

Appendix F
Project Summaries

2021 INFRA GRANT Bridge Summaries

Bridge #6165- Casey Road/ I-95. Carries Casey Road over Interstate 95 in Benedicta Twp. Interchange 259.

Year built: 1967.

Bridge Structure: Seven span, steel continuous multi-beam with concrete deck and latex concrete wearing surface, carrying 2 lane roadway. 451' long by 22' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 10/29/20
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural Minor Collector over the NHS
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has scattered areas of moderate cracking and staining. Extensive cracking with efflorescence in west span. Superstructure has 50% paint system distress with moderate rusting at high corrosion areas. Abutment and wings have scattered minor map cracking. East backwall has large spall with exposed re-steel. Piers have scattered areas of minor map cracking.



Project Description – Casey Road/I-95 Interchange in Benedicta Township, Maine

Originally constructed in 1967, the Casey Road/I-95 Interchange Bridge has advanced deck deterioration and requires a deck replacement. Interstate 95 is the primary highway corridor in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the movement of freight, mobility of residents, and viability of businesses throughout Maine, but in northern Maine in particular. This structure is particularly important due to its rural location with no viable detour options for residences on the west side of Interstate 95 as well as being the only interchange for the town of Benedicta. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community.

I-95 improves access and efficiency of transportation by providing direct, efficient connections between communities. The Casey Road/I-95 interchange at Exit 259 is the only interchange in the town of Benedicta. Disruptions to this system requires long detours along local roads. This loss of efficiency will increase fuel usage and wear on vehicle tires, negatively impacting the environment. Rehabilitating this structure with a properly designed and constructed deck system will reduce environmental impact by maintaining efficient access through the state for the public and freight ultimately reducing the carbon footprint of the structure and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove this bridge from the list of structurally deficient bridges and return it to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed.

Currently, the bridge has inadequate load carrying capacity at the inventory level for HL-93 AASHTO LRFD design loading. As part of the ongoing preliminary design effort, it was determined that by using modern materials and design details in the deck replacement, the load carrying capacity of the bridge can be improved, providing a safer transportation network.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing disruptions to both local and interstate traffic, with a solution that will extend the useful life of the structure in the most economically effective way feasible. A pro-active community outreach approach is being utilized to determine what type of impacts the project will have, and when are the most critical times of year to maintain traffic.

For residents on the western side of Interstate 95, no viable detour routes are available along local or state-maintained roadways. An 11-mile detour to the next exit north of the project site (Exit 264) and a temporary off ramp will be utilized in the traffic control plan to maintain access to these residences, allowing the bridge deck to be replaced with a full closure. This temporary off ramp will eliminate the need for expensive phasing techniques or a temporary bridge and will result in a shorter overall project duration.

The project redevelops the existing infrastructure to remove this bridge from the list of structurally deficient bridges and return it to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community and I-95, the State's highest priority public transportation and freight corridor.

Project Benefits:

- Improved public safety by increasing the load carrying capacity of the structures and replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- Casey Road/I-95 Interchange Bridge:
 - 1988 – joint repairs.
 - 1993 – joint repairs and wearing surface replacement.
 - 2016 – Cores taken of deck concrete and tested.
 - 2017 – Field mapping of delaminated deck concrete.
 - 2017 – Traffic and Crash Data collected.
 - 2017 - Preliminary Design Report completed recommending the bridge to be re-programmed as a deck replacement in near future.
 - 2018 – wearing surface replacement.
 - 2021 – Utility site visit, traffic study.

Innovations:

- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvement. The project impacts are expected to stay within the existing State right of way. Environmental permitting is anticipated for the construction of the temporary off ramp. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: Casey Road/I-95 Interchange Bridge over Interstate 95



**Photos 2 & 3: Casey Road/I-95 Bridge –
Heavy Cracking and Efflorescent Staining of Underside of Deck (left) and
Rutted Wearing Surface, Heavily Rusted Drains, and Substandard Bridge Rail (right)**

Bridge #6141- ROUTE 157/ I-95. Carries Route 157 over Interstate 95 in Medway. Interchange 244.

Year built: 1966.

Bridge Structure: Five span, steel continuous multi-beam with concrete deck and integral concrete wearing surface, carrying 2 lane roadway. 375' long by 30' wide, curb to curb.

Condition Ratings: Deck = 4 Fair, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 08/06/19
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural Minor Arterial over the NHS
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has scattered areas of cracking and staining. Extensive areas of spalled concrete with exposed re-steel on each of the exterior bays. Superstructure has 20% paint system distress with moderate rusting at high corrosion areas. Minor to isolated moderate cracking on concrete piers. Minor cracking on pier cap ends. Heavy map cracking of east abutment backwalls.



Bridge #6077- I-95 NB / ROUTE 116. Carries Interstate 95 over Route 116 in Medway.

