



USDOT Nationally Significant Freight and Highway Projects Program  
FY2017 FASTLANE Grant Application / Project Narrative

## Route 6/10 and Interstate Route 95 Interchange Project

Providence, Rhode Island

### Contact Information:

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### Route 6/10 and Interstate Route 95 Interchange Project

Was a FASTLANE application for this project submitted previously?	NO
If yes, what was the name of the project in the previous application?	N/A
Previously Incurred Project Cost	\$0
Future Eligible Project Cost	\$226.1 Million
Total Project Cost	\$226.1 Million
FASTLANE Request	\$59.0 Million
Total Federal Funding (including FASTLANE)	\$180.88 Million
Are matching funds restricted to a specific project component? If so, which one?	NO
Is the project or a portion of the project currently located on National Highway Freight Network?	YES
Is the project or a portion of the project located on the NHS?	YES
• Does the project add capacity to the Interstate system?	YES
• Is the project in a national scenic area?	NO
Do the project components include a railway-highway grade crossing or grade separation project?	
• If so, please include the grade crossing ID.	YES, FRA #909972K
Do the project components include an intermodal or freight rail project, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	NO
If answered yes to either of the two component questions above, how much of requested FASTLANE funds will be spent on each of these projects components?	\$12 Million
State(s) in which project is located	Rhode Island
Small or large project	Large
Urbanized Area in which project is located, if applicable	Providence, RI --MA
Population of Urbanized Area	1,190,956 (2010)
Is the project currently programmed in the	
• TIP?	YES
• STIP?	YES
• MPO Long Range Transportation Plan?	YES
• State Long Range Transportation Plan?	YES
• State Freight Plan?	YES (underway)

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### **Supporting Documents Provided Separately**

- Benefit-Cost Analysis – Technical Memorandum & Data
- Air Quality Analysis – Technical Memorandum
- Letters of Support

## Introduction and Project Maps

### Dear FASTLANE Review Team:

The Rhode Island Department of Transportation is seeking \$59 million in FASTLANE funding to cover 26% of the cost of the Route 6/10 and Interstate 95 Interchange Reconstruction Project in Providence, Rhode Island. The \$226 million project will reconstruct six (6) bridges of the 50+ year old interchange, including the Northbound Providence Viaduct. ALL of the bridges being replaced are either structurally deficient or functionally obsolete. One bridge is fracture critical.

With traffic volumes exceeding 200,000 daily vehicles, the Providence Viaduct is the third most traveled segment of interstate in all of New England. To address congestion, the project will reconfigure ramps to grade separate the conflicting merge and weave moves of the current configuration. A collector distributor road will also be added. RIDOT estimates these improvements will result in up to a 82% reduction in queueing from the Route 6/10 approach as compared to no-build. As a major truck route, reductions in congestion and queueing will significantly benefit freight movements in Rhode Island and New England. The benefit cost analysis indicates a ratio of 1.72 using the prescribed discount rate of 7%.

The project also has benefits for non-highway users, including:

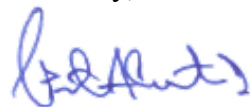
- Improved pedestrian circulation and bikeways to connect neighborhoods separated by urban interstates;
- Construction of a new pedestrian walkway to allow improved access to the Providence Train Station for neighborhoods separated by I-95; and
- A reduced highway footprint that frees up 7.3 acres of available land.

The project will also significantly improve safety. More than 1,000 vehicle crashes have occurred occurring over a recent 5-year period in this area and the elimination of conflicting merges and weaves will significantly reduce crashes.

In terms of readiness, RIDOT will use a design-build approach to expedite construction. A previous configuration for the project qualified for a Categorical Exclusion (CE) under the National Environmental Policy Act (NEPA). RIDOT believes the revised ramp configuration will also qualify for a CE. All real estate for the project is currently owned by the state or in transportation use. The City of Providence is a key stakeholder and is fully supportive of the project.

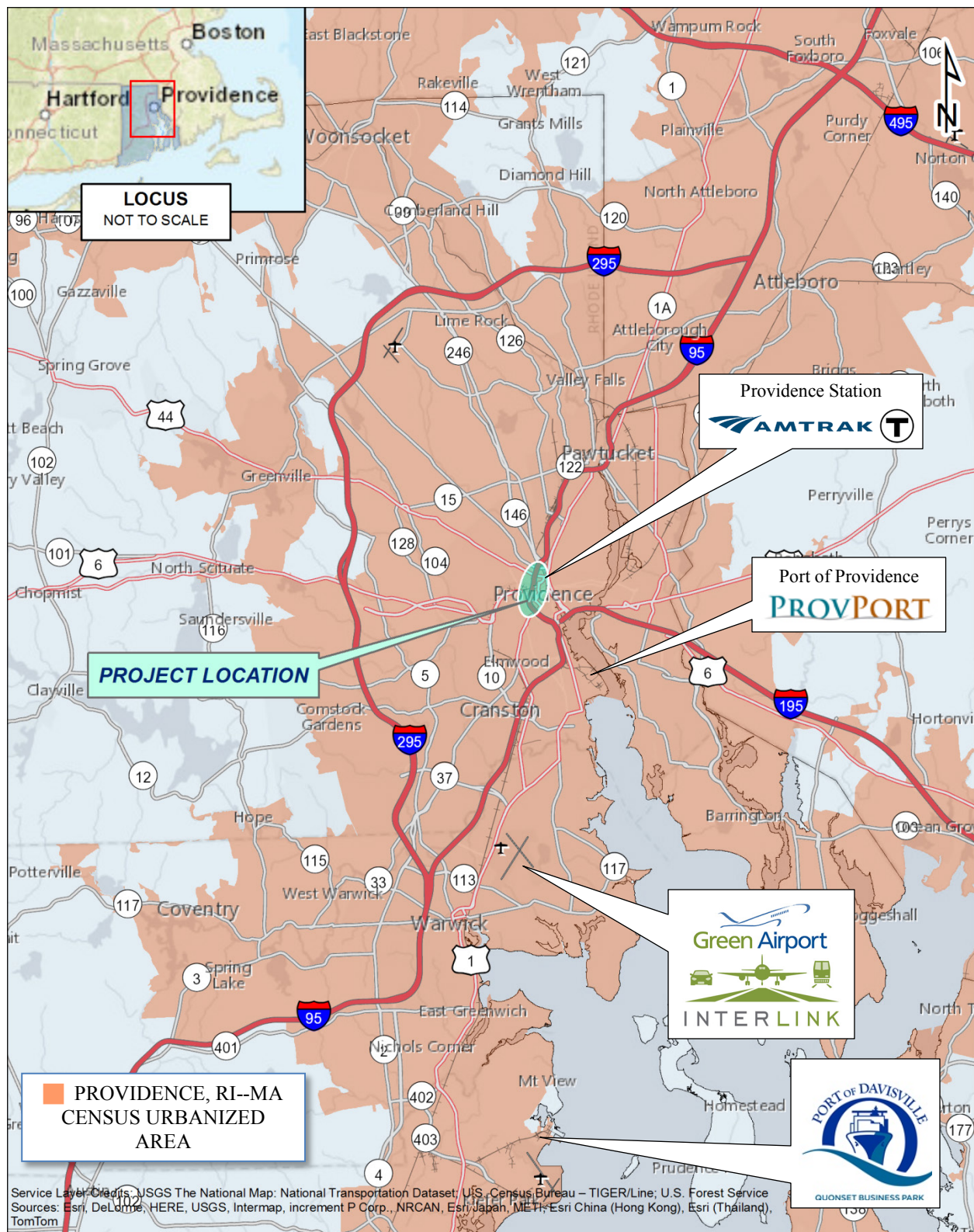
Thank you for your careful consideration of our request.

