U.S. Department of Transportation
Funding Opportunity for the Department of Transportation's
Competitive Highway Bridge Program for Fiscal Year 2018

Project Name	I-295 Bridges Project
State Priority Ranking	1 of 2
Previously Incurred Project Eligible Costs	$400,000
Future Eligible Project Costs	$32,500,000
Total Project Cost	$32,900,000
Program Grant Request Amount	$26,000,000
Federal (DOT) Funding including Program Funds Requested	$26,160,000

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I-295 Bridges Project

Project Summary

The Maine Department of Transportation (MaineDOT) is seeking $26 million from the U.S. Department of Transportation (USDOT) Competitive Highway Bridge Program (CHBP) for fiscal year 2018. The total cost of the project is $32.9 million. Of the four bridges identified in this application, $0.4 million has been previously expended for Preliminary Engineering and Right-of-Way acquisition for the two Freeport overpass bridges. The balance (future eligible project cost) for all four bridges is $32.5 million. This application assumes that $26 million (80 percent) CHBP Grant will be awarded to match existing $6.5 million (20 percent) non-federal to complete the required funding for this project.

The *I-295 Bridges Project* will:
a) Repair a network of four key highway bridges in Cumberland County, Maine that require near-term replacement, as they are all structurally deficient, and will be made safer for the long term.
b) Maintain access to basic life services at existing travel distances and times where alternatives are limited, costly, and put lives at risk.
c) Improve the corridor through which much of Maine's economic output travels to markets in New England and beyond and to ports in Portland, Boston, and New York.
d) Improve access for residents and travelers and continue MaineDOT's support the state's vibrant tourism economy that generates nearly $9.0 Billion into the economy.

The alternative is to incur significant maintenance costs to slow the deterioration but the risk for potential closure in the not too distant future is plausible. The impact of failures or closures on the residents and businesses in the region and the state is great. These bridges are clustered in an area of the state with limited reasonable alternative routing. With few alternative routes, the *one-way* detours in the event of a bridge closure would add significant expense to individuals and businesses, could put lives at risk for emergency services, and inflict substantial inconvenience at best. The displacement of the large volumes of vehicles from I-295 to single-lane highways would very likely exceed the carrying capacity of those highways and drop the Level of Service below acceptable levels. Replacing the bridges now, prior to load posting, failure or forced closure, will allow for their orderly and cost-efficient replacement. The Project will assure continuity of existing access to schools and basic emergency services for residents in this region, allow businesses in Maine to use these roads that connect to the Interstate, and allow recreational enthusiasts continued access to Maine's many outdoor activities that drive the tourism industry in the state.

MaineDOT is engaged in a continuing program of bridge improvements and replacements. However, additional funding sources are needed if MaineDOT is to continue to maintain the 2,458 state bridges, 80% of which are in rural areas, in a state of good repair.[1] MaineDOT is an accomplished and responsible recipient of past TIGER and FASTLANE grants and can be relied upon to fully fund and commence the project in advance of the 2021 obligation date, and to complete the project by the 2026 requirement. Replacing these four bridges will ensure this region maintains continuous access without inflicting undue burdens that this rural area simply cannot afford.

[1] USDOT FHWA National Bridge Inventory, https://www.fhwa.dot.gov/bridge/nbi/no10/condition17.cfm

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Standard Form 424, Application for Federal Assistance

Project Narrative

I. Project Description

A) PROJECT DETAILS AND BACKGROUND

There are 2,458 bridges over 20 feet in length in the National Bridge Inventory in Maine. Of these, 326 have been determined to be structurally deficient, and thus have a significant defect. In 2017, Maine ranked 10th nationally in terms of percentage of total bridges that are structurally deficient, some 13%.[2] All four key bridges that make up the Project are each structurally deficient. They are:

- Merrill Road Interchange Bridge on Merrill (Desert) Road over the I-295 in Freeport,
- Approach Road Interchange on Routes 125 & 136 over the I-295 in Freeport
- I-295 SB/ US 1 in Yarmouth
- I-295 NB/ US 1 in Yarmouth.

The four bridges included in this Project are all within Cumberland County and serve as mainline or as overpass structures along the I-295 corridor between Portland and Brunswick. One of the challenges in Cumberland County and York County is the expected growth in travel along the I-295 corridor. The Greater Portland area is the economic center of Maine. It is a vibrant city with quality educational facilities, superb medical facilities, and job magnate for much of southern

[2] Supra note 1, USDOT FHWA National Bridge Inventory

Maine. In addition to the year-round attributes, Portland is a tourist destination for cruise ships, foodies, brew pub aficionados, and shopping enthusiasts. All these activities that make this a very attractive place to live and work as well as visit, adds substantial traffic growth to the interstate and non-interstate highway system. The ever-increasing traffic volumes strains the capacity of the highway, creates congestion, and reduces reliability and safety.

The strain on capacity caused by increased population growth is expected to be felt most heavily in the southern part of I-295, particularly around the Portland Peninsula, where existing peak-hour volumes are highest and push up against existing capacity, creating congestion and reduced travel time reliability. This condition can be expected to grow and intensify as traffic volumes increase. Increasing the capacity of I-295 is possible in locations where space in the median exists to construct an added through lane in each direction. However, new mainline lane capacity is costly and will not address the entire capacity need.

With growth in traffic volume in the southern part of I-295, correlated closely to the expected growth from local development, new interchange capacity will also be needed. Increasing interchange capacity may be more difficult to achieve than new mainline capacity since increased interchange capacity depends on increased intersection capacity on arterials at and near the interchanges. Further adding to the challenge of increasing intersection capacity is the desire for arterials to accommodate all modes of urban transportation. Lastly, another challenge is the provision of added parking capacity for residents, commuters, and visitors. Adequate vehicular capacity to accommodate expected growth requires mainline, interchange, arterial, and parking capacity.

The four bridges detailed in this project will not mitigate or reduce the problems associated with increased growth, but the bridge designs are adequate to handle anticipated increases in traffic into the foreseeable future. However, failure to re-build these bridges could have a profound negative affect on capacity, especially if they have reduced weight limits or closure. In a sense, the avoidance of reduced capacity on these bridges will contribute in a positive way to diminishing some of the impacts from increased regional growth.

The Merrill Road Interchange Bridge, constructed in 1957, is a two-span steel girder bridge with a concrete bridge deck. The bridge length 151 feet and the curb-to-curb width is 39 feet. The deck is in poor condition. The steel superstructure has paint loss, scaling rust and minor section loss. The superstructure is in satisfactory condition. The concrete substructure has cracking, delamination and staining at both abutments, the pier caps and columns. The substructure is in poor condition.

Merrill Road Interchange Bridge will be replaced with a two-span bridge, similar to the existing bridge built in 1957. The span lengths will be configured to accommodate a future I-295 AADT. The proposed bridge typical section will include a wider bridge when compared to the existing bridge to increase shoulder widths and will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295.

The total project cost for the replacement of Merrill Road Interchange Bridge is $5,700,000.

The Approach Road Interchange Bridge, constructed in 1957, is a two-span rolled steel beam bridge with a concrete deck and bituminous wearing surface. The bridge length is 144 feet and the curb-to-curb width is 42.5 feet. The deck is in poor condition. The steel superstructure has paint failure, scaling rust and minor section loss. The superstructure is in satisfactory condition. The concrete substructure has cracking and spalling at the southwesterly bridge seat. The pier was rehabilitated in 2000, but now has extensive fine cracking with staining and delamination. The substructure is in satisfactory condition.