Year built: 1966.

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and integral concrete wearing surface, carrying 2 lane roadway. 126' long by 39' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 06/01/20
- **Repair history:** Joint rehab and beam end paint 2018
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural - Principal Arterial - Interstate
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has cracking, staining and pop-outs. Superstructure has 15% paint system distress with minor rusting. Abutments have moderate cracking & staining concrete at high exposure areas.



Bridge #1411- I-95 SB / ROUTE 116. Carries Interstate 95 over Route 116 in Medway.

Year built: 1966.

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and integral concrete wearing surface, carrying 2 lane roadway. 126' long by 39' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 06/01/20
- **Repair history:** Joint rehab and beam end paint 2018
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural - Principal Arterial - Interstate
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has cracking, staining and pop-outs. Superstructure has speckled rust on bottom flanges, complete paint loss in areas of high exposure areas. Abutments and piers have minor cracking & staining of concrete.



Bridge #6078 - I-95 NB VAUGHN DAGGETT MEM. Carries Interstate 95 over Penobscot River in Medway.

Year built: 1966.

Bridge Structure: Five span, steel continuous multi-beam with concrete deck and bituminous wearing surface, carrying 2 lane roadway. 1100' long by 30' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 7 Good, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 05/12/20
- **Repair history:** Full paint 2015. Wearing surface 2018.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural - Principal Arterial - Interstate
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has widespread minor cracking. Both the up and down stream soffits have areas of spalled and delaminated concrete. Abutment backwalls have heavy map cracking and minor delaminations. Pattern cracking at most piers noses and concrete erosion/abrasion noted at and above waterline.



Bridge #1410 - I-95 SB VAUGHN DAGGETT MEM. Carries Interstate 95 over Penobscot River in Medway.

Year built: 1966.

Bridge Structure: Five span, steel continuous multi-beam with concrete deck and bituminous wearing surface, carrying 2 lane roadway. 1056' long by 30' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 05/12/20
- **Repair history:** Full paint 2016. Wearing surface 2018.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural - Principal Arterial - Interstate
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has widespread minor cracking. Both the up and down stream soffits have areas of spalled and delaminated concrete. Abutment backwalls have heavy map cracking and minor delaminations. Pattern cracking at most piers noses and concrete erosion/abrasion noted at and above waterline.



Project Description – Interstate 95 in the Town of Medway, Maine

This project consists of a bundle of five (5) structurally deficient Interstate 95 Bridges located in Medway, Maine. Originally constructed in 1966, the Vaughan Daggett Memorial Bridges, the I-95/Route 116 Bridges, and the Route 157/I-95 Interchange Bridge all have advanced deck deterioration and require deck replacements and strengthening. Interstate 95 is the primary highway corridor in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the movement of freight, mobility of residents, and viability of businesses throughout Maine, but in northern Maine in particular. Compounding the importance of these structures is their rural location with limited viable detour options. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community, including access to Baxter State Park, access to Eastern Maine Medical Center in Bangor, and access to the U.S.-Canadian border in Houlton, all of which utilize these bridges.

I-95 improves access and efficiency of transportation by providing direct, efficient connections between communities. Disruptions to this system requires long detours along local roads. This loss of efficiency will increase fuel usage and wear on vehicle tires, negatively impacting the environment. Additionally, the deteriorating structures cause additional damage to vehicles, requiring maintenance and increasing the overall environmental impact. Finally, the current condition of the structures requires regular maintenance by crews mobilizing equipment to the sites to clean and clear debris spalling from the underside of the concrete decks. Not only is this spalling concrete a safety hazard, but this repetitive mobilization also negatively impacts the environment by using fuel and generating waste. Rehabilitating these structures with properly designed and constructed deck systems will reduce environmental impact by maintaining efficient access through the state for the public and freight, reduce the maintenance needs on passing vehicles, and reduce trips for maintenance crews, all ultimately reducing the carbon footprint of the structures and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove these five (5) bridges from the list of structurally deficient bridges and return them to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed. Additionally, by re-using the existing in-water piers, this eliminates more invasive in-water temporary impacts.

Currently, all five bridges have inadequate load carrying capacity at the inventory level for HL-93 AASHTO LRFD design loading. While the bridges do not require a posting, this is considered unacceptable due to their integral part in Maine's freight corridor and requires immediate action. As part of the ongoing preliminary design effort, it was determined that by using modern materials and design details in the deck replacement, the load carrying capacity of the bridges can be improved, providing a safer transportation network.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing

disruptions to both local and interstate traffic, with a solution that will extend the useful life of the structure in the most economically effective way feasible.

A pro-active community outreach approach is being utilized to determine what type of impacts the project will have, and when are the most critical times of year to maintain traffic. Traffic management will be coordinated amongst the five (5) bridges.

