

Rehabilitation of the South Grand Island Bridges

**2023 REBUILDING AMERICAN
INFRASTRUCTURE WITH SUSTAINABILITY
AND EQUITY (RAISE) NARRATIVE**

Submitted to:



U.S. Department
of Transportation

Federal Highway
Administration



Thruway
Authority

Project Context

Built in the early 1950s, the New York State Thruway is one of the oldest components of the National Interstate Highway System and one of the longest toll roads in the nation. The 570-mile Thruway System plays a vital role in the national, regional, and state economies, and provides connections between New York's principal cities, rural areas, and tourist destinations. Roughly one-third of all vehicles using this artery come from out of state, and it is a key component of the National Highway Freight Network (NHFN) and the New York State Freight Core Highway Network. It is the only system in the state that permits tandem trucks (a.k.a., Longer Combination Vehicles or LCVs) to operate on it.



I-190 is part of the Thruway system. Also known as the Niagara Thruway, this 28-mile segment of interstate extends from I-90 in the City of Buffalo (Erie County) to its terminus at the Lewiston-Queenston international border crossing in the Town of Lewiston (Niagara County). The South Grand Island Bridges each carry one direction of I-190, northbound and southbound, over the Niagara River. The distinctive blue twin truss arch bridge spans are iconic regional landmarks, and they are eligible for listing on the National Register of Historic Places.

Construction of the southbound bridge was completed in 1935 and the northbound bridge in 1963. Each structure has a total deck length of 3,437 feet, with a maximum vertical clearance of 100 feet provided over a 400-foot-wide navigation channel below. Both bridges were originally constructed to provide a 24-foot-wide roadway surface. The bridge section is typically comprised of two 10-foot mainline lanes in each direction, with 2-foot shoulders. The two-way Annual Average Daily Traffic (AADT) for 2021 is about 63,000, with 10% truck volume.



The northbound bridge has a 5-foot-wide pedestrian sidewalk on the east side, while the southbound bridge has a 5-foot-wide pedestrian sidewalk (presently closed due to safety concerns) on the west side. Paved shared-use pathways connect both sidewalks to extensive local and regional shared-use trail systems on both sides of the river.

Statement of Work

The objective of this project is to rehabilitate and strengthen deteriorated sections of conditionally at-risk, poor-rated elements of the two South Grand Island Bridges (BIN# 5043981 and BIN #5043982). Both bridges are on the National Bridge Inventory under 23 U.S.C. 144(b). The project scope includes strengthening and repair of both bridges to address condition issues; improving wearing surface friction on both bridges to enhance vehicle safety; safety improvements on both bridges for maintenance personnel; seismic resiliency improvements on one bridge; restoring an unusable sidewalk on one bridge and improving bicycle and pedestrian connectivity between communities and the existing shared-use trail systems on both sides of the bridges. The project will ensure that the bridges and I-190 provide for the safe, efficient movement of people, goods, and services, as well as connectivity for the communities located close to the bridges, including two Areas of Persistent Poverty. The state, the region and local neighborhoods will benefit from this environmentally sustainable and equitable project. All work performed will meet or exceed State and Federal standards for design and construction.

Transportation Challenges and Solutions

Five primary transportation challenges and solutions have been identified for the project. Each is discussed in further detail in the *Merit Criteria* file submitted for this project.

- **Challenge #1: Address Accelerated Deterioration of Superstructure Components Fracture-Critical Non-Redundant Structural Steel Members and Pin and Hanger Assemblies.** Recent inspections have identified substantial accelerated deterioration of fracture-critical non-redundant members of both bridges' original superstructure designs. The failure of one component of a fracture-critical primary support system can result in a catastrophic collapse. Both structures were designed with pin and hanger assemblies, which are also fracture-critical members. Each of these assemblies connect two plate girders of the bridge, providing a necessary expansion joint in the bridge to accommodate movement. Recent inspection report findings and engineering studies have concluded that the condition of these components is beyond the capability of maintenance forces to address and must be attended to by a Capital Project in order to reduce the risk of condition rating flags or failure that could require closure of the bridges.



Conventional Superstructure Structural Steel Members. Similar to the fracture-critical non-redundant structural steel members, the remaining conventional superstructure steel elements are experiencing accelerated deterioration. The present asset management cycle, informed by detailed data and analysis, have determined the structures are at a point where a Capital Project is necessary to address steel deterioration in order to avoid future condition rating flags that would require the structures to have lanes closed or load-rated.

Solution to Challenge #1

This project will complete repairs to all identified conditionally at-risk members. Proposed improvements, such as installing steel plates over areas of members with section loss and addressing fatigue cracking will restore, and in some instances increase, the full loading capacity of these critical structural elements. Bridge superstructure steel members that are not fracture-critical non-redundant members will be examined during ongoing in-depth bridge inspections. Areas identified as needing restorative work will be improved using best practices. Once work is completed, the improved superstructure steel members will be returned to a state of good repair and will require only routine preventative maintenance for the anticipated remaining 75-year service life of the structures.

- **Challenge #2: Improve Resiliency by Addressing Structural Seismic Risk**

The South Grand Island Bridges are considered “Critical” assets by the state. At least one of the spans must provide immediate access after a lower-level seismic event (lesser strength event) - and limited access after an upper-level seismic event (higher strength event) - to continue to serve as a link for civil defense, police, fire department, and/or public health agencies to respond to a disaster situation. In 2020, the Authority retained a specialized consultant engineering services firm to conduct a seismic evaluation and provide recommendations for the southbound bridge if needs were identified. The study determined that the bridge, in its current condition, cannot meet the seismic performance criteria requirements specified for a “Critical” bridge after an upper-level event.

Solution to Challenge #2

The 2020 seismic study of the bridge identified retrofit schemes for seismic improvements. This project will complete the recommended repairs (e.g., replacement of crucial bearings and installation of dampers, bearings, shear keys) to the southbound structure. These improvements will enable the structure to serve as part of a functioning emergency corridor following an upper-level seismic event.

▪ Challenge #3: Improve Access for Non-Motorized Bridge Users

The sidewalk on the southbound structure was required to be closed to the public due to heaving from extensive deterioration of underlying steel members and build-up of pack rust. Needed repairs to re-open the sidewalk are beyond the capabilities of maintenance forces. The paved pathways that connect the sidewalks on both bridges to existing local and regional shared-use trail systems lack wayfinding signs and amenities for trail users. The path surfaces are also deteriorated or uneven in places, and geometric deficiencies have been identified, particularly at the connection points to the bridge sidewalks, where 90° turns, slopes, and limited space are difficult to navigate.



Solution to Challenge #3

This project will improve access for non-motorized bridge users by restoring and re-opening the sidewalk on the southbound bridge, providing a sidewalk that is fully compliant with Americans with Disabilities Act standards. Feasible geometric improvements to the existing paved pathways connecting the bridges to the shared-use trail systems will be identified, and surface repairs will be made to the pathways to improve safety and accessibility. Wayfinding signs will be provided, along with amenities, such as pull-offs and benches, to improve comfort for trail and sidewalk users.

▪ Challenge #4: Improve Safety for Motorized and Non-Motorized Bridge Users

Vehicular Safety. Accident data for this segment of I-190 documents a high incidence of overtaking and rear-end accidents (63% of the recorded crashes). The Authority conducted friction testing in 2018 to measure skid resistance, concluding that skid resistance properties of the existing wearing surface are inadequate. Wearing surface friction properties must be addressed or the prevalence of overtaking and rear-end accidents will remain unacceptably high, resulting in a higher likelihood of injury and vehicle damage for patrons using the bridges.

Bicycle and Pedestrian Safety. As discussed in Challenge #3, the sidewalk on the southbound bridge was closed for public use due to heaving and safety concerns for pedestrian and cyclists using the sidewalk. The paved pathways approaching the bridge sidewalks also have safety-related surface and geometric deficiencies.

Maintenance Personnel Safety. Both bridges retain the original physical safety features provided for use by maintenance personnel. These include fixed ladders with cages, which are non-conforming under current Occupational Safety and Health Administration (OSHA) Regulation 1910.28, specifying the use of ladder safety systems and personal fall arrest systems. Conformance with this OSHA standard is needed.

Solution to Challenge #4

Vehicular Safety. This project will address the high frequency of overtaking and rear-end accidents by improving the wearing surface skid resistance properties. The Authority is currently evaluating the effectiveness, durability, and value of 2 possible methods to address this issue: installing a high-friction overlay material or sawing grooves into the existing wearing surface.

Pedestrian and Bicyclist Safety. As discussed under Challenge #3, repairs to the heaved areas of sidewalk on the southbound bridge structure will eliminate the safety hazard that required its closure, improving accessibility and connectivity for non-motorized users of the bridge. The approach paths will be evaluated for geometric and surface improvements to further enhance safety.

Maintenance Personnel Safety. A total of over 100 safety ladder systems, located on both structures, will be improved to meet current Occupational Safety and Health Administration (OSHA) standards.

▪ **Challenge #5: Traffic During Construction**

Moving people and vehicles safely and efficiently across the bridges, and through the corridor, during construction will present an additional challenge. There are no convenient access-controlled alternative routes for vehicles going to and from the US/Canadian points of entry, and unintentionally diverting traffic to nearby state and local roads to “go around” the construction area would be undesirable. There are no viable detours for bicycle and pedestrian traffic traveling to and from the southern part of Grand Island, with the closest non-motorized crossing 5 miles away at the North Grand Island Bridges. Any work to the structures must address regional and local transportation needs, and the bicycle and pedestrian connections that the structures provide must be maintained with minimal disruption.

Solution to Challenge #5

The project will be constructed with a Work Zone Traffic Control plan that emphasizes maintaining traffic flow and safety. To minimize impacts to traffic during peak daytime travel, only nighttime lane closures will be used. Particular attention will be paid to community and bicycle/pedestrian connections provided by the bridges to avoid or minimize any temporary impacts to these routes.

Short-term bridge closures will be required to complete structural bearing system replacements. Crossover alignments will be utilized while this work is conducted on one structure, which will shift all traffic to the operational bridge.

Project Status

Preliminary Design is currently being advanced for this project. In-depth asset management analysis of condition and needs has been completed to help define the work scope, including best practices for restoration and resiliency measures and methods of construction. Stakeholder outreach and environmental reviews have been initiated, and a 2020 Seismic Study and Hazard Analysis was completed. Non-reimbursable costs incurred for work performed to date total \$1.535 million.

Project Context with Other Transportation Infrastructure Investments

In 2021, the Authority substantially completed a \$355 million project to convert the entire 575-mile New York State Thruway system to cashless tolling. Prior to this, in 2018, the Authority similarly converted the I-190 toll barriers at the South and North Grand Island bridge crossings into all-cashless highway-speed tolling points. In addition to reducing congestion, these projects significantly contributed to the Authority’s efforts to reduce greenhouse gas emissions from slowed or idling vehicles at toll barriers. Total annual greenhouse gas emissions were reduced by over 44,000 short tons in 2021.

To further modernize the system, improve resiliency, combat climate change, and provide for community connections across the system, the Authority is advancing the following projects:

- Rehabilitation and seismic resiliency improvements on the North Grand Island Bridges, located approximately 5 miles to the north on the same I-190 corridor. This project also includes replacement of deteriorated lighting fixtures on the North and South Grand Island Bridges with energy-efficient LED fixtures to improve safety for both motorized and non-motorized users. (\$36 million - Scheduled completion in 2024)
- Rehabilitation and strengthening of a deteriorated 3.5-mile segment of I-190, on the same corridor between Milepost 901.7 and Milepost 904.2. (\$44.28 million - Scheduled completion in 2025)
- Replacement of the Beaver Island State Parkway Bridge over I-190, located near the north end of the South Grand Island Bridges. The new bridge will meet minimum vertical clearance requirements and provide a sidewalk on the bridge that is complaint with Americans with Disabilities Act (ADA) standards. (\$9 Million - Scheduled completion in 2023).
- Stabilization of a retaining wall at the Thruway bridge over Scajaquada Creek, approximately 5 miles away on the same I-190 corridor, to improve resiliency. (\$5.5 million - Scheduled completion in 2024)

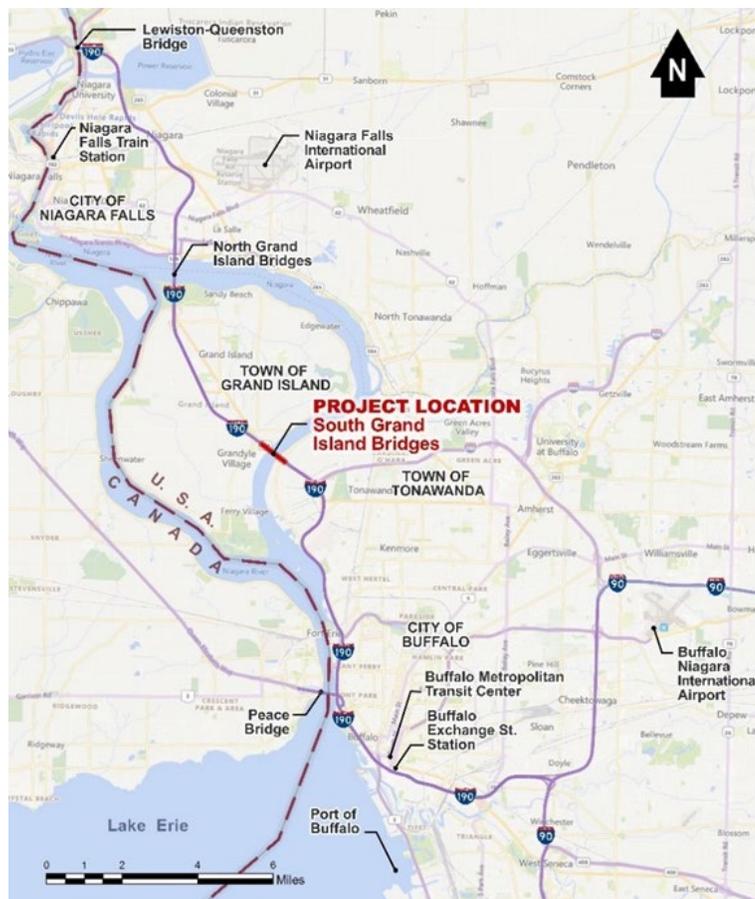
Project Location

Detailed Geographical Description

The project is located on I-190, spanning the Niagara River, between Milepost 914.35 and Milepost 914.99, in the Towns of Grand Island and Tonawanda, Erie County, New York.

Connections to Existing Transportation Infrastructure

I-190 serves as a primary truck freight connector to the Trans-Canadian highway system, providing direct interstate access to the Lewiston-Queenstown Canadian border crossing, one of only two point-of-entry freight border crossings in the region. Two million trucks crossed at these points in 2017, making them both vital to freight movement and the supply chain. Together, these two border crossings rank second economically among US-Canada crossings for truck volume. The nearest highway crossings between the US and Canada are 241 miles to the east, at the Thousand Islands Bridge in NY, and 253 miles to the west at the Ambassador Bridge in Detroit, MI.¹



On a local level, this portion of I-190 is part of the most direct interstate connection between I-90 and Niagara Falls, a major tourist destination visited by 9.5 million people annually. The bridges are one of only two connections between Grand Island, with a population of 21,389, and mainland New York. They provide the most direct connection from the island and Niagara Falls to the City of Buffalo, which serves as a regional metropolitan center for employment, shopping, healthcare, and services.

The two sidewalks provided on the structures serve to connect extensive existing shared-use trail systems on both sides of the bridges. These include the regional Niagara River Greenway and the 750-mile-long Empire State Trail, which spans the entire state and passes along the south end of the bridges. The nearest connection for non-motorized traffic crossing the Niagara River to access Grand Island is at the North Grand Island Bridges, approximately 5 miles to the north.