Sincerely,



Peter Alviti, Jr., PE, Director  
**Rhode Island Department of Transportation**

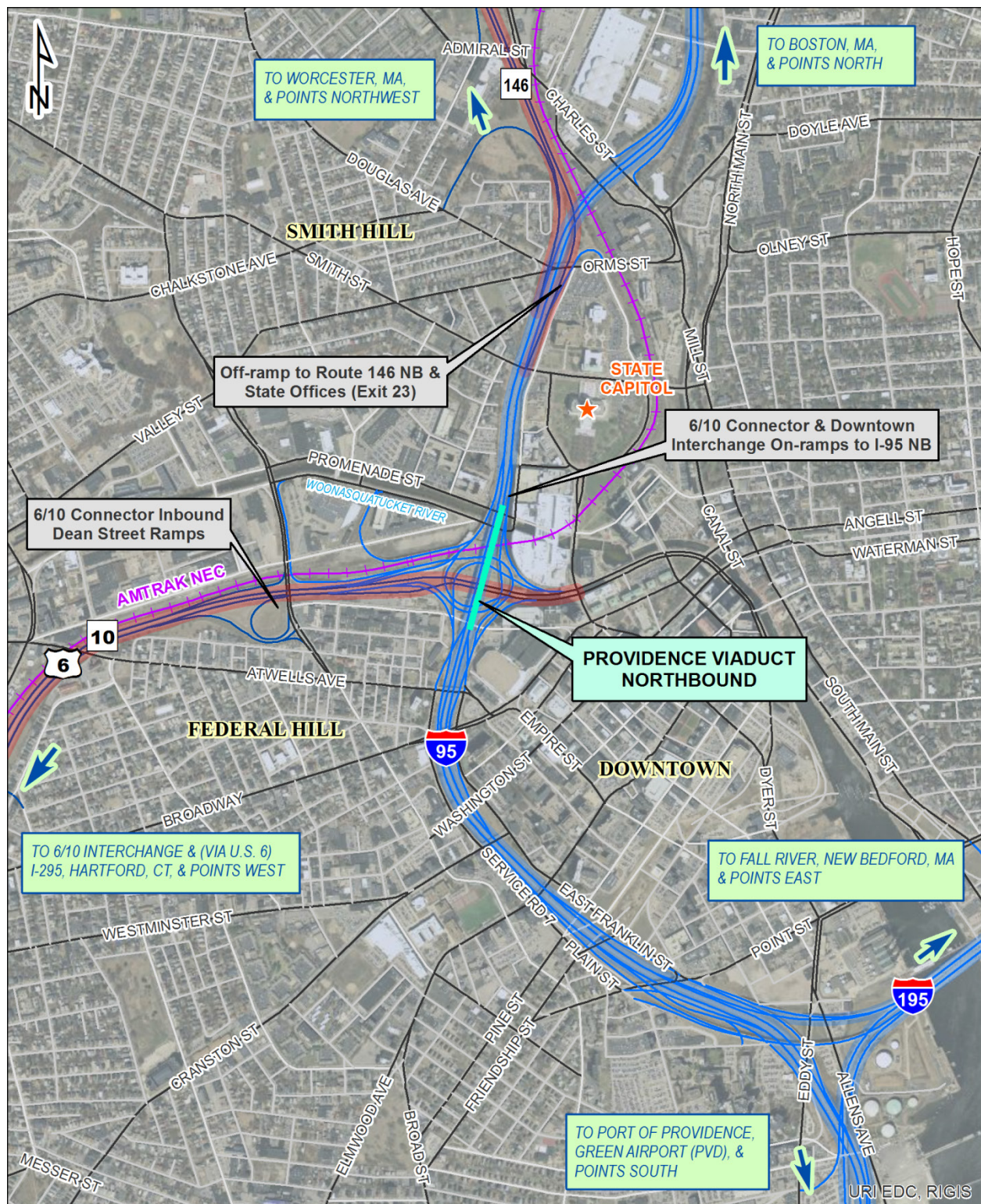




## Regional Surface Transportation Network

SOURCES: RIGIS/RIDOT, USGS NATIONAL MAP, US CENSUS DATA • APPROXIMATE SCALE: 1" = 4 MILES





**Project Area and Existing Facilities Map, Greater Providence Metropolitan Area**

SOURCE: RIGIS/RIDOT • APPROXIMATE SCALE: 1" = 1,500 FEET



## I. Project Description

The U.S. Department of Transportation's *Nationally Significant Freight and Highway Projects* (NSFHP) program presents an outstanding opportunity for state and municipal authorities to obtain much-needed funding assistance for critical highway infrastructure projects. Having successfully partnered with the USDOT and the Federal Highway Administration (FHWA) on a number of regionally and nationally significant projects over the past several decades, the Rhode Island Department of Transportation (RIDOT) is now requesting that the **Route 6/10 and Interstate Route 95 Interchange Project** be considered for federal funding assistance through award of a NSFHP Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant.

Originally constructed in the 1960s to carry Interstate Route 95 (I-95) through the heart of Providence, the [Providence Viaduct](#) (Bridge No. 578) spans the Woonasquatucket River, the Amtrak Northeast Corridor (NEC), city roads, and the interchange ramps of Exit 22, which presently provide access between I-95 Northbound and the major U.S. Route 6 / State Route 10 east-west expressway (the "6/10 Connector"). The Viaduct has long been identified as requiring



*1-95 Providence Viaduct and project interchange looking north*

full replacement due to its poor structural condition, a function of its age and the traffic loads it has carried over its lifespan (which have far exceeded those for which it was originally designed). To address this pressing infrastructure need while fully maintaining traffic on the Interstate, RIDOT has developed a phased program through which separate replacement northbound and southbound facilities are being constructed along the existing Viaduct corridor.

With the project to construct the new I-95 Providence Viaduct Southbound structure nearly complete (and with all southbound traffic shifted to this replacement facility), RIDOT is now seeking to advance construction of the **Route 6/10 & I-95 Interchange Project**, which will include a new I-95 Providence Viaduct Northbound crossing along with major improvements to the existing system of interchange connections with other arterial freeways (i.e., the 6/10 Connector, State Route 146) and the local roadway network in this area. Completion of this project will:



*All I-95 southbound traffic has been shifted to the replacement Viaduct Southbound structure (at left)*

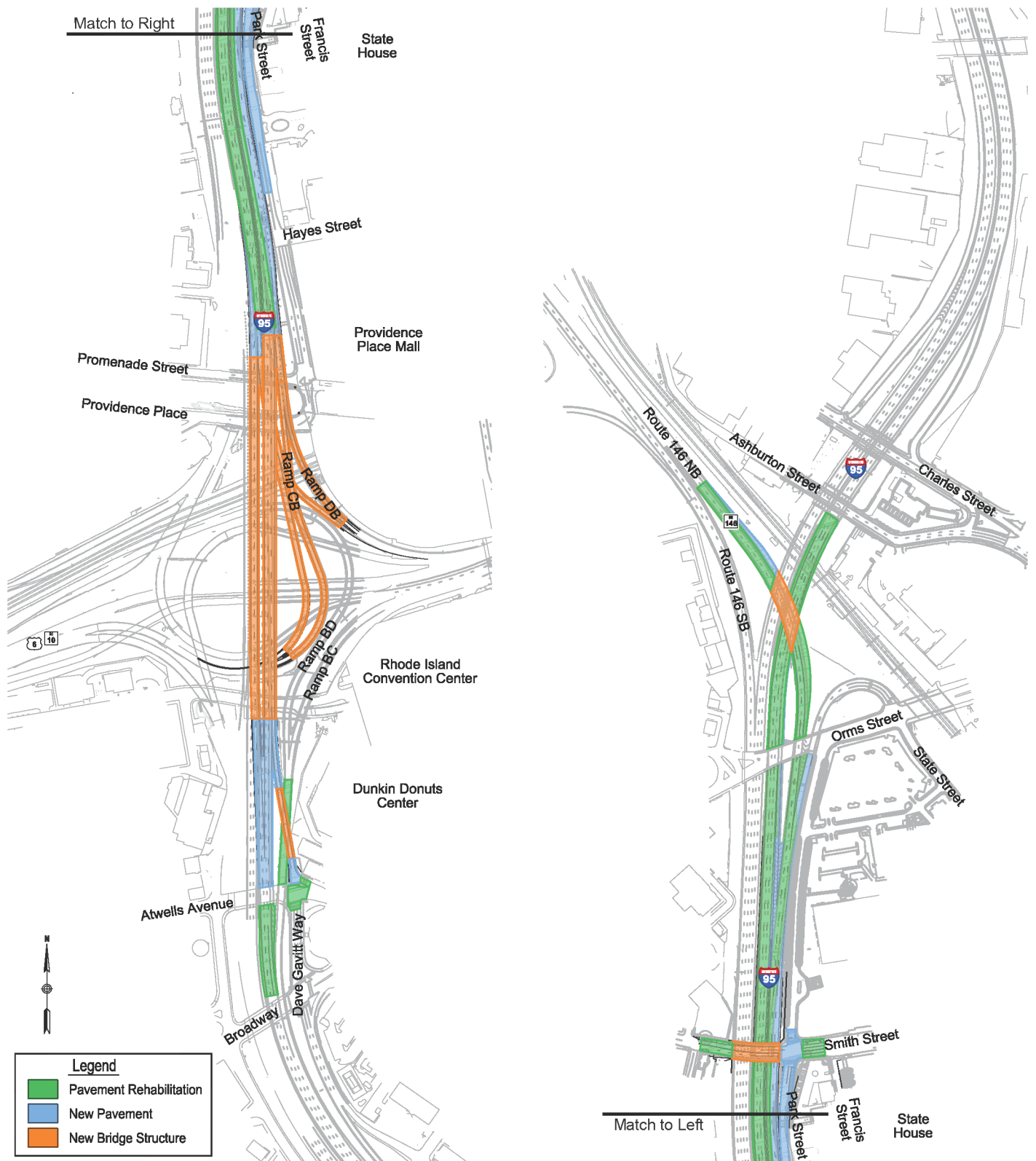
- Bring this critical segment of the Interstate 95 – a vital link on both the [National Highway System](#) and [National Highway Freight Network](#) – up to a full state of good repair, with replacement facilities having an anticipated 100-year design service life;

- Achieve significant improvements in traffic operations, safety, and efficient commodity flow through this hub in the regional surface transportation network; and
- Provide local quality of life benefits to the City of Providence and the residents of its urban core through improvements in pedestrian facilities and access to transportation options, while also freeing more than five acres of urban land in the Federal Hill neighborhood (previously taken for the construction of ramp facilities along the 6/10 Connector) for potential future neighborhood redevelopment.

Along with replacement of the I-95 Northbound facility and construction of a new pedestrian bridge spanning the Interstate (further described below), the **Route 6/10 & I-95 Interchange Project** will include integral access facility improvements that will serve to remedy critical deficiencies in the existing freeway network. The following elements of the project design will, upon completion, significantly reduce congestion, travel times, and the frequency (and severity) of vehicle collisions throughout the system:

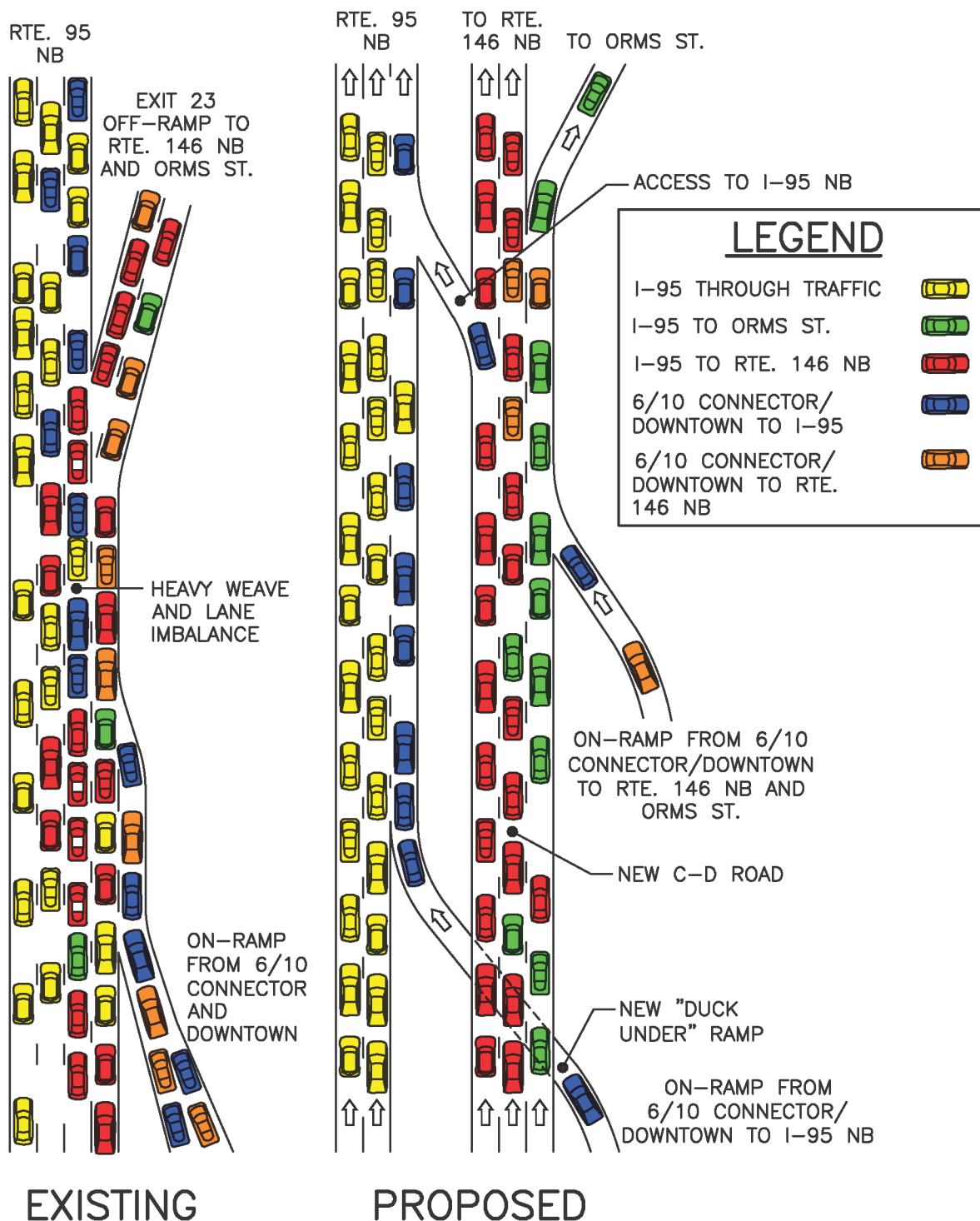
- A **new collector-distributor (C-D) road** will be constructed along the easterly, right side the new Viaduct Northbound structure, effectively eliminating the weaving conflicts and congestion that presently afflict the segment of I-95 Northbound from the 6/10 Connector (and Downtown) on-ramp at Exit 22 to the State Route 146 (and Orms Street / State Offices) off-ramp at Exit 23. The construction of this C-D road and reconfiguration of ramp facilities will effectively disentangle these conflicting movements, improving motorist safety and comfort, reducing congestion and delay, and providing new, efficient connections between the arterial freeway facilities of I-95, the 6-10 Connector, and State Route 146.
- The **Dean Street ramps along the 6/10 Connector Inbound** will be reconfigured, such that the existing on-ramp inbound will be eliminated and the off-ramp realigned to terminate at the present intersection of Dean Street and West Exchange Street. This will both (a) eliminate the weaving conflict posed by vehicles entering from the on-ramp and (b) allow for more than 5 acres of urban land (originally taken for construction of the 6/10 Connector freeway and ramps) to be reclaimed for potential future neighborhood redevelopment. A new movement from Dean Street northbound to the 6/10 Connector Outbound (turning lane and slip ramp) will be provided to balance the local traffic effects of eliminating the substandard (and congestion-exacerbating) inbound on-ramp.

The segment of I-95 through Providence's urban core, which includes major freeway interchanges with Interstate 195 (I-195), Route 6/10, and Route 146 within a span of less than two miles, provides critical linkages between origins and destinations throughout the state and the greater New England Region. Construction of the **Route 6/10 & I-95 Interchange Project** will ensure that these facilities continue to serve the needs of residents, commuters, and commerce in the 21<sup>st</sup> century and beyond, and will significantly increase efficiency in the movement of people and goods throughout the transportation system.



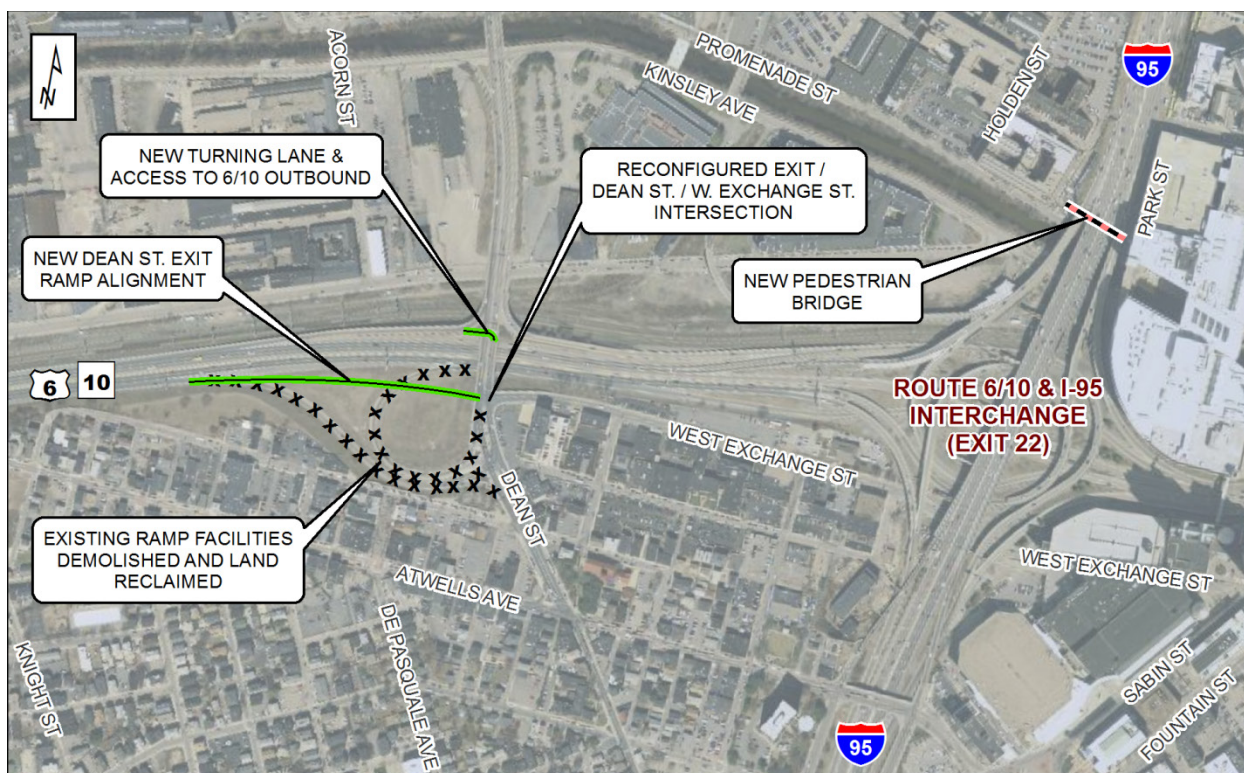
*Design Concept for Viaduct replacement, new C-D road, and I-95 Northbound ramp modifications*





*Schematic depicting current traffic conditions along the bottleneck segment of I-95 (left) and how conflicting movements will be eliminated in the proposed ramp configuration (right)*

By its connectivity with the 6/10 Connector, the proposed project is closely tied to Route 6/10 Reconstruction Project, a separate initiative being advanced by RIDOT in cooperation with the City of Providence to (a) address similar structural and operational deficiencies at the existing interchange of Routes 6 and 10 (approximately 1.4 miles west of I-95 along the 6/10 Connector), and (b) realize [the City's vision](#) for improving quality of life and mitigating the severance of neighborhoods along the Routes 6 and 10 corridors. The proposed **Route 6/10 & I-95 Interchange Project** is wholly consistent with this vision, and the benefits realized through its construction (including significant reductions in peak hour congestion along the 6/10 Connector) will support and enhance livability in the urban environment of the 21<sup>st</sup> century.



*Dean Street and Pedestrian Improvements to be implemented as part of the project*

As previously noted, a new **Pedestrian Bridge** will be constructed to span over the Interstate at the northerly end of the Viaduct, linking growing residential and business uses west of the Interstate with Downtown Providence and transit facilities to its east, including Providence Station (Amtrak/MBTA), the planned site of a future multimodal transportation center. In addition to reconnecting portions of the city that were severed by construction of the Interstate, this fully-accessible facility will provide improved access to transportation options and other amenities for residents of the city's urban core. The pedestrian bridge will also be designed to accommodate a future (non-project) truck tolling gantry on its underside, one of several that will be installed on freeways throughout the state as part of RIDOT's [RhodeWorks](#) initiative, the recently effected program for funding the state's long-term transportation infrastructure investment needs.

With the passage of *RhodeWorks* legislation by the Rhode Island General Assembly and recent adoption of the [State of Rhode Island Transportation Improvement Program \(STIP\) for Federal Fiscal Years 2017-2025](#), the local (state) share of the aforementioned Route 6/10 Reconstruction Project is fully funded, and formula funding covering much of the cost of the **Route 6/10 & I-95 Interchange Project** improvements have been programmed. To fully realize the modern,



efficient, and context-appropriate system of urban freeways envisioned by these two projects, RIDOT is seeking competitive FASTLANE grant funding to complete the capstone improvements that are included in the **Route 6/10 & I-95 Interchange Project**.