Innovative use of interstate median crossovers will be utilized by bundling all four bridges carrying I-95 together into a single traffic control plan, reducing the overall impact. This also improves safety during construction by having one coordinated traffic pattern. These interstate median crossovers will be constructed and used to divert traffic onto the adjacent barrel, maintaining a single lane of traffic in both directions for the entirety of the project, and eliminating the need for complete closures and detour routes. By utilizing the crossovers, the project can avoid costly temporary bridges in the median that would have been needed otherwise to maintain two lanes of traffic in each direction. The design team is also investigating whether the crossovers can remain in place at the conclusion of the project so they can be utilized for future bridge preservation operations.

The Route 157/I-95 Interchange Bridge will be phased, constructing one-half of the bridge at a time while maintaining traffic on the adjacent half, similarly maintaining a single lane of traffic for the entirety of the project.

The project redevelops the existing infrastructure to remove these five (5) bridges from the list of structurally deficient bridges and return them to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community and I-95, the State's highest priority public transportation and freight corridor.

Project Benefits:

- Improved public safety by increasing the load carrying capacity of the structures and replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- Vaughan Daggett Memorial Bridges:
 - 1985 – curb modifications and wearing surface replacement.
 - 1992 – transition barrier replacement and approach guardrail modifications.
 - 2015 – painting of steel superstructures.
 - 2019 – wearing surface replacement. During this project, the poor condition and widespread deterioration of the top side of the deck was identified.
 - 2021 – Utility site visit, traffic study.
- I-95/Route 116 Bridges:
 - 1985 – joint repairs and wearing surface replacement.

- 1992 – transition barrier rehabilitation and wearing surface replacement.
 - 2018 – joint modifications.
 - 2021 – Utility site visit, traffic study.
- Route 157/I-95 Bridge:
 - 1985 – wearing surface replacement.
 - 2018 – wearing surface replacement.
 - 2021 – Utility site visit, traffic study.

Innovations:

- Bundling of multiple bridges into a single traffic control plan reduces impacts to the public, improves work zone safety, and saves money.
- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvements. The project impacts are expected to stay within the existing State right of way. Environmental permitting is anticipated for the construction of the interstate median crossovers. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: I-95 NB/SB over the Penobscot River - Vaughan Daggett Memorial Bridges



**Photos 2 & 3: Vaughan Daggett Memorial Bridges –
Condition of Deck Joint at North Abutment and Substandard Bridge Rail (left) and
Deteriorated Deck Overhang (right)**



Photo 4: I-95 NB/SB over Route 116 Bridges



**Photos 5 & 6: I-95 NB/SB over Route 116 Bridges –
Deck Condition with Topside Cracking and Previous Patch Repair (left) and
Deteriorated Deck Overhang (right)**



Photo 7: Route 157/I-95 Interchange Bridge



**Photos 8 & 9: Route 157/I-95 Interchange Bridge –
Deteriorated Condition of Deck Joint (left) and
Deteriorated Deck Overhang (right)**

Bridge #6068- ROUTE 155/ I-95. Carries Route 155 over Interstate 95 in Howland. Interchange 217.

Year built: 1965.

Bridge Structure: Six span, steel continuous multi-beam with concrete deck and integral concrete wearing surface, carrying 2 lane roadway. 410' long by 28' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 4 Poor; Structurally Deficient.

- **Date of last inspection report:** 09/09/19
- **Repair history:** Deck Rehab 1986 and Wearing surface 1999
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural Minor Arterial over the NHS
- **Scour Critical:** No
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has scattered areas of heavy cracking & staining, and scattered delaminations (previously patched areas throughout). Moderate cracking & staining of exterior bays & fascia areas. Superstructure has 60% paint system distress with moderate rusting at high corrosion areas. Abutment bridge seat areas have moderate to isolated heavy areas of section loss and deterioration. East backwall has large spall with exposed re-steel. Piers have small areas of moderate cracking & staining.



Project Description – Route 155/I-95 Interchange in the Town of Howland, Maine

Originally constructed in 1965, the Route 155/I-95 Interchange Bridge has advanced deck deterioration and requires a deck replacement. Interstate 95 is the primary highway corridor in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the movement of freight, mobility of residents, and viability of businesses throughout Maine, but in northern Maine in particular. This structure is particularly important due to its rural location with limited viable detour options. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community, including access to Eastern Maine Medical Center in Bangor and access to the U.S.-Canadian border in Houlton.

I-95 improves access and efficiency of transportation by providing direct, efficient connections between communities. This interchange at Exit 217 is the only interchange serving the town of Howland with the next closest 10 miles to the north. Disruptions to this system requires long detours along local roads. This loss of efficiency will increase fuel usage and wear on vehicle tires, negatively impacting the environment. Additionally, the deteriorating structure causes additional damage to vehicles, requiring maintenance and increasing the overall environmental impact. Rehabilitating these structures with properly designed and constructed deck systems will reduce environmental impact by maintaining efficient access through the state for the public and freight and reduce the maintenance needs on passing vehicles ultimately reducing the carbon footprint of the structure and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove this bridge from the list of structurally deficient bridges and return it to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed.