Census Information

The project is located within Erie County 2010 Census Tracts 73.04, 73.06, 83, and 84. It is located entirely within “Buffalo, NY” 2010 Census-designated Urbanized Area (UACE Code 11350).

Approximately 50% of the project is located in Areas of Persistent Poverty, associated with Tracts 83 and 84, and approximately 50% of the project costs will be expended in these areas.

¹ New York State Department of Transportation. “New York State Freight Transportation Plan”. August 2019. Page 116.

Project Budget

Budget Overview

The budget for the project is based upon preliminary design information, (approximately 30% design completion) and in consideration of the cost history of similar projects and work scopes in the same geographic area. As the grant requests funding solely for the construction project development phase, only funds that are ineligible -- such as preliminary/final design costs -- are expected to be incurred by the Authority prior to the anticipated Winter 2024 grant funding obligation. A contingency of 20% of project construction costs has been applied to conservatively budget for cost increases which may occur due to industry cost escalations or other unknowns.

No prior Federal funds have previously been authorized for this project.

Future Project Costs are provided in the table below. This table documents work that is eligible for RAISE funding, along with funding sources and their shares in each major construction activity.

Future Project Costs \$Million (Eligible for RAISE Funds)				
Project Development Activity	Project Costs	Non-Federal Funds ¹	RAISE Grant Funds	Other Federal Funds
Construction	\$32.2	\$8.2	\$24.1	\$0
Mobilization	\$1.2	\$0.3	\$0.9	\$0
Subtotal: Construction Cost	\$33.4	\$8.4	\$25.0	\$0
Contingency (20%)	\$6.6	\$6.6	\$0	\$0
Subtotal: Award/Construction Cost	\$40.0	\$15.0	\$25.0	\$0
Preliminary Design	\$1.25	\$1.25	\$0	\$0
Final Design	\$1.25	\$1.25	\$0	\$0
Quality Control/Admin of Final Design and Contract	\$1.0	\$1.0	\$0	\$0
Construction Inspection	\$3.5	\$3.5	\$0	\$0
Right of Way	\$0	\$0	\$0	\$0
Total Future Project Cost	\$47.0	\$22.0 (47%)	\$25.0 (53%)	\$0 (0%)

1. Thruway Authority Capital Funds

The following table outlines project development activity cost by funding source responsibility.

RAISE Funding by Project Development Activity Percentage of Project Development Activity Costs by Funding Source Responsibility			
Project Development Activity	Thruway Authority Capital Funds	RAISE Grant Funding	Other Federal Funds
Construction	37.5%	62.5%	0%
Construction Contingency (20%)	100%	0%	0%
Preliminary Design	100%	0%	\$0
Final Design	100%	0%	\$0
Quality Control/Admin of Final Design and Contract	100%	0%	\$0
Construction Inspection	100%	0%	\$0
Right of Way/Utilities	100%	0%	\$0
Total Future Project Cost	47%	53%	0%

In sum, the RAISE Grant project work scope, outlined in the application *Project Description* and *Merit Criteria* files, will fund 62.5% of the proposed South Grand Island Bridge project construction costs. Overall, given that the Authority will retain responsibility to fund all project development phases other than construction, RAISE Grant funding will account for 53% of the cumulative total future project costs.

Funding Commitments

The Authority has committed \$22 million in Thruway Authority Capital Funds for the subject project (Refer to Authority's Chief Financial Officer letter provided in application *Funding Commitment* file).

RAISE grant funding will supplement the Authority's programmed funds and ensure the comprehensive plan to rehabilitate and strengthen the Grand Island Bridges, discussed in the application *Project Description* and *Merit Criteria* files, is fully addressed and completed as soon as possible. Without RAISE funding, the Authority will need to advance a reduced project scope, which will implement far fewer rehabilitative repairs, less or no structural resiliency improvements, and forgo planned community connectivity pedestrian and bicyclist improvements. An inability to advance the full project scope will also lead to additional delay related future expenses and impose additional construction-related traffic impacts.

Funding by Census Tracts

This project equally traverses 4 census tracts. Project funding by census tract is provided in the following table. See the *Merit Criteria* application file for project related census information.

Project Funding by Census Tract \$Million (Eligible for RAISE Funds)	
Census Tract	Project Cost in Census Tract
73.04	\$11.75
73.06	\$11.75
83 ¹	\$11.75
84 ¹	\$11.75
Total Future Project Cost	\$47.0

1. Area of Persistent Poverty and HUD Opportunity Zone

Use of Project Funds

RAISE Grant funds are requested for construction activities only, and therefore are not scheduled to be obligated until after Final Design has been completed, an activity fully under the control of the Authority. Authority funding will be applied to all other project costs, including the construction contingency fund. No other funding conditions or restrictions are applicable.

Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP)

As outlined in the letter provided on the next page of this narrative, The New York State Department of Transportation acknowledges that the requested \$25 million toward this \$47.0 million project will be incorporated into the Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP) when federal funding is allocated for this purpose.

**Department of
Transportation****KATHY HOCHUL**
Governor**MARIE THERESE DOMINGUEZ**
Commissioner**JANICE A. McLACHLAN**
Chief of Staff

February 24, 2023

Frank G. Hoare
Interim Executive Director
New York State Thruway Authority
200 Southern Boulevard
P.O. Box 189
Albany, New York 12201-0189

Dear Interim Executive Director Hoare:

The New York State Department of Transportation affirms that the New York State Thruway Authority's request for the rehabilitation of the South Grand Island Bridges, Interstate I-190, (between milepost 914.35 and milepost 914.99) in the Towns of Grand Island and Tonawanda, Erie County, meets the eligibility requirements under Title 23, of United State Code and that the project is scheduled to be obligated within the time period set forth under Transportation and Infrastructure request form.

The State acknowledges that the requested \$25 million toward this \$47.0 million project will be incorporated into the Transportation Improvement Program (TIP) and Statewide Transportation Improvement Program (STIP) when federal funding is allocated for this purpose. Furthermore, the New York State Thruway Authority acknowledged that it is solely responsible for demonstrating the availability of the remaining non-federal share to complete the project.

If you need additional assistance regarding this request, please contact Donald Mattimore at (518) 485-1382 or Don.Mattimore@dot.ny.gov.

Sincerely,

Janice A. McLachlan
Chief of Staff

50 Wolf Road, Albany, NY 12232 | www.dot.ny.gov



**Department of
Transportation**

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Sincerely,

Janice A. McLachlan
Chief of Staff

bcc: Joseph Morrissey, Director, Office of Communications
Rob Gibbon, Assistant Commissioner Government & Community Relations
Mark Casellini, Government Relations

A. Safety

This project will enhance safety for both motorized and non-motorized users. The proposed improvements are expected to result in a reduction of fatalities and/or serious injuries and to bring the accident rates below the statewide average. As discussed below, an accident analysis was developed using direct, data-driven processes and the proposed solutions are consistent with the goal of “taking substantial, comprehensive action to significantly reduce serious and fatal injuries on the Nation’s roadways,” outlined in USDOT’s 2022 *National Roadway Safety Strategy* (NRSS).

Safety for Motorized Users

Accident data for this segment of I-190 (Mileposts 914.3 to 915.0), for the pre-Covid period of 2017 through 2019, documents a total of 112 crashes, 22 of them with injuries. Of these incidents, overtaking and rear-end accidents occurred in 63% of the recorded crashes. Given the high prevalence of these accident types, the Authority conducted friction testing in 2018 to measure skid resistance, which is the force that prevents a non-turning (i.e., locked-up) tire from sliding on the pavement’s surface. This analysis concluded that skid resistance properties of the existing wearing surface are inadequate ($FN < 40$) at 19 test locations on the northbound bridge and 23 locations on the southbound bridge. To address the friction deficiency, the Authority will evaluate two options for effectiveness that will also provide durability and value. One alternative is to install longitudinal or transverse cuts (grooves) into the surface to increase pavement skid resistance properties. The second alternative is to install a durable high-friction overlay wearing course.

Improvements to the friction of the decks’ wearing surface will enhance deceleration performance capability of vehicles, which will improve safety for motorized users by reducing the likelihood of crashes. As reflected in the *Benefit Cost Analysis* submitted for this project, friction improvements are expected to result in a reduction of 4.68 damaged vehicles per year, a reduction of 2.86 injuries per year, and is projected to provide a systematic reduction of 0.04 fatalities per year.

Safety for Non-motorized Users

There is one 5-foot-wide protected sidewalk on each bridge and paved pathways connecting the bridges’ sidewalks to existing local and regional shared-used trail systems on both ends of the bridges. The sidewalk on southbound bridge is currently closed due to concrete heaving and safety concerns. Bicycles and pedestrians are accommodated only on the sidewalk on the northbound bridge.

The width of the walks is less than the 10-foot minimum width¹ desirable for shared use. Due to the age and original design of the bridges, the bridge sections are very narrow: they only allow for the 5-foot sidewalks and two 10-foot mainline lanes in each direction, with 2-foot shoulders. Given the available space and traffic demand, there is no opportunity to safely allot additional width to accommodate non-motorized modes of travel. Adding width to one or both of the structures to create wider paths has been determined to be structurally infeasible. On many structure types, an additional beam could be



¹ American Association of State Highway and Transportation Officials (AASHTO). *Guide for the Development of Bicycle Facilities*. Fourth Ed. 2012. Page 5-3.

used to add width. However, the beams could not be connected to the existing substructures of these bridges. Cantilevering a widened sidewalk off the existing structure is not viable because the structures have conflicting outside safety railings and light standard connections. Also, the additional deadload and physical properties of a widened sidewalk would adversely affect the bridge seismic performance, negating the benefits of the seismic improvements planned for this project.

This project will restore and reopen a closed sidewalk on the southbound bridge to a safe and accessible condition, effectively doubling the current capacity of the bridges for non-motorized use. During final design, in consultation with non-motorized users and other stakeholders, control of bicycle and pedestrian traffic on the bridge will be evaluated to determine if separating the uses, i.e., designating one side for pedestrian use and the other for cyclists, will enhance the safety and comfort of users.

Concerns with the safety of the paved paths connecting to the bridge sidewalks, such as the alignment of the connection points and irregularities in the surface of the paths, will be addressed. Wayfinding signs, benches and pull-offs will also be added to improve navigation and comfort for non-motorized users on the access paths.

Safety for maintenance personnel will be improved by replacing over 100 existing non-conforming fixed ladders with cages with ladder safety systems and personal fall arrest systems. This will bring the structures into compliance with the Occupational Safety and Health Administration's regulation 1910.28(b)(9).

B. Environmental Sustainability

Reduction of Transportation-Related Air Pollution and Greenhouse Gas Emissions

The project will contribute to efforts to combat climate change by reducing vehicle emissions (NO_x, SO₂, PM_{2.5}, and CO₂) attributed to work zone-related congestion and lane closures. As shown in the *Benefit Cost Analysis*, submitted with this application, a net reduction of over 180,000 metric tons in greenhouse gasses is anticipated over the 20-year analysis period.

An additional benefit is expected to result from an increased use of non-motorized transportation as a result of improvements to bicycle and pedestrian accommodations. Improved approach paths and sidewalks on the bridges will encourage more people to choose active transportation modes, rather than using motor vehicles for recreation and local trips. Estimated annual non-motorized trips (pedestrian and bicycle) on the bridges are expected to more than triple, from approximately 4,000 to just over 14,000.

Resilience

FHWA defines resilience as “the ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions.”² The project will improve resilience by improving the ability of the structures to withstand extreme weather events, flooding, or other natural disasters, preserving their functionality to serve as a primary route for preparation, evacuation, emergency response, or rebuilding.

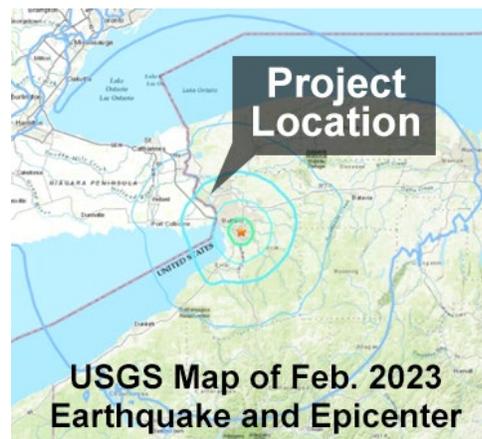
As discussed under *F. State of Good Repair*, critical condition issues on fracture-critical non-redundant members and other bridge components will be addressed. The bridges will be strengthened against the weathering effects and stresses of storm events of increased frequency and intensity, including extreme lake effect snow events from Lake Erie. According to a 2021 NYS Department of Environmental Conservation study, “The probability of extreme lake-effect snows...is likely to increase in the near future. Models suggest the decreasing trend in ice cover on the Great Lakes will lead to increased lake-effect snow in the next several

² Federal Highway Administration. “Transportation System Resilience to Extreme Weather and Climate Change – Executives.” <https://ops.fhwa.dot.gov/publications/fhwahop15024/index.htm>. Accessed February 10, 2023.

decades through greater moisture availability.” A historic, deadly blizzard and lake effect snowstorm, with a combination of high winds in excess of 70 mph and heavy lake effect snow, struck the Buffalo area as recently as December 2022.

The project will also improve resilience by providing seismic protection. The structures are classified as “Critical” bridges. The Authority retained specialized consultant services in 2020 to analyze the effect that a seismic event would have on the southbound Grand Island Bridge, and to identify retrofit schemes to mitigate an event’s detriment to the structure. It was determined that, without recommended seismic improvements, this vital regional emergency-response transportation corridor is at risk of being severed following an upper level (2500-year) seismic event. This project will incorporate the study’s recommended substructure resiliency improvements, including the replacement of dampers, bearings, shear keys, and widening joints, to ensure that the bridge will be capable of meeting or exceeding seismic performance thresholds, allowing the bridge to serve as part of a lifeline for emergency response following an upper-level seismic event.

Seismic events in this region have become an increasing concern. In February 2023, the region experienced a 3.8-magnitude earthquake. The US Geological Survey (USGS) has recorded 24 earthquakes above magnitude 2.5 in the region since 1983, including a 2.6 magnitude quake in March 2022. While these are considered low magnitude, they are not at all uncommon in the region. USGS reports that, within the central and eastern United States, the number of earthquakes has increased dramatically in recent years. Between the years 1973-2008, there was an average of 21 earthquakes of magnitude three (M3) and larger in the central and eastern United States. This rate jumped to an average of 99 earthquakes with of magnitude of three or larger (M3+) per year in 2009-2013 and in 2014, alone, there were 659 M3+ earthquakes.³



C. Quality of Life

Improving Active Transportation Usage and Affordable Transportation Choices

Nonvehicular transportation is a key component of the project. Full restoration of a closed sidewalk on the southbound structure, and improvements to the shared-use paths connecting the sidewalks to adjacent trail systems, will enhance safety, comfort, and navigation for non-motorized users. Accessibility for disabled users will be significantly improved by addressing existing barriers created by surface irregularities on the paths and sidewalks. As reflected in the *Benefit Cost Analysis*, the improvements are expected to nearly triple the estimated annual non-motorized trips (pedestrian and bicycle), from approximately 4,000 to just over 14,000.

