion upon adjacent communities. Vehicles completing the missing movements must negotiate at least 3 signalized intersections to reenter the freeway.

This project will address this challenge by providing a direct connection between I-95 and RI-4 to reduce interchange-related traffic congestion and improve commuter and freight networks. The new ramps will construct two bridges, 1,800 linear feet of ramp, 750 feet of auxiliary lane and 3,500 feet of new roadway to facilitate the improved connection. 3,800 feet of mainline I-95 South will be shifted to the south 90 feet to allow the new ramp from RI-4 North to merge with I-95 South.

(B) Noise, Pollution, and Quality of Life Near RI-403

The original RI-403 project was completed in 2008 but construction of three ramps was deferred to contain costs. The deferred ramps were designed to remove commuting and freight traffic from local residential streets, and with the QBP's continued growth into one of the largest economic engines in the state, the missing ramps have become a significant transportation challenge for the park and the surrounding area.

QBP is split into two areas: the main business park, and the West Davisville district. Trucks traveling between the two areas use local roads near low-income housing, creating noise, pollution, and safety concerns. Freight operators frequently miss turns and end up on local roads near retail establishments and the Quonset Bike Path. **This project will address this challenge by providing direct access to RI-403 from US-1 and West Davisville, reducing freight use on local roads and improving safety and air quality.** Connecting the two sections of QBP via currently missing RI-403 ramp makes business sense for the park and its industrial tenants, but it will also improve the quality-of-life for those who live and work along Devil's Foot Road and Post Road in North Kingstown.

C. History & Context

(1) Project History

The origins of RI-4 date back to 1952, when construction began on a short arterial from US-1 to the modern location of Exit 3 at RI-2 and RI-102 in North Kingstown. In 1965, the Rhode Island Department of Public Works (now RIDOT) constructed a 5.4-mile freeway from modern RI-102 to the I-95 merge. As the state

grew, so have the demands on RI-4. It serves Quonset Business Park (QBP), Quonset State Airport, and the Port of Davisville via RI-403, which house more than 200 businesses. RI-4 also serves summer tourist traffic, providing a direct route to beaches, the City of Newport, ferry service to Block Island and Martha's Vineyard.

RIDOT completed a draft Interstate Access Change Request in 2016 to study the impact of adding the missing movements between I-95 and RI-4. In 2019, Quonset Development Corporation (QDC) submitted a BUILD Grant application to construct the three ramps in Component 2 which did not receive an award but opened a dialogue between the entities about a project to combine the two components presented here.

In 2020, RIDOT and QDC received a $4 million BUILD planning grant to begin engineering the project and determine its environmental feasibility. **Those funds have supported the development of this project through preliminary design, engineering, permitting, and NEPA approval.** RIDOT and QDC applied for an INFRA grant in 2021 and again in 2022 to support construction but did not receive an award.

(2) Transportation Network & Investment Context

Nearly 300,000 vehicles circulate through the project areas daily, including commuters, commercial freight operators, and a steady stream of tourists and beachgoers in the summer months. This project is being built almost entirely on existing state-owned right-of-way. The efficient preliminary design presented in this application resists falling into the pattern of over-builds prominent in mid-century highway construction.

This project is being built almost entirely on existing state-owned right-of-way. The efficient preliminary design presented in this application resists falling into the pattern of over-builds prominent in mid-century highway construction. Recent, ongoing, and upcoming projects in the surrounding area (shown in a map in Appendix A-2) total **$187.65 million**. Nearly 300,000 vehicles circulate through the project areas daily, including commuters, commercial freight operators, and a steady stream of tourists and beachgoers. RI-4's central role in mobilizing southbound travelers has led to its characterization as the "gateway to South County." The project will support economic competitiveness by improving access to growth areas in southern Rhode Island. By making movement of freight and goods more efficient, the project will also incentivize the continued development of the Quonset Business Park, the Port of Davisville, and the Quonset State Airport.

D. Project Location

This project is located in south-central Rhode Island, spanning four municipalities: the City of Warwick and the Towns of East Greenwich, North Kingstown, and West Warwick, Rhode Island. Figure 6 shows the location of the project. These four communities range from urban to suburban and include a mix of residential areas, tourist attractions, and some of the largest employment centers and academic institutions in the state. Quonset Business Park (QBP), the New England Institute of Technology (NEIT), the Community College of Rhode Island (CCRI), Kent Hospital, the Port of Davisville, Quonset State Airport, Rhode Island T.F. Green International Airport, Camp Fogarty Training Center, and several state parks and beaches are all located near the project area.

I-95 is the main north–south Interstate Highway on the east coast of the United States, running southwest-northeast through Rhode Island. RI-4 is a major north–south freeway in the southern Providence metropolitan area, directly linking Providence with eastern Washington County, home of the State's largest economic generators—QBP, and the beaches of Narragansett and South Kingstown. It is also one of the primary routes for traffic in and out of the City of Newport, one of the state's most popular tourism and entertainment destinations.

Figure 1-6 Detailed Project Overview Map

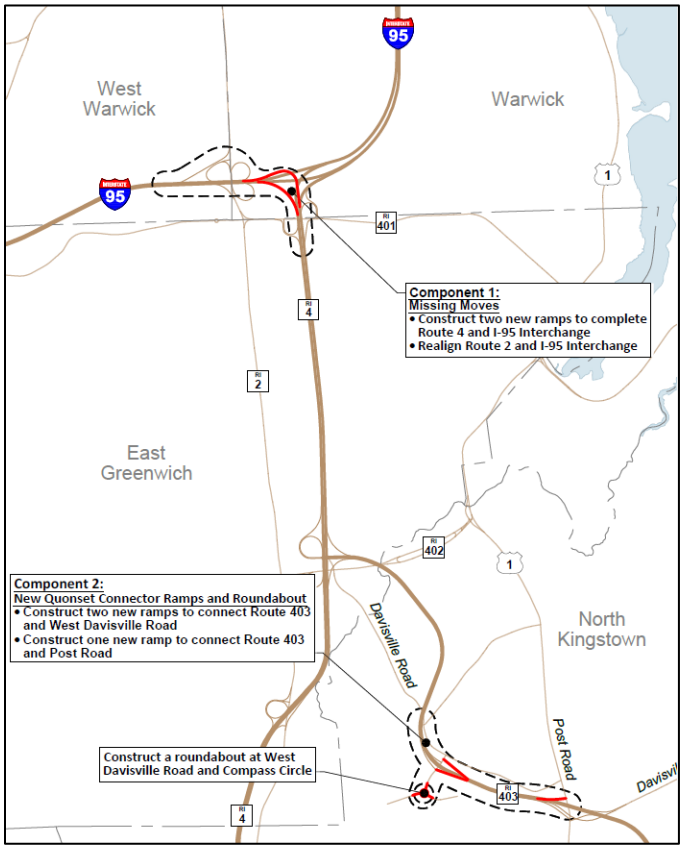
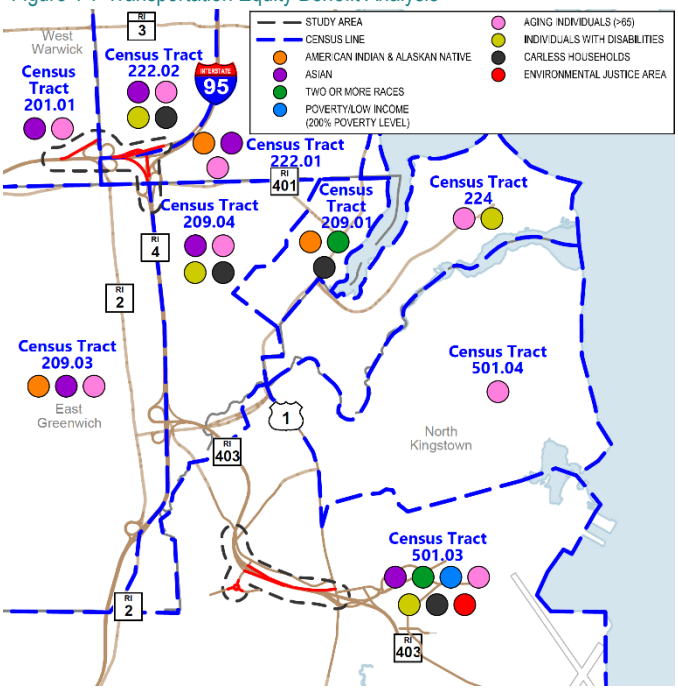


Figure 1-7 Transportation Equity Benefit Analysis



The project has two primary components, as illustrated in Figure 1-6. **Component 1** of this project includes the interchanges between I-95, RI-2, and RI-4, located at mile marker 24.6 on I-95. On RI-4, project limits extend from the I-95 interchange to the north to roughly 1,500 feet south of the Division Street Bridge. On I-95, the north limit is approximately 2,500 feet north of the existing ramp linking I-95 South to RI-4 South. The south limit is the end of the ramp linking RI-2 to I-95 South.

Component 2 of this project covers the eastern end of RI-403 between West Davisville Road and US-1/Post Road. It is located entirely within the Town of North Kingstown. This project will construct Ramps WD-C and WD-D at the West Davisville interchange, and Ramp C at the US-1 interchange. Component 2 also includes a roundabout at West Davisville Road and Compass Circle.

(3) Area of Persistent Poverty

Component 1 of this project is not located within an area of persistent poverty. **Component 2 is located in census tract 501.03, which is defined as an area of persistent poverty according to the USDOT Grant Location Verification Map.**

(4) Historically Disadvantaged Community

This project contains one census tract identified as disadvantaged according to the Climate and Environmental Justice Mapping Tool. Census Tract 501.03 shows health and legacy pollution disadvantages, including a low-income population in the 68th percentile.

The Rhode Island Division of Statewide Planning conducted a Transportation Equity Benefits Analysis (TEBA) for this project, which is included as a memorandum in Appendix B-2. Figure 7 summarizes the affected tracts by special designation. **This project is located entirely within the Providence, RI-MA urbanized area.**

2. Project Budget

A. Project Overview

Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the Multimodal Project Discretionary Grant (MPDG) Program to support **Completing the I-95 Missing Move and Ramps to Quonset Business Park**, a surface transportation project to construct a series of new interchanges and ramps to connect I-95 and RI-4 and move freight traffic from QBP off local roads.

This $135 million public-private partnership project will realize unfinished plans to improve safety and freight connectivity. The specific technical aspects of this project include:

- **Safety**: Remove traffic from local roads through interchange realignments and the construction of new ramps while incorporating high friction surface treatments on project pavement;
- **State of Good Repair:** Construct three new ramps, a new bridge overpass, and new signalized intersection to modernize RI-4 and replace outdated transportation infrastructure;
- **Economic Impacts, Freight Movement & Job Creation:** Install three new ramps to provide a direct connection from QBP to RI-403, improving efficiency of freight movement through this important economic center;
- **Climate Change, Resiliency, and the Environment:** Reduce greenhouse gas emissions by more than 500 tons every year, and construct a more functional, resilient emergency evacuation route;
- **Equity, Multimodal Options, and Quality of Life:** Remove traffic from local roads in a Justice40 community through construction of three new ramps connecting QBP with RI-403, improving safety and reducing greenhouse gas emissions, particularly in disadvantaged neighborhoods; and
- **Innovation:** Deploy design-build project delivery methods to maximize efficiency and minimize traffic disruptions, and implement new ITS technologies to monitor traffic conditions during and after construction to improve efficiency of traffic movements and reduce congestion.

Taken together, these improvements will address immediate freight connectivity and safety issues while along this critical corridor in the heart of Rhode Island.

B. Budget Overview

This project has an estimated future eligible cost of $135 Million, including design, construction, soft costs, and contingencies. Figure 2-1 shows how each source of funds will be spent for each major activity and the proposed share for non-federal, MPDG, and other federal funds.

RIDOT has developed detailed specifications and estimates to support this project. To date, RIDOT has partnered with QDC to secure a financial commitment of $2 million to support the non-federal match requirement for this project, a commitment that QDC has honored again this year.