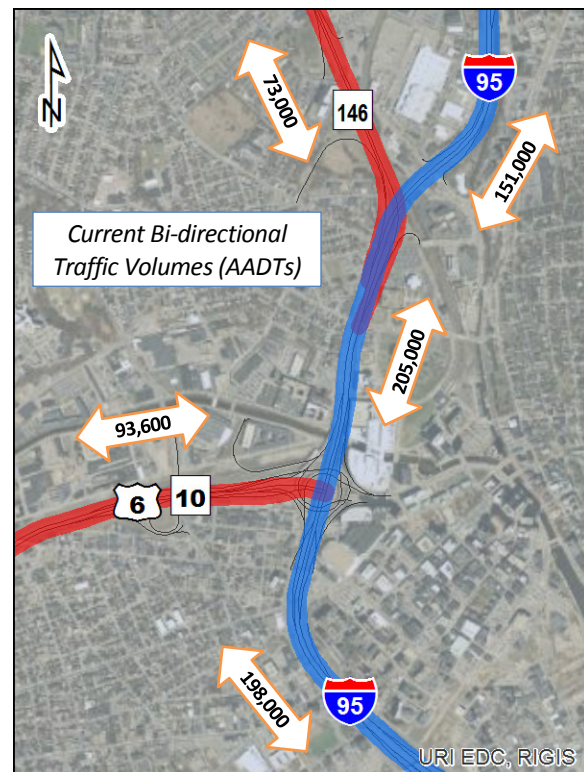
The scope of this project encompasses the new I-95 Providence Viaduct Northbound Bridge and the associated improvements described above, which will include construction of new bridges (including those for the reconfigured system of ramps) and retaining walls; pavement widening and resurfacing; new signage, striping and safety elements; stormwater management facilities; demolitions; and other work typical of major highway projects. All proposed work will be contained within the existing transportation rights-of-way, with no property acquisitions required to construct any of the project improvements.

### ***A CRITICAL HIGHWAY INFRASTRUCTURE ASSET IN NEED OF REPLACEMENT***

The segment of I-95 carried by the Providence Viaduct is the most heavily travelled stretch of highway in Rhode Island and one of the oldest mainline structures along the Interstate. While the original 1,290-foot, multi-span structure was designed to accommodate approximately 57,500 vehicles per day, the combined traffic volume crossing northbound and southbound segments now exceeds 200,000 vehicles per day. In the time since its construction, there have been no major upgrades to the portion of the Viaduct carrying I-95 Northbound or its associated interchange ramps. These facilities remain as they were originally constructed and, as expounded upon below, do not efficiently handle modern traffic demands.

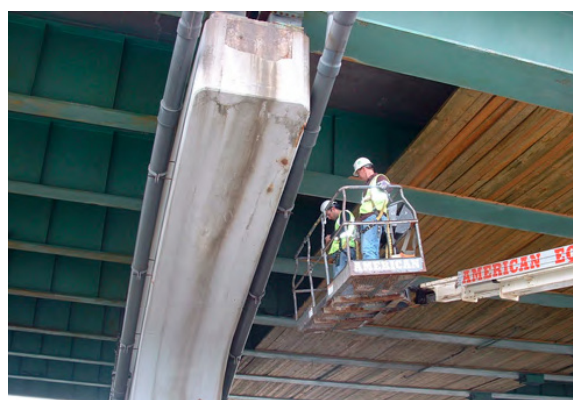
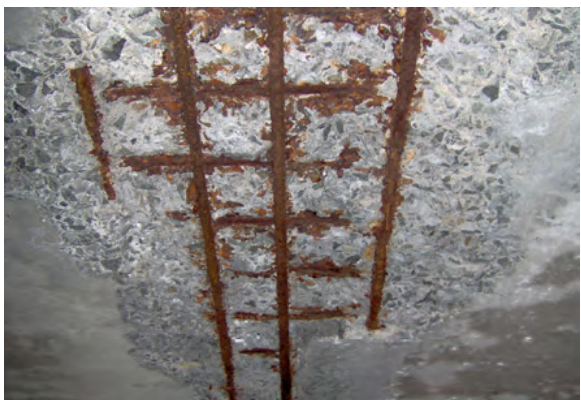
It is difficult to overstate the dire condition of the original Providence Viaduct and its structural elements, which have deteriorated to the point where full replacement is the only viable option for maintaining this critical highway asset in a state of good repair. As the FHWA will no longer authorize funding for the continued rehabilitation of this facility, RIDOT is seeking to expedite construction of the replacement Viaduct Northbound structure as part of the **Route 6/10 & I-95 Interchange Project**, which – coupled with the nearly completed I-95 Providence Viaduct Southbound facility – will see this critical segment of the Interstate fully restored to state of good repair.

The most recent National Bridge Inventory reports for the existing Viaduct (2014, 2016) have identified numerous deficiencies in the structural elements supporting existing northbound facilities, with the entire bridge classified as both structurally deficient (SD) and functionally obsolete (FO). Due to the severe condition of certain members (described and depicted below), RIDOT and FHWA have mandated that bi-monthly inspections of the structure be conducted as a condition of allowing the facility to remain open to traffic. These costly inspections – along with the several emergency repair contracts that have been commissioned over the past decade to remedy critical deficiencies where and when they are identified – are a drain on RIDOT fiscal



resources, as monies that could be more productively spent elsewhere are used to maintain a facility that has long been identified as requiring complete replacement.

- Since the early 2000s, extensive spalling throughout the underside of the concrete deck structure has necessitated the use of timber shielding to prevent concrete debris from falling on facilities beneath the Viaduct, including roads, sidewalks, and the rail corridor. Steel reinforcement is exposed in numerous locations, compromising the strength of the decking to support traffic loads and exacerbating its deterioration.



- The steel superstructure supporting the roadway deck is also beset by fatigue cracks and fractures throughout its various structural members. Testing of the steel material has revealed that the girder steel does not meet the minimum specifications for brittle fracture established by American Association of State Highway and Transportation Officials (AASHTO). Through bi-monthly inspections (conducted since 2009 at an average cost of \$5,200 per inspection) new cracks and growth in existing cracks continue to be discovered, requiring emergency repairs in order to keep the Interstate facility safely open to traffic.
- The concrete piers which comprise the existing Viaduct substructure also exhibit clear signs of deterioration and loss of strength. Several of the post-tension anchorage pockets at the end and underside of “hammerhead” pier caps are in poor condition, with most of the end anchors exposed and rusted. Testing has revealed the strength of concrete in the majority of piers to be less than original design values, and many piers have chloride contamination that exceeds acceptable levels.



In addition to the Viaduct itself, the condition of interchange ramp and overpass bridges along the interstate corridor are in a similarly poor state of repair. Of the six bridges that are to be replaced under the project (including the existing Viaduct) four are classified as structurally deficient (including the “fracture critical” Atwells Avenue on-ramp bridge), with the remaining two identified as functionally obsolete.

To date, RIDOT has incurred significant (and unsustainable) costs in conducting emergency repairs on the existing Viaduct, measures that are necessary to ensure that the Interstate facility can safely remain open to traffic. Three such emergency repairs were made in 2009, followed by further emergency repairs to structural steel members in 2013. Over a 10-year period, the bridge maintenance repair costs and bi-monthly inspections have cost the State of Rhode Island an estimated \$5.4 million. In addition to the already significant routine maintenance and inspection costs, certain emergency repairs to the structure are required nearly every year to address critical issues, i.e., those with the potential to require partial or full closure of the facility, or worse,



result in structural failure. **The complete replacement of the I-95 Northbound facility is urgently needed to ensure that this critical link of the Interstate System (and national freight/highway networks) is restored to a state of good repair.**

### ***AN OUTDATED AND CONGESTED INTERCHANGE SYSTEM***

Unquestionably, the most problematic and precarious section of I-95 Northbound through Rhode Island is the approximately ¼-mile segment between (a) the on-ramp from the 6-10 Connector Inbound and Downtown Providence (Memorial Boulevard) and (b) the Exit 23 off-ramp to State Route 146 and Orms Street. This “State Offices” exit has gained notoriety as one of the most severe bottlenecks in the regional highway network, due principally to the short distance over which vehicles must weave to complete certain interchange movements.

Currently, vehicles destined for I-95 Northbound from the 6/10 Connector Inbound (and Downtown Providence) on-ramp must weave left over this short distance to gain access to I-95 through lanes, while vehicles approaching the viaduct on I-95 vehicles and destined for Route 146 (and the local Orms Street off-ramp) must weave right over this same distance. In addition to the adverse highway safety conditions posed by this configuration, these directly conflicting movements are the principal cause of chronic bottlenecking, with congestion rapidly propagating along approaching freeways as traffic volumes increase during peak hours. During such periods, peak hour back-ups along I-95 Northbound, the 6/10 Connector Inbound and I-195 Westbound often exceed several miles in length.



*View of the I-95 corridor looking north along the 6/10 Connector / Downtown Providence on-ramp, with the overhead sign for the Route 146 / State Offices exit visible in the distance*

Congestion along the 6/10 Connector Inbound is further exacerbated by the proximity of the Dean Street on-ramp to the project interchange, as vehicles attempting to gain access to I-95 Northbound via this on-ramp must complete a two-lane shift left over a distance of less than 700 feet. This movement conflicts with 6/10 Inbound traffic destined for I-95 Southbound and the Downtown Providence exit, and, combined with the effects above-described I-95 bottleneck, causes severe gridlock along the 6/10 Connector Inbound (and the existing interchange ramp to I-95 Northbound) during morning and evening peak traffic periods.

The existing bottleneck segments described above also pose a significant safety hazard to motorists, due to the combined effects of high volumes of traffic, conflicting origin-destination movements, substandard lane widths, and other functional deficiencies. More than 1,000 vehicle crashes occurred along these segments over a 5-year span from 2009-2014, including seven serious-injury crashes and more than 600 collisions on the Interstate itself.

Further discussed under [Section II \(Project Location\)](#), the congestion and safety issues posed by the subject interchanges incur significant impacts on the local, state, and national freight networks these arterial freeways presently serve. In developing Rhode Island's Statewide [Freight and Goods Movement Plan](#) (a public draft of which is soon to be released), officials at the Department of Administration and RIDOT have identified the State's [two highest highway freight project needs](#) to be:

1. Replacement of the I-95 Viaduct at U.S. Route 6; and
2. Improvements to the diverge on I-95 Northbound at Route 146.

As described below, the proposed **Route 6/10 & I-95 Interchange Project** will effectively address both of these priority needs, significantly improving the efficiency, safety, and reliability of the highway freight network while providing similar benefits to all users of the system.