Improved access to the trails is expected to have health benefits, as well. The Centers for Disease Control and Prevention (CDC) recommends that adults engage in 150 minutes (2 and a half hours) of aerobic activity every week and states that, “Having access to places for physical activity, such as parks and trails, encourages community residents to participate in physical activity and do so more often.”⁴

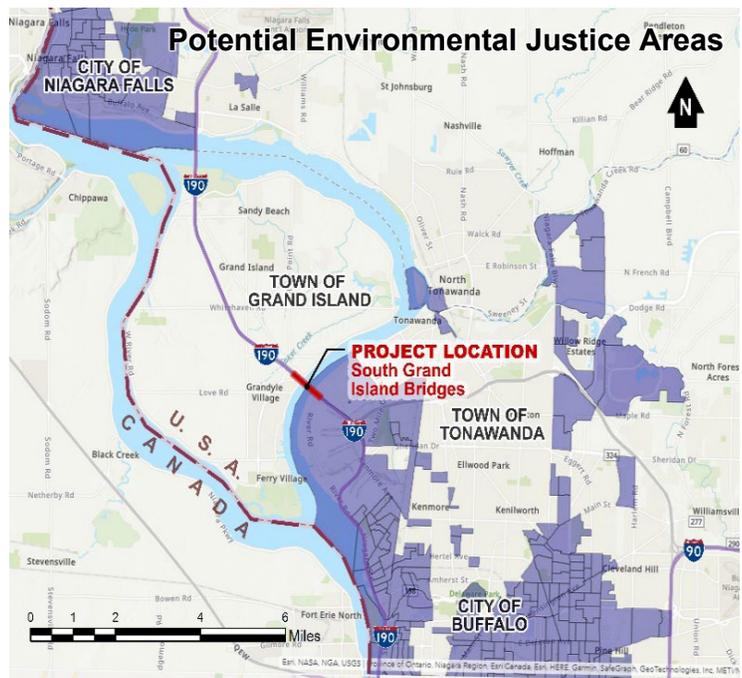
³ U.S. Geological Survey (usgs.gov). Earthquake Facts.” <https://www.usgs.gov/programs/earthquake-hazards/earthquake-facts-earthquake-fantasy>. Accessed February 23, 2023.

⁴ Centers for Disease Control and Prevention. “Parks, Trails and Health.” <https://www.cdc.gov/healthylives/healthtopics/parks.htm>. Accessed February 24, 2023.



There will be an improved connectivity between the extensive existing trail systems on both sides of the bridges, including the Empire State Trail (EST), which crosses the entire state and passes along the south end of the bridges. This will offer both recreational and healthy activity opportunities to residents of the region. A 2018 user projection report developed for the 750-mile EST estimated that annual trail users on the segment closest to the bridges would amount to 126,434 (44,252 bikes and 82,182 pedestrians) ⁵. Additional detail on trail connectivity is provided in *E. Economic Competitiveness and Opportunity*.

The project will support the use of non-motorized or public transit modes, including the use of non-motorized transportation and transit by historically underserved communities. In addition to being located within two Areas of Persistent Poverty, associated with Census Tracts 83 and 84, the project is located in and near multiple Potential Environmental Justice Areas. These are U.S. Census block groups of 250 to 500 households each that, at the time of analysis in 2020, had populations that met or exceeded at least one of the following statistical thresholds:



⁵ "Trail User Projections," Empire State Trail (July 2018). <https://empiretrail.ny.gov/sites/default/files/2021-09/EST%20Trail%20User%20Projections%20July%202018.pdf>

- At least 52.42% of the population in an urban area reported themselves to be members of minority groups; or
- At least 26.28% of the population in a rural area reported themselves to be members of minority groups; or
- At least 22.82% of the population in an urban or rural area had household incomes below the federal poverty level.

In 2016, the Institute for Transportation & Development Policy (IDTP) found that lower-income households paid a larger portion of their income on transportation expenses than households with higher incomes. IDTP states that “the lowest earning 20% of the population earned an average of \$11,933 and spent an average of \$3,497 (29%) on transportation costs.”⁶ Providing safe, accessible non-motorized transportation options can help alleviate some of the transportation cost inequity that exists for lower-income households near the bridges.

Use of affordable public transportation for historically underserved populations will also be supported by this project. Three Niagara Frontier Transportation Authority (NFTA) Metro Bus transit routes use the bridges. NFTA reports that, within ¼ mile of stops on these routes, up to 37% of the population lives in poverty and up to 58% is non-white or of Hispanic/Latino origin.⁷ Ensuring the public transit infrastructure is maintained and reliable helps to ensure that public transit will remain a viable option for lower-income and historically underserved populations that rely on these routes.

D. Mobility and Community Connectivity

As discussed in *A. Safety*, *C. Quality of Life* and *E. Economic Competitiveness and Opportunity*, the project will enhance the existing non-motorized trail network by providing safer, more accessible active transportation connections across the bridges. It will seek to implement improvements referenced in the 2007 *Niagara River Greenway Plan*, which are described in *E. Economic Competitiveness and Opportunity*. In addition, overall mobility, efficiency, and reliability for people, transit, and freight will be preserved by eliminating the risk of load restrictions or full closure of a critical local and regional interstate link. It will also reduce the frequency of maintenance activities requiring work zone restrictions that contribute to congestion.

E. Economic Competitiveness and Opportunity

Improving Freight Mobility

The South Grand Island Bridges and the I-190 corridor are part of a vital national, state, and regional freight route, as well as serving as an important regional and local connection for mobility. I-190 serves as a primary truck freight connector to the trans-Canadian highway system, providing direct interstate access to the Lewiston-Queenston Canadian border crossing, one of only two point-of-entry freight border crossings in the region. Two million trucks crossed at these points in 2017, making them both vital to freight movement and the supply chain. Together, these two border crossings rank second economically among US-Canada crossings

⁶ “The High Cost of Transportation in the United States”, Institute for Transportation & Development Policy, May 2019
<https://www.itdp.org/2019/05/23/high-cost-transportation-united-states/>

⁷ NFTA Route Maps “Favorite Stats” <https://platform.remix.com/map/f03586db/line/f6acfc6b?latlng=42.99313,-78.93256,16.836&dir=0&public=true>. Accessed

for truck volume.⁸ The nearest highway crossings between the US and Canada are 241 miles to the east, at the Thousand Islands Bridge in NY, and 253 miles to the west at the Ambassador Bridge in Detroit, MI.

This segment of I-190 is part of the greater 570-mile New York State Thruway System (Thruway). The Thruway is one of the oldest components of the National Interstate Highway System (NHS) and is part of the National Highway Freight Network (NHFN), and the New York State Freight Core Highway Network. In addition, it is the only system in the state that permits tandem trucks (a.k.a., Longer Combination Vehicles or LCVs) to operate on it. The mainline of the Thruway extends 426 miles, from New York City to Buffalo (I-87 and I-90). Other elements of the Thruway System include the New England Thruway (I-95), the Cross Westchester Expressway (I-287), the Garden State Parkway Connector, the Berkshire Connector (I-90), and the Erie Section (I-90s). The Thruway is essential for commerce and travel in the state and region: it connects New York's principal cities, rural areas, and tourist destinations. One-third of all vehicles using the Thruway are from out of state.



On a local level, this portion of I-190 is part of the most direct interstate connection between I-90 and Niagara Falls, a major tourist destination visited by 9.5 million people annually. The bridges are one of only two connections between Grand Island, with a population of 21,389, and mainland New York. They provide the most direct connection from the island and Niagara Falls to the City of Buffalo, which serves as a regional metropolitan center for employment, shopping, and necessary services.

Restrictions or closure of the bridges would impair mobility and damage the local, regional, and state



⁸ New York State Department of Transportation. "New York State Freight Transportation Plan". August 2019. Page 116.

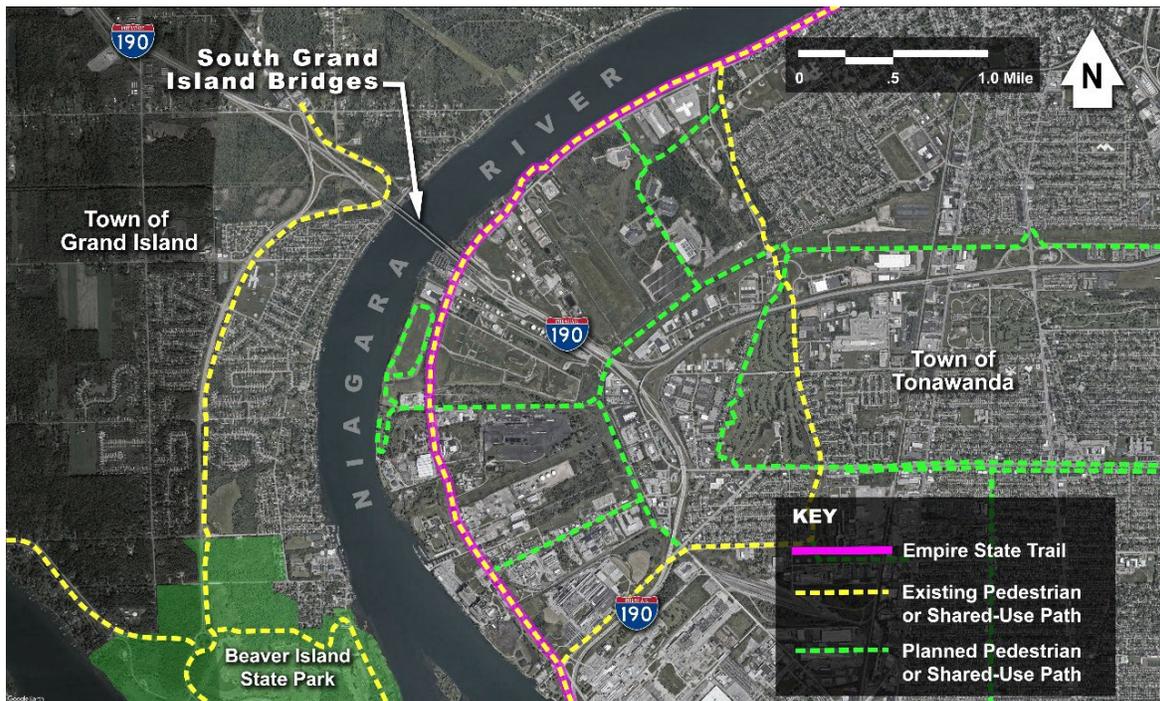
economies. As discussed in the *Benefit Cost Analysis*, should an event occur without the proposed retrofits being completed, the impacts would be devastating to the corridor and surrounding communities as well as the local and regional economies. The estimated replacement cost of the bridges is nearly \$1 billion, and during the 2 years required for inspection and construction. Traffic accessing Grand Island would be forced to use a detour that would add approximately 13 miles to their trip. Through-traffic would also need to detour around the island on non-interstate routes in surrounding communities. Non-motorized traffic would have no viable detour, with the closest bicycle and pedestrian crossing from the Grand Island to the mainland located approximately 5 miles away at the North Grand Island Bridges. Detours that would be necessary during repair and/or replacement of the structures would add 0.683 hours of travel for southbound vehicles and 0.583 hours of travel for northbound vehicles, in a calculated economic impact of over \$455 million in transportation costs.



Travel time savings that will be achieved by the project, by reducing maintenance activities and work zone-related delays, are estimated to be 3.995 million Personal Vehicle Hours and 0.367 million Truck Hours over the 20-year analysis period, a \$44 million present-worth benefit.

Facilitating Tourism

The project will facilitate tourism by improving connectivity between the extensive existing trail systems on both sides of the bridges, including the Empire State Trail (EST) and Niagara River Greenway. In 2017, New York State launched the EST to promote outdoor recreation, encourage healthy lifestyles, support community vitality, and bolster tourism-related economic development. The 750-mile EST, which crosses the entire state, passes along the south end of the bridges. A 2018 user projection report developed for the EST estimated that annual trail users on the segment closest to the bridges would amount to 126,434 (44,252 bikes and 82,182

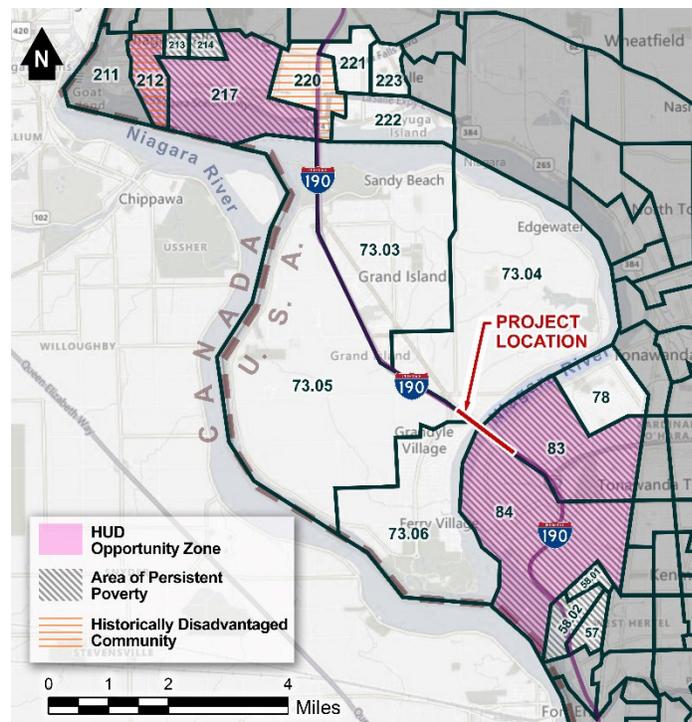


pedestrians)⁹. Improved connectivity of the EST across the South Grand Island Bridges will enhance both the EST and the trail systems on the other side of the river, as well as improving access between the EST and Beaver Island State Park, located on the southern end of Grand Island.

The bridges fall within the Niagara River Greenway Area (Greenway), a 36-mile-long corridor that extends the length of the Niagara River in the counties of Niagara and Erie. The mission of the Greenway includes supporting economic development and tourism. The Greenway corridor includes parklands and trail networks to provide connections to and between unique natural, cultural, and recreational resources in the region. The 2007 *Niagara River Greenway Plan* identifies the Grand Island Bridges as a desirable location to create a “Transition Gateway,” intended to highlight the “experience of passing over a river or stream and through its associated riparian or even urban environment.” The Authority has reached out to the Greenway and will seek to incorporate elements of the plan in this project, including gateway interpretive signs and safer, more comfortable access for trail users.

Inclusivity, Labor, and Employment

In addition to the economic and employment benefits described above, the delivery of the project itself will directly create high-quality employment opportunities. Fifty percent of this project is located within 2 Areas of Persistent Poverty. Seven additional Areas of Persistent Poverty and 2 Census Tracts identified as Historically Disadvantaged Communities are located within 5 miles, in Niagara Falls. It is anticipated that residents of these communities will benefit from the employment and economic opportunities created by the project, including indirect benefits to local business providing goods and services to construction personnel. A 2021 study prepared for the American Road and Transportation Builders Association found that, for highways and bridges, the average direct spending of additional IJA funds on infrastructure produces economic output (sales) with an overall multiplier of 3.4 nationally.¹⁰ While this multiplier is subject to variation based on work scope, geography, and other contextual factors, it is a strong indicator that there will be tangible economic benefits at a regional and local level from investment in interstate infrastructure.



It is the policy of the Authority to ensure equal opportunity and to prevent and eliminate discrimination in all its activities, including the areas of construction, consultants, commodities, and professional services. The Authority ensures its compliance responsibility in meeting the requirements for federal Civil Rights law on its Federal Aid-funded transportation projects, including requirements for the participation of Disadvantaged Business Enterprises (DBEs). The Authority is also fully committed to actively promoting Minority and Women-Owned Business Enterprises (MWBE) and Service-Disabled Veteran-Owned Business (SDVOB)

⁹ “Trail User Projections”, Empire State Trail (July 2018) <https://empiretrail.ny.gov/sites/default/files/2021-09/EST%20Trail%20User%20Projections%20July%202018.pdf>

¹⁰ IHS Markit. “Economic impacts of Transportation Infrastructure- Macroeconomic, Industry and State-level Impact Analysis of the Additional Highway, Bridge, and Public Transit Spending in the Infrastructure Investment and Jobs Act.” September 2021.

opportunities. Participation goals will be set, results reported, and contracts monitored for this project. Further, the Authority incorporates targeted training provisions within its contracts to provide a mechanism which allows for underrepresented groups to become skilled in the various construction trades.