Since 2021, RIDOT has procured the services of two separate design and engineering firms to develop and advance the scope of this project—Commonwealth Engineering, and GM2, Inc. The budget below reflects the development of quantity-level estimates prepared and refined by both firms in conjunction with RIDOT staff.

Figure 2-1 Project Budget by Phase, Component, and Funding Source

Phase	Component 1 Missing Moves @ I-95 and RI-4 ($)	Component 2 Quonset Ramps ($)	Contingency ($)	Total Budget ($)	Non-Federal Share ($) 20 %	MPDG Share($) 60 %	Other Federal Share($) 20%
Design & Permitting	$630,000	$432,000	$118,000	**$1,180,000**	$236,000		$944,000
Design & Construction Initiation	$4,851,000	$1,971,000	$758,000	**$7,580,000**	$1,516,000		$6,064,000
Construction Phase 1	$43,650,000	$17,910,000	$6,840,000	**$68,400,000**	$13,680,000	$50,000,000	$4,720,000
Construction Phase 2	$16,380,000	$9,810,000	$2,910,000	**$29,100,000**	$5,820,000	$21,000,000	$2,280,000
Construction Phase 3	$6,660,000	$4,612,500	$1,252,500	**$12,525,000**	$2,505,000	$10,000,000	$20,000
Closeout & Other	$9,729,000	$4,864,500	$1,621,500	**$16,215,000**	$3,243,000		$12,972,000
Total	**$81,900,000**	**$39,600,000**	**$13,500,000**	**$135,000,000**	**$27,000,000**	**$81,000,000**	**$27,000,000**

(1) Previously Incurred Costs

RIDOT hired Commonwealth Engineering to support preliminary engineering on this project in 2020. Commonwealth advanced the project through scoping, permitting, and environmental review, including the completion of the NEPA and Section 106 processes for both components. In 2022, RIDOT hired GM2, Inc, an engineering firm with local expertise to advance the base technical concept (BTC) for this project and develop documents to solicit design-build services to complete the project. GM2 is prepared to support advertising the project for design-build services **as early as January 2024** if RIDOT receives MPDG support**.**

As of August 17, 2023, a total of $3,002,305.20 has been expended or incumbered to support this project. The primary uses of that funding include approximately $2.7 million on design services, permitting, analysis, and utility coordination, with the remaining $0.3 million divided between labor and other expenses. All expenses incurred to date have been supported by the BUILD Planning grant RIDOT and QDC received in 2020, as well as the match provided by RIDOT and QDC.

(2) Future Eligible Costs

This project has a future eligible cost of $135 million, including design, construction, staff time, project closeout, and contingencies. The $4 million BUILD Planning grant awarded in 2020 is counted separately.

Figure 2-2 Project Budget by Funding Source

Funding Source	Component 1	Component 2	Contingency	Total Funding	Percent of Project Total
MPDG Funds	$49,140,000	$23,760,000	$8,100,000	$81,000,000.00	60%
Other Federal Funds	$16,380,000	$7,920,000	$2,700,000	$27,000,000.00	20%
Non-Federal Funds	$16,380,000	$7,920,000	$2,700,000	$27,000,000.00	20%
Total Project Cost:	$81,900,000	$39,600,000	$13,500,000	$135,000,000.00	100%

Other federal funds will be derived from annual formula funding. Non-federal funds will come from a combination of state funds and a $2 million contribution from QDC.

(3) Cost Estimating and Contingencies

For this project, a contingency of 20% was applied to the cost estimate for each component, in alignment with AASHTO and FHWA industry standards for projects at the scoping design stage. This percentage is further substantiated by localized data from previous local projects, in part to account for potential cost increases attributed to inflation.

To ensure the financial completeness of this project and as a plan for potential cost overruns, the provided budget includes an additional 10% of the total project budget *in addition to that 20% contingency included in the estimated costs shown above*. Because both components of the project will be delivered as a single contract, a single contingency amount is included to cover both components together. RIDOT is confident from recent experience with large-scale grant projects that this is a sufficient level of contingency funding for the current stage of design that the project has reached. Currently, design plans are at a 10% level, and will continue to be advanced to a level sufficient to advertise a request for proposals (RFP) to procure the services of a design-build team to execute the project.

(4) Freight Rail, Port, & Intermodal Funds

No portion of this project is subject to the limit on freight rail, port, and intermodal infrastructure described in the INFRA program statute.

(5) Budget Allocation by Census Tracts and Urbanized Areas

The table below reflects an estimate of the total project costs per census tract. Approximately 29% of the future eligible expenses for this project will be spent in Census Tract 501.03, which is both an Area of Persistent Poverty and an Historically Disadvantaged Community, not including potential usage of any contingency funds. **Those investments will support safety improvements to shift heavy freight vehicles off of local roads and keep them on the state's Primary Highway Freight Network, including direct connectivity to Quonset Business Park.**

Figure 2-3 Project Budget by Census Tract

Census Tract	Project Costs per Census Tract	Urban Area	Area of Persistent Poverty	Historically Disadvantaged Community
Component 1: Missing Move				
201.01	$24,570,000	Yes	No	No
222.02	$57,330,000	Yes	No	No
Subtotal	**$81,900,000**			
Component 2: Quonset Route 403				
501.03	$39,600,000	Yes	Yes	Yes
Subtotal	**$39,600,000**			
Contingencies	$13,500,000	-	-	-
Total Project Cost:	**$135,000,000**	**$135,000,000 (100%)**	**$39,600,000 (29%)**	**$39,600,000 (29%)**

(6) Documentation of Funding Commitments for Non-Federal Funds

Funding is committed to this project in Rhode Island's STIP, which only identifies funding types in the constrained years (FFY2022-2025). The STIP includes $3.27 million in non-federal funds in those years, and an additional $13.08 million in federal funds, including the obligation of the 2020 BUILD Planning grant funds. In total, the STIP includes $115.35 million to support this project, including additional state funds to be committed in the outyears as match. **The intent of this application is to leverage the requested MPDG funds to accomplish this project and more.** If RIDOT is awarded the requested $81 million in MPDG funding, that will free up **$56.35 million currently to be programmed to other projects.** The STIP Project Page is included with the **Funding Commitment Documentation** uploaded with this application.

(7) Federal Funds to be Used for Future Eligible Project Costs

As Figure 9 shows, this project will use $81 million from the MPDG program and $27 million in federal formula funds to support design and construction. It is RIDOT's opinion that the MPDG program is the best fit for this project. RIDOT does not expect to apply for discretionary grant funding from any other programs to support *Completing the Missing Moves* at this time, even if this application is unsuccessful.

C. How All Project Funds May Be Used

Apart from the requested MPDG funding, no funding for this project requires satisfying any unique conditions. The expectation for this project is that RIDOT will continue its exemplary track record of delivering major grant projects on-time and on-budget. However, the Department understands that planning for unanticipated scenarios is an essential part of delivering projects effectively. Therefore, in preparation of this grant application, RIDOT has developed and analyzed 3 distinct funding scenarios for this project that may emerge if any aspect of the financial plan presented here fails to materialize.

- **Scenario 1: RIDOT does NOT receive any MPDG Funding** | This is the third time RIDOT and QDC have attempted to secure construction funding for this critical project. Should USDOT continue deem this project unworthy of funding, it is likely RIDOT will explore the possibility of putting this project on-hold and reallocating the programmatic resources dedicated to it in the state's 10-Year Plan to other projects in need of funding for state of good repair investments. RIDOT will deploy the proven **Project Prioritization Methods** documented in both the FFY2022-2031 STIP and the 2022 Transportation Asset Management Plan (TAMP) to reallocate funds.

- **Scenario 2: RIDOT receives A PORTION of the requested MPDG Funding |** If RIDOT receives the full amount of MPDG support requested in this grant application, the Department is committed to mobilizing any and all resources required to ensure that the project is delivered on-time and on-budget. **That includes committing additional resources from a combination of state and federal funds to completely fund this project.**

  The amount of additional resources available is constrained, and RIDOT would carefully analyze any offer from USDOT to accept lesser amounts of funding. However, **at 3 separate instances in the past, RIDOT has accepted offers from USDOT for slightly less grant funding than the amounts requested, and all 3 times, RIDOT has committed state resources to close the funding gap and advance awarded projects on-time.** A letter expressing that financial commitment signed by Director Peter Alviti is included as Appendix C-1.

› **Scenario 3: RIDOT receives ALL requested MPDG funding, but the project budget escalates beyond the levels estimated in this application |** 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:

1. **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.
2. **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.
3. **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.

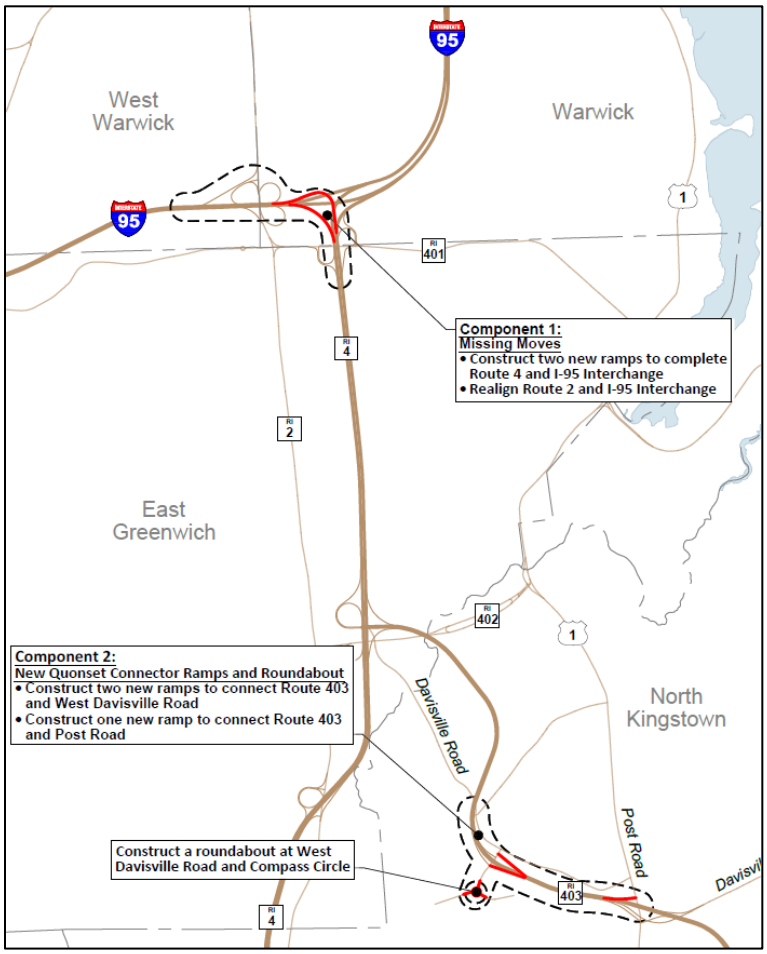
3. Outcome Criteria Narrative

A. Project Overview

Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the Multimodal Project Discretionary Grant (MPDG) Program to support **Completing the I-95 Missing Move and Ramps to Quonset Business Park.** This $135 million project is a public-private partnership to construct several critical connections for freight movement in Southern New England.

As the name suggests, this project is about completing unfinished plans. Spanning three towns in central Rhode Island, this project has two components linked by a three-mile stretch of RI RI-4, a limited-access freeway and essential north-south connection for 63,000 daily vehicles.

Figure 3-1 Project Summary Map



Component 1 will complete the "Missing Movements" between Interstate 95 (I-95) and RI-4 to create a direct freeway connection at one of the busiest junctions in the state while removing traffic from local roads.

Component 2 will construct three ramps to service RI Route 403 (RI-403) which were deferred during initial construction in 2008, expanding access to Quonset Business Park (QBP) and improving safety in nearby neighborhoods. This project will directly address all 6 of the Project Outcome Criteria identified in the Notice of Funding Opportunity (NOFO).

Taken together, these improvements will address immediate freight connectivity, safety, and economic development issues along this critical corridor in the heart of Rhode Island. The project is a generational opportunity to invest in the state's economic future by funding a smart, freight-driven project that is ready to be constructed.