The Approach Road Interchange Bridge will be replaced with a two-span bridge, similar to the existing bridge built in 1957. The span lengths will be configured to accommodate a future AADT. The proposed bridge typical section will include a wider bridge when compared to the existing bridge to increase shoulder widths and will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

The total project cost for the replacement of Approach Road Interchange Bridge is $6,400,000.

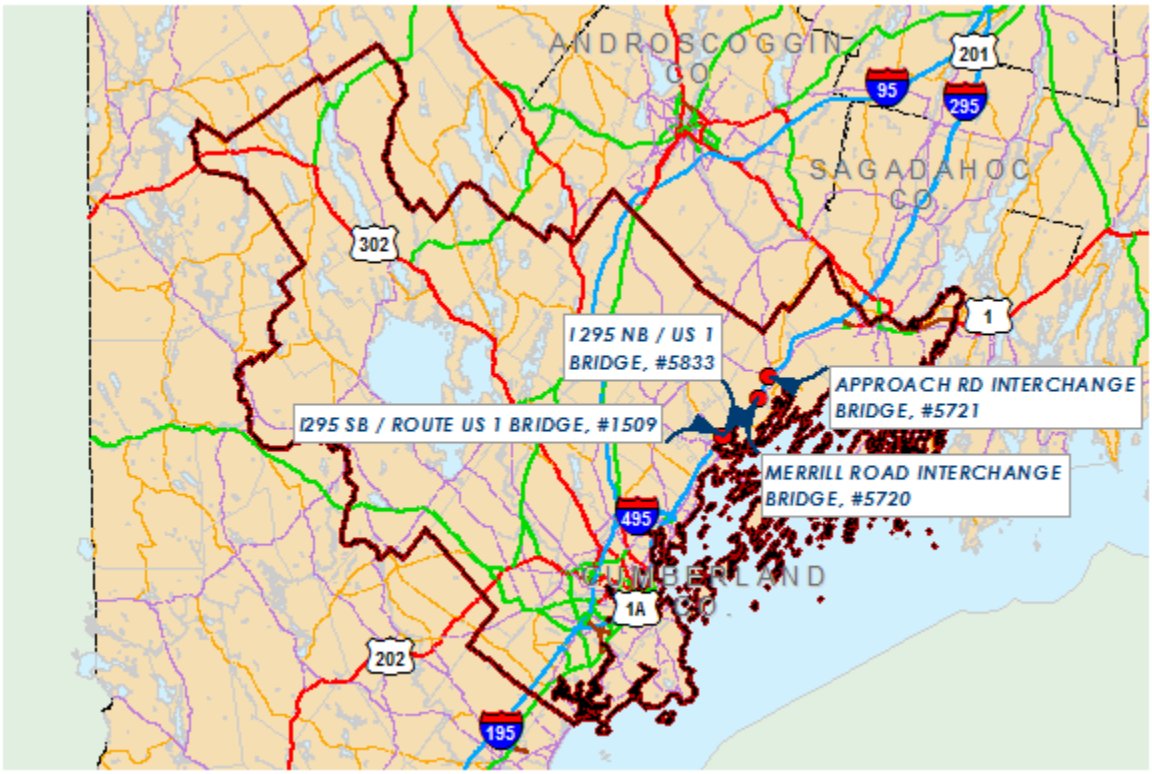
The I-295 SB Bridge/ US 1 & I-295 NB Bridge/ US 1, constructed in 1959, are three-span steel girder bridges with a concrete bridge decks. The deck on the SB bridge is in satisfactory condition and the deck on the NB bridge is in fair condition. The superstructures on both bridges are in fair condition and the substructures on both bridges are in poor condition.

The I-295 SB Bridge/ US 1 & I-295 NB Bridge/ US 1 will be replaced with three-span bridges, similar to the existing bridges built in 1961. The span lengths will be configured to accommodate future traffic/mobility needs for Route 1, with outside spans at 80 percent of the center span for structural efficiency. The proposed bridge typical section will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295. Substructure elements will consist of reinforced concrete abutments and piers, most likely supported on piles. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

The total project cost for the replacement of I-295 SB Bridge/ US 1 & I-295 NB Bridge/ US 1 Bridge is $10,400,000 each, or $20,800,000.

The total cost for replacement of the four bundled bridges with approach work is estimated at $32.9 million. Less $0.4 million previously incurred on Preliminary Engineering and Right-of-Way costs; the remaining costs are estimated at $32.5 million. This application request is for

$26 million (80 percent) in CHBP Grant funds to supplement the $6.5 million (20 percent) in existing non-federal funds, in order to fully fund the replacement of these bridges.



Quantitative Facts[3]

Project Name: I-295 Bridges Project

- This project will replace four highway bridges (built in 1957-1959) with modern bridges designed for 100-year lives and with modern safety features, preventing the safety and economic impact of their outages.
- The Project has a total Net Present Value (NPV) benefit of at least $698 million and a benefit-cost ratio of at least 31.4 to 1
- The Project is regional in scope and is located in a rural region of the country.
- The bridges in the Project are located in Cumberland County.
- The Project is located in Maine Congressional District 1 (Representative Chellie Pingree). The state is represented by U.S. Senators Susan Collins and Angus King.[4]
- Total Cost of the Project: $32,900,000
- Total amount of CHBP FY 2018 funds requested: $26 million (80 percent of future eligible costs of the project). A match has been committed by the Maine Department of Transportation in the amount of $6.5 million (20 percent).[5]

[3] *See* Appendix A, Benefit-Cost Analysis, for an explanation of the statistics cited below.
[4] *See* Appendix E, Support Letters.
[5] *See* Appendix F, Match Letter.

- The Project's geospatial data can be found in a table in Project Location.
- The BCA (Benefit to Cost Analysis) conservatively estimates that a no-build scenario will lead to some manner of shut down for an average of two weeks per year and assumes that the detour miles occur during that time.

B. Current and Future Conditions of the bridges

Built in the 1950s, these bridges are at the end of their useful lives despite undergoing life-extending improvements in the past. They are presently structurally deficient. In each case, access across the bridges during construction will be maintained to avoid the reroute pain that the Project will be preventing. If the Project is not completed, there is the real risk of an eventual outage which would force the reroutes described below.

Details on the current bridges, the replacement bridges and the impact of a detour if the bridges were closed for each bridge in the Project follow:

1. Merrill Road Interchange Bridge – Merrill (Desert Road) over I-295

Bridge	Year Built	Remaining Service Life (Yrs)	Bridge Length (Feet)	Bridge Type	Challenge
Merrill Road Interchange	1957	5-10	151	Two-Span Steel Beam	Structurally Deficient

a) Current State

The Merrill Road Interchange Bridge, constructed in 1957, is a two-span steel girder bridge with a concrete bridge deck. The bridge length 151 feet and the curb-to-curb width is 39 feet. The bituminous wearing surface has extensive reflective cracking and rutting. There are two areas on the underside of the deck over travel lanes that have been chipped out. Other areas of the deck and soffit exhibit rust staining and delamination. The deck is in poor condition. The steel superstructure has paint loss, scaling rust and minor section loss. The superstructure is in satisfactory condition. The concrete substructure has cracking, delamination and staining at both abutments, the pier caps and columns. There is a ¼ inch crack along the full height of the south end pier column. The substructure is in poor condition.