## ***THE SOLUTION***

Through construction of the **Route 6/10 & I-95 Interchange Project**, the current deficiencies in the highway infrastructure at this location will be fully addressed, restoring this artery of the system to a state of good repair and achieving substantial operational benefits, including improvements to safety and significant reductions in congestion and travel times. These benefits stem largely from the innovative incorporation of a C-D road and access ramp modifications in the proposed Viaduct Northbound replacement design, which effectively eliminate conflicting weave movements and provide more accommodating, streamlined access between freeway facilities, particularly in the movements from the 6/10 Connector to I-95 Northbound, the 6/10 Connector to Route 146 Northbound, and I-95 Northbound to Route 146 Northbound.

To analyze and quantify performance benefits, microsimulation traffic models for the project (build) and do-nothing (no-build) scenarios were developed using the VISSIM software package and appropriate inputs, including traffic volumes and composition, origin-destination patterns, design speeds, and lane/ramp configurations. Model results for the morning and evening peak hour in the design year (2035) are presented in the tables below and clearly demonstrate the improvements that will be realized through the project.



### Projected Vehicle Queues - 2035

Inbound Freeway Segment	Peak Hour	Maximum Vehicle Queueing Distance (miles)		
		No-build	Project (build)	Percent Reduction
I-95 Northbound (to 6/10 merge)	AM	2.9	0.1	<b>96%</b>
	PM	1.4	0.1	<b>93%</b>
I-195 Westbound (to I-95 merge)	AM	2.0	0.2	<b>90%</b>
	PM	0.7	0.1	<b>86%</b>
Route 6/10 East (to I-95 merge)	AM	3.3	0.6	<b>82%</b>
	PM	3.2	0.6	<b>81%</b>

### Projected Travel Times - 2035

Inbound Freeway Segment	Peak Hour	Computed Travel Time (minutes)		
		No-build	Project (build)	Percent Reduction
I-95 Northbound Thurbers Ave. to Route 146 diverge	AM	9.2	6.5	<b>29%</b>
	PM	7.0	6.1	<b>13%</b>
I-195 Westbound Broadway (E. Providence) to I-95 NB merge	AM	12.2	5.5	<b>55%</b>
	PM	4.7	4.6	<b>2%</b>
Route 6/10 East Reservoir Ave. (Cranston) to I-95 NB at Branch Ave. (past Route 146 diverge)	AM	20.7	6.1	<b>70%</b>
	PM	35.1	6.0	<b>83%</b>

Results based on VISSIM 8 Travel Time Evaluation and compiled based on the average of 5 model runs. Average travel times are for simulated vehicles traveling between the approximate locations indicated, with actual locations for measurements consistent under no-build and build scenarios.

The traffic modeling and analysis also accounts for the proposed improvements at the Dean Street ramps, which include removal of the looping 6/10 Connector Inbound on-ramp to eliminate the weaving problems posed by the current access configuration. While this measure will further improve safety and traffic flows, it does involve elimination of an access point to the freeway network, albeit one that is quite deficient with respect to modern highway design standards. Locally, users who presently gain access to the Interstate at this location will need to seek alternate access points (e.g., the Atwells Avenue on-ramp), however this slight increase in local travel time is more than offset by the widespread travel time savings that the project provides for users of the freeway system. The project improvements at Dean Street – including elimination of the inbound on-ramp – have been developed in close coordination with (and are fully supported by) the City of Providence. These elements closely align with the local vision for this urban freeway corridor, on which plans for the separate (but highly related by proximity and purpose) Route 6/10 Reconstruction Project are based.

In addition to serving the freight and highway transportation needs of the region, the project includes the construction of a pedestrian bridge to span over the interstate facility. This structure will enhance personal mobility and accessibility (particularly for non-driving members of the community), reducing the severance imposed by the I-95 corridor. Along with supporting the future installation of toll gantry facilities central to the *RhodeWorks* program, the project's pedestrian bridge will better connect people with places, linking urban residential and office uses

west of the highway (e.g., the Providence Foundry residential development) with the numerous civic, commercial, recreational, and transit uses to its east, including Providence Station (the site of a planned future multimodal facility), the Providence Place Mall, Waterplace Park, and the Rhode Island Convention Center.

The above benefits have been quantified through prudent economic analysis (see [Section VII - Cost Effectiveness](#)) to demonstrate that the cost of constructing the project is justified by the positive economic impacts that will occur as a result of vastly improved traffic flow and operating conditions over the analysis period. The results of the Benefit-Cost Analysis (BCA) developed in support of this FASTLANE application demonstrate that construction of the **Route 6/10 & I-95 Interchange Project** will provide tangible and quantifiable benefits to the local and regional economy, and to all users of the system. Summarized under [Section V \(Merit Criteria\)](#) of this project narrative, the economic, mobility, safety, and community outcomes that will be realized upon completion of the project are overwhelmingly positive and demonstrably aligned with the merit criteria of the FASTLANE program.

An air quality analysis has also been performed (using guidelines established by the U.S. Environmental Protection Agency and the Rhode Island Department of Environmental Management) to assess the potential effects of the project with respect to vehicle emissions. As documented in the technical memorandum submitted with this FASTLANE application, the difference between build and no-build scenario emissions for all pollutants are minor to negligible at a mesoscale level, and construction of the project would not impact Rhode Island's compliance with the Clean Air Act requirements for Transportation Conformity and State Implementation Plans.

## II. Project Location

The I-95 Providence Viaduct is located in the heart of Providence, Rhode Island ([41.826° N, 71.419° W](#) – see also [Project Maps](#) in the preface of this narrative), carrying the interstate facility over the Woonasquatucket River, and the I-95 interchange with U.S. Route 6 / State Route 10 (the “6/10 Connector”). Extending west from this interchange, the 6/10 Connector continues southwest for a distance of approximately 1.4 miles to another major urban interchange, which provides access between U.S. Route 6 (east-west), State Route 10 (north-south), and the local roadway network in the Providence neighborhood of Olneyville.

From this interchange – also slated for full replacement under the separate Route 6/10 Reconstruction Project noted in the preceding section – Route 10 continues south, reconnecting with I-95 in the neighboring City of Cranston and completing a beltway-like loop through the city's densely inhabited Olneyville, Federal Hill, Silver Lake, and West End neighborhoods. U.S. Route 6 is the primary link between Providence and points west (including the city of Hartford, Connecticut), extending from the 6/10 Interchange to Interstate Route 295 (I-295) along a 4-mile segment of limited access freeway before continuing west into Connecticut as an undivided four-lane highway.

Two other arterial freeway facilities spur from I-95 in the immediate vicinity of the **Route 6/10 & I-95 Interchange Project**: (1) I-195, which is the primary route between Providence the cities of Fall River and New Bedford in southeast Massachusetts and other points east, and (2) State Route 146, a four-lane divided highway that runs northwest from the city center and is the primary route through northern Rhode Island and into central Massachusetts. Route 146 has a full cloverleaf interchange with I-295 approximately 8 miles northwest of the project area (and just south of the city of Woonsocket, Rhode Island) before continuing northwest into



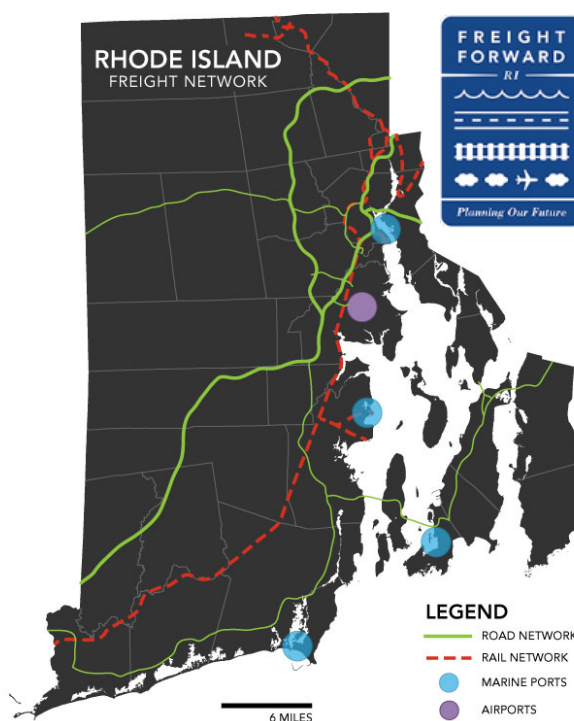
Massachusetts and to its terminus near the City of Worcester, where it connects with Interstate Routes 90 (the Massachusetts Turnpike) and 290.

The [Amtrak Northeast Corridor \(NEC\)](#) runs in a general north-south direction through Providence and is spanned by the Providence Viaduct where the railway crosses the Woonasquatucket River. As the nation's principal rail right-of-way along the Eastern Seaboard – extending from Richmond, Virginia, north to Boston, Massachusetts, and servicing New York, Philadelphia, and Washington, DC – this corridor is host to various freight, high-speed, and commuter rail services/uses. Locally, Providence Station (just northeast of the Route 6/10 and I-95 interchange) provides access to intercity (Amtrak) and commuter (Massachusetts Bay Transportation Authority) services, with the [MBTA Providence/Stoughton Line](#) providing service to Boston and south to [T.F. Green Airport \(PVD\)](#), the latter via the newly-constructed *InterLink* Station.

As indicated on the cover page chart, the **Route 6/10 & I-95 Interchange Project** is situated at the core of the [Providence, RI--MA Census Urbanized Area](#), an expansive 545-square mile region of Southern New England that encompasses Greater Providence (including the Rhode Island cities of Pawtucket, North Providence, Cranston, Warwick, East Providence, Woonsocket and Newport) and extends into portions of southeastern Massachusetts to include the cities of Attleboro and Fall River. I-95, I-195, U.S. Route 6, and State Routes 10 and 146 are all designated by the FHWA as links within of the [National Highway System \(NHS\)](#) of roadways serving this Urbanized Area ([map](#)), a network that includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility.