The primary purposes of this project include [1] creating safer roads, [2] achieving and maintaining a state of good repair; [3] improving economic impacts, freight movement, and job creation; [4] addressing climate changem resiliency, and the environment; [5] delivering equity, multimodal options, and quality of life improvements; and [6] delivering an innovative project creative technologies and delivery methods.

B. Project Outcome Criteria

(1) Safety

(A) Reduce Fatalities & Serious Injuries

This project addresses several safety issues caused by existing road conditions. A crash analysis conducted to support the Interchange Justification Report (IJR) for Component 1 (The Missing Moves) examined a three-year period and identified 1,000 accidents on freeway segments and 500 on arterial roads in the vicinity of RI-4 and I-95. Of the freeway incidents, more than half were rear-end collisions, likely attributable to congestion. Apart from the RI-2 / I-95 SB Off-Ramp intersection, all the surface road intersections in the study area will have a sharp decline in traffic volume as a result of the proposed action.

Figure 3-2 Strategies Supporting the National Roadway Safety Strategy

Impact on Crashes, Fatalities, & Injuries	•Reduce all crashes by projected 50% •Deploy Every Day Counts (EDC) countermeasures to reduce risks of fatal and serious injury crashes
Protecting Vulnerable Road Users	•Improve signalized crossing to assist pedestrians crossing major arterials •Reduce pedestrian exposure to traffic on local roads
Addressing Inequities in Crash Victims	•Pedestrian Risk Tool used in scoping to ensure improvements for pedestrian facilities •Prioritizing upgrades to service zero vehicle households
Incorporation of Roadway Design and Technology	•Lead Pedestrian Interval (LPI) on Division St.; allows pedestrians to establish presence •Upgrade ITS equipment to improve emergency response times.
Supporting National Roadway Safety Strategy	•**Safer Roads:** Enhance all crossings; HFST on RI-4 ramp •**Safer Speeds:** Traffic signal system coordination to influence progression speeds

The decline in surface road volumes will improve safety and is expected to decrease the existing high accident rates experienced at most of the study intersections. In addition, traffic analyses conducted to support this grant application determined that high-friction surface treatments on the horizontal curve linking RI-4 North to I-95 North may reduce crashes by up to 50% per year.

(B) Protect Non-Motorized Users

Near RI-403, 30 crashes per year were identified within the Component 2 work area over 7 years. By redirecting traffic away from local roads and onto RI-403, this project will remove 2,500 daily vehicles, mostly heavy trucks and commuter traffic, from local roads like Devil's Foot Road, an area where 1 in 5 households has school-aged children.

(C) Implementing the National Roadway Safety Strategy

The safety improvements in this project will have a positive impact on the number, rate, and consequence of crashes, protect vulnerable roadway users, address inequities, incorporate technology, and utilize the NRSS to improve safety. Figure 3-2 identifies specific strategies.

RIDOT received feedback from USDOT that this project would be likely to receive a higher rating for Safety considerations if additional safety data were included to help document this analysis. Geospatial crash data are included with this submission.

(2) State of Good Repair

This project will maintain the highway infrastructure system in a state of good repair by modernizing core infrastructure to service local, regional, and freight travel requirements. The pavement and bridges within the project limits are in fair condition. A 30-year lifecycle management plan is included in the attached BCA (Lifecycle Management Cost).

(A) Aligning with Transportation Asset Management Plans

RIDOT's primary objective is achieving and maintaining a State of Good Repair (SOGR), an objective which is also a **primary purpose of this project**. Safe and efficient transportation is a top concern of the state, as outlined in the Long-Rang Transportation Plan for the next 30 years. Following the guidance of USDOT in their debrief of RIDOT's 2022 MPDG application, RIDOT notes that the Department's asset management goals are laid out in both state law, and in RIDOT's federally-approved 2022 Transportation Asset Management Plan (TAMP) **which explicitly accounts for the repair, operation, and maintenance of the assets in this project.**

The benefit-cost analysis for this project includes detailed projects of lifecycle management costs for all assets proposed in this project. RIDOT is committed to setting aside **$26.125 million** over the next 30 years. **RIDOT has already unequivocally accounted for the repair, operation, and maintenance of the assets in this project in the following plans and policies:**

- **RIDOT's 2022 Transportation Asset Management Plan (TAMP)** | Includes condition projections the presume the completion of all assets in this project prior to 2031, and a Financial Plan which includes dedicated preservation spending to maintain both bridges and pavement across the state, including the new assets proposed by this project;
- **Rhode Island's FFY2022-2031 State Transportation Improvement Program (STIP)** | Includes funding to support the construction of this project, including the required match for the requested grant, and dedicated line items for long-term bridge and pavement maintenance and preservation; and
- **Rhode Island's 2022 Freight and Goods Movement Plan** | Identifies 2 locations within this project among the **15 Top Freight Bottlenecks in the state** (see p. 131, Table 23), a challenge which will be directly addressed by the improvements proposed in this application.

All RIDOT assets are inspected and maintained by RIDOT's Division of Highway and Bridge Maintenance. RIDOT is leveraging the Bipartisan Infrastructure Law (BIL) to increase its commitment to asset preservation. In February 2022, RIDOT added BIL funds to the STIP, dedicating $195 million in additional funding to support bridge and pavement maintenance activities.

(B) Addressing Current and Projected Vulnerabilities

The proposed action is needed to shift traffic from local roads, improving level-of-service on all affected routes. This project will reduce threats to efficient freight movement by improving travel times and decreasing freight traffic on local roads. In a no-build scenario, rising levels of through traffic on local roads would accelerate asset deterioration and increase lifecycle management costs. The project's capacity to prolong asset lifespans by redirecting asset-deteriorating traffic yields future cost reductions beyond the scope of routine maintenance. In addition, the safety improvements detailed in Section B(1) and the attached BCA will address existing road user vulnerabilities.

Figure 3-3 Lifecycle Management Costs (30 years)

Item	Cost ($M)
Bridge Maintenance	$20.005
Pavement Maintenance	$11.440
Total (30 Years)	**$31.445**

The attached BCA includes a detailed lifecycle management plan to maintain all assets constructed by this project. RIDOT estimates maintenance and preservation costs to maximize asset lifespans will total $31.445 million over 30 years.

Pursuant to FHWA's published Policy on Using Bipartisan Infrastructure Law Resources to Build a Better America, this project will improve the condition and safety of existing state-owned transportation infrastructure within the right-of-way.

(3) Economic Impacts, Freight Movement, Job Creation

(A) Improving System Operations

This project makes up a large portion of the Primary Freight Network in Rhode Island. Construction of Component 1 alone is expected to generate 1,125 jobs and increase economic output by $134,149,888 ($ 2016). According to the 2020 Congestion Management Plan, RI-4 at I-95 is the #19 ranked congested bottleneck in the state. Rhode Island's 2022 Freight and Goods Movement Plan separately identified it as the 14th and 15th most significant freight bottlenecks. This project will reduce congestion for all road users by:

- Removing heavy freight traffic from local and arterial roads, particularly in Areas of Persistent Poverty and Historically Disadvantaged Communities;
- Eliminating a complicated and unsafe series of movements using busy arterial roads to maintain a connection between limited access highways; and
- Installing new ITS and safety infrastructure to guide road users through a critical part of the state's highway system.

The end result will be much-improved traffic flow at one of the state's top bottlenecks.

(B) Improving Multimodal Transportation Systems

This project will shift car and truck traffic from local and arterial roads creating a safer environment for transit users on and around RI-2, Devil's Foot Road, and US-1.

(C) Decreasing Transportation Costs

This project will improve the National Highway Freight Network, reducing congestion on primary freight corridors and improving travel times for commercial freight vehicles by more than 20,000 hours per year.

(D) Improving Economic Strength of Regions and Cities

Both project areas are located just a few miles from Rhode Island's rural communities. The improvements outlined in this application will strengthen rural communities' access to major roadways and by extension, national and international trade markets, encouraging regional economic development and creating new job opportunities.

(E) Enhancing Recreational and Tourism Opportunities

RI-4 is known as the "gateway to South County"; a large area of beaches, tourism and economic vibrance in addition to some of the most pristine wooded and rural areas on the East Coast. In the summer, daily drivers on RI-4 increase by 11-13 percent on average due to beach traffic. Many beachgoers are from out of state and find it challenging to navigate the signalized moves at RI-4 and I-95. This project will eliminate that

confusion and improve access to tourist destinations including the Martha's Vineyard Fast Ferry, Quonset State Airport, Seabee Museum and National Park, John H. Chafee Rome Point Preserve, Historic Wickford Village, and dozens of town and state managed beaches and parks.

(F) Creating High Quality Jobs

The Quonset Business Park plays a significant role in supporting Rhode Island's economy, contributing $5.9 billion in economic output in 2022, which represents 8.3 percent of the state's Gross Domestic Product (GDP). The average wage at the Park is 10 percent higher than the statewide average and the Park created $1.72 billion in income for Rhode Island households in 2023. According to the Bureau of Labor Statistics (BLS), 17.8 percent (81,000) of Rhode Island private and public sector workers were union members in 2020. Among the 50 states, Rhode Island reported the third highest union membership rate. Union members and workers whose jobs are covered by a union or employee association contract represent 19.1 percent of Rhode Island's wage and salary workers, 7 percent higher than the national average. Ironworkers (Local 37) are employed in various vertical construction projects at the Park, and more will be added to support this $135 million project.

Figure 3-4 Creating Jobs at QBP



Teamsters members at the Park include car haulers at NORAD Inc. UPS, JF Moran and others employ drivers that frequently use the routes affected by this project. In addition, RIDOT and its vendors have partnered with the Laborers International Union of North America (LIUNA) to not just provide jobs, but help create long-lasting, good-paying careers in the construction field.

(G) Workforce Opportunities for Historically Underrepresented Groups

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 the OJT/SS program. RIDOT's primary contractors are signatory to collective-bargaining agreements with the member unions of the Rhode Island Building & Construction Trades Council (RIBCTC).**

(H) Fostering Economic Growth and Development

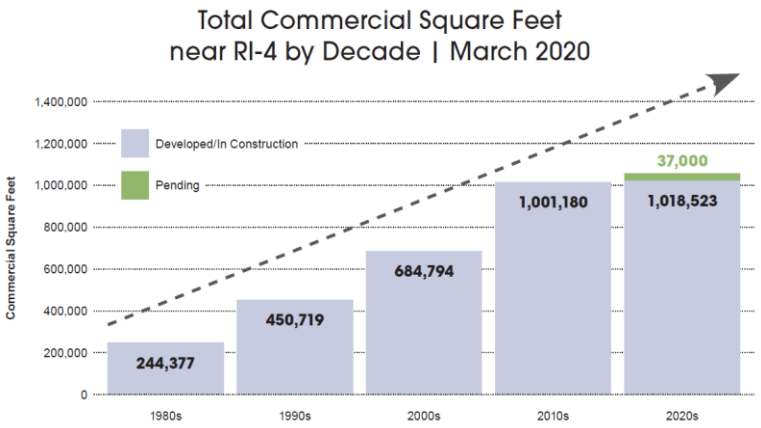
This project improves access to key points in the southern half of Rhode Island. Easing freight access will encourage continued economic growth, particularly at and around QBP. Component 2 of this project includes a new roundabout that will allow businesses at West Davisville to expand and accommodate the additional commuter traffic and large vehicles going to and from this area. The roundabout will not have a direct impact for the residents of Devil's Foot Road, and it will allow the businesses around West Davisville Road to expand and provide additional job opportunities for the residents in the area.

The Quonset Business Park is a keystone in Rhode Island's green-energy transition strategy. The Port of Davisville, located within the Park, plays a critical role in the offshore wind energy sector. Revolution Wind, who will be constructing the 800 MW Revolution Wind Farm, made their first official landfall in Rhode Island

at the Quonset Business Park ahead of planned wind farm construction. With a national Federal target to install 30 GW of offshore wind capacity by 2030, there will continue to be significant and sustained demand for the Port of Davisville facilities to support offshore wind in the coming decades.