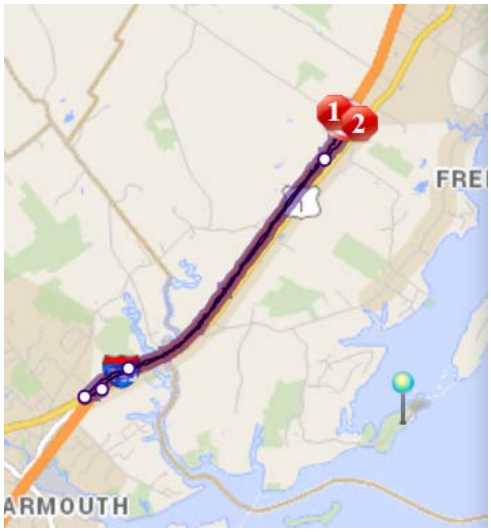
b) Description of Replacement Bridge

The Merrill Road Interchange Bridge (Desert Road) over I-295 mainline in Freeport will be replaced with a two-span bridge, similar to the existing bridge built in 1957. The span lengths will be configured to accommodate a future I-295 AADT. The proposed bridge typical section will include a wider bridge when compared to the existing bridge to increase shoulder widths and will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295. Substructure elements will consist of reinforced concrete abutments and piers, most likely supported on piles. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

Corrosion-resistant materials will be utilized for superstructure elements and for substructure elements with increased exposure to corrosion. The proposed bridge type will likely be a steel girder bridge with a concrete deck and three-bar steel bridge rail. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs.

c) Impact of Closure Detour – 5 one-way miles

If the Project is not completed and there is a closure, the detour for crossing the Merrill Road Interchange Bridge is **5** one-way miles for 9,408 vehicles on an average day. This is the shortest route not employing local roads. The route has a daily user cost of $54,608.[6]



Bridge	Functional Classification	AADT	Heavy Truck AADT
Merrill Road Interchange	Rural - Major Collector	9,408	376

AADT - Annual Average Daily Traffic

[6] *See* Appendix A, Benefit-Cost Analysis, for user cost details on all bridges.

2. Approach Road Interchange Bridge – Routes 125 & 136 over I-295

Bridge	Year Built	Remaining Service Life (Yrs)	Bridge Length (Feet)	Bridge Type	Challenge
Approach Road Interchange	1957	5-10	144	Two-Span Steel Beam	Structurally Deficient

a) Current State

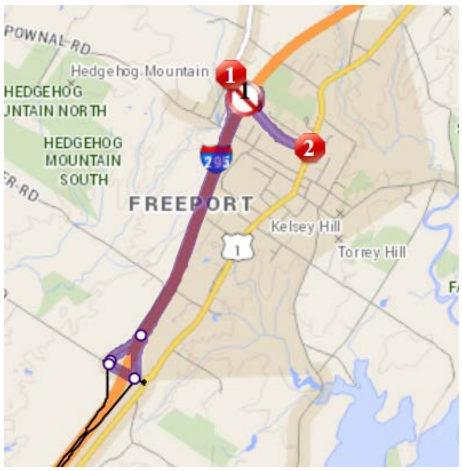
The Approach Road Interchange Bridge, constructed in 1957, is a two-span rolled steel beam bridge with a concrete deck and bituminous wearing surface. The bridge length is 144 feet and the curb-to-curb width is 42.5 feet. The bituminous wearing surface has cracking and multiple patches. The underside of the deck has several areas that have been chipped out. The deck is in poor condition. The steel superstructure has paint failure, scaling rust and minor section loss. The superstructure is in satisfactory condition. The concrete substructure has cracking and spalling at the southwesterly bridge seat. The pier was rehabilitated in 2000, but now has extensive fine cracking with staining and delamination. The substructure is in satisfactory condition.

b) Description of Replacement Bridge –

The Approach Road Bridge (#5721) over I-295 mainline in Freeport will be replaced with a two-span bridge, similar to the existing bridge built in 1957. The span lengths will be configured to accommodate a future I-295 AADT. The proposed bridge typical section will include a wider bridge when compared to the existing bridge to increase shoulder widths and will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295. Substructure elements will consist of reinforced concrete abutments and piers, most likely supported on piles. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

c) Impact of Closure Detour – 1.5 one-way miles

If the Project is not completed and there is a closure, the detour for crossing the Approach Road Interchange Bridge is **1.5** one-way miles for 16,878 vehicles on an average day. This is the shortest route not employing local roads. The route has a daily user cost of $26,795.[7]



Bridge	Functional Classification	AADT	Heavy Truck AADT
Approach Road Interchange	Rural - Major Collector	16,878	675

AADT - Annual Average Daily Traffic

3. I-295 SB and I-295 NB over US Route 1

Bridge	Year Built	Remaining Service Life (Yrs)	Bridge Length (Feet)	Bridge Type	Challenge
I-295SB/ US 1	1959	5-10	279	Three-Span Steel Girder	Structurally Deficient
I-295NB/ US 1	1959	5-10	279	Three-Span Steel Girder	Structurally Deficient

a) Current State

The I-295 SB/ US 1 Bridge, constructed in 1959, is a three-span steel girder bridge with a concrete bridge deck. The bridge length 279 feet and the curb-to-curb width is 30 feet. The bituminous wearing surface is in satisfactory condition with a small pothole over the south abutment. There are a few scattered hairline cracks with efflorescence throughout the deck. There are spalled areas and delaminated concrete with exposed rebar adjacent to the bridge joints over the piers. The deck is in satisfactory condition. The steel girders have freckled rust along the bottom flanges and at beam ends. Some of the bridge bearings have moderate to heavy surface rust with minor to moderate section loss. The superstructure is in fair condition. The columns and horizontal concrete portions of the piers have cracking, rust staining, delamination and spalls with exposed rebar. The abutments have scattered hairline cracking and rust staining. The substructure is in poor condition.

The I-295 NB/ US 1 Bridge, constructed in 1959, is a three-span steel girder bridge with a concrete bridge deck. The bituminous wearing surface is in satisfactory condition. There are a few scattered hairline cracks with efflorescence throughout the deck. There are spalled areas and delaminated concrete with exposed rebar adjacent to the bridge joints over the piers. The deck is

[7] User cost details for all bridges can be found at **http://www.mainedot.gov/mdot/grants/**

in fair condition. The steel girders have freckled rust along the bottom flanges and at beam ends. The bearings over the piers are all in poor condition, with complete paint loss, and moderate to heavy section loss. The superstructure is in fair condition. The columns and horizontal concrete portions of the piers have cracking, rust staining, delamination and spalls with exposed rebar. The abutments have scattered hairline cracking and rust staining. The substructure is in poor condition.

b) Description of Replacement Bridge –

The I-295 SB/ US 1 Bridge and the I-295 NB/US 1 Bridge over Route 1in Yarmouth will be replaced with three-span bridges, similar to the existing bridges built in 1959. The span lengths will be configured to accommodate future traffic/mobility needs for Route 1, with outside spans at 80 percent of the center span for structural efficiency. The proposed bridge typical section will more than likely be constructed of steel girders supporting a composite reinforced concrete deck. A steel girder bridge, properly detailed with corrosion-resistant materials will have a long service life with low maintenance costs. The superstructure depth and bridge profile will be configured to maintain or improve the existing vertical clearance over I-295. Substructure elements will consist of reinforced concrete abutments and piers, most likely supported on piles. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

c) Impact of Closure Detour

Bridge	Functional Classification	AADT	Heavy Truck AADT
I-295SB/ US 1	Principal Arterial - Interstate	26,355	2,372
I-295NB/ US 1	Principal Arterial - Interstate	25,517	2,297