I-95 is designated as a Primary Highway Freight System (PHFS) facility on the [National Highway Freight Network](#), one of the principal surface transportation corridors for the movement of freight and goods along the Eastern Seaboard and between origins/destinations throughout the United States. Together with the above-noted NHS Routes, the Interstate System is also the backbone of state and regional freight networks, with I-95 providing highway connectivity with the [Port of Providence](#) (further discussed below) and the [Port of Davisville](#) (Quonset Point, approximately 14 miles south of Providence).

Through a joint effort between RIDOT and the Rhode Island Statewide Planning Program (Department of Administration), and with input through an extensive stakeholder working group, the State of Rhode Island is nearing completion of its *Statewide Freight & Goods Movement Plan* ([Freight Forward RI](#)). State officials have conducted extensive research to date, having commissioned studies and compiled data from a variety of sources to assess present conditions and future trends in all modes of freight movement (air, rail, marine, and truck), including the intermodal connectivity thereof. Through these efforts, which will soon culminate in the public release of the draft plan, officials have identified the State's [two highest highway freight project needs](#) to be (1) Replacement of the I-95 Viaduct



at U.S. Route 6, and (2) improvements to the diverge on I-95 Northbound at Route 146. Construction of the **Route 6/10 & I-95 Interchange Project** will effectively address both of these vital needs through a single effort.

Presently, the state and region are highly reliant on [highways and truck transportation](#) for [commodity flow](#), with approximately 89% 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 an average annual growth rate of 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. The [Port of Providence](#), the second busiest (handling over 7.8 million tons of cargo in 2014) and one of only two deep-water ports in New England, also figures prominently in the future of freight movement in the region. With its strategic location along the Northeast Seaboard and excellent access to the regional highway network via I-95, the flow of goods and materials through this port is also expected to increase, as will the associated truck traffic connecting this freight with regional and local destinations.

Routes 6, 10, and 146 are also essential links in the movement of freight and goods throughout the state and region. Included amongst the [Freight Plan's draft findings released to date](#) is the recommendation that Routes 6 and 10 be designated as surface transport facilities on the forthcoming *Rhode Island State Freight Map*. Replacement of the 6/10 Interchange is also included amongst the Plan's recommended/prioritized highway freight project needs, and will be achieved under the separate Route 6/10 Reconstruction project.

Locally, I-95 and other network freeways serve a densely populated region of the Urbanized Area (including the cities of Providence, Cranston, Pawtucket, Warwick, and East Providence) within which retailers, commercial vendors, and industrial concerns are reliant upon trucking for the movement of goods and materials. Other major users of the system include the United States Postal Service (the USPS Providence Central Mail Processing Facility being just 1 mile north of the I-95 Viaduct Interchange) and municipal waste haulers delivering recyclables and solid waste to the [Rhode Island Resource Recovery Corporation](#) (approximately 1 mile south of the U.S. 6 / I-295 Interchange).

### III. Project Parties

The [Rhode Island Department of Transportation \(RIDOT\)](#) is the applicant and primary party responsible for this project. RIDOT has extensive experience with federal grant processes and has successfully leveraged federal assistance across range of major transportation infrastructure projects, including recent TIGER grant awards for the I-95 Providence Viaduct (Southbound) and Apponaug Bypass (Warwick, RI) projects. RIDOT will be responsible for administering the grant funds and managing the project, and contact information is provided on both the Standard Form 424 application and the cover page of this project narrative.

As discussed under the subheadings of [Section VIII \(Project Readiness\)](#), RIDOT's program to replace the Providence Viaduct has been in development for some time, and the current plan to construct the replacement Viaduct Northbound facility (with integral improvements to address chronic congestion along this bottleneck segment of I-95 Northbound) enjoys broad support from state and local officials, transportation and business advocacy groups, and the general public. RIDOT has coordinated extensively with the [City of Providence](#) on its plans for the **Route 6/10 & I-95 Interchange Project** to ensure that its broad objectives (reducing congestion along the Interstate and other arterial freeways, improving the efficiency of regional highway and freight



networks) are harmonized with local efforts aimed at improving quality of life within this highly urbanized area of the city.

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

### (i) Future Eligible Cost

The future costs of the **Route 6/10 & I-95 Interchange Project** for which FASTLANE funds are sought (design/build contract documents, final design and construction) are eligible costs as defined under Section C.3.ii-iii (Eligibility Information) of the FASTLANE II [Notice of Funding Opportunity](#) (NOFO). For purposes of evaluating its merits with respect to the program's review criteria, the project's estimated total cost of \$226.1 Million exceeds prescribed minimum size requirements to be considered a large project (see [Section VI](#)).

### (ii) Availability and Commitment of Funding Sources and Uses

**Financial Condition of the Project's Sponsor** – With the passage of the *RhodeWorks* legislation in February 2016, RIDOT's 10-Year Plan (the foundation of the STIP) is now fully funded, placing the Department in a sound financial position. Developed using an asset management approach, implementation of the 10-Year Plan will enable RIDOT to bring bridge conditions within the state to the federal minimum standard by 2025, while maintaining pavement condition and expanding maintenance. Beginning in FFY2017, the State's [Transportation Improvement Program](#) includes significant funding programmed for bridge rehabilitation and replacement, including those to be replaced through the **Route 6/10 & I-95 Interchange Project**. Rhode Island is only the third state in the union to have a 10-year constrained STIP.

Source	Amount (millions)	Percent
<i>FY17 FASTLANE Grant Funds</i>	\$59.0	26%
<i>Other Federal Funds</i>	\$121.88	54%
<i>State Funds</i>	\$45.22	20%
<i>Total</i>	\$226.10	100%

**FASTLANE** – RIDOT is requesting \$59.0 million from the FASTLANE program in this grant application, less than 30% of the project's cost.

**Non-FASTLANE Funding Share** – RIDOT is contributing a significant amount of local share for the project. As summarized in the above table, RIDOT is proposing that 74% of the project's cost be funded by non-FASTLANE sources.

**Other Federal Funding** – *RhodeWorks* legislation enacted by the General Assembly included authorization for \$300 million in new GARVEE bonds restricted to bridge capital infrastructure projects, which were issued in October 2016.

RIDOT would also dedicate Surface Transportation Block Grant Program (STBG) federal formula funds for the project. These funds are allocated in RIDOT's constrained 10-Year STIP. RIDOT would use a combination of GARVEE and STBG funding for 54% of the project cost.

Importantly, RIDOT will be implementing a large commercial vehicle toll for the reconstruction of the Viaduct Northbound. Once the toll is implemented, revenue collected would be used to reimburse a portion of these funds and then used for other Title 23 eligible projects. Heavy truck

tolls will be set at a level so as to generate the required revenue to fund the share of bridge reconstruction costs proportionate to the amount of wear/damage caused by such vehicles. RIDOT and FHWA have recently signed Memoranda of Understanding (MOU) for several tolling locations throughout the state, and are expected to enter into a similar agreement for facilities at this location.

**State Funding** – RIDOT would dedicate \$45.2 million of funds in vehicle registration, surcharges and other dedicated vehicle user fees, along with gas tax and diesel tax revenues. With the passage of State Budget Article 21, these fees are dedicated to RIDOT via formula and restricted to use on transportation infrastructure projects.

**Contingency/Reserves** – The current project estimate includes a contingency level of 12 percent. Should the project cost exceed this estimate, RIDOT has a number of available contingencies and reserves. In moving to a 10-Year Plan approach to infrastructure investment, RIDOT and the State Planning Council (the MPO of jurisdiction) agreed to update the plan on an annual basis. This provides the ability for RIDOT to manage cash flow needs and re-sequence project funding should additional funding be required for the project. Furthermore, Rhode Island has the ability to restructure debt should additional funds be needed.

**Ability to Manage Grants** – Prior to the passage of the FAST Act, RIDOT received more than \$200 million in federal funding annually. The FAST Act will increase federal formula funding by more than \$100 million over a five-year period. RIDOT is a long-time recipient of FHWA funding and has virtually eliminated inactive FHWA grants. RIDOT recently began holding quarterly meetings with the FHWA Division Office and produces a detailed Quarterly Report on active projects. It is also one of only a handful of states to implement a project management approach to capital investment.

**Stable and Reliable Funding** – At the local level, Rhode Island created the “Intermodal Surface Transportation Fund” (RIGL 31-36-20), which dedicates the collection of gasoline and diesel tax revenues towards transportation purposes. Additionally, beginning July 1, 2015 and every second year thereafter, the gasoline tax will be adjusted by the percentage of CPI-U, an index designed to keep up with inflation. Between FY2016 and FY2025, an estimated \$90.1 million will be allocated to RIDOT yearly from this source.

Recent transportation funding reforms were enacted through the State Budget process, RIGL 39-17.1-4 (also known as “Article 21”) created the “Rhode Island Highway Maintenance Account” (RIHMA) as a special account within the Intermodal Surface Transportation Fund and dedicates the collection of vehicle registration fees, surcharges and other vehicle user fees towards transportation purposes. RIGL 39-18.1-5 mandates that the allocation of these funds “be directed to the Department of Transportation” and utilized exclusively to fund “programs that are designed to eliminate structural deficiencies of the state’s bridge, road and maintenance systems and infrastructure.” Between FY2016 and FY2025, an estimated \$83.2 million will be collected yearly from this source. Legislative transportation reforms also allocated additional funding to the Rhode Island Turnpike and Bridge Authority and RIPTA by formula. With the passage of the *RhodeWorks* legislation in February 2016, the General Assembly authorized RIDOT to implement a toll on large commercial vehicles on certain bridges throughout the state to fund their reconstruction, including the Providence Viaduct. RIDOT is expecting annual revenue of \$45 million per year from tolls – less than 10% of the total *RhodeWorks* program.

*RhodeWorks* also authorized \$300 million in new GARVEE bonding, along with a refinancing and restructuring of existing GARVEE debt. This restructuring will provide an additional \$120 million benefit to RIDOT in the first three years of the program.