(I) Supporting Integrated Land Use

Figure 3-5 Commercial Development near Route 4 by Decade



The improvements proposed in this project will support land-use productivity and growth in the communities surrounding both project components. The towns of North Kingstown and East Greenwich have grown rapidly in the decades since RI-4 was built. In North Kingstown alone, commercial development on the RI-4 corridor has grown exponentially, adding nearly one million square feet of new commercial real estate to local tax rolls since 1990.

Rhode Island's Land Use Plan includes an objective to "maintain a balanced, integrated, safe, secure, and cost-efficient transportation system, locating residential, industrial, commercial, and institutional development within transportation corridors," and this project strives to support that aim by improving connectivity across the state.

(J) Helping the United States Compete in a Global Economy

This project improves access to Quonset Business Park from points north, south, and west. The Park is home to 1 in 20 jobs in Rhode Island, and 1 in 5 manufacturing jobs. The Port of Davisville is a top 10 port in North America for imports of finished automobiles. Cargo shipped through the Port include submarine hull cylinders, propane, lumber, food products, 3D printed objects, and wind turbine components. Since 2005, the Park created 5,649 new jobs, $1.85 billion in private investment, and generates $169.1 million in tax revenue annually. It is expected that QBP will continue to expand, bringing employment at the Park to 16,695 workers by 2030.

(4) Climate Change, Resiliency, & the Environment

(A) Incorporation Climate Change and Environmental Justice

Climate change is very apparent in the Ocean State. Annual average temperatures in Rhode Island have risen 3 degrees since 1900, and the state's 21 coastal communities risk flooding and land loss as a result of rising seas. In addition, climate change threatens the state with stronger, more frequent storms including high-wind and water events. The corridors in this project are important hurricane evacuation routes. The entirety of Component 2 is located in an Area of Persistent Poverty and an Historically Disadvantaged Community. That area will benefit from this project in the following ways:

- A new access point from Post Road to Route 403W will allow travelers on Post Road to have more efficient access to Route 403, eliminating the need for through traffic to use Devil's Foot Road. That traffic pattern change should improve air quality in a tract that is in the 90th percentile for asthma, 68th percentile for percentage of low income households according to the CEJST tool; and

› New ramps will provide efficiency and redundancy for emergency and evacuation situations, both of which are beneficial for favorable outcomes, and a necessary investment in a tract in the 93rd percentile for Proximity to Risk Management Plan Facilities according to the CEJST tool.

Environmental justice planning is described further in in Section 3B(5).

(B) Reducing Transportation-Related Pollution

This project will reduce greenhouse gas emissions by 700 metric tons per year relative to the no-build scenario by improving road usage efficiency; Component 1 will reduce GHG emissions by 732 tons alone. While there are slight increases in greenhouse gas emissions shows in the BCA that is due to the Build Condition processing 2,000 more vehicles that the proposed condition which improves freeway access and reduces individual trip miles and emissions. The project also incorporates stormwater runoff into its design as described below, and the Design-Build team will obtain a RIDEM RIPDES (RI Pollution Discharge Elimination System) permit during final design.

(C) Preventing Stormwater Runoff

The Part 667 assessment included in RIDOT's 2022 TAMP details an internal study that was conducted to identify repeatedly damaged assets and their associated vulnerabilities during the period from 1997 through 2021. **The study does not identify any location within the project area as a recipient of repeated damage due to flooding and stormwater runoff or any other cause.** However, other parts of I-95 just north of the project area have been subject to closures and damage due to extreme weather events in recent years, including multiple closures of highways in the Providence area. **This project creates an opportunity to install new stormwater treatment infrastructure at a critical junction point for I-95, which will help ensure that exposure to flooding, damage, or repeated damage can be minimized, and improve water quality across watersheds.** RIDOT recently applied for grant funding through the PROTECT program to install 97 nature-based STUs across the state, including five along RI-4 and I-95 in very close proximity to the project area. Nature-based stormwater solutions are a foundational component of RIDOT's climate resilience efforts and will be installed wherever possible during capital projects, including this project.

The wetland that Ramp WD-C will impact has the potential to contain an interior special aquatic site (SAS). The scoping team's biologist conducted two surveys in the spring of 2021 and found no evidence of vernal pool obligate species. While the SAS has the potential to provide a wildlife habitat, the absence of any obligate species suggests the SAS is not suitable, likely due to the proximity of RI-403 and the North Kingstown Transfer Station parking lot. It is not anticipated that the minor alterations to the wetland will adversely affect its wildlife habitat value. Runoff will be treated with proposed stormwater treatment units, a benefit to the wetlands and its aquatic species. This year, RIDOT upgraded two large detention basins along RI-403. The basins designed near the ramps will be equipped to handle the runoff capacity of the new proposed ramps in this project.

(D) Promoting Energy Efficiencies

Reducing traffic delays improves energy efficiency. This project makes important contributions to that effort by optimizing signalized intersections surrounding both project areas and shifting VMT away from low-speed local roads towards more efficient freeways.

(E) Complying Within Federal Flood Risk Management

A portion of the I-95 SB to RI-2 off-ramp terminal is adjacent to the existing Zone AE floodplain (1% annual chance of flood). The total impacted floodplain area is approximately 1.2 acres, but the proposed ramps will

be designed to avoid impacts to the maximum extent practicable. Floodplain compensation areas would be established in accordance with guidance to mitigate any adverse impacts on the floodplains if needed.

(F) Addressing Environmnental Sustainability

(i) Reducing Greenhouse Gas Emissions

As shown in Section VI and the attached BCA, Component 1 of this project will reduce greenhouse gas emissions by 177.58 tons per year. Component 2 will increase emissions per year by 140.75 tons, but this impact will be mitigated by future improvements in fuel efficiency and autonomous freight technology. Furthermore, Component 2 removes freight traffic from local roads, improving air quality in residential areas.

(ii) Supporting Climate Action Plans

Since 2015, numerous resources have been developed in Rhode Island to support environmental resiliency for long-term planning, illustrating what coastal flooding could look like under different climate change scenarios. Resources supporting efforts to mitigate the effects from climate change and reduce GHG emissions include the Rhode Island Climate Dashboard, Transportation Emissions Dashboard, RI STIP Mapping Tool, and Long-Range Transportation Plan. This project supports these action plans by reducing greenhouse gas emissions.

Rhode Island has developed an EPA-approved Stormwater Control Plan for the Saddle Brook Watershed, the area impacted by Component 1 of this project. The current watershed has only 0.1 acres of stormwater treatment, and the plan has identified 17 Stormwater Treatment Units (STUs) totaling 10.9 acres of treatment. **6 of those STUs will be constructed by this project, directly addressing stormwater management needs and resiliency in this area.**

(iii) Integrating Planning in the STIP

Rhode Island's State Transportation Improvement Program (STIP) is a 10-year program focused on state of good repair projects. A recent review by FHWA-RI noted the STIP complies all state and federal requirements. FHWA also recently recognized RIDOT's Transportation Asset Management Plan as consistent with all federal requirements and a "commitment to the principles of asset management."

(iv) Applying Environmental Justice Tools

In 2021, RIDOT completed a Title VI Environmental Justice Analysis for each component of this project. They are attached to this narrative as Appendix B-1. The project is not considered to have an adverse effect on an environmental justice population.

Component 1 of this project would have direct beneficial impacts because it would provide full freeway-to-freeway access between Interstate I-95 and RI-4, reducing interchange-related traffic congestion in surrounding communities, and improve commuter and freight networks, which would improve safety within the local community. Component 2 will positively impact the public, including Justice40 populations. The removal of extraneous through traffic will benefit the residents of Devil's Foot Road, located entirely in an Area of Persistent Poverty and Historically Disadvantaged Community. The decrease in heavy vehicle traffic will reduce wear and tear, congestion, pollution, and noise. There will also be an improvement in the safety of the roadway for residential drivers and pedestrians. The addition of the RI-403 ramps will also provide local residents a more direct route to get onto the freeway, reducing travel times.

(v) Supporting Energy Baseline Studies

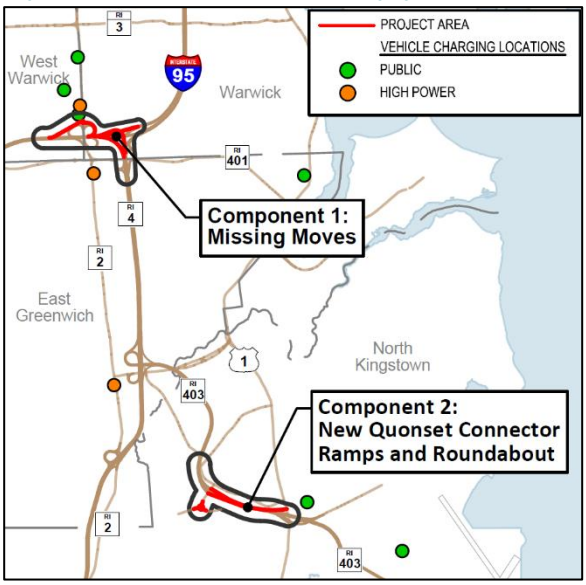
Baseline transportation energy sector studies include the 2021 Clean Transportation and Mobility Innovation Report and the 2016 RI Greenhouse Gas Emissions Reduction Plan. This project supports both studies by reducing greenhouse gas emissions.

(vi) Supporting Modal Shifts in Freight

This project encourages a shift in freight away from local roads and onto highways. The improvements in both components are designed around demand management to reduce congestion. By shifting traffic off local roads, queuing and low-speed emissions will fall, reducing travel time delays and greenhouse gas emissions.

(vii) Incorporating Electrification Infrastructure

Figure 3-6 Proposed Electric Vehicle Charging Stations



In 2022 RIDOT's "State Plan for Electric Vehicle Deployment," was approved by USDOT. A subsequent update was submitted for approval this year. Both are the basis of a $23 million NEVI implementation to expand the state's alternative fuel corridors and publicly accessible electric vehicle charging stations.

This project will advance those objectives by installing improving access to EV charging stations near RI-4, which is likely to be designated as a NEVI corridor.

i. Promoting Energy Efficiency

This project promotes energy efficiency by reducing travel times and fuel consumption.

ii. Serving Renewable Energy Supply Chains

As Section B(3)(H) notes, Quonset Business Park plays a critical role in developing and serving the renewable energy supply chain. The Port of Davisville, located in the Quonset Business Park is strategically located near the U.S. Bureau of Ocean Energy management's (BOEM) offshore wind lease areas, offering easy access for crews and services supporting the wind industry. With over $100 million in investments, the Port modernized and expanded its infrastructure including the recent completion of the Crew Transfer Vessel harbor; a specialized facility designed to service offshore wind related ships. Revolution Wind - an 800 MW offshore wind farm scheduled to break ground in September 2023- will bring renewable energy to Rhode Islanders through the Quonset Business Park. **Materials to support these and other critical projects flow through both Quonset Business Park, and this project will ensure that all materials required to advance those efforts arrive at their destinations safely, on-time, and on-budget.**

(viii) Improving Disaster Preparedness and Resilience

The project area is a coastal and emergency evacuation route. This project enhances the state's disaster preparedness by replacing worn-out infrastructure and easing congestion.

(ix) Avoiding Adverse Environmental Impacts to Air and Water Quality

This project will avoid adverse environmental impacts. Water quality will be addressed by following the requirements from the Stormwater Consent Decree between RIDOT, USDOJ, and USEPA. The project will comply with all permitting requirements, and the scoping team has taken steps to minimize wetland impacts (see Section 4).

(x) Repairing Dilapidated or Idle Infrastructure

The proposed ramp WD-D in Component 2 goes through an Engine House to service the Seaview Railroad. The Engine House was relocated in 2021 at the expense of QDC.

(xi) Incorporating Energy-Efficient Buildings

No energy-efficient buildings are being constructed in this project.

(xii) Recycling of Materials

Although no carbon-reducing materials have been selected for use in this project, RIDOT is working with researchers at the University of Rhode Island and a carbon-concrete manufacturer on uses of low-carbon materials and is open to using them in the future.