AADT - Annual Average Daily Traffic

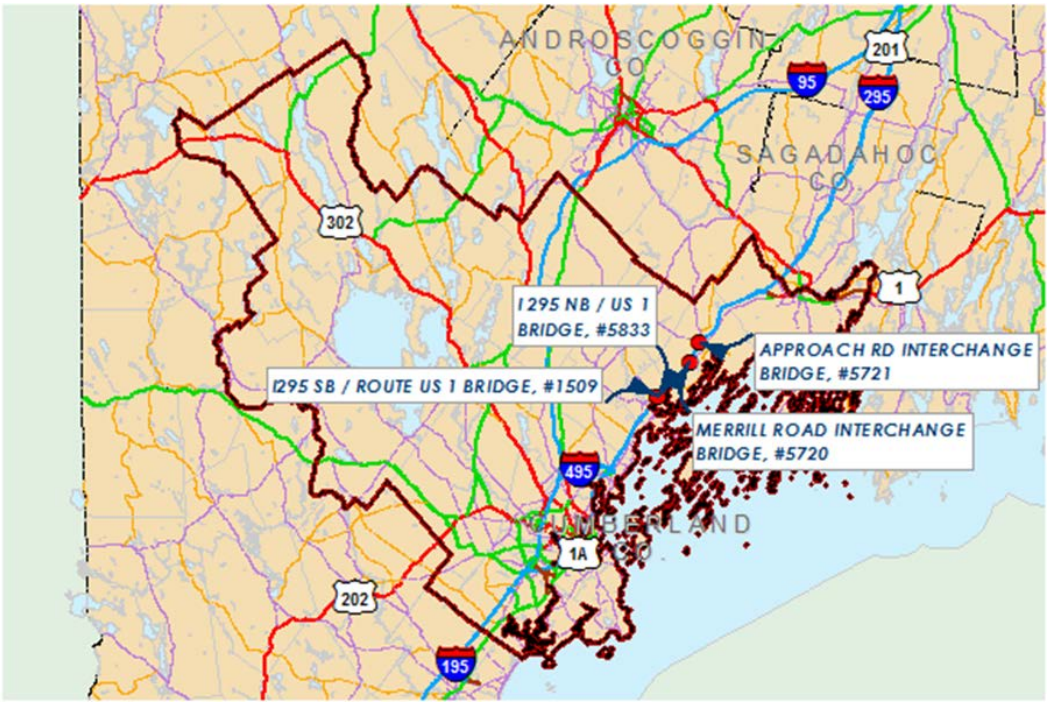
The closure of I-295 SB/US 1 (#1509) and I-295 NB/US 1 (#5833) at Exit 17 in Yarmouth would have very substantial impacts to Interstate 295 users. It would be a combination of long-distance detour impacts, localized detour impacts, and intersection delays. For long-distance travelers, who normally use I-295 to travel between Gardiner (and points north) and Portland (and points south), the most feasible detour would be to use I-95 (the Maine Turnpike). This alternate route is approximately 5 miles and 3 minutes longer than the I-295 route. Out of all the AADT normally on I-295, approximately 7100 northbound and 7100 southbound trips would be redirected to I-95 on an average day. This is about 30% of the 48,000 AADT on the Yarmouth bridges. These redirected travelers would experience about 28,000,000 extra vehicle-miles traveled and more than 250,000 extra vehicle-hours traveled on an annual basis. For other users of the Yarmouth bridges, the most feasible route is to use the off- and on-ramps at Exit 17. This would mean slowing down I-295 travelers and directing them through the two at-grade intersections with US Route 1. Even under the assumption that two thru lanes would be provided on each of the ramps for I-295 traffic, substantial delays would be experienced by I-295 thru traffic and the current users of the two intersections. Furthermore, the capacity of the

intersections, even with traffic redirected to I-95 and enhanced ramps and intersections, would be inadequate to accommodate the remaining traffic, especially in the warmer months of the tourist season (June through September). This condition would result in routine backups that could extend for miles along I-295. The total annual user impact to vehicles traveling through the at-grade intersections at Exit 17 would amount to more than 660,000 vehicle-hours. Overall, the travel impact of closing the bridges would be over 28,000,000 vehicle-miles and 900,000 vehicle-hours annually.

The detour route for I-295 SB and NB has a daily user cost of $37,019 and $50,286 respectively.

II. Project Location

Location - Maps, geo-spatial information[8]



The bridges in the Project are in Cumberland County in Maine's 1st Congressional District. They are located in the towns of Yarmouth and Freeport.

Town	Bridge	Bridge #	Longitude	Latitude	County
Freeport	Merrill Road Interchange	5720	43.84327	-70.12083	Cumberland
Freeport	Approach Road Interchange	5721	43.86434	-70.10789	Cumberland
Yarmouth	I-295 SB/ US 1	1509	43.80782	-70.16673	Cumberland
Yarmouth	I - 295 NB/ US 1	5833	43.80807	-70.16618	Cumberland

[8] *See* Appendix B, Maps with Project Locations

The percentage of structurally deficient bridges in the U.S. fell from 2001 to 2013 while Maine's percentage of bridges in that category remained the same.[9] Maine had 326 structurally deficient bridges in 2017 and ranked 10th in the nation in this category. Of the total number of bridges statewide, 13 percent of them were classified as structurally deficient.[10] Cumberland County, home to all four of these bridges, ranks 3rd in the state for total number of structurally deficient bridges. These bridges were selected as one Project for this grant application due to their close proximity to one another, their access to the region and their poor ranking. The bridges are within 3 miles of one another, making them a concentrated safety concern for Cumberland County. The bridges are a vital connection to the region's employment, emergency services, access to healthcare, tourism and recreation. The greater Portland area, as well as the rest of the state, relies heavily on a well-functioning transportation system to maintain its economic prosperity. The region simply cannot afford the financial impacts and the transportation problems that would occur if any of these bridges were taken out of service. Businesses depending on seamless travel to and from their respective businesses would bear the brunt of the economic impact with customers, residents and tourists, avoiding the hassle of traffic congestion, added drive distances and time.

III. Project Parties

MaineDOT – Funding $6,500,000

The Maine Department of Transportation (MaineDOT) is a cabinet-level state agency with primary responsibility for statewide transportation by all modes of travel. MaineDOT employs approximately 1,900 people and expends or disburses more than $600 million per year, including federal, state and local funds. The primary source of transportation funding in Maine is gas tax revenue, which by statute, can be used for highways and bridges only. The funding source for the Project will be State General Obligation Bonds. In Maine that comes from state bonds approved by the legislature and taxpayers. Due to its significant economic and transportation impact on the entire state and region, the Project has been prioritized by MaineDOT.

MaineDOT will continue to consult with stakeholders during the development of this project.