### (iii) Federal Funds and Required Match

There are no prior year federal funds dedicated to the project. FASTLANE funding does not exceed 60% of the project's cost, nor does federal funding exceed 80%. As proposed, FASTLANE funding represents less than 30% of the project's cost.

### (iv) Detailed Project Budget

A combined schedule and budget is provided below, summarizing how monies from all funding sources will be spent over the construction period to anticipated completion of the project in 2024. Engineering/design and construction costs presented include all work to fully complete the project, including maintenance and protection of traffic, demolition of structures, and contingency. The total project cost is broken down by cost classification on the attached SF-424C Budget Information worksheet, and of this \$226.1 million, an estimated \$9.0 million will be spent on engineering and construction of the improvements at Dean Street, and \$14.7 on the new pedestrian bridge over the Interstate.

**Project Schedule and Budget**

FFY:	2017	2018	2019	2020	2021	2022	2023	2024	TOTALS
<b>Schedule</b>									
Preconstruction Engineering Complete	◆								
Contract Advertisement	◆								
Notice to Proceed	◆								
Construction – Design/Build									
Project Completion								◆	
<b>Expenditures (\$ millions)</b>									
Engineering and Design	6.18	1.50	1.00	1.00	1.00	2.33	1.00	0.50	14.51 (6.4%)
Construction	0	25.00	39.72	30.60	27.00	25.00	34.14	30.13	211.59 (93.6%)
<b>Totals</b>	<b>6.18</b>	<b>26.50</b>	<b>40.72</b>	<b>31.60</b>	<b>28.00</b>	<b>27.33</b>	<b>35.14</b>	<b>30.63</b>	<b>226.10</b>

### (v) Requested NSFHP Funds

One hundred percent of the FASTLANE grant funds requested will be applied to final design development and construction of highway and bridge facilities described in this project narrative. These will be used to construct the replacement Providence Viaduct Northbound structure and access/operational improvements, including the integral C-D road and northbound ramp modifications at the Route 6/10 and I-95 interchange.

## V. Merit Criteria

The **Route 6/10 & I-95 Interchange Project** is demonstrably aligned with the merit criteria established for the FASTLANE program, strengthening a critical link in the regional freight network and providing tangible benefits for all users of the surface transportation system. To facilitate the expeditious review of the project's merits, these expected outcomes of the project expounded upon in Sections [I \(Project Description\)](#), [VII \(Cost Effectiveness\)](#) and elsewhere throughout this Project Narrative are concisely summarized in the table below.

MERIT CRITERIA	
a. Economic Outcomes	<ul style="list-style-type: none"> <li>Restores the vital regional surface transportation link provided by the I-95 Providence Viaduct (part of both the National Highway System and National Highway Freight Network) to a state of good repair, replacing the existing structurally deficient and deteriorating facility with a modern, functional and highly resilient design</li> <li>Strengthens the regional and national highway and intermodal freight transportation networks, improving the efficiency of commodity flows throughout the Northeast, supporting economic growth in the region, and creating opportunities for enhanced multimodal connectivity through the Port of Providence</li> <li>Relieves the economic burden of maintaining an obsolete facility long identified as in need of full replacement, allowing funds to be more productively used to address the State's transportation infrastructure needs</li> <li>Along with the separate Route 6/10 Reconstruction Project, supports state and local efforts to improve quality of life and economic vitality in the State Capital's urban core</li> <li>Through economic modelling and analysis, provides a benefit-cost ratio of <b>1.72</b> (7% discount rate), demonstrating that the investments in constructing new facilities are well justified by the significant travel time, crash reduction, reliability, and related economic activity benefits that will be realized through construction of the project</li> </ul>
b. Mobility Outcomes	<ul style="list-style-type: none"> <li>Restores the vital regional surface transportation link provided by the I-95 Providence Viaduct to a state of good repair, replacing the deficient and obsolete facility carrying I-95 Northbound through Providence with a modern, functional and highly resilient design</li> <li>Fully addresses the two highest-priority highway freight project needs identified in the State's Draft <i>Freight and Goods Movement Plan</i>, which are to (1) replace the I-95 Viaduct at U.S. Route 6, and (2) improve the diverge on I-95 Northbound at Route 146</li> <li>Enhances the resiliency of this artery in regional and national highway/freight networks; similar to the nearly completed I-95 Providence Viaduct Southbound replacement structure, new facilities will be constructed with modern materials, methods, and technologies and have an anticipated 100-year service life</li> <li>Eliminates one of the most severe bottlenecks along I-95 in the region through construction of a new collector-distributor (C-D) road and improvements to the existing system of interchange ramps providing access between the 6/10 Connector, I-95 Northbound, and Route 146</li> <li>Reduces congestion and backups along the inbound arterial freeways connecting to points north (I-95 North, 6/10 Connector, I-95 West) – which during peak hours can extend for miles along each approach segment – to a fraction of current levels, significantly reducing travel times and improving throughput</li> </ul>
c. Safety Outcomes	<ul style="list-style-type: none"> <li>Eliminates key conflicting weave movements in the existing freeway system, in particular, the ¼-mile segment of I-95 over which (a) 6/10 Connector traffic destined for I-95 Northbound must weave left and (b) I-95 mainline traffic destined for Route 146 must weave right</li> <li>Achieves significant reductions in the frequency and severity of vehicle collisions, through a proposed design that effectively eliminates problematic weave movements (including a new C-D road, dedicated ramp from 6/10 Inbound to I-95 North) in the existing system</li> <li>Reduces vehicle collisions by an estimated 35% along a segment of I-95 Northbound where over 1,000 vehicle crashes have occurred over a recent 5-year period</li> <li>Improves safety and comfort for all users of the system</li> </ul>



d. Community and Environmental Outcomes	<ul style="list-style-type: none"> <li>Improves quality of life in adjacent urban areas through significantly reduced congestion</li> <li>Avoids impacts to neighboring properties and community resources through a design in which all proposed facilities will be constructed within existing rights-of-way</li> <li>Provides a new pedestrian connection across the interstate facility, reducing severance and improving access to multimodal transit options within the urban core</li> <li>Includes best management practices (BMPs) for stormwater management and environmental resource protection in accordance with state and federal requirements</li> <li>Creates opportunity for future neighborhood development and local economic growth through the reconfiguration of 6/10 Connector Inbound ramps at Dean Street, reclaiming over 5 acres of urban land previously taken for construction of the freeway for potential future neighborhood redevelopment</li> <li>Project is devoid of activities or resources with the potential for adverse impacts to surrounding natural and build environment, and all project activities qualify for Categorical Exclusion under 23 CFR 771</li> </ul>
<b>OTHER REVIEW CRITERIA</b>	
a. Partnership and Innovation	<ul style="list-style-type: none"> <li>RIDOT has worked (and continues to work closely) with the City of Providence on plans to replace the Viaduct Northbound and reconstruct the 6/10 Connector, efforts culminating in a proposed design that is wholly consistent with the city plans for addressing quality of life and transportation needs for the 21<sup>st</sup> century</li> <li>Project enjoys broad support from officials at all levels of government, stakeholders, and the local community</li> <li>RIDOT plans to expedite project delivery through a design-build form of procurement, expected to result in innovative value engineering solutions and reduce the overall cost of construction</li> </ul>
b. Cost Share	<ul style="list-style-type: none"> <li>Funds programmed for the project in the recently effected FFY 2017-2025 STIP, within which both the I-95 Providence Viaduct Northbound and the 6/10 Reconstruction are identified as Regionally Significant Projects</li> <li>In part through the recently passed <i>RhodeWorks</i> legislation, RIDOT has available stable and dependable sources of funding to fulfill all local match obligations</li> <li>All engineering and construction estimates include appropriate contingency factors commensurate with the design stage of project facilities</li> <li>RIDOT has a proven track record of effectively managing federal grants and utilizing grant monies in an expeditious and well-documented manner</li> </ul>

## VI. Large/Small Project Requirements

At an estimated total cost of \$226.1 million, the **Route 6/10 & I-95 Interchange Project** meets the qualifying criteria for consideration as a “Large” project as defined under Section C.3.iii of the FY2017 FASTLANE NOFO. As documented in the preceding section and elsewhere within this narrative, the accompanying SF-424 forms, and the Benefit-Cost Analysis conducted, the **Route 6/10 & I-95 Interchange Project**:

- Generates economic, mobility, and safety benefits on a regional and national level;
- Is a cost-effective investment in highway infrastructure, with a favorable benefit-cost ratio of 1.72 (7% discount rate);
- Contributes to all of the enumerated national goals of the Federal-aid highway program listed under 23 USC 150 (including maintaining infrastructure in a state of good repair, reducing congestion, and improving safety, system reliability and the efficient movement of freight);
- Is based on the results of preliminary engineering, including traffic, air quality, and economic modelling analyses conducted to assess the project design and expected outcomes;

- Has stable and dependable sources of non-federal funding programmed in the State's Transportation Improvement Program; and
- Will see construction of improvements begin well within the 18-month period from the date of obligation of funds.

Full implementation of the **Route 6/10 & I-95 Interchange Project** cannot be completed without the federal financial assistance requested through the FASTLANE program. With the award of the FASTLANE funds requested under this application, RIDOT will be able to fully implement the proposed design, which will realize the full state of good repair, safety, and operational benefits described in this narrative. Absent this funding support, the project would need to be scaled back and would likely include construction of the Viaduct Northbound replacement structure and limited, if any, operational improvements. The significant congestion and safety issues inherent in the current configuration of I-95 Northbound ramps would remain, and an outstanding opportunity to comprehensively address the operational deficiencies in this key link of in the highway network will have passed.

## VII. Cost Effectiveness

A Benefit-Cost Analysis (BCA) has been developed for the **Route 6/10 & I-95 Interchange Project** in accordance with the [Benefit-Cost Analysis Analyses Guidance for Applicants](#) for FASTLANE Grants (published November 17<sup>th</sup>, 2016) and with reference to OMB Circulars A-4 and A-94 concerning benefit-cost analyses. A summary of this analysis, distilled from the complete Benefit-Cost Analysis report and supporting data (provided as separate attachment to this FASTLANE narrative) is presented below.