(5) Equity, Multimodal Options, & Quality of Life

In the USDOT debrief concerning RIDOT's 2022 MPDG application for this project, the review team expressed that this project did not merit a high rating for Equity, Multimodal Options, and Quality of Life because the application did not specify how the project would generate mobility benefits for the surrounding community. To address that concern, this application notes that construction of new assets in both project components will **improve the Travel Time Reliability for public transit providing critical access to and from Quonset Business Park and other major trip generators within the project area**. Bus lines servicing the area include:

- The QX (Quonset Express) line from the newly-opened Pawtucket-Central Falls Transit Center to QBP;
- Route 16 line connecting CCRI and the New England Institute of Technology to QBP; and
- Route 14 which connects Providence, Newport, and Narragansett to QBP.

All three of these lines are currently subject to suboptimal operating conditions posed by the existing road geometry that would be rectified by the installation of new ramps and facilities. The following sections provide additional details describing this project's impacts on Quality of Life Enhancements.

(A) Improving Quality of Life

(i) Increasing Affordable and Accessible Transportation Choices

This project will make local and arterial roads safer, improving access to affordable and accessible transit options, especially on RI-2 and US-1.

(ii) Improving Access to Emergency Care and Essential Services

By reducing congestion, this project will make it easier for emergency services to respond to those in need and reach care centers safely.

(iii) Reducing Transportation and Housing Cost Burdens

This project improves fuel efficiency, reducing transportation costs. Using public-private financing, this project will encourage commercial and mixed-income development, especially near QBP.

(iv) Increasing Walkability and Accessibility

Removing freight traffic from local roads will encourage adoption of active transportation.

(v) Enhancing Unique Characteristics of the Community

Rhode Island, the Ocean State, is defined by its connection to Narragansett Bay and its waterways. The Port of Davisville is the former home to Naval Air Station Quonset Point and the home of the United States Navy's Construction Battalion "SeaBees". This project will reinforce Quonset's second wind as a cornerstone of Rhode Island's blue economy, powered by offshore wind, to reinvigorate a former military community.

(vi) Proactively Addressing Equity

Equity planning is addressed in Sections II(b) and V(d)(iv) of this narrative.

(vii) Engaging Diverse People and Communities

RIDOT will engage diverse communities to ensure that equity concerns are considered. Municipal outreach methods include charting any EJ impacts within the project limits, scheduling public and stakeholder meetings, creating a project website, sending weekly email updates, and assigning Outreach personnel to respond to stakeholder issues.

(viii) Supporting Local, Regional, and State Equitable Development Plans

Rhode Island supports Justice40 goals, and those supported by this project include Clean Energy and Energy Efficiency, and Training and Workforce Development. The state also has a public participation plan to provide equitable involvement in planning processes.

(B) Benefiting Historically Disadvantaged Communities

Component 2 of this project is located entirely within an Historically Disadvantaged Community. Benefits to that community are described throughout this proposal, but include at a minimum:

- Air quality improvements due to a reduction in congestion and rerouting of heavy freight vehicles off local roads within the HDC;
- Safety improvements, reducing heavy traffic on local roads; and
- Improvements in travel time reliability for all vehicles, including public transit, totaling an estimated annual benefit of **more than $12.19 million in travel time savings just within Component 2 alone.**

(C) Proactively Addressing Equity and Barriers to Opportunity

(i) Completing an Equity Analysis

An equity impact analysis has been completed for each Project Component as part of the Project Scoping process. Separately, RIDOT staff used the CEJEST tool to assess the project area, and the findings of that analysis have been noted throughout this project narrative. In addition, the state conducts an Equity Analysis for the Long-Range Transportation Plan and a Transportation Equity Benefit Analysis as part of the STIP.

(ii) Adopting Equity and Inclusion Programs

RIDOT encourages the hiring, training, and promotion of persons within protected classes to reflect more accurately the available workforce in Rhode Island. RIDOT also maintains active Civil Rights, ADA, Equal Employment Opportunity, Title VI, and Disadvantaged Business Enterprises (DBE) programs.

(iii) Planning and Hiring Policies

RIDOT's Contractor Compliance Program ensures that federally funded construction contracts comply with 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.

To both create and support high quality jobs, RIDOT has developed a relationship with Building Futures RI (BFRI) to establish a registered apprenticeship program (RAP) in the bridge maintenance division. This program is expected to launch in August 2023. RIDOT has partnered with since its founding in 2017 and will the only State-certified and statewide construction pre-apprenticeship training program. The program has drawn participation from all but one of Rhode Island's economically distressed census tracts. Of Building Futures' Graduates in Resident Apprenticeships, 385 graduates have entered the Resident Apprenticeships in skilled construction, with 76% continuing to work in the industry. Half, (50%) of the Building Futures' Graduates come from Justice involved areas, with 100% from low-income and 35% from extremely low-income areas when entering the program.

(iv) Mitigating Physical Barriers

The removal of traffic from local roads surrounding both project components creates opportunities for low-income communities to grow and expand.

(v) Including New or Improved Walking and Bicycle Infrastructure

This project does not include pedestrian or bicycling infrastructure.

(vi) Improving Freight Access

This project will improve freight movement to all areas of the state, including underserved communities near Component 2 where growth of QBP is fueling economic development. Currently, the state and region are highly reliant on highways and truck transportation for commodity flow, with approximately 89 percent of all freight (by both weight and value) moving in and out of Rhode Island transported by truck. This total truck tonnage is anticipated to grow at 2.1 percent per year through 2030, a trend of key consideration in the planning and prioritization of highway infrastructure projects over the next several decades. This project will ensure that members of all communities can safely navigate the state's highway system as freight demands continue to grow and expand *without* negative impacts on HDCs and APP communities.

(vii) Addressing Automobile Dependence as a Barrier to Opportunity

This project addresses automobile dependency as a barrier to opportunity by moving heavy freight vehicles off of local roads thereby making it safer to walk, ride, and access transit offerings on local roads.

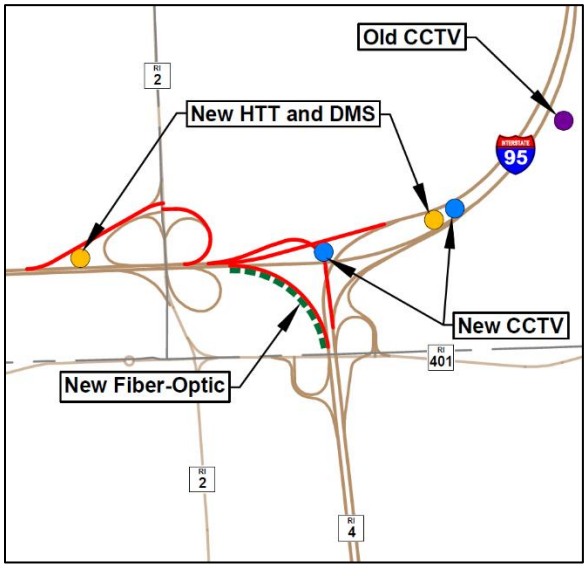
(6) Innovation

In the USDOT debrief concerning RIDOT's 2022 MPDG application for this project, the review team noted that the previous application did not sufficiently explain whether this project would provide **transformative benefits** for Rhode Island. To address that concern, completing this project would represent a **transformative innovation** for Rhode Island in **three** (3) major ways:

- **Demonstrating the Impact of Federal Discretionary Grant Programs |** If this project secures the requested MPDG funding, it will be the first project in RIDOT history funded by a majority of discretionary grant dollars. The project will have been conceived, developed, designed, and constructed using almost exclusively competitive dollars, offering a case study for the state, region, and country to demonstrate the true reach of well-funded discretionary grant programs;
- **Proving the Utility of a Project Delivery Method |** This project is unique in that NEPA was able to be completed using funds from a Planning grant, thereby creating a much more complete, competitive project for a construction grant. If this project is able to secure construction funding, RIDOT will adopt this approach as a Standard Operating Procedure for Major Capital Projects eligible for discretionary grant funds, in an attempt to develop complete, holistic investments; and
- **Transforming the Way People and Goods Move Throughout New England |** Completion of this project will create direct connections between two of the economic drivers of the state—Quonset Business Park and I-95—where none currently exist. Easing access between these resources will enable robust economic growth, particularly for the rural, western portion of the state where job and housing opportunities are likely to expand, and the busy, coastal part of the state that drives tourist traffic down the very roads in this project.

(A) Innovative Technologies

Figure 3-7 Component 1: ITS Improvements



RIDOT's Transportation Management Center analyzed the project area to identify potential ITS improvements. Their recommendations include but are not limited to installing new CCTV cameras, rehabbing existing CCTV equipment, installing multiple hybrid travel time and ground-mounted DMS signs, and installing new fiberoptic infrastructure. The full scope of their recommendations is included in Appendix A-4.

These systems will provide the RIDOT TMS 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.

Such benefits are compounded by the project's capacity to eliminate drivers' interaction with at least three traffic lights that currently delay the transition from RI-4 North to I-95 South – a route that serves as one of the most prominent economic forces within RI's transportation network. The recommended innovative technology additions in conjunction with a reduction in unnecessary interaction with existing traffic control mechanisms will result in transformative traffic flow efficiency benefits for statewide travelers.

(B) Innovative Project Delivery

This project is perhaps the most unique example of innovative project delivery in RIDOT's history. Development of this iteration of the project began with a successful application for planning grant funds, which have been deployed over the past three years to develop a scope, complete environmental reviews, and develop robust cost estimates and phasing proposals. **That process has positioned this project to be executed immediately upon award of MPDG funding.**

RIDOT will be utilizing a "design-build" procurement process, using a single contract to support both design and construction work. One entity, one contract, and one unified flow of work from initial concept through completion has been a tried-and-true method for successfully delivering transportation projects with superior results for the past six years. RIDOT will issue a Request for Proposals (RFP) encouraging potential applicants to be as creative and innovative as possible in their proposals. However, responding design-build teams will have a robust base technical concept from which to expand.

(i) Component 1: The Missing Moves

1. Phase 1: Ramp Construction

The first phase of construction in Component 1 will include construction of three ramps. At RI-2, the existing ramp linking RI-2 South to I-95 South will be modified to accommodate traffic from RI-2 North. Two travel lanes will be maintained in each direction on RI-2, and there will be no traffic impacts on the other ramps. At the I-95 and RI-4 interchange, construction will begin on two new ramps and a new section of I-95 South. Five travel lanes will be maintained at the I-95 South split to RI-4 south, and two travel lanes will be maintained on the rest of I-95. Construction will also begin on a new superstructure to support the ramp from RI-4 North to I-95 South. The new bridge will have six spans carrying traffic over I-95, merging onto I-95 South in the right lane. The approach will use space occupied by I-95 South, so a short segment of new highway will be built on previously disturbed land between the existing barrels of I-95 North and South.

2. Phase 2: Completing the Ramps

Phase 2 will complete construction of all three ramps begun during Phase 1. At RI-2, ramp modifications to allow traffic from RI-2 North will conclude, and the northern side of the ramp will be widened to accommodate an additional travel lane. Signal modifications will be made to add a dedicated left arrow for northbound traffic on RI-2. Traffic on the I-95 South off-ramp to RI-2 will be reduced to one lane during this phase, but there will be no traffic impacts on I-95 or the existing loop ramp providing access to I-95 South, which will be removed in Phase 3. At the I-95/RI-4 merge, the new segment of I-95 South will open to traffic, allowing the old portion to be closed and demolished. The western portion of the eliminated section will be replaced by the end of the new ramp linking RI-4 North to I-95 South, and construction on the superstructure supporting that ramp will be completed. Finally, the new ramp linking I-95 North to RI-4 South will open to traffic.

3. Phase 3: Completing Tie-Ins, New Pavement, and Water Quality Improvements

During the final phase of construction, ramp tie-ins will be completed, and a new pavement surface, road markings, and water quality improvements will be installed. At RI-2, the newly configured ramp to I-95 South will open to traffic, rendering the old loop ramp from RI-2 North to I-95 South redundant. That loop ramp will be demolished and replaced by a new water quality system. At the interchange of I-95 and RI-4, the final ramp linking RI-4 North to I-95 South will open to traffic, completing the installation of the "Missing Moves". Construction will conclude with installation of a new pavement surface and road markings.