Every Authority-awarded construction contract is subject to the strong and well-established provisions of New York State Labor Law. On contracts financed with Federal Aid, any provisions of the state Labor Law that conflict with mandatory Federal-Aid construction contract compliance requirements, as contained in 23 CFR 635.11, are superseded. To the benefit of workers, state Labor Law provisions that are more restrictive than the Federal-Aid construction contract compliance requirements, or the Davis-Bacon Act, and are not in conflict with them, continue to apply.

Prevailing Wage Schedules, defined for each project based upon County of work, are issued by the New York State Department of Labor for all general construction public works projects. These wage rates are monitored for conformance during construction and strictly enforced.

Workers' rights notices are posted in accordance with State and Federal Law. Before commencing any work on the site, the contractor must post, in a location accessible to all workers, a copy of the New York State Department of Labor schedules of prevailing wages and supplements for the specific contract, a copy of all redeterminations of such schedules for the contract, the Workers' Compensation Law notice, required safety notices, and all other notices required by law. The notices must be maintained in clear, legible condition until all work on the site is complete.

Project Labor Agreements (PLAs) are utilized by the Authority on select projects. Before advancing a project under the PLA process, an independent analysis is undertaken to determine whether the use of a PLA will best serve the Authority's interest in obtaining the best work at the lowest possible price, preventing favoritism, fraud, and corruption, and to what extent other considerations such as the impact of delay, the possibility of cost saving advantages, and any local history of labor unrest may have upon the project.

F. State of Good Repair

State of Good Repair – Challenge

Although rigorously maintained, the South Grand Island structures are vulnerable to accelerated deterioration due to their advanced age, original design details, and marine environment location. The condition of these components is beyond the capability of maintenance forces to address and must be addressed by a Capital Project.

While the current National Bridge Inventory (NBI) ratings for these structures (deck, superstructure, and substructure) range from "Fair" to "Good," they are at risk of falling into poor condition within the next 3 years. These structure types are highly susceptible to ratings that are rapidly reduced from "Satisfactory" or "Fair" to "Poor" condition because the bridges were constructed with superstructures that include fracture-critical non-redundant members. Some of the members on these structures are similar in design to the I-35 Mississippi River Bridge that collapsed in Minnesota in August 2007.



To safely manage risk for structures of this type, New York State requires more rigorous qualifications for bridge inspectors, as well as more analysis and information for bridge inspection reports, than is required under

the NBI inspection protocols. This data collection process serves to provide a more comprehensive understanding of the existing bridge condition and future needs than an NBI inspection provides. Findings from these more detailed investigations have revealed numerous critical bridge condition issues on both bridges, including:

- 5,653 linear feet of “Poor” and 31 linear feet of “Severe” condition-rated steel elements
- 195 fracture-critical steel gusset plates rated in “Poor” condition
- 25 fracture-critical pin and hanger assemblies rated in “Poor” condition
- 31 bearings rated in “Poor” condition
- 14,838 square feet of sidewalk rated in “Poor” condition

With this additional level of scrutiny, the Authority is able develop and apply a highly accurate systemwide bridge asset management plan to maintain structures with non-redundant fracture-critical elements. Failure of one component of a fracture-critical primary support system can result in bridge closure or a catastrophic collapse. Other critical condition issues could lead to lane or load restrictions, which would severely impact mobility and freight along I-190.

Because of the 2020 general inspection findings, more robust in-depth bridge inspections are currently being performed to supplement the data previously gathered for the structural condition of fracture-critical non-redundant members, pin and hanger assemblies, and other bridge members. This project will complete repairs to all identified conditionally at-risk members. Proposed improvements, such as installing steel plates over areas of section loss and addressing fatigue cracking will restore, and in some instances increase, the full loading capacity of these critical structural elements. With these improvements, the structures will be returned to a state of good repair and require only routine preventative maintenance for the anticipated remaining 75-year service life of the structures.

State of Good Repair – Workplan

As demonstrated in the *Benefit Cost Analysis*, maintenance cost savings for the 20-year analysis period will be \$8.5 Million (present worth value).

The Authority’s asset management maintenance plan will ensure that the state of good repair is retained. The Authority has developed a Bridge Asset Management System that employs an objective, integrated decision-making process, which is data-driven and replicable. The goal of the Bridge Asset Management System is to establish long-term programmatic planning and maximize the remaining safe service life of each bridge, while also addressing non-condition related vulnerabilities. Comparable data for each of the 817 Thruway bridges is analyzed in detail by a multi-disciplinary team to determine the type of work needed to keep the structures in safe and serviceable condition. By incorporating 30 years of bridge inspection data, inventory data, structural details and vulnerabilities, highway safety data, along with the capital and maintenance history and operational concerns for each bridge, a plan is developed to prioritize maintenance and Capital projects. Each of the Thruway bridges has a detailed long-range capital and maintenance plan to help ensure it is maintained in a state of good repair.

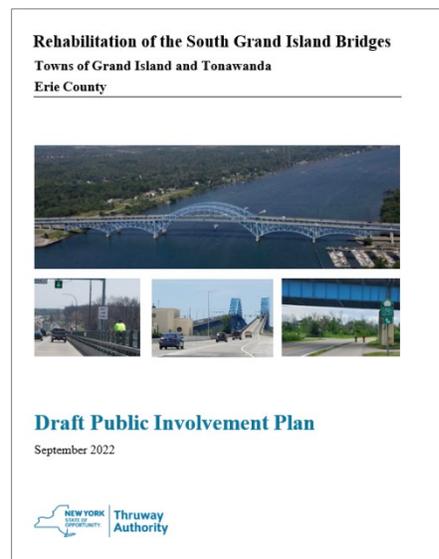
In conjunction with the Bridge Asset Management System, maintenance engineers and groups within the Authority's Buffalo Division Office work daily to ensure the reliability of the Authority's assets and the safety of its patrons in that region. Given the importance of the Grand Island Bridges to the state, region, and local communities, a dedicated Bridge Management group in the Buffalo Division performs necessary preventive and corrective repairs to protect the structures. Work beyond the capabilities of maintenance forces, such as the work proposed by this project, is completed by Capital improvements, which are designed and overseen by the Authority's Department of Engineering, in conjunction with the Bridge Asset Management plan.

G. Partnership and Collaboration

The Authority has engaged diverse people and communities and will continue to do so throughout the course of this project. A detailed Public Involvement Plan has been developed, identifying a wide range of potential stakeholders and methods of outreach, including in-person and internet-based communication, to share information about the project, encourage discussion, and gather input from affected or interested groups and individuals. The Authority has already engaged numerous stakeholders, including:

- Municipalities along the corridor
- Local bicycle advocacy organizations
- Entities with jurisdiction over adjacent trail systems
- Local and regional economic development groups
- Local and regional business organizations
- Freight, bus, and motorist representative organizations
- Regional infrastructure and transportation coalitions
- Local and regional trade organizations
- State and local elected officials

The Authority will work with these stakeholders to identify other groups and individuals with a potential interest in the project, treating the plan as a "living document" to be revised as new stakeholders, points of contact, or methods of communication are identified. This will include working with elected officials and the municipalities to identify the best mode of outreach to communicate with residents of historically underserved communities that may be affected by, or have an interest in, the project. Letters of support from stakeholders are included in *Letters of Support* file, submitted with this application.



H. Innovation

Innovative Technologies

Use of Unmanned Aerial Systems (UAS) for QA/QC Activities

With a goal of developing transformative new technical capabilities which will realize safety, efficiency, reliability, and resiliency benefits for its systems, the Authority has cultivated a partnership with the Northeast UAS Airspace Integration Research Alliance, Inc. (NUAIR) to jointly develop and introduce commercial UAS technology into the transportation industry. This team has implemented several successful new applications of UAS technology thus far. Continuing this mission, the Authority will utilize this project as a demonstration case for use of UAS technology to perform quality control/assurance (QA/QC) activities.

NUAIR is a New York-based nonprofit advancing its mission to safely integrate UAS into the national airspace to enable scalable, economically viable, commercial drone operations. NUAIR manages operations of the FAA-designated New York UAS Test Site at Griffiss International Airport, Rome, NY and is responsible for UAS testing advancements within its 50-mile UAS test corridor between Rome and Syracuse, NY. Under this partnership, NUAIR is providing equipment selection/use guidance and assuring that the Authority's UAS program strictly complies with all FAA and other federal, state, and local regulations relevant to the proposed technology and that the program prioritizes public safety and risk aversion.

The Authority and NUAIR are in an advanced planning stage for deployment of UAS technology on this project. The Authority/NUAIR team has determined that this plan will emphasize utilization of UAS to improve safety, efficiency, and quality, of QA/QC data collection activities for the challenging project environment that is complicated by hazardous heights and difficult to access low-light surroundings. Projected benefits of UAS technology for project related QA/QC processes will include:

- **Improved QA/QC Worker and Traveler Safety:** The Authority's aircraft will be remotely operated from a safe location and will live stream the view and transmit data from UAS drone to stakeholders, either on-site or in offices, using remote monitors or tablet devices. This evolutionary change in work procedure will reduce, and potentially eliminate, the need for staff to physically access unsafe areas of interest to conduct QA/QC work. The traveling public will also benefit as the use of unusual traffic patterns associated with work zones needed to support traditional QA/QC investigative work processes will be significantly reduced or eliminated.
- **QA/QC Work Efficiency Advancements:** UAS equipment will, in a fraction of time required by traditional methods, be used to pre-inspect key areas of the structure to evaluate and pre-determine problem areas and to collect vital optical (photo/video) and survey data. This enhanced quantitative data will much better inform the use of specialized expensive bridge inspection vehicles needed to conduct work, and which result in travel time impacts to users of the bridge.
- **Quality of QA/QC Work Product:** The Authority will utilize its Skydio and Lumicopter inspection drones to view areas of the bridge that are difficult or dangerous to reach, or which cannot be reached at all in person. The Lumicopter is a fully caged drone with oblique lighting added for use in low-light areas, making it possible to obtain first person views of any low-light bridge component. The Skydio drone operates in GPS-denied environments and will be used to obtain supplemental video and LiDAR survey information of steel members. Both platforms operate in the safety of a controlled area, away from traffic, and do not require presence of specialized under bridge inspection vehicles.

- **Enhanced Data Collection/Processing Capabilities:** The Authority has a robust modeling software package, Bentley Context Capture, which will be used to process the substantial quantities of QA/QC field data which drones can provide and will be used to create digital models of steel components.
- **Improved Record Plan and Asset Management:** Prior to construction close-out, UAS flights will occur to gather final information for the project as-built plans and to create a digital record of the final structure which will serve to inform the asset management strategies for these structures.

Innovative Project Delivery

Within the parameters permitted by the RAISE program, the Authority may use a Best Value bidding procedure for this project. The Best Value process has been used successfully for several Thruway projects in the past. Two recent Authority projects that used Best Value bidding, both with project costs of over \$50 million, benefitted from construction time savings of up to 37% and price savings of up to 20%.

Traditional bidding procedures award the contract to the lowest responsible bidder. The Best Value bidding procedure is an innovative process that considers quality and efficiency in addition to cost. While price is still a major factor, a bidder with the lowest overall price may not necessarily be awarded the project: it will be awarded to the bidder who demonstrates the best complete understanding and ability to deliver the best project.

Competitive bids are solicited through a two-part process:

- **Part One** consists of traditional construction plans, proposal, bid items and quantities.
- **Part Two** consists of a description of technical evaluation factors specific to the project, their relative weights, the weighting of price vs. technical evaluation factors, and instructions to the bidders.

Bidders submit a price proposal and a separate technical submission. The technical submissions are not publicly opened or read. Instead, they are reviewed and scored, based on defined project-specific criteria related to quality, schedule, experience, capability, traffic impacts, and the bidder's overall understanding of the project.

The technical evaluation scores are combined with the price proposals to determine the Best Value Bidder. All Best Value Submissions are reviewed and scored by an Evaluation Committee, under the direction of the Authority's Office of Capital and Contracts Management.

This innovative procurement process reduces risk to the Authority. A contractor is selected based, in part, on their complete and written understanding of all critical aspects of the project rather than just price alone. This increases the potential for selecting and awarding to the contractor with the ability to deliver the best overall project. Contractors can propose the use of innovative approaches or techniques that will offer significant benefits in terms of:

- lower costs
- shorter timeframes to complete work
- less disruption to neighboring communities
- less disruption to the movement of people, goods, and services
- improved work quality
- improved safety

Best Value bidding would be expected to be particularly important for a project like this one, located at a critical connection of two populated urban area, on a high traffic volume freight corridor, where minimizing delays and disruption is critical.

Project Readiness

Detailed Project Schedule

Major project milestones and their anticipated completion dates are identified in the table below. All necessary activities will be completed to allow RAISE grant funds to be obligated sufficiently in advance of the statutory deadline of June 30, 2026, and expended significantly earlier than the statutory deadline of September 30, 2032.

All work will be completed within the existing right-of-way. No real property or right-of-way acquisitions are needed. No railroad or utility agreements are needed to complete work under this project.

Public involvement has begun with outreach to stakeholders and will be conducted for the duration of the project, through construction (Refer to application *Merit Criteria* file).

Project Milestone	Date
Completion of Project Scoping	March 2020
Start of NEPA and SEQR (State) Environmental Review Processes / Public Engagement Process	May 2022
Incorporated into Statewide Transportation Improvement Program ⁽¹⁾	September 2023
Completion of Preliminary Design	September 2023
Completion of Final Design - Plans, Specifications, and Estimates	March 2024
Completion of NEPA and SEQR (State) Environmental Review Processes	September 2023
Environmental Permitting Complete (None Required)	N/A
Completion of Utility Agreements (None Required)	N/A
Real Property / Right-Of-Way Acquisitions Completed (None Required)	N/A
RAISE Grant Funds Obligated ^(2, 3)	February 2024
Project Letting	May 2024
Project Award	June 2024
Start of Construction	May 2024
Completion of Construction / Public Engagement ^(2, 3)	November 2025
Notes: 1. Refer to application <i>Project Budget</i> file. 2. All necessary activities will be complete to allow RAISE grant funds to be obligated substantially in advance of the programmatic administrative deadline (June 30, 2027). 3. RAISE funds will be spent expeditiously once construction starts, with all funds expended approximately 6 years earlier than the programmatic September 30, 2032 deadline.	

Required Approvals

Environmental Permits and Reviews

National Environmental Policy Act. It is anticipated that this project will be classified as a Class II Action under the National Environmental Policy Act (NEPA) as implemented in 23 CFR 771. The Federal Highway

Administration (FHWA) would be the NEPA lead agency. The project will be submitted for approval as a NEPA Programmatic Categorical Exclusion on the basis that it is not an action that will individually or cumulatively have a significant environmental effect. It meets the description in 23 CFR 771.117(c)(22) of “[a project] that would take place entirely within the existing operational right-of-way.” The project will result in no significant changes or expansions to the existing infrastructure. The project NEPA determination is anticipated to occur in September of 2023.

New York State Environmental Quality Review Act. The project is expected to meet all criteria to be classified as a Type II project under the New York State Environmental Quality Review Act (SEQRA) in accordance with 6 NYCRR Part 617. The Authority plans to declare itself as the lead agency for SEQRA. Since the project is anticipated to qualify as a SEQRA Type II action, a State Consistency Review by the Authority is not anticipated to be required, and no further environmental review is required under SEQRA.

No need for environmental permits is anticipated. However, consultation has been, or will be, conducted with:

- The State Historic Preservation Office (SHPO) for potential effects to the National Register-Eligible southbound bridge. Consultation with the SHPO was completed in August 2022, with the finding that the project will have No Adverse Effect on the bridges.
- The New York State Department of State (DOS) for consistency with State Coastal Management policy. The project is located within protected coastal areas. Given the limited potential for the work scope to impact the protected areas, and the potential to improve recreational non-motorized access to and across the Niagara River, it is anticipated that the project will be found consistent with the policy.
- The US Fish & Wildlife Service (USFWS) and New York State Department of Environmental Conservation (DEC) for Federally- and State-listed threatened or endangered species that are either known to exist or have the potential to exist in the project limits. A consultation with USFWS was initiated in December 2022 using the Information for Planning and Consultation (IPaC) system. USFWS determined that this project may affect the threatened Northern long-eared bat (*Myotis septentrionalis*), but the project may rely on the Service’s January 5, 2016, Programmatic Biological Opinion (PBO) on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions to fulfill its Section 7(a)(2) consultation obligation. USFWS noted that it has published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act and that the change in the species’ status may trigger the need to re-initiate consultation for any actions that are not completed once the new listing determination becomes effective.