Readers are referred to the standalone BCA report for a more detailed and comprehensive discussion of methodology, assumptions, inputs, and results.

Completion of the **Route 6/10 & I-95 Interchange Project** will result in a variety of benefits, the sum of which more than offset the costs of construction. The benefits realized by this project can be categorized into the cost savings associated with significantly reduced travel times and vehicle operating costs, improvements in travel time reliability, improvements in safety, and wider economic benefits from improvements in productivity. Quality of life impacts are described qualitatively (see BCA document), while all other impacts are monetized and then compared in present value terms to project costs.

Using the prescribed discount rate of 7%, the ratio between monetized benefits and costs (in 2016 dollars) is **1.72**. A sensitivity analysis using a 3% discount rate results in a benefit-cost ratio of 3.39. Details of benefits and costs by year are presented in the BCA spreadsheet accompanying this FASTLANE application.

**Summary of Benefits**  
(IN MILLIONS, 7% DISCOUNT RATE)

Benefit Type	Benefits
Business Time & Reliability	\$23.1
Personal Time & Reliability	\$90.9
Logistics & Supply Chain Benefits	\$6.6
Vehicle Operating Cost Savings	\$51.2
Safety Benefits	\$64.0
Environmental & Social Benefits	\$16.9
<b>Total Benefits</b>	<b>\$252.8</b>

**Summary of Benefits and Costs**  
(IN MILLIONS)

	Undiscounted	Discounted at 3%	Discounted at 7%
Project Costs*	\$226.1	\$196.1	\$164.2
O&M Costs	-\$52.9	-\$30.6	-\$17.1
<b>Total Costs</b>	<b>\$173.2</b>	<b>\$165.6</b>	<b>\$147.1</b>
<b>Total Benefits</b>	<b>\$1,135.5</b>	<b>\$560.6</b>	<b>\$252.8</b>
<b>Benefit-Cost Ratio</b>	<b>N/A</b>	<b>3.39</b>	<b>1.72</b>

\* \* Project costs include capital outlays and adjustments for O&M.

Project costs for the “Build” concept of this application as well as a “Base” case (under which the existing Viaduct bridge and system of ramps continue to be maintained/repaired as-is) were developed by engineering design consultants on behalf of RIDOT. These figures (see preceding funding subsections of this narrative) were then used to develop a net incremental cost for the purposes of the BCA.

## VIII. Project Readiness

Given the dire condition of the Providence Viaduct and the critical surface transportation needs this corridor of I-95 serves, completion of the replacement Viaduct Northbound is one of Rhode Island’s topmost priorities over the next decade, reflected in its classification as a “regionally significant project” in the [FFY 2017-2025 STIP](#). The scope of the **Route 6/10 & I-95 Interchange Project** will not only bring this vital asset up to a full state of good repair, but will eliminate one of the most persistent and severe bottlenecks along I-95 in the Northeast Corridor.

To move the project through to completion as efficiently as possible, RIDOT has developed a streamlined program for project delivery, which includes finalization of the preconstruction engineering design for subsequent procurement and construction through a design-build form of contract.

### (i) Technical Feasibility

RIDOT has spent much of the past decade evaluating alternatives for replacement of the I-95 Providence Viaduct which also eliminate the inherent deficiencies of the interchanges with the 6/10 Connector and Route 146 along I-95 Northbound. In the **Route 6/10 & I-95 Interchange Project**, RIDOT has identified a comprehensive solution that is both technically and economically feasible.

RIDOT has commissioned a design contract to advance the project through preconstruction engineering, an endeavor that is well underway and expected to be complete in 2017. This effort will advance all elements of the project design (including but not limited to, highway, structural, traffic, drainage, utilities) to a level sufficient for RIDOT to advertise the project as a design-build contract, including plans, specifications, and estimates to a level tantamount to a 30% design review submission under a conventional design-bid-build procurement approach. The preconstruction engineering consultant will also be preparing and submitting permit applications/modifications/extensions to the authorities having jurisdiction over the work.

To date, RIDOT has developed sufficiently detailed conceptual designs to ensure that the project is (a) constructible within the constraints of state and federal funds available, (b) in conformity with modern highway design safety standards and performance criteria, and (c) consistent with local, regional, and national objectives for transportation efficiency and resiliency in the 21<sup>st</sup> Century. Crucially, all elements of the project are contained in the existing operational right-of-way, obviating potential risks associated with property acquisitions and ensuring that it remains eligible for a [categorical exclusion \(CE\)](#) in accordance with FHWA regulations for compliance with the National Environmental Policy Act (NEPA).

### (ii) Project Schedule

As shown on the schedule provided under [Subsection IV\(iv\)](#) of this narrative, the **Route 6/10 & I-95 Interchange Project** is on track for award of the design/build contract for its construction in less than 12 months’ time. Such an expeditious approach is essential to restoring this critical junction in the surface transportation network to a state of good repair as quickly as possible. The severe condition of several of the Viaduct’s structural elements continues to pose the risk of structural compromise (or worse, failure), which would result in the indefinite closure of



facilities to trucks or all traffic entirely. Any such closures would result in significant impacts to the regional highway and freight networks and to the regional economy. It is expected that design/build work on the project will commence in the last quarter of 2017, well within the obligation timeframe for FASTLANE grant awards as set forth in the NOFO.

### **(iii) Required Approvals**

#### **(a) Environmental Permits and Reviews**

It has long been established that replacement of the structurally deficient I-95 Providence Viaduct is an activity qualifying for a CE under FHWA's NEPA requirements (23 CFR 771.117), as replacement of an Interstate facility at its existing location is among those actions that do not individually or cumulatively have a significant effect on the human environment (and thus do not require the preparation of an environmental assessment or an environmental impact statement to document NEPA compliance). At the time when operational improvements were first proposed for inclusion within the scope of the Viaduct Northbound project (2014 TIGER grant application), RIDOT commissioned an updated *Environmental Evaluation Report* to document these improvements along with their eligibility for categorical exclusion.

RIDOT has re-opened its review of the project and the additions and modifications to its scope – in particular, improvements at the Dean Street Interchange and construction of a new pedestrian bridge spanning the Interstate – and has preliminarily determined that the project remains eligible for a CE, as all activities will take place entirely within the operational right-of-way and are amongst the qualifying actions of listed under 23 CFR 771.117 (c) and (d). In accordance with FHWA procedures, the above-referenced Environmental Evaluation Report will be updated to reflect the full scope of the **Route 6/10 & I-95 Interchange Project**, and will be submitted to FHWA for approval of a CE designation.

#### **(b) State and Local Approvals**

As with all major actions of similar magnitude, RIDOT is required to abide by state and federal law in the planning, design, and implementation of such projects, including obtaining all necessary regulatory approvals prior to construction, such as those pertaining to environmental protection, historic resources, and health and safety. Since initial plans to replace the Providence Viaduct have already seen the necessary approvals procured (for the Viaduct Southbound project), the federal, state, and local approvals already received will require only extensions or modifications thereto, minimizing the risk of any potential delays in acquiring the necessary permits for construction.

To date, RIDOT has received for replacement of the Viaduct an exemption from the [U.S. Coast Guard](#) along with permit authorizations from the [U.S. Army Corps of Engineers](#), the Rhode Island [Coastal Resources Management Council](#), and the applicable programs of the [Rhode Island Department of Environmental Management \(RIDEM\)](#), including its Water Quality Certification and Rhode Island Pollutant Discharge Elimination System (RIPDES) programs. The preconstruction engineering consultant will be preparing documentation and applications for the extension or modification of these permits, which are expected to be in place well before advertising of the design/build contract.

The need to replace the rapidly deteriorating Viaduct has long been established, and following a protracted period during which the state's other pressing major transportation needs were being addressed, the State of Rhode Island and RIDOT are now committed to seeing this vital node in the regional highway network brought up to a state of good repair. As evidenced by the letters of support accompanying this application, RIDOT's plans to replace the Viaduct and construct

vastly improved northbound interchange facilities enjoys broad support from officials at all levels of government, interest groups, and the general public.

### (c) State and Local Planning

The **Route 6/10 & I-95 Interchange Project** has been (and will continue to be) advanced in a manner that is wholly consistent with planning policies of the State of Rhode Island and the City of Providence. The [State Planning Council](#) is the Metropolitan Planning Organization (MPO) for transportation planning purposes, overseeing the [Statewide Planning Program](#) (Department of Administration, Division of Planning) in the development of the state's Long Range Transportation Plan ([Transportation 2035](#)) and [Transportation Improvement Program \(STIP\)](#). As noted in preceding sections, the proposed project features prominently in the FFY 2017-2025 TIP and will see the state's two highest priority highway freight project needs (as identified in the forthcoming the [Statewide Freight & Goods Movement Plan](#)) fully addressed.

RIDOT will continue to engage with the City of Providence through its [Department of Planning and Development](#) to ensure that the design and build-out of facilities remains consistent with the shared vision for the city's urban freeways and, in particular, the 6/10 Connector.

### (iv) Assessment of Project Risks and Mitigation Strategies

As noted in preceding sections of this document, the **Route 6/10 & I-95 Interchange Project** is being developed such that all facilities can be constructed within the existing freeway rights-of-way. This element removes any cost or schedule risks associated with the right-of-way acquisition and certification process, components which typically involve a degree of risk to cost and schedule in major construction projects.

The risks associated with this project are limited to the typical schedule uncertainties associated with projects of this magnitude, along with the potential for delays associated with obtaining the necessary regulatory approvals prior to construction. Informed by the nearly completed I-95 Providence Viaduct Southbound project, RIDOT is keenly aware of these risks, and will (a) leverage key lessons learned on a project that is nearly identical in several respects, including bridge construction over the Woonasquatucket River and NEC, maintenance and protection of traffic on a critical segment of the interstate, etc., and (b) take every advance measure possible to minimize and mitigate those risks. The preparation of bidding documents for a design-build contract is seen as a low-risk endeavor, with the schedule totally under the control of RIDOT and its consultant.

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