(ii) Component 2: The Quonset Connector Ramps and Roundabout

4. Phase 1: Ramp Construction

The first phase of construction at the Secondary Project Area will begin construction on all three ramps that will eventually connect to RI-403. At the intersection of Post Road and Gate Road, construction will begin on Ramp C, which will allow Post Road traffic to access RI-403 West. Construction will occur off-alignment, and there will be no traffic impacts on RI-403, Post Road, or the surrounding arterials. At West Davisville Road, construction will begin on new ramp WD-D, which will allow traffic on West Davisville Road to access RI-403 East, and ramp WD-C, which will connect traffic on RI-403 West to West Davisville Road. Just south of RI-403 at the intersection of West Davisville Road and Compass Circle, construction will begin on a roundabout for freight movement through the West Davisville campus of QBP.

5. Phase 2: Ramp Tie-Ins

During Phase 2, construction on all three ramps connecting to RI-403 will continue. At Post Road, a temporary lane shift will move traffic away from the future location of Ramp C so that the construction team can link it directly to Post Road on the southbound side. While traffic is shifted, the signal system at the intersection of Post Road and Gate Road will be modified to include the addition of a dedicated left turn arrow from Post Road northbound to Ramp C. At the other end of Ramp C, the tie-in to RI-403 West will be constructed. A lane shift will be deployed on RI-403 West, but two travel lanes will be maintained westbound, and there will be no traffic impacts on RI-403 East. At West Davisville Road, traffic will be reduced to a single lane in each direction while tie-ins are constructed to Ramps WD-D and WD-C, and on RI-403, lane shifts will be used in each direction to allow construction of ties-in on the opposite end of each ramp. Construction of the proposed roundabout at Compass Circle will continue, expected to nearly complete during Phase 2.

6. Phase 3: Paving, Surface Marking, and Opening to Traffic

Phase 3 will wrap up construction along RI-403. During Phase 3, the entirety of the Secondary Project Area will receive complete milling, overlay, and new pavement markings, utilizing nighttime closures to minimize traffic impacts. Once this work is complete, all three new ramps will be opened to traffic, completing the link.

(C) Innovative Financing

This project is a Public Private Partnership (P3), financed with a combination of state, federal and private funding sources. The commitment of funding from QDC will reduce reliance on state and federal funding sources, freeing up state match funds for use on other projects in the STIP. QDC is a quasi-state agency created by the RI General Assembly to develop and manage QBP and the Port of Davisville. QDC's operations are self-funded from land leases, utilities, and port revenues. The funding contribution of QDC is not derived from taxes or highway revenue, but from the lease of land owned by the State and user fees. QDC has agreed to contribute $2 million to support the project.

4. Project Readiness

A. Project Overview

Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the Multimodal Project Discretionary Grant (MPDG) Program to support **Completing the I-95 Missing Move and Ramps to Quonset Business Park.** This $135 million project is a public-private partnership to construct several critical connections for freight movement in Southern New England.

As the name suggests, this project is about completing unfinished plans. Spanning three towns in central Rhode Island, this project has two components linked by a three-mile stretch of RI Route 4 (RI-4), a limited-access freeway and essential north-south connection for 63,000 daily vehicles.

Component 1 will complete the "Missing Movements" between Interstate 95 (I-95) and RI-4 to create a direct freeway connection at one of the busiest junctions in the state while removing traffic from local roads. Component 2 will construct three ramps to service RI Route 403 (RI-403) which were deferred during initial construction in 2008, expanding access to Quonset Business Park (QBP) and improving safety in nearby neighborhoods. **NEPA is complete for both components of this project, and FHWA has granted a Categorical Exclusion. The project has been under design for several years now, with design currently at a 10% level and being advanced to a level sufficient to advertise a design-build contract.**

B. Environmental Risk

(1) Detailed Project Schedule

As Figure 4-1 shows, this project is under way and has already secured state and local approvals.

Figure 4-1 Proposed Project Schedule and Milestone Dates

Milestone	Start Date	Completion Date
Planning Approvals	May 27, 2021	September 9, 2021
Scoping & Preliminary Design	March 1, 2019	November 30, 2022
Section 106 and 4(f) Review	March 1, 2020	December 1, 2021
NEPA Review	March 31, 2021	May 13, 2022
Right-of-Way	May 13, 2022	November 30, 2022
Permitting	September 1, 2022	December 1, 2024
MPDG Funding Award	*November 30, 2023*	
Procurement of Design-Build Team	December 1, 2023	August 31, 2024
State & Local Approval	September 1, 2022	December 1, 2024
Partnership Agreements	July 31, 2024	March 1, 2025
Construction NTP	August 31, 2024	October 31, 2028
Punchlist & Closeout	November 1, 2028	October 31, 2030

NEPA for this project was completed May 13th, 2022, and preliminary engineering work will continue through 2023. Right-of-way acquisition and contract procurement are scheduled to begin before the end of the calendar year. If MPDG support is provided for this project, construction is expected to begin August 31,

2024. RIDOT is confident that the schedule described in this application will allow the project to achieve all necessary milestones to obligate INFRA funding by the statutory deadline of September 30, 2026 specified in the NOFO. The schedule above is predicated in part on an MPDG award announcement by November 30, 2023, but subsequent milestones can be adjusted if awards are announced at a later date.

(2) Required Approvals

(A) Right of Way

All components of this project will be constructed within existing RIDOT-owned right-of-way, except the ramp linking I-95 North to RI-4 South, which will require acquisition of three acres of land currently owned by National Grid. RIDOT has begun coordination with National Grid to acquire this land. All 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.

(B) Environmental Permits and Reviews

(i) NEPA

The requirements of the National Environmental Policy Act (NEPA) have been met for this project. FHWA-RI approved NEPA submissions for both components by May 10, 2022.

(ii) Section 106

Pursuant to the requirements of the National Historic Preservation Act (NHPA), 54 USC § 3061, and 36 CFR 800, the Section 106 review for this project has been completed. Both portions of the project were completed with FHWA's Finding of No Effect that was sent on October 26, 2021. The 30-day review and comment window has expired with no comment from consulting parties.

(iii) Archaeological Resources

In consultation with the Rhode Island State Historic Preservation Office (RISHPO) and the Tribal Historic Preservation Office (THPO), a Phase I archaeological survey has been conducted at the RI-4 Missing Move segment of the project. The Phase I archaeological survey uncovered a pre-contact site along the originally proposed RI-4 North to I-95 South ramp alignment. To avoid any impacts to archaeological resources, RIDOT altered the alignment of the proposed ramp to shift south. The Public Archaeology Lab (PAL) has determined that the proposed alignment described in this application will not require any additional archaeological coordination because it will occupy previously disturbed land within the highway right-of-way.

A Phase I archaeological survey has been conducted for the RI-403 Quonset Connector Ramps segment of the project. The RI-403 freeway corridor was completed in 2008 and required an Environmental Impact Statement (EIS) be completed. At that time, the project area was surveyed for archaeological resources and found to have no adverse effect to any historic properties, including archaeological sites. However, a small portion of the project area was not permitted access to archaeological survey at the time. Under the most recent survey for the RI-403 Quonset Connector Ramps, no pre- or post-contact cultural material was recovered, and no further archaeological investigation is recommended.

(iv) Above-Ground Historic Properties

This project does not have an adverse effect on any above-ground Historic Properties listed in the National Register of Historic Properties eligible to be listed in the National Register.

(v) Reviews, Permits, and Approvals from Other Agencies

The project will require a RIDEM Wetlands Application to Alter due to work within wetlands adjacent to I-95 SB and the Route 403 ramp to West Davisville Road. RIDEM Stormwater Quality Treatment will be utilized for the entire project area. Stormwater management design will be in accordance with the Stormwater Management Design and RIDEM Linear Stormwater Manual.

The design-build team procured to execute the project will also obtain a RIDEM Wetlands Permit Application to Alter (RI-4), a RIDEM Wetlands Request for Preliminary Determination (RI-403), an Army Corp of Engineers General Permit #19 PCN (Pre-Construction Notification) Application (RI-4), a RIDEM Water Quality Certification (RI-4 and RI-403), a RIDEM RIPDES (RI Pollution Discharge Elimination System), and a Construction General Permit Notice of Intent (NOI).

(vi) Environmental Studies and Other Documents

Since the submission of an INFRA Grant application for this project in 2022, planning and engineering staff have advanced environmental studies and designs on several items. In Component 1, The RI-4 North to I-95 South ramp crosses over Saddle Brook. The original design had a culvert to maintain Saddle Brook, but after discussions with the Natural Resource Unit, the design was changed to a continuous bridge over Saddle Brook for easier maintenance and minimizing wildlife impacts. A retaining wall was added to the I-95 southern shift to further minimize impact. An existing culvert will need to be extended with the retaining wall.

In Component 2, a retaining wall has been added to the ramps between West Davisville Road and Route 403 to minimize the area of fill and impacts to wetland areas. A noise study was completed for the addition of the three ramps on Route 403. A noise wall 3,800 feet long by 22 feet tall is proposed on the northern side of Route 403 to minimize the noise increase to residents on Devils Foot Road. Outreach and polling of the residents will be conducted to determine if the noise wall will be constructed.

(vii) Discussions with DOT Field Offices Regarding Compliance

FHWA-RI, RIDOT, and scoping consultants hold ongoing discussions. The team meets monthly to review questions, concerns, and progress. Several meetings with FHWA headquarters discussed traffic concerns for the RI-4 North and I-95 South ramp. FHWA-RI approved the Interchange Justification Report on April 12, 2022. Categorical Exclusions (CEs) for all portions of this project were submitted to FHWA after several rounds of comments. FHWA approved the Component 2 CE on May 6, 2022.

(viii) Right of Way

All components of this project will be constructed within existing RIDOT-owned right-of-way, except the ramp linking I-95 North to RI-4 South, which will require acquisition of three acres of land currently owned by National Grid. RIDOT has begun coordination with National Grid to acquire this land. All 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.

(ix) Public Engagement

The Stakeholder Outreach for this project began in April 2020. The Outreach team at RIDOT identified all stakeholders in the area that could be impacted by decreased traffic due to the construction this project. Also identified were town officials and the local Chambers of commerce in the areas of East Greenwich and Warwick. Individually, the Outreach team contacted as many businesses as possible, and the team asked

each employer how they felt about the project, the potential impact the business may face and if they had any feedback they'd like to share. This process was done over the course of two weeks and was completed by May 2020. The majority of the responses are supportive of the project or have no concerns.

RIDOT is remained in frequent contact with all potentially affected businesses and partners, most notably including Quonset Development Corporation. Both RIDOT and QDC remain committed to facilitating a robust and active public engagement process to support this project, the status of which is a frequent point of inquiry to the Department.

(x) State and Local Approval

This project 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 February 17, 2022. It will comply with all state and local environmental approvals required, including those described in section VII(c)(i). The Section 106 and 4(f) processes are complete for both components, and NEPA is complete for Component 2.

(xi) Other State and Local Environmental Planning Approvals

This project enjoys broad support from public and private agencies and individuals. RIDOT has received letters of support from partners at the Department of Administration's Division of Statewide Planning, Quonset Development Corporation, local and state leaders and congressional representatives, stakeholders in the construction and transportation industry, and members of the impacted community. Additional letters of support received after the application deadline will be posted on the project website.

(xii) Federal Transportation Requirements Affecting State and Local Planning

This project is included in Rhode Island's STIP, Long-Range Transportation Plan (LRTP), and Freight Plan, in accordance with the requirements of 23 U.S.C. § 134 and § 135.