All consultation is expected to be complete by September 2023.

Federal Transportation Requirements Affecting State and Local Planning

The State DOT has agreed the project is eligible and will be added to the STIP and TIP when Federal funding is allocated. The project will also be added to the New York State Freight Transportation Plan. Refer to the application *Project Budget* file for documentation of coordination with the New York State Department of Transportation.

Assessment of Project Risks and Mitigation Strategies

A systematic approach to risk management will be used to help minimize costs and avoid potential contract complications or disputes. The project team and project stakeholders will undertake an identification process of all risks that may affect successful implementation of the project, regardless of when such risks may occur. Once risks are identified, their occurrence probability and project relative impact will be rated and used to determine an overall project risk rating. Strategies to mitigate the potential impacts of the risks will be defined. Priority will be given to the high-risk factors, with appropriate attention also devoted to moderate and low risks.

The results of the risk analysis process will be used in preparing contract provisions and any agreements with stakeholders or other third parties. The analysis will be used to identify the type and extent of engineering for different components of the project to avoid and mitigate high and moderate risk factors.

A preliminary assessment of risks that are known at this time has been developed and is shown in the table below. As the project is advanced and additional input is received from stakeholders, the assessment will be revised as necessary.

Preliminary Risk Assessment Synopsis				
Identified Risk	Occurrence Probability Rating ¹	Project Impact Rating ²	Overall Project Risk Rating ³	Mitigation Strategy
Environmental Permits Delay in securing necessary environmental approvals or permits to proceed with letting, award and construction	1	2	2	Identify and perform all necessary consultation with regulatory agencies as early in the project development process as possible to ensure that any issues can be addressed in a timely manner.
Utility Delays Design or construction delays caused by slow utility owner response to requests for information or activities	1	1	1	Identify any utilities that will potentially be affected and engage utility owners as early in the process as possible to maximize time available for responses; maintain positive, proactive contact with utility owners during design and construction.
Completion Time Unseasonable weather, severe weather, or other uncontrollable circumstances have the potential to slow the progress of construction and delay completion of the project	2	2	4	The project schedule includes an allowance of time for weather variations: only limited types of work are planned during winter, when harsh weather is most likely to affect construction activities.
Design Approvals by External Agencies Approval will be required if bridges under other agencies' jurisdiction need to be raised to achieve minimum clearances. Delayed approvals have the potential to delay the completion of design.	1	2	2	Engage other agencies as soon as any bridges that may be affected are identified; coordinate throughout the design process to identify and address their concerns well before the final design is developed.
Community Concerns Community perception of negative environmental impacts has the potential to delay completion of the environmental review process	2	2	4	Continue to communicate openly with stakeholders about impacts and benefits of the project; actively incorporate community feedback into the design and construction processes.

NOTES:

1. Rated on a scale of 1 to 3, with 3 representing the highest probability
2. Rated on a scale of 1 to 3, with 3 representing the highest impact
3. Overall risk rating ≤3 is low
>3 or <6 is moderate
≥ 6 is high

Technical Capacity

The New York state Thruway Authority can deliver the project in a manner that fully satisfies Federal requirements. Over several decades, the Authority has, on multiple occasions, been a recipient of Federal transportation funds and has successfully delivered each of the projects, including a \$1.6 Billion loan grant for the Governor Mario M. Cuomo Bridge (Tappan Zee Bridge Replacement) under the Transportation Infrastructure Finance and Innovation Act (TIFIA).

As an owner of an Interstate facility, the Authority is particularly familiar with Federal standards and procedural requirements for developing and delivering a Federally funded project. The Authority adheres to the FHWA-approved design guidance and standards contained in the New York State Department of Transportation's (NYSDOT) Project Development Manual and Highway Design Manual. Other FHWA and State-approved design guidance manuals, such as the Manual of Uniform Traffic Control Devices, will be applied, as appropriate, to this project. Construction will also be administered in accordance with FHWA approved guidance documents, including the NYSDOT Contract Administration Manual and Construction Inspection Manual.

This project will comply with applicable Federal requirements including but not limited to Buy America provisions, ADA regulations, Civil Rights requirements, Federal Motor Vehicle Safety Standards (FMVSS), and/or the Federal Motor Carrier Safety Regulations (FMCSR).

Civil Rights and Labor Law Requirements

It is the policy of the Authority to ensure equal opportunity and to prevent and eliminate discrimination in all its activities, including the areas of construction, consultants, commodities, and professional services. The Authority ensures its compliance responsibility in meeting the requirements for federal Civil Rights law on its Federal Aid-funded transportation projects, including requirements for the participation of Disadvantaged Business Enterprises (DBEs). The Authority is also fully committed to actively promoting Minority and Women-Owned Business Enterprises (MWBE) and Service-Disabled Veteran-Owned Business (SDVOB) opportunities. Participation goals will be properly set, results reported, and civil rights implementation contracts monitored for this project. Further, the Authority incorporates targeted training provisions within its contracts to provide a mechanism which allows for underrepresented groups to become skilled in the various construction trades.

Every Authority-awarded construction contract is subject to the strong and well-established provisions of New York State Labor Law. On contracts financed with Federal Aid, any provisions of the state Labor Law that conflict with mandatory Federal-Aid construction contract compliance requirements, as contained in 23 CFR 635.11, are superseded. To the benefit of workers, state Labor Law provisions that are more restrictive than the Federal-Aid construction contract compliance requirements, or the Davis-Bacon Act, and are not in conflict with them, continue to apply.

Prevailing Wage Schedules, defined for each project based upon County of work, are issued by the New York State Department of Labor for all general construction public works projects. These wage rates are monitored for conformance during construction and strictly enforced. Workers' rights notices are posted in accordance with State and Federal Law. Before commencing any work on the site, the contractor must post, in a location accessible to all workers, a copy of the New York State Department of Labor schedules of prevailing wages and supplements for the specific contract, a copy of all redeterminations of such schedules for the contract, the Workers' Compensation Law notice, required safety notices, and all other notices required by law. The notices must be maintained in clear, legible condition until all work on the site is complete.

Previous Experience with DOT discretionary grant awards.

The Authority has been a past recipient of the discretionary Federal Funding, including successful implementation of a \$1.6 Billion loan grant for the Governor Mario M. Cuomo Bridge (Tappan Zee Bridge Replacement) under the Transportation Infrastructure Finance and Innovation Act (TIFIA).

The Authority is fully resourced to implement a RAISE Grant. Following selection, the Authority will expedite negotiations to quickly sign a grant agreement with USDOT. The Authority will then work with FHWA to

implement the award in accordance with technical guidance. The Authority will provide all required monitoring documentation and deliver all finalized technical and financial reports to close out the project.

Financial Completeness

Project Funding Sources:

The Authority has committed \$22 million in Thruway Authority Capital Funds for the subject project. Authority funding accounts for 47% of the planned future project costs. Refer to the application *Project Budget* and *Funding Commitment Documentation* files.

RAISE Grant funding will supplement the Authority's funding to ensure that the time-sensitive and necessary improvements identified in Sections I and III are completed by November 2025. Without RAISE funding, limited available funds will require that deteriorating conditions of the bridge are addressed only on an emergency-need basis to avoid imminent condition-related flags that may cause bridge closure or load posting. Seismic resiliency improvements will be delayed by at least 10 years, with completion no sooner than 2035. Improvements to accommodations for non-motorized users will be delayed indefinitely, and the southbound bridge sidewalk will remain closed. A reduced-scope-of-work approach will result in greater impacts to bridge users, including freight, public transportation, and non-motorized users, who will experience compounding impacts in service as the bridge conditions continue to deteriorate.

Documented Support

Letters of support from key public and private stakeholders are provided within the *Letters of Support* file submitted as part of this application.

Cost Overrun Plan

The Authority has budgeted funds for 100% of the project development activities related to planning, design, and construction inspection and is positioned to fund any cost overruns within these task areas. The project cost estimate, submitted with this application within the *Project Budget* file, has been developed using itemized unit cost estimates which consider the cost history of similar projects and work scopes in the same geographic area. The project includes a 20% contingency, which is appropriate by Federal and State best practices for this level of design. The Authority retains capability within its Capital Program to fund any construction cost overruns which exceed Awarded costs.



BENEFIT-COST ANALYSIS

Steel Repairs and Seismic Retrofits for South
Grand Island Bridge (I-190) from MP 914.3 to
MP 915.0

August 29, 2022

Prepared for:
New York State Thruway Authority

Prepared by:
Stantec Consulting Services, Inc.

Project Number:
192810429

The conclusions in the Report titled Benefit-Cost Analysis are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Benefit-Cost Analysis Supplementary Documentation

1. Executive Summary

The net benefits of the South Grand Island Bridges Retrofit Project on I-190 from MP 914.3 to MP 915.0 in Tonawanda, New York ('Project') were estimated through a comprehensive Benefit-Cost Analysis (BCA) as per U.S. Department of Transportation (USDOT)'s Benefit-Cost Analysis Guidance for Discretionary Grant Programs (March 2022 update). This BCA quantifies and monetizes the Project's benefits and compares them against the Project's costs. The analysis makes evident that Project benefits exceed Project costs, meaning that its completion results in a net benefit to society relative to taking no action.

The Project is anticipated to result in several categories of beneficial impacts, including the following:

- Bridge management benefits through seismic retrofits by reducing the level of damage anticipated to occur as a result of seismic events.
- Bridge management benefits by reducing frequency and associated costs of emergency and scheduled maintenance to bridge deck, structural steel, and sidewalk pavement.
- Travel time savings by reducing the frequency of lane closures and delays required for emergency and scheduled bridge maintenance.
- Decrease the number of crashes, injuries and crash related costs by decreasing the frequency of incidents related to deck surface friction.
- Benefits of pedestrian and bicycle (ped-bike) facility improvements and reduced mortality due to induced active transportation trips following restoration of sidewalks alongside bridge.
- Reduce emissions of pollutants, such as nitrogen oxides (NO_x), fine particulate matter (PM_{2.5}), sulfur dioxide (SO₂), and carbon dioxide (CO₂), fewer VMT's at inefficient operating conditions (i.e. variable and slow speeds) due to congestion caused by emergency bridge and pavement maintenance.

Table 1 summarizes the changes expected from the project and the associated benefits.



Benefit-Cost Analysis

Table 1 – Summary of Improvements and Associated Benefits				
Current Status or Baseline & Problems to be Addressed	Changes to Baseline/ Alternatives	Types of Impacts	Benefits	Summary of Results (Discounted 2020 \$)
The South Grand Island Bridges, MP 914.3 to MP 915.0, on I-190 in Tonawanda are in need of repairs including seismic retrofits, steel repairs, sidewalk repairs, and deck surface friction improvements.	The project will complete steel repairs, seismic retrofits, rehabilitation of the sidewalk and deck friction improvements. Retrofits will allow structure to withstand anticipated seismic events for 75 years, deck surface condition will return to "very good" status upon project completion and emergency deck and steel repairs will no longer be required.	Improved travel times along the segment from avoiding future work zones from scheduled and emergency repair work.	Travel Time Savings	\$43,971,475
		Improved safety and crash avoidance by increasing deck surface friction.	Improved Safety and Reduced Crash Costs	\$10,181,392
		Decrease bridge management costs by avoiding the need for scheduled and emergency repair work.	Reduction in emergency and scheduled repairs.	\$8,491,399
		Improved ped/bike facilities and reduced mortality of induced active transportation users by restoring sidewalk across bridge.	Ped/Bike Facility Improvements, Mortality Reduction	\$3,128,905
		Reduced capital improvement and vehicle travel time costs by avoiding need to close bridge for repair after seismic event.	Travel Time Savings and Reduced Construction Cost	\$401,795
		Reduction in Greenhouse Gas (GHG) Emissions and CO2, due to reduced travel time and congestion.	Reduced in Emissions Costs	\$16,463,733
		Reduced preparation for future capital investments through realization of a residual value of the investment at the end of analysis period	Residual Value of Capital Investment	\$6,293,811

The project is expected to start generating benefits when the resurfacing is complete at the end of 2025.

The 20-year period of analysis used in the estimation of the project's benefits and costs includes 2 years of project construction (2024-2025) and 18 years of benefits.¹ The total project capital costs are \$48.0 million in undiscounted 2020 dollars. The breakdown of project costs is presented in Table 2.

Table 2 – Summary of Project Costs	
Cost Category	Undiscounted 2020 \$
Preliminary / Final Design	\$4,000,000
Construction	\$40,000,000
Construction Inspection	\$4,000,000
Total (Undiscounted)	\$48,000,000
Total (Discounted)	\$35,860,679

¹ Note that benefits are conservatively estimated only for a period of 20 years, consistent with USDOT BCA Guidance for projects that address infrastructure deficiencies. The BCA model allows for an extension of benefit years that includes conducting future emergency repairs to maintain infrastructure condition.



Benefit-Cost Analysis

A summary of the relevant data and calculations used to derive the benefits and costs of the project are shown in the BCA model (in 2020 dollars). Based on the analysis presented in the rest of this document, the project is expected to generate \$88.9 million in discounted benefits and \$35.9 million in discounted costs using a 7 percent real discount rate for most benefit categories and a 3 percent real discount rate for CO₂ emissions. Therefore, the project is expected to generate a Net Present Value of \$53.1 million and a Benefit-Cost Ratio of 2.48. In other words, for each dollar spent in project costs, approximately \$2.48 worth of benefits will be generated by the improvements.

A summary table of annual monetized benefits and costs is provided in Section 7.



2. Introduction

This document describes the analytical methods and findings of the economic analysis conducted in support of the grant application for the Project. The remainder of this document is structured as follows:

- **Section 3**, Methodological Framework, describes the conceptual framework in which the Benefit-Cost Analysis is performed.
- **Section 4**, Project Overview, summarizes the project, including a brief narrative of existing conditions; a summary of estimated project cost and schedule; and a description of the types of effects that the project is expected to generate.
- **Section 5**, Methodology and Assumptions, provides a narrative of the general assumptions underlying the analysis including projected traffic volume growth through the impacted segment.
- **Section 6**, Economic Benefits, describes data and assumptions used in quantifying and monetizing benefits from each category of benefits.
- **Section 7**, Summary of Findings and BCA Outcomes, summarizes results of the Benefit-Cost Analysis (BCA) including the metrics of Net Present Value (NPV), Benefit-Cost Ratio (BCR).
- **Section 8**, BCA Sensitivity Analysis, provides the outcomes of the sensitivity analysis. Additional data tables are provided within the BCA model including annual estimates of benefits and costs to assist the U.S. Department of Transportation (USDOT) in its review of the application.²
- **Section 9**, Schedule of Estimated Benefits and Costs, provides results for estimated project costs and benefits for each analysis year.

² The BCA model is provided separately as part of the application.



3. Methodological Framework

A benefit-cost analysis (BCA) is an economic tool used to evaluate the economic justification of capital-intensive projects. A BCA describes, quantifies, and monetizes the social benefits and social costs generated by a particular project. A project's net benefit is estimated by subtracting the project's costs from the project's benefits. According to the USDOT (2022), "The goal of a BCA is to provide an objective assessment of a project that carefully considers and measures the outcomes that are expected to result from the investment in the project and quantifies their value."