Federal Highway Administration – Maine Division
Maine Department of Environmental Protection
Maine Department of Inland Fisheries & Wildlife
Maine Historic Preservation Office
U.S. Fish and Wildlife Service
Army Corps of Engineers
Town of Yarmouth
Town of Freeport

[9] http://maine.gov/mdot/pdf/kobs2014.pdf, page 11
[10] American Road & Transportation Builders Association 2016 Annual Bridge Report, Source: U.S. Department of Transportation Federal Highway Administration National Highway Bridge Inventory, 2015 data

IV. Grant Fund Sources/Uses

Preliminary Engineering and Right-of-Way acquisition has previously been incurred for the Merrill Road Interchange Bridge and the Approach Road Interchange Bridge in Freeport in the amount of $0.4 million. The balance (future eligible project cost) for all four bridges is $32.5 million. This application assumes that $26.0 million (80 percent) CHBP Grant will be awarded to match existing $6.5 million (20 percent) non-federal to complete the required funding for this project, as follows:

	Previously Incurred	MaineDOT	Grant	Total
Preliminary Engineering	$370,000	$468,000	$1,872,000	$2,710,000
Right of Way	$30,000	$74,000	$296,000	$400,000
Construction		$5,518,000	$22,072,000	$27,590,000
Construction Engineering (CE)		$440,000	$1,760,000	$2,200,000
Total	$400,000	$6,500,000	$26,000,000	$32,900,000
% of Future Eligible Project Costs		20%	80%	

The Cost Estimates for the individual bridges are provided in Appendix C.

State Matching Funds

Funding for MaineDOT's portion of the project will come from the State's General Obligation Bond proceeds. MaineDOT is well equipped to manage and administer this grant, having received and managed numerous USDOT grants for highway, railroad and transit programs including previous TIGER and FASTLANE awards. Those awards include the Kennebec Bridge Replacement (Richmond-Dresden), Sarah Mildred Long Bridge Replacement (Kittery-Portsmouth), and the Penquis Region Bridges project.

A match commitment letter from the MaineDOT Commissioner is attached as Appendix F.

V. Selection Criteria

The Project is important because it meets all of the merit criteria, both primary and secondary. The bridges are each structurally deficient, functionally obsolete or fracture critical or all three, which combined with the potential for increased emergency response time and additional road transit time in the event of an outage, is an important *safety* issue. The bridges range in age from 59 to 61 years since they were originally built, and all show visible signs of that age. The Project would put all into a *state of good repair*. With few alternative routes, and none which are reasonable and practical, an outage of each of the bridges would impact the *economy* of the region, the ability to *compete* on a level playing field and the economic fortunes of the residents. Outdoor recreation and the environment play a vital role to Maine and the tourist industry. As such, the project will be constructed in an *environmentally sustainable* way reflective of the

unique and recent agreement MaineDOT has with FHWA for NEPA. Any outage would greatly lessen *quality of life* in the region causing wasteful time and resources versus current routes. Construction of the Project will use *innovative* processes and materials for completion. The Project has a broad base of support from numerous stakeholders, enabling MaineDOT to once again be a great *partner* with USDOT for a significant federal grant.

1) Innovations

The Project bridges will be designed for 100-year lives. To achieve that, MaineDOT will utilize a variety of innovative techniques in construction:

i. Use of corrosion resistant reinforcing steel for bridge components – Stainless steel concrete reinforcing will be used for all superstructure elements, including abutment backwalls, and will be considered for substructure elements, especially piers. Consideration will be given to the use of large diameter stainless steel welded bar grids to accelerate the process of placing concrete reinforcing for deck construction, potentially saving several weeks of construction time.
ii. Use of high performance concrete – Low permeability concrete will be used in the bridge through performance-based specifications. MaineDOT has used performance-based specifications for concrete since the late 1990s.
iii. Use of good detailing practices including:
    1. Use of integral abutments or semi-integral abutments to eliminate the use of joints and bearings.
    2. Using the minimum number of deck drains possible.
    3. Using fiberglass reinforced polymer drains
    4. Increased reinforcing bar cover, particularly on the bottom face of the deck
iv. Accelerated Bridge Construction (ABC)
    a. Strategic use of precast and cast-in-place concrete elements; precast where impacts to traffic are greater (e.g. pier)
    b. Particularly on the Yarmouth bridges carrying I-295, investigate weekend closure alternatives for the superstructure e.g. slide-in or SPMT move (self-propelled. modular transporter)

2) Safety

All four bundled bridges are structurally deficient, as indicated by their most recent evaluation scoring. The safety and well-being of area residents could be jeopardized in the event of bridge failure. With the continuing in traffic growth in recent years, the capacities of portions of the I-295 corridor are being severely tested, resulting in frequent traffic congestion and delay. While traffic volumes have grown, the number of crashes in the corridor has grown faster. Crashes and minor incidents anywhere along the highway create traffic hazards that temporarily reduce highway capacity and produce massive traffic backups.

Emergency response time would increase as time and distance of travel for emergency responders would rise. Replacing the four bridges in this grant application will address safety issues on the highway system. Any increase in mileage will increase the likelihood of negative

safety events. Using these detour miles and conservatively estimating that a no-build scenario will lead to some manner of shutdown for an average of two weeks per year and with these mileages and time frames, the Project will result in an overall safety savings of $34,670,959 over the course of 30 years on a 7 percent NPV basis.

In Maine, the number of fatal crashes per 100 million vehicle miles traveled is 1.07. Using this data, the dollar value of lives saved by this project over 30 years is expected to be more than $32 million. Looking at each bridge independently, this project will result in a cost savings of $10,319,942 for Merrill Road; $5,522,692 for Approach Road; $7,442,451 for I-295 SB/ US 1; and $8,930,941 for I-295 NB/ US 1. A 2018 FMCSA study stated that the number of large trucks involved in crashes that resulted in injuries per 100 million truck miles traveled was 50.3. To be conservative, this application assumes that all the injuries would be minor (i.e. Maximum Abbreviated Injury Scale Level 1). The value of preventing injuries is $297,185 over the course of 30 years. Looking at each bridge independently, this project will result in a cost savings of $58,216 for Merrill Road; $31,149 for Approach Road; $94,463 for I-295 SB/ US 1; and $113,356 for I-295 NB/ US 1. The economic impact of these crashes is $4,327 per accident, which accounts for property damage only. The benefit of eliminating these crash impacts over the course of 30 years has a value of $2,157,749. Looking at each bridge independently, this project will result in a cost savings of $691,204 for Merrill Road; $369,896 for Approach Road; $498,477 for I-295 SB/ US 1; and $598,172 for I-295 NB/ US 1.

VI. Support for Economic Vitality

1) Economic Competitiveness

A. The Goods Economy

The bridges are an example of infrastructure supporting commerce and economic growth in a state that is economically challenged. With few alternate means of transportation, existing roads are key to the economic and social livelihood of the area. A network of paved and unpaved rural local roads provides the foundation for residents, raw materials, goods and services to connect to the economy outside their area. In all areas of the state, they afford the movement of the timber and forest products to numerous mills scattered across the state. These roads also provide a quiet, meaningful quality of life for those living along them. Rural local roads feed into rural minor collector roads. These roads feed and work in concert with the rural major collector roads to provide a vital link between rural areas and larger road arteries. Both of the Project's Freeport overpass bridges encompass rural major collectors. Traffic gathered at these points can then access the largest rural artery of all, the rural principal arterial – interstate highways. Interstate 95 and I-295 act as primary arteries through Maine.