(3) Assessment of Project Risks and Mitigation Strategies

The risks associated with this project are typical for projects of this magnitude. RIDOT and its project partners are taking every advance measure possible to minimize and mitigate all project risks, which include:

- **Utility Coordination:** A high voltage transmission corridor over I-95 will need to be adjusted to accommodate the new flyover. The project budget includes funding to support this task, and RIDOT will continue to coordinate regularly with National Grid.
- **Traffic Backups During Construction:** Both project components are located in highly traveled areas, and construction may be disruptive. RIDOT will provide advanced notice of all lane shifts and scheduled work to inform the public and mitigate potential delays. Prospective design-build teams will also be encouraged to develop innovative methods to maximize off-alignment work
- **Permitting Review Time:** This is a large project with a variety of required permits. The Design-Build team will need ample time and funding to complete the permitting process. RIDOT will carefully monitor and update the project schedule to ensure timely completion.
- **Contaminated Soil Near the Engine House:** Removal of the Sea Vue Engine House may surface contaminated soil in the West Davisville project area. RIDOT will work closely with QDC to mitigate this risk and remediate the area as needed.

C. Technical Capacity

(1) Engineering and Design Studies and Activities

RIDOT has a scoping contract with Commonwealth Engineering to advance the project supported by a $4 million BUILD planning grant. This effort will advance design to a level sufficient for RIDOT to advertise the project as a design-build contract. The Interchange Justification Report (IJR) for the project was approved by FHWA-RI on April 12, 2022, and Categorical Exclusion for Component 2 was approved on May 6, 2022.

(2) Development of Design Criteria and Basis of Design

The basis of the design is the correction of design flaws in the existing road network, and incorporation of safety improvements. Appendix D lists Design Criteria Guidelines.

(3) Basis for the Cost Estimate

As shown in the **Project Budget** portion of this application, RIDOT has estimated that the total future cost of the project will be $135 Million. It is derived from a quantity-level estimate completed by Commonwealth Engineering during scoping and refined by GM2 in partnership with RIDOT during the development of the base technical concept.

(4) 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.

(5) Compliance With Civil Rights and Title VI Requirements

RIDOT effectuates its nondiscrimination commitment in projects for the construction and maintenance of multi-modal 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.

5. Project Requirements

A. Project Overview

Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the MPDG Program to support **Completing the I-95 Missing Move and Ramps to Quonset Business Park.** Component 1 will complete the "Missing Movements" between I-95 and RI-4 to create a direct freeway connection at one of the busiest junctions in the state while removing traffic from local roads. Component 2 will construct three ramps to service RI Route 403 (RI-403), deferred during initial construction in 2008, expanding access to Quonset Business Park (QBP) and improving safety in nearby neighborhoods.

B. Statutory Selection Requirements

This project satisfies all statutory requirements of 23 USC 117. The table below summarizes how this project meets the applicable statutory requirements in the format requested in the Notice of Funding Opportunity.

Figure 5-1 Statutory Selection Requirements

23 USC 117 INFRA	Guidance
(1) the project will generate national or regional economic, mobility, or safety benefits	**Component 1:** The Missing Moves project component will streamline the transition from RI-4 to I-95 South, eliminating travelers' reliance upon local roads and traffic signals to complete this connection. The resulting traffic reduction along these local roads will improve mobility for residents in surrounding communities. Meanwhile, the substantial number of passenger, freight, and emergency vehicles that use this route for daily economic and safety functions will benefit from significantly reduced travel times. **Component 2:** Constructing the deferred ramps linking RI-403 and Quonset Business Park will create a safe, direct connection between one of the state's largest job centers and one of the only deepwater ports in New England. Construction of these ramps will allow heavy freight vehicles to access the business park directly from major freight routes, bypassing local roads that are currently frequented by large vehicles. The result will be a safer, smarter corridor that protects the jobs of the freight operators and skilled laborers who work nearby, and protects the lives of the children and families who live and play on nearby neighborhood streets. **Project:** Both components of this project expand access to major job centers, reduce congestion on a primary freight corridor, remove traffic from local roads, and reduce crash incidences and severities. For additional details, see **Appendix D-Benefit-Cost Analysis**.

23 USC 117 INFRA	Guidance
(2) the project will be cost effective;	**Component 1:** The Missing Moves component is projected to deliver highly cost-effective returns, with a positive benefit-cost ratio of **2.17**. Benefits include: › $795 million undiscounted travel time savings; › 22,000 metric tons of GHG emissions reduction; and › $22 million in undiscounted safety benefits Collectively, these benefits exceed total undiscounted costs of $166 million. Beyond the quantifiable costs and benefits of Component 1, the project will certainly make it easier and more attractive to reach Rhode Island's coastal communities, one of the economic drivers of tourism and economic development for the state. **Component 2:** The Quonset Connector Ramp component is projected to be similarly cost effective, with a positive benefit-cost ratio of **2.21**. Benefits will include: › $366 million undiscounted travel time savings; and › $4 million in undiscounted safety benefits. Collectively, these benefits exceed total undiscounted costs of $49 million. **Project:** Together, the individual project components generate a positive benefit-cost ratio of **2.18**. This value, as well as the independent values for each project component, were calculated using a refined methodology that took into account feedback from USDOT on RIDOT's previous applications for funding to support this project. Those refinements included but are not limited to new methodological approaches to traffic modeling, enhanced safety analyses, and a new approach to estimating Workzone Impact Disbenefits. The overall strengths of this project include travel time savings, safety enhancements, and emissions reductions. For details, see **Appendix D-Benefit-Cost Analysis**.

23 USC 117 INFRA	Guidance
(3) the project will contribute to the accomplishment of 1 or more of the national goals described under section 150 of this title;	**Project:** This project will address all 7 of the National Goals described under 23 CFR 150 in the following ways: › **Safety:** Reduce incidence and severity of traffic incidents › **Infrastructure Condition:** Creates several miles of new interstate pavement, ramps, and bridges; › **Congestion Reduction:** Reduces travel delays by several thousand hours each day; › **System Reliability:** Improves level-of-service on local roads and interstates; › **Freight Movement and Economic Vitality:** Expands access to Quonset Business Park and I-95; › **Environmental Sustainability:** Prevents thousands of tons of greenhouse gas emissions; and › **Reduce Project Delivery Delays:** Accelerates project delivery by combining two components and utilizing design-build procurement to compress schedules. **Both project components directly contribute to the accomplishment of all of the above national goals.** For additional details describing the impacts of each element, see the **Project Outcome Criteria** section of this application.
(4) the project is based on the results of preliminary engineering;	**Project:** Both project components were advanced through scoping and development of a base technical concept as a single unit. The following activities have been completed **for both components**: › Environmental Assessments, including NEPA › Topographic surveys › Metes and bounds surveys › Traffic studies › Hazardous materials assessments, and › General estimates of types and quantities of materials. Geotechnical investigations, financial plans, utility engineering, and other work needed to establish the parameters of final design are in progress. Hydrologic analysis and revenue estimates do not apply to this project.

23 USC 117 INFRA	Guidance
(5) with respect to related non-Federal financial commitments, 1 or more stable and dependable sources of funding and financing are available to construct, maintain, and operate the project, and contingency amounts are available to cover unanticipated cost increases;	**Project:** Apart from the requested MPDG grant, all funding sources required to complete this project are included in the approved FFY2022-2031 STIP. QDC has agreed to contribute an additional $2 million to support **Component 2**. The project budget includes a $13.5 million contingency, accounting for the level of design that the project has currently reached (10%). In addition, a 20% contingency has been built in to the estimates provided herein, a standard level of safety for projects of this size and scale. RIDOT has also included with this application a commitment from Director Peter Alviti stating the Department's understanding of its financial commitments and dedicating resources to getting this critical project built on-time and on-budget. For more information, see the **Project Budget** portion of this application.
(6) the project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor;	**Project:** If no federal funds were awarded to this project, it would be unable to proceed in its current scope, schedule, or budget. Without MPDG funding, the project would be delayed in construction pending the allocation of additional resources, as the current schedule and funding amount provided in RIDOT's Statewide Transportation Improvement Plan (STIP) is contingent on grant support, as stated in the project description (STIP ID 3350). The absence of MPDG funding would force RIDOT to pursue a more limited, scaled back scope of work for both Component 1 and Component 2, and may require a revision of the budget downward from its current programmed amount of $115.35M. In the absence of MPDG funding this round, it is likely that RIDOT will consider reallocation the other funds associated with this project to other programmatic needs. For additional information, see the **Project Budget** portion of this application.

23 USC 117 INFRA	Guidance
(7) the project is reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project.	**Project:** RIDOT anticipates construction to commence on August 31, 2024, with total obligation of funding by the statutory deadline of September 30th, 2026 as specified in the NOFO. Substantial completion of the project is expected on October 31st, 2028, as shown in the **Project Readiness** section of this application. NEPA is complete for **both components** of this project, and RIDOT is confident in its ability to deliver this project on-time, on-budget, with the same high standards for construction and design maintained by the Department for the past several years. RIDOT has a stellar track record receiving and deploying discretionary grant funds as part of highly technical, complex projects. The Department's experienced Project Management staff is fully capable of ensuring that no federal or state dollars go to waste, and that this project can be executed fully and efficiently.

6. Benefit-Cost Analysis Narrative

A. Project Overview

Rhode Island Department of Transportation (RIDOT) and Quonset Development Corporation (QDC) request $81 million from the Multimodal Project Discretionary Grant (MPDG) Program to support Completing the I-95 Missing Move and Ramps to Quonset Business Park (QBP), a surface transportation project to construct a series of new interchanges and ramps to connect I-95 and RI-4 and move freight traffic from QBP off local roads. This $135 million public-private partnership project will realize unfinished plans from the 1950s to improve safety and freight connectivity. The specific technical aspects of this project include:

- **Safety**: Remove traffic from local roads through interchange realignments and the construction of new ramps while incorporating high friction surface treatments on project pavement;
- **State of Good Repair:** Construct three new ramps, a new bridge overpass, and new signalized intersection to modernize RI-4 and replace outdated transportation infrastructure;
- **Economic Impacts, Freight Movement & Job Creation:** Install three new ramps to provide a direct connection from QBP to RI-403, improving efficiency of freight movement through this important economic center;
- **Climate Change, Resiliency, and the Environment:** Reduce greenhouse gas emissions by more than 500 tons every year, and construct a more functional, resilient emergency evacuation route;
- **Equity, Multimodal Options, and Quality of Life:** Remove traffic from local roads in a Justice40 community through construction of three new ramps connecting QBP with RI-403, improving safety and reducing greenhouse gas emissions, particularly in disadvantaged neighborhoods; and
- **Innovation:** Deploy design-build project delivery methods to maximize efficiency and minimize traffic disruptions.

Component 1 will complete the "Missing Movements" between Interstate 95 (I-95) and RI-4 to create a direct freeway connection at one of the busiest junctions in the state while removing traffic from local roads. Component 2 will construct three ramps to service RI Route 403 (RI-403) which were deferred during initial construction in 2008, expanding access to Quonset Business Park (QBP) and improving safety in nearby neighborhoods. Taken together, these improvements will address immediate freight connectivity and safety issues while along this critical corridor in the heart of Rhode Island.

This project is an efficient and cost-effective investment, and so are each of its two components independently.

- *Completing the I-95 Missing Move and Ramps to Quonset Business Park* has a favorable Benefit-Cost Ratio of **2.18** and a net present value (NPV) of **$134.68 million**.
- **Component 1, The Missing Moves,** has a B-C Ratio of **2.17** and a NPV of **$91.73 million**.
- **Component 2, The Quonset Connector Ramps,** has a B-C Ratio of **2.21** and a NPV of **$42.95 million.**

The analysis submitted shows that this project generates substantial safety, emissions, and travel time savings benefits. The benefit-cost analysis (BCA) for this project assumes a 7% real discount rate with an alternative yearly discount rate of 3%. Complete calculations are included in the BCA attached as **Appendix D**.

Based on feedback from USDOT on RIDOT's 2022 INFRA grant application, the BCA for this project has been revised in the following ways:

- **Traffic Modeling:** As the preliminary design of the project has continued to progress, design details have been refined in terms of roadway alignments and lengths for storage lanes. Additionally, the original submission of this construction grant was made in 2021, at a time where traffic volumes were significantly impact by the pandemic.