The benefits of any project are equal to the sum of expected beneficial impacts to society, (i.e., both users and non-users of the facility) over the life of the project, properly discounted and monetized in a common metric (typically U.S. dollars from a specified year). Similarly, the costs of the project are based on the expected negative impacts to society over the life of the project, properly discounted and monetized in the same common units. While benefits generally consist of a wide potential range of project specific positive impacts, costs typically primarily consist of increased capital spending to implement the project and also to maintain the project.

The BCA produces several related measures to assess the economic rationale of a proposed project. The benefit-cost ratio (BCR) is calculated by dividing the project's present value of social benefits by the project's present value of social costs. A BCR greater than 1.0 indicates that undertaking project activities as specified yields more benefits to society than costs to society and is therefore deemed economically justified. The net present value (NPV), calculated by subtracting the discounted project costs from the discounted project benefits, measures the net benefit in present value that society would accrue as a result of the project implementation relative to the no-build scenario.

The general methodology for the Project was developed using the BCA guidance published by USDOT in March 2022. In particular, the major methodologic steps consist of the following:

- Specifying existing and future conditions in each future year for both the build and no-build scenarios.
- Identifying non-overlapping categories of social costs and social benefits over which to account.
- Quantifying changes in cost and benefit categories between build and no-build scenarios in each year of the analysis employing those assumptions and methodologies outlined in Sections 5 and 6.
- Monetizing changes from the previous bullet in 2020 dollars.
- Discounting future monetized benefits and costs with a real discount rate of 7 percent for all categories except CO₂ emissions, which is discounted at 3 percent rate (USDOT (2022)).
- Conducting a sensitivity analysis to assess the impacts of changes in important analytical inputs and assumptions.

This analysis seeks to avoid overestimation of benefits as well as underestimation of costs. The strategy of tending to understate benefits and tending to overstate costs as adopted in this analysis is considered a conservative approach and lends greater credibility to any affirmative finding of economic justification (if applicable). Categories of benefits that may accrue to society but have been omitted from monetization include: decreases in detours and detriments associated with the increased traffic on alternate routes due to congestion from closures, and avoided emissions of various pollutants not included in this analysis like volatile organic compounds (VOCs) and carbon monoxide. Furthermore, the smaller standard deviation of expected travel time that results from lower frequency of necessary emergency repairs yields and associated congestion at



Benefit-Cost Analysis

unpredictable frequencies is an additional element of time savings not captured here³. If these omitted categories were included in the monetization process, net project benefits would further increase.

³ For example, with lower standard deviation of travel time along this corridor, vehicle operators enjoy relatively higher certainty of arrival times. This higher certainty allows users to re-optimize travel behavior especially to time-critical destinations (eg. doctors' appointments, workplace, airport) by including a smaller contingency buffer.



4. Project Overview

4.1 Base Case and Alternatives

Base Case – The No-Build condition assumes that steel repairs, sidewalk replacement, and seismic retrofits do not occur. The sidewalk remains closed and emergency repairs continue to be conducted at an increasing rate to maintain the roadway. Under this scenario, the bridge also remains in a state that is unable to withstand significant seismic events leaving the region vulnerable to potential long-term closure of the bridge impacting local, regional and international travel. Traffic volumes increase over time according to NYSTA projections. Other than changes to traffic volumes, traffic patterns, including diurnal and intra-week variation, remain materially similar to those patterns in recent historical years.

Build Case – The northbound or southbound structure will undergo seismic retrofits, and both structures will undergo steel repairs and replacement of the deteriorated sidewalk pavement according to the timing and cost schedules laid out herein. The sidewalk and steel repairs are initially in “very good” condition after project completion and deteriorates gradually over the analysis period with no emergency repairs necessary for the first 10 years. The anticipated life span of the seismic retrofits is anticipated to meet or exceed to life span of the bridge, 75 years. As in Base Case, traffic volumes continue to grow alongside population growth in adjacent communities. Other than changes to traffic volumes, traffic patterns in future years are generally similar to those patterns in recent historical years.

Unless otherwise noted, for all benefit and cost categories monetized values presented in this analysis represent the difference in that category between the Base and Build Case.

4.2 Categories of Impacts

The Project is expected to significantly improve overall bridge condition, which will increase the resilience of the bridge to seismic events, reduce the frequency of emergency and scheduled repairs, reduce the frequency of delays for motorists, reduce the number of crashes, reduce the emissions of harmful air pollutants, and increase ped-bike activity.

These impacts are described in more detail below:

- **Resilience to Seismic Events:** The seismic retrofits to one of the bridges will reduce the level of damage anticipated to occur as a result of seismic events, reducing capital improvement costs and vehicle travel time costs by avoiding need to close both bridges for inspection and repair after an event.
- **Reduction in Emergency and Scheduled Repairs:** The project will reduce the frequency of emergency and scheduled repairs and the associated direct costs in labor, equipment and materials to perform them.
- **Travel Time Savings:** A reduction in emergency repair frequency will reduce the frequency of necessary lane closures and resulting traffic delays and lower average travel speeds that would result. This is partially offset by increases in travel time during the construction period.
- **Improved Safety and Avoided Crash Costs:** Improving the condition and friction of the deck surface through pavement grooving and improved drainage will reduce the number of vehicle incidents expected to occur.



Benefit-Cost Analysis

- **Reduction in Emissions:** The project will reduce emissions of air pollutants produced by vehicles by reducing delays related to emergency work zones. As vehicles brake and reduce travel speeds through the emergency work zones, they emit several pollutants such as carbon dioxide (CO₂), nitrogen oxides (NO_x), particulate matter (PM_{2.5}), and sulfur dioxide (SO₂) at higher rates per mile due to less efficient vehicle operation. This is partially offset by increased emissions resulting from delays associated with project construction.
- **Ped-Bike Facility Improvements:** Restoring the sidewalks alongside the bridge creates direct benefits from improving ped-bike facilities as well as reducing mortality due to induced active transportation trips.

4.3 Project Cost and Schedule

The construction of the Project is expected to occur in years 2024 and 2025 with project completion expected in the beginning of 2026. The costs associated with design, construction, and inspection are expected to be incurred between 2022 and 2025. The breakdown of project costs is presented in Table 3. The capital expenditures of the project will total approximately \$48.0 million (undiscounted).

Calendar Year	Capital Expenditures (2020 \$)	Discounted Capital Expenditures (2020 \$)
2022	\$1,333,333	\$1,164,585
2023	\$2,666,667	\$2,176,794
2024	\$23,000,000	\$17,546,590
2025	\$21,000,000	\$14,972,710
Total	\$48,000,000	\$35,860,679

5. Demand Projections

The projected future traffic demand is a key factor in calculating seismic benefits, travel time savings, safety benefits, and emissions for the No-Build and Build scenarios. The volumes and delays for vehicles on the corridor are based on the hourly traffic data.

NYSTA estimated daily traffic data in average annual daily traffic (AADT) over the analysis period. These figures include projections for 2025, 2035, 2040, and 2045. This analysis uses this implied growth rate between these dates to calculate traffic demand across the bridge for each year of the analysis period. Conservatively, the project is not assumed to increase capacity, and thus daily traffic volumes are consistent between the No-Build and Build scenarios. The primary difference in hourly traffic volumes results from changes in delays due to lane closures associated with emergency and scheduled repairs between the No-Build and Build scenarios.

The historic AADT between 2017 and 2021 and the resulting volume projections for the bridge highway segment are presented in Table 4.



Benefit-Cost Analysis

Year	AADT
2017	71,181
2018	71,616
2019	71,212
2020	53,497
2021	63,452
2025	65,239
2035	70,692
2040	73,566
2045	76,556

6. Estimation of Economic Benefits

This section describes the measurement approach used for each benefit and cost category identified in Section 4.2 and provides an overview of the associated methodology, assumptions, and estimates. Table 5 outlines general assumptions used in the BCA.

The BCA measures benefits against costs throughout a period of analysis beginning at the preliminary design and the start of construction including 2 years of construction costs and an 18-year benefits period. All monetized benefits and costs are estimated in 2020 dollars with future dollars discounted according to USDOT BCA guidance. The benefits and costs have been discounted to a base year of 2020.

Variable Name	Unit	Value	Source
Construction Start Year	Year	2024	NYSTA Project Schedule
Construction Duration	Years	2	
Project Open Year	Year	2026	
Benefits Period	Years	20	Typical USDOT BCA analysis period
Extended Benefits Period	Years	0	Extended analysis period assumption. Assumes additional maintenance expenditures will be incurred to maintain steel condition for a longer timeline.
Emergency Repair Start year (Build)	Year	2026	
General Discount Rate	Percent	7%	USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs (March 2022 - Revised)
Environmental Discount Rate (CO2)	Percent	3%	USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs - March 2022 (Revised)
Annualized Factor (weekdays)	Days/Year	261	Considers only weekdays in a year.
Annualization Factor - Full Week	Days/Year	365.25	Known
Commercial Vehicle Percentage	Percent	8.4%	NYSTA calculated based on observed commercial vehicle data.



6.1 Travel Time Savings

Travel time savings are estimated using the AADT projections and USDOT travel time recommended values. The build scenario initially creates negative time travel savings during the construction period. However, after construction, the build scenario generates positive travel time savings as the incidence of emergency repairs and the associated delay causing lane closures are greatly reduced.

6.1.1 Methodology

Estimation of travel time savings is based on AADT information from NYSTA outlined in the Demand Projections section. The AADT information is applied to the projected work zone activity along the project corridor, and the relative average vehicle speeds during the different work zone periods. In the No-Build scenario, an estimated 625 hours of emergency work zones will occur each year requiring single lane closures on one side at a time. The average travel speed during the emergency repairs was estimated at 35 mph. The BCA assumes that the number emergency work zones will continue to increase on an annual basis over time. Following its completion, the project will require emergency repairs at a lower frequency, an assumed 50 percent of the No-Build closure hours in the BCA. In addition to emergency repairs, the No-Build scenario will experience regularly scheduled maintenance and inspection that will significantly be reduced following project completion, requiring additional lane closures and further increasing travel times. The average travel speed during scheduled maintenance is assumed to be 70 mph, near the free flow speed of the highway in the baseline condition. Speeds are higher than emergency repairs due to being able to plan traffic control accordingly and conduct maintenance during fewer peak hours when delay can accumulate the most.

In the build scenario, an estimated 18 full weekend work periods requiring double lane closures will occur during the construction period in 2026. These work days will take place on weekend days to minimize disruptions and will include extra hours on late Friday evenings and early Monday mornings. Construction will occur with closure of both lanes on one bridge and a crossover to divert traffic to the other bridge with one-lane operation of each direction. The average travel speed is expected to also be 70 mph. Scheduled work zones during the construction period for the build scenario occur as dictated by NYSTA lane closure allowances for the corridor.

6.1.2 Assumptions

The assumptions used in the estimation of travel time savings are summarized in Table 6.



Benefit-Cost Analysis

Table 6 – Travel Time Savings Assumptions			
Variable Name	Unit	Value	Source
Value of Time (All Purpose) auto	2020 \$/Person	\$17.80	Table A-3 USDOT BCA Guidance
Average Vehicle Occupancy	Persons	1.67	Table A-4 USDOT BCA Guidance
Value of Time (All Purpose)	2020 \$/Vehicle	\$29.726	Calculation, Value of time per person * Occupancy
Value of Time (trucks)	2020 \$/Vehicle	\$32.00	Table A-3 USDOT BCA Guidance
Commercial Vehicle Percentage	Percent	8.4%	NYSTA Commercial Vehicle Percent
Annual Percent Growth in Maintenance Requirements in Future Years for No-Build Scenario	Percent	1.54%	Ahmed, A., Bai, Q., Lavrenz, S. and Labi, S., 2015. Estimating the marginal cost of pavement damage by highway users on the basis of practical schedules for pavement maintenance, rehabilitation and reconstruction. Structure and Infrastructure Engineering, 11(8), pp.1069-1082
Project Length	Miles	0.7	NYSTA
Duration of SILO Inspections (No Build, 6 wks)	Hours/Year	960	NYSTA Inspection Logs, annual duration of Bi-annual and SILO inspections.
Duration of Steel/Deck Repairs (No Build, 6 wks)	Hours/Year	960	Assumption
Duration of Steel/Deck/SW Repairs (Build, 2 wks)	Hours/Year	288	NYSTA, assume closure is for deck work only.
Duration of Deck Repairs (Build, 2 wks)	Hours/Year	288	NYSTA, assume closure is for deck work only.
Single Lane Closure Duration	Hours/Year	2496	NYSTA, assume all maintenance work is completed with single lane closure
Double Lane Closure Duration	Hours/Year	0	NYSTA, assume all maintenance work is completed with single lane closure

6.1.3 Benefit Estimates

Table 7 outlines the monetized net benefits of travel time over the project lifecycle between Build and No-Build scenarios. They account for \$44.0 million in net benefits over the life cycle, discounted at 7 percent.

Table 7 – Travel Time Cost Savings		
Benefit Type	Constant 2020 \$	Discounted 2020 \$
Travel Time Savings	\$130,496,056	\$43,971,475

6.2 Crash Cost Savings

The proposed project would result in crash cost savings to society by reducing the number of incidents due to bridge deck condition and friction. Improvements to friction consisting of adding grooving to the existing bridge deck are proposed.



Benefit-Cost Analysis

6.2.1 Methodology

NYSTA provided existing crash data which were used to forecast the number of crashes for the No-Build scenario. Supplemental to the crash data, to capture the statistical probability of serious injury and fatal crashes, the Highway Safety Manual (HSM) predictive method was used. The existing conditions were modeled in FHWA's IHSDM software and Empirical-Bayes analysis for the whole project was conducted to determine the expected number of crashes over the BCA analysis period. Results of this analysis were calibrated against NYSTA crash data. FHWA Crash Modification Factors #7229 and #7231, related to pavement grooving, were utilized to estimate crash reduction in the Build scenario. The results of the HSM predictive method are provided in KABCO crash severity categories: K – fatal, A – serious injury, B – minor injury, C – possible injury, and PDO – property damage only. The reduction in crashes from the No-Build to Build scenarios are applied to USDOT recommended monetization values. Outputs from the analysis in IHSDM are provided as an attachment to this BCA document.

6.2.2 Assumptions

The assumptions used in the estimation of vehicle operating costs are summarized in Table 8.

Variable name	Unit	Value	Source
Cost of Damaged Vehicle (PDO)	2020 \$/vehicle	\$4,600	USDOT BCA Guidance Table A-2
Cost of Possible Injury (C)	2020 \$/injury	\$77,200	USDOT BCA Guidance Table A-1
Cost of Minor Injury (B)	2020 \$/injury	\$151,100	
Cost of Serious Injury (A)	2020 \$/injury	\$554,800	
Cost of Fatality (K)	2020 \$/injury	\$11,600,000	

6.2.3 Benefit Estimates

Table 9 outlines the safety benefits due to improvements in pavement friction from grooving over the project lifecycle. These benefits amount to \$10.2 million over the analysis period, discounted at 7 percent.

Benefit Type	Constant 2020 \$M	Discounted 2020 \$
Crash Avoidance Benefits	\$23,961,884	\$10,181,392

6.3 Emissions Cost Savings

The BCA estimates the reduction emissions by pollutant type and monetizes the cost of emissions using values provided in the USDOT's BCA Guidance.

6.3.1 Methodology

The primary air quality impact associated with the project is decreased link emission rates post-project due to a reduction in delays and lower speeds caused by emergency repairs and scheduled maintenance –



Benefit-Cost Analysis

Emergency repair events are anticipated to reduce to 50% of the No-Build scenario after project completion, as well as elimination of frequent scheduled maintenance and inspection.