Freeport is known for its numerous outlet stores, L.L. Bean, Wolfe's Neck State Park, and the Desert of Maine. The town provides spaces open to the public that provide opportunities to hike, swim, bike, camp, skate, snowmobile, picnic, and boat through the provision of public water access points. L.L. Bean is Freeport's principle business, and a worldwide company with annual sales of over a billion dollars. L.L. Bean's expanded distribution center located in Freeport is a million square-foot state-of-the-art facility. It processes an average of 45,000 customer orders a day and

can store over 10 million units of merchandise. Over 14.5 million packages were shipped in 2016. In 2016, annual net sales were $1.6 billion. Year-round employee count was over 5,100. During the winter holidays, with the addition of over 4,000 seasonal employees, the workforce grew to nearly 10,000. For workers in the I-295 region, a rerouted drive to places of employment would mean increased travel costs: fuel cost, time spent on the drive, added wear-and-tear to a vehicle, and added traffic on alternate-route roads and bridges.

The entire business district of Freeport has more than 100 shops with national and international reputations. Cruise ship travelers landing in Portland list Freeport as a must-see-while-in-Maine destination. In market research data from the Maine Office of Tourism, shopping is consistently the number one reason for making day trips to Maine from New England and Canada. As a destination for shopping, Freeport is at the top of the list for places to go.

The entire coastal region has a healthy, vibrant lobster industry. All the product is transported over the highway system with I-295 being a major route to Portland and onto Boston, New York, and the eastern seaboard.

Not as prevalent as in the more forested parts of the state, timber growth and forest management play an important role in the economy, especially for small farm and woodlot owners, who derive earnings and income from sustainable forest tracts.

B. The Service Economy

Travel and tourism, important to any state rich in natural beauty and outdoor recreational opportunities, is a key driver of the broader service economy in Maine, but that mission requires solid roads and bridges that make getting there safe, convenient and affordable. The four bridges in the Project provide access to recreational areas key to a growing economy in the state. Maine's roads and bridges provide access for the tourism industry, which had 36.7 visitors in 2016 who generated nearly $8.9 billion in spending.[11]

Northern regions in Maine are known for outstanding opportunities to hike, canoe, hunt, fish, snowmobile, snowshoe and cross-country ski. A large collection of lake cottages and a wide range of hotels mean that tourists need these bridges to access this region and to flourish. The areas along the Maine Coast have historically and continue to be the beneficiaries of the bulk of the tourist visitation and spending.

C. Operating Cost Savings

Costs to operate vehicles according to the BCA Guidance for Discretionary Grant Programs includes costs such as fuel prices, maintenance, tires and depreciation. Using the BCA Guidance suggested values, this project will result in operating costs savings of $126.5 million over the course of 30 years. Looking at each bridge independently, this project will result in a cost savings of $41,231,543 for Merrill Road; $22,064,782 for Approach Road; $31,582,596 for I-

[11] https://digitalmaine.com/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1168&context=decd_docs

295 SB/ US 1; and $31,582,596 for I-295 NB/ US 1. These costs savings are significant, particularly for this region of Maine.

A key goal of the Trump Administration is to reduce America's dependence on foreign oil, which will serve the purpose of increasing the country's energy security. The project moves the United States closer to seeing a real reduction in the nation's dependency on foreign oil by reducing unnecessary fuel use due to having to detour and intersection delays.

Maintenance savings are a critical component of any highway infrastructure project. Maintenance costs are constant and make it difficult for the state to budget for large capital projects. This project will save Maine $4,132,219 over the course of 30 years. Looking at each bridge independently, this project will result in a cost savings of $909,736 for Merrill Road; $1,003,194 for Approach Road; $1,109,645 for I-295 SB/ US 1; and $1,109,645 for I-295 NB/ US 1.

The elimination of truck-miles from the highway decreases travel time for the average highway user thus improving mobility. The travel time that is critical to this project is avoiding the detour time, the capacity queing time, slower thru traffic and intersection delays for passenger and truck users of the bridges. Overall, the project will save $229.4 million in travel time costs over the course of 30 years. Looking at each bridge independently, this project will result in a cost savings of $80,844,077 for Merrill Road; $37,834,195 for Approach Road; $44,825,060 for I-295 SB/ US 1; and $65,893,182 for I-295 NB/ US 1.

2) Environmental Sustainability

MaineDOT recognizes that assuring sustainability of habitats, ecosystems and transportation infrastructure can occur in concert rather than in conflict. Toward that end, MaineDOT endeavors to exercise reasonable stewardship over both natural resources and transportation infrastructure through its commitment to addressing aquatic organisms, wildlife habitat and fish passage in cooperation with natural resource agencies, while weighing all aspects of a proposed project. An agreement between the Federal Highway Administration, Maine Division and the Maine Department of Transportation authorizes MaineDOT to determine on behalf of the FHWA whether a project qualifies for a NEPA Categorical Exclusion (CE) if the project does not have a significant effect on the human environment.[12] MaineDOT and various other state and federal departments have executed agreements to expeditiously but thoroughly review environmental impacts from projects *(and they are listed in Project Readiness.)*

Pollutants of Concern

Most heavy trucks are powered by diesel engines, which are major sources of emissions of nitrogen oxides (NO_x), sulfur dioxide and particulate matter (PM). NO_x reacts with volatile organic compounds to form ground-level ozone, commonly known as smog. Diesel exhaust is of specific concern because it is likely to be carcinogenic to humans by inhalation and may

[12] Programmatic Agreement between the FHWA, Maine Division and the MaineDOT Regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Project

additionally cause non-cancer respiratory effects.[13] The avoided net costs of emissions of sulfur oxide and volatile organic compounds over the 30-year life of the project are projected to be approximately $11 million. Sulfur oxide is emitting at a rate of 0.097 g/mile has a social cost of $44,373 per mile attached to it. Volatile organic compounds emit at a rate of 0.445 g/mile with a corresponding value of $1,905 per mile. Likewise, the avoided costs of emissions of nitrogen oxide (NOx) over the course of the 30-year life of the project are projected to be approximately $152 million. Trucks produce approximately 9.191 g/mile of NOx which has an assigned social cost of $7,508 per mile. And the avoided costs of particulate matter (PM) emissions are valued at approximatley $162 million. Particulate Matter is emitting at a rate of 0.215 g/mile and has a social cost of $343,442 per mile attached to it. The overall net cost associated with these emissions over the 30-year project period is over $325 million.

Quality of Life

A region's quality of life is enhanced when residents have mobility and ease of passage. Access to schools, shopping and the area's robust outdoor recreation activities requires dependable roads and bridges, especially during the region's harsh winters. A rural school bus network must work in concert with the educational system. Access to schools via direct bus routes prevents delay.

The delays from high volumes and frequent incidents result in unreliable travel times. The two Project bridges in Yarmouth carry I-295 traffic over US Route 1. Route 1, which carries 60,000 vehicles per day, provides access to Yarmouth neighborhoods and commercial corridors. This route experiences severe traffic congestion during morning and afternoon commutes. Interchange improvements along the carried roadway will include updated approach configurations to improve safety and mobility for pedestrians and bicyclist, as well as striping and signage to designate multiuse corridors.