  For this 2023/2024 submission a full study area traffic count program was completed and that information used to update the traffic modeling to reflect more clearly the current conditions. In addition, **following guidance from the USDOT grant review team, RIDOT utilized a 0.25% growth rate for traffic projections, plus additional traffic generated by estimated growth at Quonset Business Park. This is the growth rate USODT officials identified as an acceptable growth rate for this and future analyses.** These updates carried through to the safety and air quality/emission models as well.

- **Safety Analysis:** Building on the updated traffic data, this BCA analysis used the most up to date crash data available (2016-2022) to project safety impacts due to the project.

  For Route 403, the network changes cannot be captured using the Crash Modification Factor methodology, and therefore, predictive modeling was used. That modeling relies on traffic data, and so the predictive model was also updated with new traffic data from the counts program conducted earlier this year.

- **Workzone Impact Refinements and Recalculations:** As the preliminary design of the project has continued to progress, constructability and construction phasing details have been refined. As such, the design consultant has proposed an approach to constructing each of the ramps offline (not within the roadway network) which eliminates a need for work zones or lane closures/shifts.

  The design consultant has identified a small window of time necessary for tying in the new ramps with the existing roadway network which will result in a small disruption to traffic. The goal will be to minimize impacts through off-peak period work and weekend work as feasible. A smaller workzone impact than was calculated in previous benefit-cost analyses of this project is therefore shown in the revised BCA analysis.

B. Findings

Completing the Missing Move and Ramps to Quonset Business Park has a favorable benefit-cost ratio of 2.18, and a net present value of $134.68 million. Component 1 has a BCA of 2.17 and Component 2 has a BCA of 2.21. It is therefore a cost-effective investment. The Benefit-Cost Analysis shows that this project generates safety, emissions, and travel time savings over 30 years. Complete calculations are included in **Appendix D** and the BCA spreadsheet. Calculations are documented in the Benefit-Cost Analysis Calculations spreadsheet in **Appendix D**.

Figure 6-1 Benefit-Cost Analysis Summary

Item	Value
Project Benefits Evaluation Period	30
Primary Discount Rate:	7%
Alternative Discount Rate:	3%
Present Value Benefit (7%):	$248,841,254.66
Present Value Cost (7%):	$114,160,328.08
Project Benefit-Cost Ratio (7%):	**2.18**
Net Present Value (NPV) (7%)	$134,680,926.58

C. Assumptions and Methodology

(1) 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.

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 each 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 areas, and do not include counts for the portion of RI-4 linking the two component areas. While speed reductions in the future No Build Condition may at times spill back onto other portions of RI-4 and I-95, as well as into the upstream interchanges, those impacts are not included in this model.
- **Travel Time:** While the RI-4/I-95 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 opening year of operations (2028) 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 utilized represent the corresponding year in the traffic modeling conducted for this analysis. The factors were derived by calculating a seasonal average during the evening peak hour with a representative vehicle mix.

This project will generate significant benefits for **Safety, Travel Time Savings, and Emissions.** The table below summarizes the quantified primary project benefits.

Figure 6-2 Summary of Primary Project Benefits

Parameter	Baseline Scenario (No INFRA Funding)	Preferred Action Scenario (With INFRA Funding)
Safety	• No substantive safety enhancements	• Broad implementation of high friction surface treatment. • Interchange modifications to provide additional access. • Adaptive signal control on Post Road corridor
Travel Time	• Maintain existing traffic conditions, which continue to deteriorate increasing travel delay over time as general travel on Route 4 increases and as employment at Quonset Business Park increases by 5,000 employees during planning horizon.	• 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.
Emissions	• Within each study area, emissions continue to grow as vehicle delays increase in the future as traffic operations deteriorate.	• Improved traffic access management results in reductions in emissions primarily in future years.
Work Zone Disbenefits	• No existing work zone	• Through preliminary engineering, work zone impacts to general traffic are minimized through emphasis on offline construction.

(2) 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, 2016, to December 31, 2022;
- Highway Safety Manual ISATe default model and results;
- VISSIM Microsimulation results;
- Motor Vehicle Emissions Simulator (MOVES3) model;
- Cost data from the RIDOT Office of Bridge Engineering; and
- Preliminary design documents.

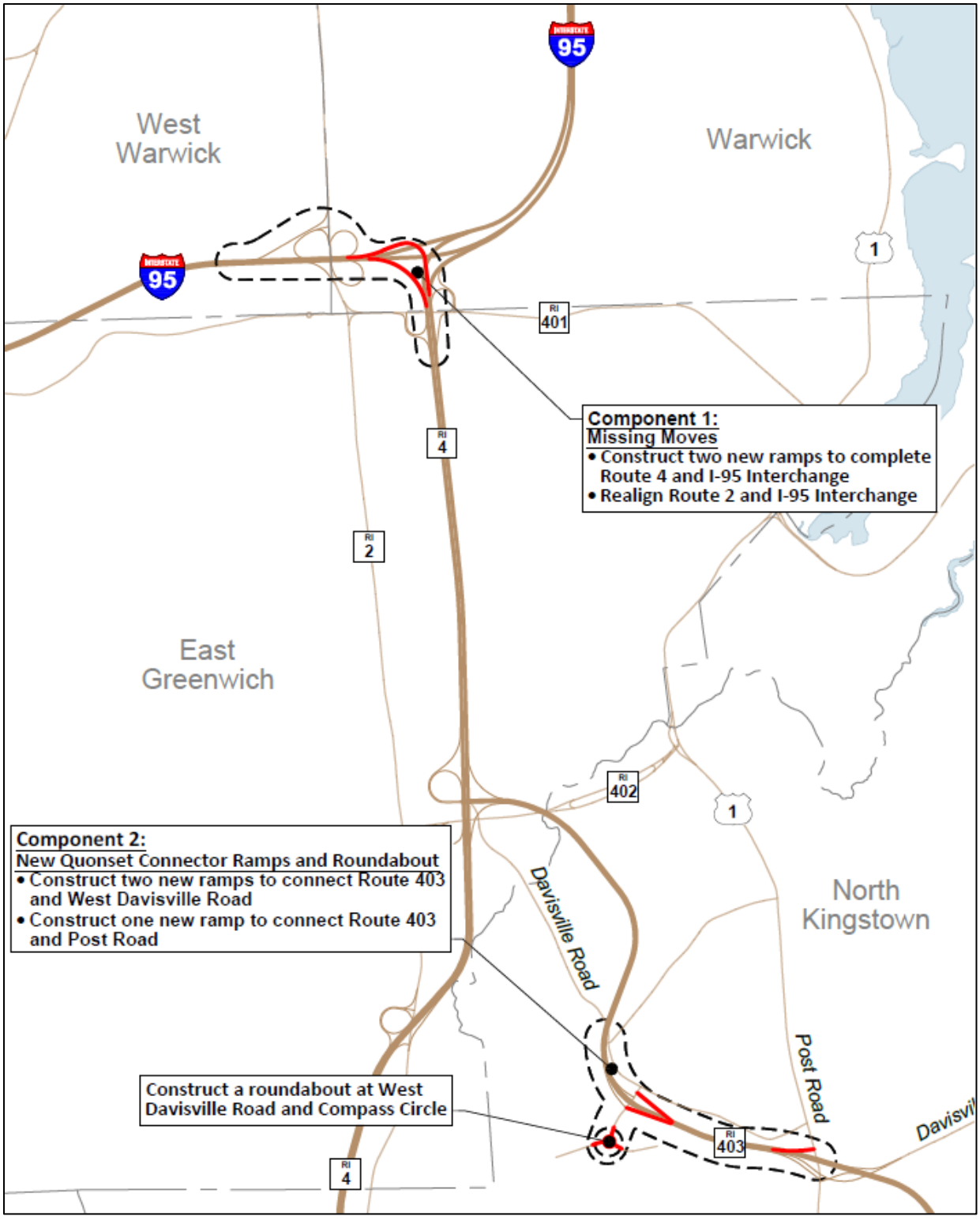
(3) Key Input Parameters

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.

(4) Spatial Extents

To accurately align the scope of the project with its estimated costs and benefits, two distinct spatial extents were used. The extents are shown in the graphic below.

Figure 6-3 Project Spatial Extents



D. 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 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.

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.

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.

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.

Component 1 of this project is a major generator of travel time savings and, by extension, a reduction in greenhouse gas emissions. More than 200,000 vehicles travel through the I-95/RI-4 interchange every day, and the proposed action will generate **$795 million in travel time savings over 30 years.** The reduction in congestion during the same period will prevent an estimated **732 metric tons of greenhouse gas emissions.** Overall, Component 1, The Missing Moves, **has a positive Benefit-Cost Ratio of 2.17 and a NPV of $91.73 million.**

Component 2 will deliver safety enhancements and reduce travel times in its own right. Shifting traffic away from local roads will prevent an estimated **30 crashes each year**. Improving freeway access will **increase average speeds in the area by nearly 15 percent, reducing delays by an average of 1,020 hours in traffic each day.** Overall, Component 2, The Quonset Connector Ramps, **has a positive Benefit-Cost Ratio of 2.21 and a NPV of $42.95 million.**

Collectively, *Completing the I-95 Missing Move and Ramps to Quonset Business Park* **has a favorable Benefit-Cost Ratio of 2.18 and a NPV of $134.68 million,** indicating that the entire project as proposed in this grant application is a cost-effective and worthwhile investment.

The figure below provides a summary of the baseline challenges addressed by this project, including a description of the proposed change to each baseline condition in the preferred action scenario and the anticipated impacts of each intervention. For the entire project, key impacts include safety enhancements, travel time savings, emissions reductions, and notably low workzone disbenefits due to the innovations proposed in the base technical concept.

Figure 6-4 Baseline Challenges, Proposed Changes, and Impacts

Baseline Challenge	Change to Baseline	Impacts
Safety High rate of crashes, particularly in component 1 study area.	Install high friction surface treatment on key curves and speed transitions in each study area and adaptive traffic signal control at key busy intersections. These safety benefits are realized despite new conflict points introduced as a result of improving freeway access through new interchange ramps.	Component 1: Nearly $0.6 M in safety benefits annually and a reduction of 3 fatal/serious injury crashes over 30 years. Component 2: $4M safety benefit over 30 years with a total reduction of 80 crashes.
Travel Time Maintain existing traffic conditions, which continue to deteriorate increasing travel delay over time as general travel on Route 4 increases and as employment at Quonset Business Park increases by 5,000 employees during planning horizon.	Improved access to Route 4, I-95, and Route 403 improves travel efficiency and reliability.	Component 1: $795M in travel times savings benefits resulting in 2,400 hours in reduced travel delay daily over the 30 year period. Component 2: $270.5 M in travel time savings over 30 years with daily reduction in delay of 1,020 hours.
Emissions See above travel time baseline which continues to deteriorate in the future with QBP growth.	See above changes in travel patterns that improves flow through the network.	Component 1: Project reduces greenhouse gas emissions by 22,000 metric tons over 30 years with $7.7 M in benefits Component 2: While CO_2 emissions increase, this is coupled with the improved travel network providing capacity for 2,000 additional vehicles per day
Work Zone Disbenefit Work zones are not present	A minimal work zone is needed to complete construction of this project.	Work zone activities are primarily offline and the disbenefit of work zone activities is limited to $2.4M across both components.

E. Project Costs

The costs associated with this project are [1] the $135 million future eligible construction and design cost and [2] lifecycle management costs.

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.

F. Calculations

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 D – 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 D-1 – Safety:** Two technical memos explaining and documenting the strategies and methodologies deployed to estimate safety issues, accident counts, and proposed interventions throughout each component 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 D.2 – Travel Time:** Two technical memos documenting the methodologies and assumptions used in the development of the VISSIM microsimulation model for each project component and provides documentation of the model results. Data collection, model calibration, and travel time segment comparisons are discussed.
- **Appendix D-3 – Emissions:** Two technical memos document the air quality study undertaken for each component of the project, including a detailed mesoscale analysis over two selected years within the benefits period.