The BCA estimates included herein monetize reductions of emissions from this effect. The reduction in tons of emissions by pollutant type was estimated based on the difference in total emissions rates (g/hr) between the Build and No-Build scenarios for two analysis years using volume projections from NYSTA: project opening year 2026 and 2036. Using per-hour emission rates for carbon dioxide (CO₂), nitrogen oxides (NO_x), particulate matter (PM_{2.5}), and sulfur dioxide (SO₂) from the Environmental Protection Agency (EPA)'s Motor Vehicle Emission Simulator (MOVES), the default MOVES3-based Erie County, NY fleet were modeled based on an average congested and free-flow speeds for each No-Build and Build scenario, respectively. It was assumed that after 2036, emissions benefits yield diminishing returns due to expected improvements in emissions standards of the general vehicle fleet.

6.3.2 Assumptions

The assumptions used in the estimation of vehicle operating costs are summarized in Table 10.

Analysis Year	Model Input Parameter	Existing/Baseline Condition Input Description	Lane Closure Condition Input Description
2024 (existing) / 2026	Model Scale	Project Scale	Project Scale
	Analysis Year	2024 (The year construction begins.)	2026 (run as 2024 in MOVES3 to provide consistent basis for comparison of existing vs. lane closure conditions.
	Representative Day Type	Weekdays	Weekdays
	Representative Month	April	April
	Representative Hour of Day	10-11 am	10-11 am
	Geographic Location	Erie County, NY	Erie County, NY
	Road Type	Urban Restricted Access (Freeway)	Urban Restricted Access (Freeway)
	Pollutants Modeled	NO _x , SO ₂ , PM _{2.5} exhaust, brakewear and tirewear, GHGs: CH ₄ , N ₂ O, CO ₂	NO _x , SO ₂ , PM _{2.5} exhaust, brakewear and tirewear, GHGs: CH ₄ , N ₂ O, CO ₂
	Link Average Speed	60.2	5.7
	Link Average Traffic Volume	32380	32380
	Link Designations	0.7 miles	0.7 miles
	Lane Closure Assumption during Emergency Repair Events	1 lane closed	1 lane closed
	Total Duration of Existing Emergency Repair Events	--	NYSDOT/ NYSTA Maintenance Data
	2036	Model Scale	Project Scale
Analysis Year		2036	2036



Benefit-Cost Analysis

2036	Representative Day Type	Weekdays	Weekdays
	Representative Month	April	April
	Representative Hour of Day	10-11 am	10-11 am
	Geographic Location	Erie County, NY	Erie County, NY
	Road Type	Urban Restricted Access (Freeway)	Urban Restricted Access (Freeway)
	Pollutants Modeled	NOx, SO2, PM2.5 exhaust, brakewear and tirewear, GHGs: CH4, N2O, CO2	NOx, SO2, PM2.5 exhaust, brakewear and tirewear, GHGs: CH4, N2O, CO2
	Link Average Speed	60.2	5.6
	Link Average Traffic Volume	32380	32380
	Link Designations	0.7 miles	0.7 miles
	Lane Closure Assumption during Emergency Repair Events	1 lane closed	1 lane closed
	Total Duration of Existing Emergency Repair Events	--	NYSDOT/ NYSTA Maintenance Data

6.3.3 Benefit Estimates

The emissions reductions from avoiding emergency repairs and scheduled maintenance are higher than emissions increase from the construction period.

Table 11 outlines the emission benefits for this project for Nitrogen Oxides (NO_x), Particulate Matter (PM_{2.5}), and Sulfur Dioxide (SO₂) discounted at 7 percent. CO₂ emissions are also presented in Table 11 and discounted at 3 percent. The emissions cost savings total \$16.5 million (discounted).

Table 11 – Emissions Benefit Cost Savings		
Emissions Type	Constant 2020 \$	Discounted 2020 \$
Carbon Dioxide (CO ₂)	\$11,493,223	\$8,134,458
Nitrogen Oxides (NO _x)	\$5,075,977	\$2,319,560
Particulate Matter (PM _{2.5})	\$12,935,653	\$5,986,107
Sulfur Dioxide (SO ₂)	\$51,451	\$23,607
Total	\$29,556,304	\$16,463,733



6.4 Bridge Maintenance Savings

The BCA estimates savings related to bridge maintenance by calculating the benefit of repairing bridge steel and other improvements, thus reducing costs directly related to performing future emergency repairs and scheduled maintenance.

6.4.1 Methodology

The project will repair steel for the South Grand Island Bridges and add seismic retrofits to the northbound or southbound structure. The BCA assumes that regular emergency repairs and scheduled maintenance are required to maintain the bridge at a functioning level, and that the number of repairs will continue to increase on an annual basis over time. The project will improve the bridge condition and reduce the need to conduct emergency repairs to 50% of the No-Build scenario and will eliminate frequent scheduled maintenance. The bridge will deteriorate over the analysis period and will require increased repairs to maintain the bridge, but at a lower frequency than the No-Build scenario.

6.4.2 Assumptions

The assumptions used in the estimation of bridge maintenance cost savings are provided in the Table 12.

Variable Name	Unit	Value	Source
Starting Year for Emergency Repairs (No Build)	years	2022	NYSTA project assumptions
Annual Duration of Emergency repairs per Year	hours/year	625	from NYSTA
Annual Percent Growth in Maintenance Requirements in Future Years for No-Build Scenario	percent	1.54%	Ahmed, A., Bai, Q., Lavrenz, S. and Labi, S., 2015. Estimating the marginal cost of pavement damage by highway users on the basis of practical schedules for pavement maintenance, rehabilitation and reconstruction. <i>Structure and Infrastructure Engineering</i> , 11(8), pp.1069-1082

6.4.3 Benefit Estimates

Table 13 outlines the bridge maintenance cost savings for this project. The bridge maintenance cost savings will total \$8.5 million (discounted).

Benefit Type	Constant 2020 \$	Discounted 2020 \$
Bridge Maintenance Cost Savings	\$17,921,834	\$8,491,399

6.5 Seismic Retrofits

The project will improve the resiliency of the existing northbound structure to future seismic events in the region. Events of various magnitude, duration, and return period are possible and will result in both required bridge repairs or replacement and corresponding travel time increases resulting from full bridge closure during post-event inspections, repairs, and construction.



Benefit-Cost Analysis

6.5.1. Methodology

Methodology prescribed in “Seismic Retrofitting Manual for Highway Structures: Part 1 – Bridges” published by Federal Highway Administration (January 2006) was used to estimate expected direct losses resulting from the structural damage for an earthquake with a given return period. The methodology calculates the probability of structural damage (direct loss probability) and the corresponding total repair cost ratio (i.e., the expected proportion of the total replacement cost of the entire bridge resulting from earthquake damage). Five damage outcomes are considered (i.e., from no damage to collapse of the structure), with the probability provided for each damage outcome. In addition to the direct bridge damage calculations, estimated detour travel time increase due to full bridge closure during inspection and repair activities was projected using an assumed detour route and traffic volumes on the bridge. This was factored into the probability of each damage outcome to estimate the impacts to travel time (i.e. where collapse would result in a long delay during replacement construction and minor event with no damage would result in a minor/short delay during post-event inspection). Expected damages and delays from the five damage outcomes were then used to calculate the expected value of annual loss.

The Federal Emergency Management Agency (FEMA) HAZUS software earthquake model (HAZUS Earthquake Model Technical Manual, HAZUS 4.2 SP3, October 2020) was used to estimate annual loss, where average annualized loss was calculated as the summation of the 1) products of the average losses (i.e., both direct bridge repair/replacement costs and related detour delays for each of five damage outcomes) for seismic events for eight different return periods (ranging from 2500 to 100) – and 2) the probability for each type of event to occur.

6.5.2. Assumptions

Assumptions used in the estimation of travel time savings are implicit in the formulas used in the FHWA and FEMA models and can be viewed in in the BCA workbook “Seismic” tab.

6.5.3 Benefit Estimates

Table 14 outlines the seismic retrofit benefits of this project, which is estimated to be \$0.4 Million in discounted 2020 dollars.

Table 14 – Seismic Benefit Cost Savings		
Benefit Type	Constant 2020 \$	Discounted 2020 \$
Seismic Event Travel Time Savings and Reduced Construction Cost	\$987,345	\$401,795

6.6 Pedestrian and Bicycle Facility Improvements

The project will repair and rehabilitate the sidewalks along the bridge that will result in both connectivity and mobility improvements compared to existing conditions, as well as reduce the mortality of the community by inducing trips across the bridge using active transportation modes including pedestrians and bicycles.



Benefit-Cost Analysis

6.6.1 Methodology

Standard benefit per pedestrian/bicycle users prescribed in the USDOT BCA Guidance (USDOT 2022) was used in calculating the projected pedestrian and bicycle benefits by calculating induced trips and applying benefit values of sidewalk, cycle paths, and reduced mortality assumptions by their respective units.

6.6.2 Assumptions

Table 15 includes the USDOT BCA Guidance assumptions used in the analysis.

Variable Name	Unit	Value	Source
Induced trip volume from adjacent trail	percent	50%	Assumption
Value of Expanding Sidewalk	per person-mi per ft of added width	\$0.10	Table A-8 USDOT BCA Guidance
Value of Cycle Path (no at-grade xings)	per cycle-mi	\$1.78	Table A-9 USDOT BCA Guidance
Value of Mortality Reduction for Induced Active Transportation (Walking)	per induced trip	\$7.08	Table A-12 USDOT BCA Guidance
Value of Mortality Reduction for Induced Active Transportation (Walking)	per induced trip	\$6.31	Table A-12 USDOT BCA Guidance

6.6.3 Benefit Estimates

Table 16 summarizes the ped-bike benefits of this project, which are estimated to be \$3.1 Million in discounted 2020 dollars.

Benefit Type	Constant 2020 \$	Discounted 2020 \$
Ped/Bike Facility Improvements & Mortality Reduction	\$7,965,271	\$3,128,905

6.7 Residual Value

The project analysis period was chosen to reflect the primary useful structural retrofit life of the project which will extend beyond the 20-year analysis period for the project, resulting in a residual value of the investment, which was estimated and accounted as a project benefit at the end of the analysis period.

6.7.1 Methodology

Construction costs were disaggregated into elements and assigned useful lives of between 10 and 75 years. Initial investments by element were adjusted to 10% of their value over their respective useful lives using a



Benefit-Cost Analysis

straight-line depreciation curve, with residual values at the end of the 20-year analysis period accounted as a benefit to the project.

6.7.2 Assumptions

The assumptions used in the estimation of residual value are summarized in Table 17.

Table 17 – Assumptions for Residual Value			
Variable name	Unit	Value	Source
Useful Life - Steel Repairs & Seismic Retrofits	Years	75	NYSTA
Useful Life - Sidewalk Rehabilitation	Years	30	NYSTA
Useful Life - Deck Friction Improvements	Years	10	NYSTA
Salvage Value at end of useful life	Percent of Investment	10%	NYSTA
Depreciation Method	Method	Straight Line	

6.7.3 Benefit Estimates

Table 18 summarizes the residual value benefits discounted at a 7 percent discount rate.

Table 18 – Residual Value Estimate		
Benefit Type	Constant 2020 \$	Discounted 2020 \$
Residual Value	\$29,836,000	\$6,293,811

7 Summary of Findings and BCA Outcomes

Table 19 and Table 20 summarize the BCA findings. Annual costs and benefits are computed over the lifecycle of the project.

Table 19 – Economic Benefit Estimate		
Benefits	Constant 2020 \$	Discounted 2020 \$
Reduced Travel Time Costs	\$130,496,056	\$43,971,475
Improved Safety and Avoided Crash Costs	\$23,961,884	\$10,181,392
Reduction in Emissions Costs	\$29,556,304	\$16,463,733
Reduction in Pavement Maintenance Costs	\$17,921,834	\$8,491,399
Seismic Event Travel Time Savings and Reduced Construction Cost	\$987,345	\$401,795
Ped/Bike Facility Improvements & Mortality Reduction	\$7,965,271	\$3,128,905
Residual Values	\$29,836,000	\$6,293,811
Total Benefits	\$240,724,694	\$88,932,509



Benefit-Cost Analysis

Table 20 – Overall Benefit-Cost Analysis Results		
Project Evaluation Metric	Constant 2020 \$	Discounted 2020 \$
Total Benefits	\$240,724,694	\$88,932,509
Total Costs	\$48,000,000	\$35,860,679
Net Present Value	\$53,071,830	
Benefit-Cost Ratio	2.48	

With a 7 percent general discount rate and 3 percent discount rate for CO2, the \$35.9 million discounted investment would result in \$88.9 million in total discounted benefits and a benefit-cost ratio of approximately 2.48.



8 BCA Sensitivity Analysis

The BCA outcomes presented in the previous sections rely on a large number of assumptions and long-term projections, both of which are subject to considerable uncertainty.

The primary purpose of the sensitivity analysis is to help identify the variables and model parameters whose variations have the greatest impact on the BCA outcomes: the “critical variables.”

The sensitivity analysis can also be used to:

- Evaluate the impact of changes in individual critical variables – how much the final results would vary with reasonable departures from the “preferred” or most likely value for the variable
- Assess the robustness of the BCA and evaluate, in particular, whether the conclusions reached under the “preferred” set of input values are significantly altered by reasonable departures from those values.
- In the sensitivity analysis, only one assumption from the baseline model is changed to see the effect of that assumption on initial results. The cases presented in the sensitivity analysis are the following:
 - Maintenance Delay: increasing free-flow speeds of emergency closure from 35 to 50 mph.
 - Project Costs: increasing and decreasing the total project cost of the project by 30%.
 - Seismic Vulnerability Parameters: adjusting parameters in the seismic analysis using more conservative or liberal assumptions (see Table 21)

The sensitivity analysis results are presented in Table 21.

Table 21 – Sensitivity Analysis Summary				
Parameters	Change in Parameter Value	Current Net Present Value	New Net Present Value	New B/C Ratio
Maintenance Delay	Increasing the free flow speeds of emergency closure from 35 to 50 mph	\$53,071,830	\$28,115,186	1.78
Project Cost	Increasing the total project cost by 30%		\$44,201,770	1.95
Seismic Vulnerability Parameters	Use the highest RCR values within accepted range		\$53,364,652	2.49
	Use more conservative annual losses/assume \$0 for more frequent return periods		\$52,744,000	2.47
	Use bridge replacement cost of \$1B		\$53,118,492	2.48



9. Schedule of Estimated Benefits and Costs

Table 22 presents the present value costs and present value benefits of the project.