Less time spent commuting daily adds to one's quality of life. For residents in the region, reroutes in the event the bridges are closed become costly. Also impacting quality of life is the noise pollution that would result to the region from the additional traffic miles that come from detours in the event of bridge closures. The noise pollution from cars and heavy trucks and tractor-trailers can be considerable.

VII. Life-Cycle Costs and State of Good Repair

As previously mentioned, the bridges in the Project are each structurally deficient. The proposed design of the new bridges will eliminate vulnerabilities in the features of the current bridges, which were completed in the 1950s, prior to the adoption of better, safer and more efficient bridge design elements. The new bridges are designed for a 100-year lifespan. Meanwhile, if not replaced, the remaining service life of the three bridges, as well as the cost to maintain the bridges during that timeframe, follows:

	Merrill Road	Approach Road	I-295 SB Bridge/ US 1	I-295 NB Bridge/ US 1
Remaining Service Life (Yrs)	**5-10**	**5-10**	**5-10**	**5-10**
Joint Replacement	-	-	$50,000	$50,000
Superstructure Rehab	-	-	-	-
Deck Rehab	$500,000	$550,000	-	-
Substructure Rehab	$650,000	$700,000	$1,000,000	$1,000,000
Wearing Surface Mill & Fill			$400,000	$400,000
ONE-TIME TOTAL:	**$1,150,000**	**$1,250,000**	**$1,450,000**	**$1,450,000**
Annual:				
Deck Patching	$5,000	$5,000	$5,000	$5,000
Bridge Inspections	$1,500	$1,500	$1,500	$1,500
Bridge Washing	$500	$500	$500	$500

Concrete deterioration, spalling and collision damage shown in the following photos will be eliminated with the replacement of new modern bridges.

Merrill Road Bridge – South cracking Column

Approach Road Interchange Bridge – Over SB Lane

I-295 SB /Route 1 Bridge – South Pier

I-295 NB /Route 1 Bridge – South Pier

The new bridges will be safer, more accommodating to users and employ innovative features in their construction.

1) Anticipated Savings from Bundling

Having one contractor for the project of four bridge replacements will simplify and streamline traffic control and scheduling. There will be many opportunities to effectively coordinate manpower, equipment, and materials to reduce costs. Many Preliminary Engineering activities can be made more efficient by bundling. Design team meetings, utility coordination, environmental permitting, right of way acquisition, to name a few can be combined among the bundled projects to reduce engineering costs. Bundling projects of reasonably similar scopes in remote locations significantly reduces the cost of mobilizing large construction equipment as this cost can be spread over multiple projects. Significant savings can also be realized on overhead staff such as project superintendents, surveyors, and project engineers. In addition, both the Department and the Contractors face a shortage of qualified construction personnel. Bundling of projects creates opportunities to be much more efficient with scarce human resources.

2) Partnership

The project has wide support from a variety of stakeholders. They stand ready to assist in completing approvals rapidly and constructing the four bridges with as little disruption as possible to traffic and adjoining communities. Appendix E contains numerous letters confirming stakeholder collaboration and project support. The stakeholders understand the importance of these bridges to residents, workers, tourists, emergency responders and area schools.

There will be another unique partnership at play in the Project. MaineDOT and FHWA have established several programmatic agreements to expedite the NEPA process handling state and federal reviews concurrently. These agreements cover Categorical Exclusions, programmatic wetlands findings, state and national historic preservation and the Federal Endangered Species Act. Signatories to these agreements also include US Army Corps of Engineers (ASACE), US Fish & Wildlife Service (USFWS), Advisory Council on Historic Preservation and Maine State Historic Preservation Officer, NOAA's National Marine Fisheries Service and the Maine Turnpike Authority. These partnerships greatly expedite construction projects such as the bridge replacements (*and will be discussed further in Project Readiness*) in the Project.

VIII. Project Readiness

1) Technical Feasibility

The bridges in the Project will be designed by and construction will be led by the Bridge Program team at MaineDOT. Over the last decade, that team has replaced 18 multi-span bridges over water, with expenditures more than $160 million. Those past structures have averaged 494 feet in length, far longer than any bridge in the Project. During that same time, the team has tackled well over 100 bridge projects and has secured permitting for all of them. While no bridge project is without some level of challenge, the bridges in the Project are all well within the

capability of the team and none have complicated engineering design challenges, neither civil nor mechanical.

The Cost Estimate of the Project by bridge and broad category is as follows:

Bridge	Preliminary Engineering (PE)	Right of Way (ROW)	Construction	Construction Engineering (CE)	Total
Merrill Road Interchange	$470,000	$100,000	$4,730,000	$400,000	$5,700,000
Approach Road Interchange	$540,000	$100,000	$5,320,000	$440,000	$6,400,000
I295 SB/ US 1	$850,000	$100,000	$8,770,000	$680,000	$10,400,000
I295 NB/ US 1	$850,000	$100,000	$8,770,000	$680,000	$10,400,000
Project Total	$2,710,000	$400,000	$27,590,000	$2,200,000	$32,900,000

2) Project Schedule/Gantt Chart

The proposed project milestones are as follows:

Project Milestones	
PDR/ Preliminary Plan	July 2019
Formal Public Contact	October 2019
NEPA Complete	April 2020
Environmental Approvals	April 2020
R/W Certified	Feb 2021
PS&E Complete	March 2021
Obligation of Funds	March 2021
Project Advertising	March 2021
Construction Begin	May 2021
Construction Complete	June 2023

The project plan for each bridge anticipates both obligation of funding and completion of the Project well within the September 30, 2021, and 2026 deadlines, respectfully.

A complete project schedule is included in Appendix D.

3) Required Approvals

Environmental Approvals

Communication with environmental agencies and interested parties has been initiated. Baseline data collection is underway to identify natural and cultural resources potentially affected. Alternatives will be evaluated under state and federal laws. The NEPA process will be completed prior to the final design of the preferred alternatives.

a) National Environmental Policy Act (NEPA)

The (NEPA) process will inform and be incorporated into preliminary design efforts. The project is anticipated to be classified as a Categorical Exclusion in accordance with 23 CFR 771.117(c) (13). The FHWA Maine Division will be the lead agency for NEPA review. NEPA is underway. Should any issues arise, MaineDOT will work directly with the respective agencies to quickly resolve them. The NEPA process is expected be completed by April, 2020. In the event of any issues forthcoming, there will be ample time to address them prior to the required Competitive Highway Bridge Program obligation date.

b) U.S. Coast Guard Permit

The I-295 bridges do not cross waterbodies. A U.S. Coast Guard permit will not be required to remove the existing structures to construct the new structures.

c) Other Federal and State Environmental Permits

Because the bridges are not over waterbodies, minimal impacts to waters of the United States are anticipated. A permit may be required if temporary impacts to adjacent wetlands are required. A U.S. Army Corps of Engineers permit will be required for work being conducted within waters of the United States. A Maine Department of Environmental Protection permit will also be required. If necessary, all permit approvals are expected to be received by April, 2020.

d) Historic and Archeological

MaineDOT, FHWA, the Advisory Council on Historic Preservation, and the Maine State Historic Preservation Officer are signatories to a Programmatic Agreement regarding implementation of the Federal Aid Highway Program in Maine. Work on the Interstate or other controlled access highways within existing interchanges, medians, and travel ways within previously constructed slope limits is listed in the agreement as an activity that has little or no potential to affect historic properties that does not require Section 106 consultation with SHPO or any further consideration under Section 106. Should the design of the project require work outside of the existing interstate facilities, the MaineDOT Historic Coordinator will ensure that all historic resources are identified and all potential effects are considered in accordance with Section 106 of the National Historic Preservation Act.

e) Section 4(f) of the Department of Transportation Act

Identification of 4(f) resources is complete. No Section 4(f) resources were identified at the Merrill Road (Bridge #5720) or the I-295 SB/Rte 1 Bridge (Bridge #1509). The north bound entrance/exit ramps for Bridge #5721, Approach Road Interchange Bridge are located adjacent to the Freeport Community Library, which includes open space and recreation ball fields. If the proposed design requires use of an identified resource, MaineDOT will work with FHWA to obtain approval under Section 4(f).

f) Endangered Species Act (ESA) and Essential Fisheries Habitat (EFH)

MaineDOT has identified the Federal Endangered Species the project areas. The I-295 bridges are within the range of Northern Long-Eared Bat. MaineDOT and FHWA will coordinate with federal agencies during project design to avoid and/or minimize effects to ESA/EFH. MaineDOT and FHWA will complete the required consultations prior to April, 2020.

The bridge projects are not located within designated Essential Fish Habitat. In addition, no in-water work is proposed. Therefore, the projects will not affect Essential Fish Habitat.

4. Risks & Mitigations

Project Risks	Mitigations
Cost control • While the preliminary design phase has begun for the bridges, the final recommended improvements at these bridges could lead to scope and cost increases if additional required work is identified.	Thorough preliminary evaluation • Multiple alternatives will be evaluated during preliminary design with many scenarios of how to maintain traffic being considered • Constructability reviews will be a key focus during preliminary design with a focus on ***most constructible*** and cost effective. Design Build Process may be employed • Will result in higher probability to achieve cost estimates • Better constructability issue resolution
ROW acquisition • There is limited right of way acquisition for each of the bridges in the Project	State of Maine law for required takings[14] • Statutes in the State of Maine allow for this process to be completed expeditiously and according to an existing process that MaineDOT executes often. • Follows a 5-step process 1. Mapping 2. Appraisal 3. Negotiation 4. Offer 5. Condemnation • The process cannot be stalled at any phase including condemnations as there is a separate appeals process that allows the project to proceed with no delay • The entire Right of Way process is allotted up to a year in the project schedule • There are no local statutes or challenges that can impact the process

Further mitigating any project delay are numerous programmatic agreements MaineDOT has with reviewing agencies. MaineDOT will take advantage of the following agreements to streamline the environmental review and approval process:

[14] See MaineDOT's The Land Owner's Guide to the Acquisition Process *Revised 12/2014,* http://www.maine.gov/mdot/publications/docs/brochures/landownersguideoct2014.pdf

i. Cooperative Agreement between US Department of the Interior Fish and Wildlife Service (USFWS), FHWA and the MaineDOT State Transportation Reviews by the USFWS in Maine 2015-2020
ii. Cooperative Agreement between USFWS, FHWA and the MaineDOT State Transportation Reviews by the USFWS in Maine 2016-2021
iii. Programmatic Agreement for the State of Maine concerning identification of listed and proposed species and designation of non-federal representative under the Federal Endangered Species Act between FHWA, Maine Division USACE, MaineDOT, USFWS, NOAA's National Marine Fisheries Service
iv. Programmatic Agreement between the FHWA, Maine Division and the MaineDOT Regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Project
v. Section 106 Tribal 106 Programmatic Agreement
vi. Memorandum of Agreement for Stormwater Management Between the MaineDOT, MTA and Maine Department of Environmental Protection

MaineDOT and the Bridge Program Division has years of experience completing bridge replacement projects on time and within budget. The Project will meet all statutory deadlines required for a CHBP grant.

IX. Results of Benefit Cost Analysis

A benefit-cost analysis was conducted for the replacement of these bridges comparing the replacement to the no-build scenario. The analysis was performed over a 30-year period with the benefits and costs adjusted to present value using a 7% discount rate. The analysis conservatively estimates that a no-build scenario will lead to some manner of shutdown for an average of two weeks per year until the remaining service life of the bridge has been exceeded and will then need to be closed. The analysis looks at the project from the standpoint of society as a whole, and accounts for the net benefits and net costs based on the criteria described in the U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs. The analysis presented here addresses benefits from travel time savings, user costs, safety, and emissions reduction. Several other benefits of the bridge replacements are difficult to quantify. These benefits include increased economic competitiveness, livability enhancement, productivity increases, and national security. The matrix below summarizes key results of the analysis.

	Costs	Benefits
CAPEX	$21,900,989	
O&M	$1,049,236	$5,181,456
Travel Time Savings		$229,396,514
Safety		$34,670,959
Emissions		$325,187,115
Operating Costs		$126,461,517
TOTAL	**$22,950,225**	**$720,897,561**
Benefit-Cost Ratio		31.41

See Appendix A for detailed BCA

X. Cost Share

This CHBP grant is needed to supplement the additional funding MaineDOT has been spending and is committed to spend on bridges as part of its 8,800-mile state-jurisdiction highway network. MaineDOT commissioned an important bridge report in 2007 *Keeping Our Bridges Safe (KOBS).* The 2007 Report was written to meet an Executive Order issued after the August 1, 2007 bridge collapse in Minneapolis, Minnesota. Maine responded appropriately to the results of the report and increased funding for bridges in the state through a bond program that increased funding from $70 million annually to $110 million during the 4-year period ending in 2013.[15] MaineDOT Commissioner David Bernhardt then directed this report to be reviewed in 2014 to determine progress towards achieving the goals. The 2014 update recommended spending $140 million per year to put Maine's bridges into a state of good repair and extend bridge life as needed.[16] Funding challenges for bridges in this rural state remain. The 2018-2020 MaineDOT Work Plan expects to complete 260 bridge projects and spend some $353 million which while ambitious still lags the 2014 KOBS report by nearly $70 million.[17] Rural Maine needs the impact of a CHBP grant to help maintain highway access through the I-295 Region. Once the Project is completed, MaineDOT is committed to allocating funds to maintain the new bridges to the appropriate standards over their lives.

XI. Federal Wage Rate Certification

See Appendix G.

[15] Supra Note 11, Keeping our Bridges Safe, page 1
[16] Supra Note 11, Keeping our Bridges Safe, page 1
[17] https://www.maine.gov/mdot/projects/workplan/docs/2018/MaineDOTWork_Plan_2018_2019_2020.pdf page ii

Grant Request Supporters

MaineDOT's grant request for CHBP FY 2018 funds is supported by a diverse group of elected officials, shippers and stakeholders due to the significant impact the Project will have on the region. This list of supporters includes:

Members of Congress

U.S. Senator Susan Collins
U.S. Senator Angus King
U.S. Congresswoman Chellie Pingree

State Elected Officials/Offices

Governor Paul LePage
Town of Yarmouth
Town of Freeport

State and Local Organizations
Maine Forest Products Council – Executive Director

Please visit https://www.maine.gov/mdot/grants/

**** As additional letters of support are submitted, MaineDOT will place them on the website noted above.

APPENDIX

Benefit-Cost Analysis Worksheet	A
Maps with Project Locations	B
Cost Estimate/Project Budget	C
Gantt Chart	D
Letters of Support	E
Match Commitment Letter	F
Federal Wage Certification Letter	G