Table 22 – Summary of Benefits and Costs										
CY	Maintenance Cost Savings	Travel Time Savings	Emissions	Crash Savings	Seismic Event Benefits	Ped-Bike Benefits	Total Capital Residual Value	Total Construction	Total Benefits	Net Present Value
2022	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,164,585	\$0	-\$1,164,585
2023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,176,794	\$0	-\$2,176,794
2024	\$833,857	-\$6,526,675	-\$2,071,425	\$846,491	\$0	\$0	\$0	\$17,546,590	-\$6,917,752	-\$24,464,342
2025	\$1,108,300	-\$2,653,933	\$10,776	\$797,442	\$19,026	\$0	\$0	\$14,972,710	-\$718,389	-\$15,691,099
2026	\$698,243	\$2,314,749	\$1,172,502	\$751,235	\$35,563	\$275,321	\$0	\$0	\$5,247,614	\$5,247,614
2027	\$939,488	\$5,461,995	\$2,936,044	\$707,706	\$33,236	\$259,368	\$0	\$0	\$10,337,837	\$10,337,837
2028	\$610,737	\$2,151,216	\$1,095,878	\$666,699	\$31,062	\$244,339	\$0	\$0	\$4,799,931	\$4,799,931
2029	\$821,406	\$5,136,835	\$2,745,493	\$628,067	\$29,030	\$230,181	\$0	\$0	\$9,591,012	\$9,591,012
2030	\$534,220	\$2,000,759	\$1,018,465	\$591,675	\$27,131	\$216,844	\$0	\$0	\$4,389,094	\$4,389,094
2031	\$718,187	\$4,835,867	\$2,531,352	\$557,391	\$25,356	\$204,279	\$0	\$0	\$8,872,431	\$8,872,431
2032	\$467,310	\$1,862,288	\$931,361	\$525,093	\$23,697	\$192,442	\$0	\$0	\$4,002,191	\$4,002,191
2033	\$627,957	\$4,546,804	\$2,318,129	\$494,667	\$22,147	\$181,291	\$0	\$0	\$8,190,996	\$8,190,996
2034	\$408,798	\$1,723,917	\$854,120	\$466,004	\$20,698	\$170,787	\$0	\$0	\$3,644,324	\$3,644,324
2035	-\$1,263,148	\$4,216,820	\$2,128,901	\$439,002	\$19,344	\$160,891	\$0	\$0	\$5,701,809	\$5,701,809
2036	\$357,629	\$1,590,474	\$792,135	\$413,565	\$18,078	\$151,568	\$0	\$0	\$3,323,449	\$3,323,449
2037	\$211,041	\$3,197,191	\$0	\$389,601	\$16,896	\$142,786	\$0	\$0	\$3,957,514	\$3,957,514
2038	\$312,879	\$1,467,656	\$0	\$367,026	\$15,790	\$134,512	\$0	\$0	\$2,297,864	\$2,297,864
2039	\$419,849	\$3,633,025	\$0	\$345,759	\$14,757	\$126,718	\$0	\$0	\$4,540,108	\$4,540,108
2040	-\$243,096	\$1,354,970	\$0	\$325,725	\$13,792	\$119,375	\$0	\$0	\$1,570,766	\$1,570,766
2041	\$367,150	\$3,350,463	\$0	\$306,851	\$12,890	\$112,458	\$0	\$0	\$4,149,812	\$4,149,812
2042	\$239,512	\$1,240,134	\$0	\$289,071	\$12,046	\$105,942	\$0	\$0	\$1,886,706	\$1,886,706
2043	\$321,078	\$3,066,922	\$0	\$272,321	\$11,258	\$99,803	\$6,293,811	\$0	\$10,065,193	\$10,065,193
Total	\$8,491,399	\$43,971,475	\$16,463,733	\$10,181,392	\$401,795	\$3,128,905	\$6,293,811	\$35,860,679	\$88,932,509	\$53,071,830

Note: CY = Calendar Year

⁹ Most categories are discounted at 7 percent, while CO2 emissions are discounted at 3 percent per USDOT’s BCA guidance.

U.S. DOT. *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*. March 2022. Available at: [Benefit-Cost Analysis Guidance for Discretionary Grant Programs | US Department of Transportation](#)



Letters of Support

Stakeholder
New York State Senator Timothy Kennedy (Chairman Transportation Committee)
New York State Assemblymen William B. Magnarelli (Chair Transportation Committee)
New York State Assemblymen Angelo J. Morinello
Town of Tonawanda Supervisor Joseph H. Emminger
Dottie Gallagher, President and CEO, Buffalo Niagara Partnership
Kimberley A. Minkel, Executive Director, Niagara Frontier Authority
Kendra Hems, President, Trucking Association of New York
Michael JI. Elmendorf II, President & CEO, Associated General Contractors of New York State
John Evers, PhD, President/CEO, American Council of Engineering Companies of New York
Marc Herbst, President, New York Roadway and Infrastructure Coalition
Robert Brisman, President, Bus Association of New York
Brad Buyers, Sam Capitano, and Ryan Forrestel, Co-Chairs, Fair Apportionment of Infrastructure Revenue
Karen M. Utz, Regional Director, WNY Office, Empire State Development Corporation
Anthony B. Spada Jr., President-Chief Executive Officer, AAA New York State

**THE SENATE
STATE OF NEW YORK**



TIMOTHY M. KENNEDY
SENATOR, 63RD DISTRICT

CHAIRMAN

TRANSPORTATION

SELECT COMMITTEE ON

STATE-NATIVE AMERICAN RELATIONS

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February 14, 2023

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

Dear Secretary Buttigieg:

I strongly support the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application. This RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190). The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project. Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns. As the Chair of the State Senate Committee on Transportation, I strongly support these goals and the work of the Thruway Authority to maintain and improve these vital connections.

For these reasons, I strongly support the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application. Thank you for your attention to this important matter. Should you have any questions, I welcome your call.

Sincerely,

Timothy M. Kennedy
New York State Senator, 63rd District





THE ASSEMBLY
STATE OF NEW YORK
ALBANY

CHAIR
Committee on Transportation

COMMITTEES
Economic Development, Job Creation,
Commerce and Industry
Education
Rules
Oversight, Analysis and Investigation
Steering

WILLIAM B. MAGNARELLI
Assemblyman 129th District

February 13, 2023

Hon. Pete Buttigieg
Secretary
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Secretary Buttigieg,

As Chair of the New York State Assembly's Committee on Transportation, I am writing in support of the New York State Thruway Authority's ("Thruway Authority") application for a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190). The Thruway Authority is seeking \$25 million for this project that is critically important to both the State and the local community.

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. In addition, the project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists.

Each year, there are 13 million trips taken on this stretch of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe and efficient movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic. Therefore, I respectfully request that you give the Thruway Authority's RAISE application a full and fair consideration. Please feel free to contact me if I can be of any further assistance on this matter.

Very truly yours,

William B. Magnarelli
Member, NYS Assembly
129th District

WBM/dep



ANGELO J. MORINELLO
Assemblyman 145th District

THE ASSEMBLY
STATE OF NEW YORK
ALBANY

RANKING MINORITY MEMBER
Committee on Codes

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Labor
Tourism, Parks, Arts and
Sports Development
Veterans' Affairs

February 14, 2023

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

Dear Secretary Buttigieg:

I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application. The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, as well as local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE Grant will help provide for the safe, efficient and sustainable movement of people, goods and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion and air quality concerns.

I thank you for your attention and consideration regarding this matter.

Very truly yours,

A handwritten signature in black ink that reads "Angelo J. Morinello". The signature is written in a cursive style with a large, prominent initial "A".

ANGELO J. MORINELLO,
Assemblyman, 145th District

AJM/cld



2919 Delaware Avenue - Room 11 • Kenmore, New York 14217 • (716) 877-8804
Fax: (716) 877-1261

February 14, 2023

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

Dear Secretary Buttigieg:

I am writing in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

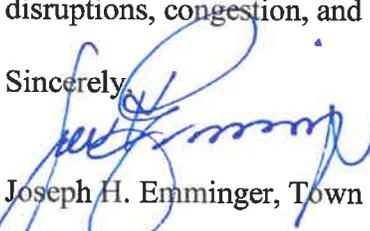
The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190). The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities, such as the Town of Tonawanda, in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-19, enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,


Joseph H. Emminger, Town Supervisor

JHE/js

"A GREAT PLACE TO LIVE, WORK AND PLAY"





February 17, 2023

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

Dear Secretary Buttigieg:

Re: New York State RAISE Grant Application – Niagara Thruway

The Buffalo Niagara Partnership, on behalf of its members who employ over a quarter million people in the region, supports the New York State Thruway Authority's application for a \$25 million Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant through your Department. These funds will be used to rehabilitate a critical section of the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as a vital corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

The project will address critically needed steel repairs to both South Grand Island bridge structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the overall safety for motorists and the quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

For these reasons, the BNP SUPPORTS the New York State Thruway Authority's application and urges you to give it your strongest consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dottie Gallagher', is written over a light gray rectangular background.

Dottie Gallagher
President and CEO
Buffalo Niagara Partnership



Niagara Frontier Transportation Authority
Serving Buffalo Niagara

181 Ellicott Street
Buffalo, New York 14203
716-855-7300
Fax: 716-855-6677

February 16, 2023

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

Dear Secretary Buttigieg:

I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kimberley A. Minkel", is written over a light blue circular stamp.

Kimberley A. Minkel
Executive Director



Kendra Hems
President

3 Corporate Drive, Suite 101
Clifton Park, NY 12065
P 518.458.9696
nytrucks.org

February 23, 2023

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

Dear Secretary Buttigieg:

On behalf of the Trucking Association of New York, I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,

A handwritten signature in black ink that reads "Kendra Hems". The signature is written in a cursive style with a horizontal line at the end.



**ASSOCIATED GENERAL CONTRACTORS
OF NEW YORK STATE**

10 AIRLINE DRIVE, SUITE 203
ALBANY, NY 12205-1025
518-456-1134 P 518-456-1198 F
www.agcnys.org

MICHAEL J. ELMENDORF II
PRESIDENT & CEO

February 13, 2023

The Honorable Pete Buttigieg, Secretary
U.S. Department of Transportation
1200 New Jersey Ave, S.E.
Washington, D.C. 20590

**RE: RAISE Grant Application, New York State Thruway Authority/South Grand Island Bridges
(Niagara Thruway)**

Dear Secretary Buttigieg:

The Associated General Contractors of New York State (AGC NYS), New York's leading statewide construction industry association and the New York State Chapter of the Associated General Contractors of America, is pleased to write in support of the New York State Thruway Authority's the \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application to supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The New York State Thruway is the critical transportation artery in the State of New York, connecting communities and moving people, goods and commerce from one end of the state to the other. Among New York's transportation systems, the Thruway is unique in that it was constructed all at the same time more than 60 years ago and is seeing much of its infrastructure aging out or developing significant needs at the same time. It has seen significant declines in its pavement conditions system-wide—85 percent of its roadway base dates to the original construction of the system—and 75 percent of the Thruway's bridges are more than 60 years old.

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

The Honorable Pete Buttigieg
February 13, 2023
Page Two

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient and sustainable movement of people, goods and services, while ensuring that surrounding communities, which include Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhance the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion and air quality concerns.

We urge your favorable consideration of this RAISE Grant Application to support this critical, much-needed project.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'M. J. Elmendorf II', followed by a long horizontal flourish.

Michael J. Elmendorf II
President & CEO, AGC NYS

February 16, 2023

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

Dear Secretary Buttigieg:

I write on behalf of the American Council of Engineering Companies of New York (ACEC New York) in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

ACEC New York is a proactive coalition representing nearly 300 member firms who engage in every discipline of engineering related to the built environment including civil, structural, mechanical, electrical, environmental, and geotechnical. We are a diverse group of consulting engineering firms from across New York State, ranging from sole proprietors to multinational corporations that collectively employ over 30,000 New Yorkers and nearly ten times that number worldwide.

The Thruway Authority's RAISE grant application supplements the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190). Each year, there are 13 million trips taken on this section of Interstate 190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

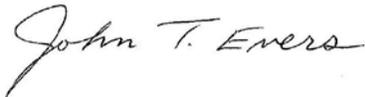
The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

ACEC New York

American Council of Engineering Companies of New York

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,



John Evers, PhD,
President/CEO
ACEC New York

CC:

Frank Hoare, Interim Executive Director, NYS Thruway Authority

Dan Duprey, PE, Chair, ACEC New York

Todd Gadd, PE, Chair, ACEC NY Thruway Committee



Executive Committee

John T. Cooney, Jr.
Construction Industry
Council of Westchester
& Hudson Valley, Inc.

Michael J. Elmendorf
Associated General
Contractors of NYS

John T. Evers, PhD.
ACEC New York
American Council of
Engineering Companies

Daniel J. McGraw
International Union of
Operating Engineers

Patrick Purcell
LECET - NYS Laborers

Robert G. Wessels
General Contractors
Association of New York

New York Roadway and Infrastructure Coalition

111 Washington Avenue, Suite 501
Albany, New York 12210
(518) 436-0786
office@wearenyric.org
www.wearenyric.org

Marc Herbst
President
Long Island Contractors Association - LICA

Ross Pepe
President-emeritus

Stephen Morgan
Secretary
Featherstonhaugh,
Wiley & Clyne

February 15, 2023

The Honorable Peter Buttigieg, Secretary
U.S. Department of Transportation
1200 New Jersey Ave, S.E.
Washington D.C. 20590

Dear Secretary Bettigieg:

I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link

following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally-designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'Marc Herbst', written in a cursive style.

Marc Herbst
President, NYRIC



February 17, 2023

RE: NYSTA – Bridge Investment Program Application – I-190 SGI bridge repairs

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

Dear Honorable Buttigieg,

As representatives of the FAIR (Fair Apportionment of Infrastructure Revenue of Western New York) Committee, we are in total support of the New York State Thruway Authority's grant application seeking federal grant funding from the BIP (Bridge Investment Program) for the Niagara Thruway Interstate I-190, South Grand Island Bridges Rehabilitation.

With the FAIR Committee of WNY representing well over 250 construction companies, engineering firms, material supplier and manufacturers, local trades unions, municipal agencies, specialty subcontractors and trade organizations our members are reliant upon a healthy infrastructure industry that meets the needs of our community and maintains the quality of life for residents in this area.

With over 13 million vehicles per year traveling on these twin bridges over the Niagara River between the Towns of Tonawanda and Grand Island, this route is a critical north-south transportation corridor for Western New York as well as accessing the Canadian border. The safety, efficiency, and reliability of the movement of people and freight on this route is of paramount importance. Rehabilitating the South Grand Island Bridges on the Niagara Thruway will provide a long-term improvement to this corridor as well as upgrade mobility and community conductivity and will decrease the need for repeated routine maintenance with increased traffic disruption. Additionally, this project will perform improvements to sidewalks and bicycle routes to enhance the connectivity, navigation and comfort for non-motorized travel on the bridge structures.

It is with the full support of our membership that we fully support the Grant Application by the New York State Thruway Authority for the Bridge Investment Program for the Niagara Thruway I-190, South Grand Island Bridges Rehabilitation.

Respectfully, Your FAIR Co-Chairs,

Brad Buyers

Sam Capitano

Ryan Forrestel

Fair Apportionment of Infrastructure Revenue
2660 William Street, Cheektowaga, NY 14227
(716) 874-3435 Fax: (716) 875-4412



Fair Apportionment of Infrastructure Revenue
2660 William Street, Cheektowaga, NY 14227
(716) 874-3435 Fax: (716) 875-4412

February 21, 2023

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

Dear Secretary Buttigieg:

I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity, and decrease the need for repeated maintenance, which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,



Karen M. Utz
Regional Director, WNY Office



February 14, 2023

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

Dear Secretary Buttigieg:

I write in support of the New York State Thruway Authority's \$25 million U.S. Department of Transportation Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant application.

The RAISE Grant will supplement the cost of a project to rehabilitate the South Grand Island Bridges, located on the Niagara Thruway (I-190).

The Niagara Thruway is a 21-mile segment of interstate that connects the City of Buffalo (Erie County) to the City of Niagara Falls (Niagara County). This segment serves as an important corridor for commerce, connecting points between the United States and Canada, and local communities in between.

The project will address critically needed steel repairs to both South Grand Island structures and incorporate resiliency design improvements to ensure this essential transportation link can continue to serve as a vital emergency response link following a major seismic event. The project will include safety improvements to the deck of the southbound structure and will also improve community connectivity by rehabilitating the closed sidewalk on the southbound bridge for use by pedestrians and bicyclists. Additionally, the project will provide amenities between the bridge structures and existing trail systems to enhance connectivity, navigation, and comfort for non-motorized travel on the bridge.

Each year, there are 13 million trips taken on this section of I-190, which connects the Town of Tonawanda to Grand Island. The RAISE grant will help provide for the safe, efficient, and sustainable movement of people, goods, and services, while ensuring that surrounding communities, which includes Federally designated Areas of Persistent Poverty and Opportunity Zones, benefit from this project.

Rehabilitating the South Grand Island Bridges will provide a long-term improvement to this corridor, maintaining community connections across I-190 and enhancing the safety and reliability for travelers and commercial traffic, as well as quality of life for residents in this area. It will upgrade mobility and community connectivity and decrease the need for repeated maintenance -- which contributes to traffic disruptions, congestion, and air quality concerns.

Sincerely,

A handwritten signature in blue ink, reading "Anthony B. Spada, Jr.", is positioned above the typed name.

Anthony B. Spada, Jr.
President-Chief Executive Officer