Currently, the bridge has inadequate load carrying capacity at the inventory level for HL-93 AASHTO LRFD design loading. While the bridge does not require a posting, as part of the ongoing preliminary design effort, it was determined that by using modern materials and design details in the deck replacement, the load carrying capacity of the bridge can be improved, providing a safer transportation network.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing disruptions to both local and interstate traffic, with a solution that will extend the useful life of the structure in the most economically effective way feasible. A pro-active community outreach approach is being utilized to determine what type of impacts the project will have.

The project will be phased, constructing one-half of the bridge at a time while maintaining traffic on the adjacent half, maintaining a single lane of traffic for the entirety of the project. Based on the traffic

volumes, this method was determined to be the best balance between economics and traffic management. This method avoids the need for a long detour or a costly temporary bridge.

The project redevelops the existing infrastructure to remove this bridge from the list of structurally deficient bridges and return it to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community and I-95, the State's highest priority public transportation and freight corridor.

Project Benefits:

- Improved public safety by increasing the load carrying capacity of the structures and replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- 1980 - Superstructure painting.
- 1986 – Deck rehabilitation.
- 1999 – Wearing surface replacement.
- 2021 – Utility site visit, traffic study.

Innovations:

- Traffic control plan utilizes techniques to reduce impacts to the public, improves work zone safety, and save money.
- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvement. The project impacts are expected to stay within the existing State right of way. Minimal environmental permitting is anticipated to be required for this project. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: Route 155 /I-95 Interchange Bridge over Interstate 95



**Photos 2 & 3: Route 155/I-95 Bridge –
Scattered Cracking, Efflorescent Staining, and Delamination of Underside of Deck (left) and
Deteriorated Substandard Bridge Rail (right)**

Bridge #6082- US 202/ I-395. Carries US Route 202 over Interstate 395 in Bangor.

Year built: 1964.

Bridge Structure: Four span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 274' long by 46' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 7 Good, Substructure = 7 Good; Structurally Deficient.

- **Date of last inspection report:** 03/19/19
- **Repair history:** Deck Rehab and Wearing surface 2004
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has 20% scattered spalls with exp. rebar, delaminations, impending spalls and repairs throughout. Superstructure has sporadic paint loss. All beam ends and bearings at abutments have almost total paint loss with minor to moderate section loss and scaling rust. Abutments have scattered minor to moderate cracking and staining. Piers are in good condition.
- **Scour:** Not scour critical



Bridge #6080- US 202/ MCRR. Carries US Route 202 over Maine Central Railroad in Hampden.

Year built: 1965.

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 154' long by 43' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 12/02/19
- **Repair history:** Wearing surface 1988
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Condition of the main structural components:** Structure is in overall poor condition. Deck bottom has moderate cracking, efflorescence and scattered delaminations. Joints are damaged. Superstructure has 20% paint system distress. Exterior girders have isolated heavy rusting to the web stiffener. Abutment backwalls and bridge seat areas are cracking and stained. Piers and columns in satisfactory condition.
- **Scour:** Not scour critical



Project Description – Route 202 in the Towns of Bangor and Hampden, Maine

This project consists of a bundle of two (2) structurally deficient Route 202 Bridges located in Bangor and Hampden, Maine. Originally constructed in 1964 and 1965 respectively, the Route 202/I-395 and the Route 202/MCRR bridges both have advanced deck deterioration and require deck replacements. Route 202 is a principal arterial in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the mobility of residents, and viability of local businesses in the Bangor area. Compounding the importance of these structures is their location at the edge of an urban area and relatively high traffic volumes. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community.

Route 202 improves access and efficiency of transportation by providing direct, efficient connections between communities. The interchange between Route 202 and I-395 is already near capacity so keeping a lane open in each direction is imperative for the Route 202 over I-395 bridge. Disruptions to this system requires detours along local roads. This loss of efficiency will increase fuel usage and wear on vehicle tires, negatively impacting the environment. Additionally, the deteriorating structures cause additional damage to vehicles, requiring maintenance and increasing the overall environmental impact. Rehabilitating these structures with properly designed and constructed deck systems will reduce environmental impact by maintaining efficient access through the Bangor area for the public and freight and reduce the maintenance needs on passing vehicles ultimately reducing the carbon footprint of the structures and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove these two (2) bridges from the list of structurally deficient bridges and return them to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed.

Currently, both bridges have inadequate load carrying capacity at the inventory level for HL-93 AASHTO LRFD design loading. While the bridges do not require a posting, this is considered unacceptable due to their integral part in Maine's freight corridor. As part of the ongoing preliminary design effort, it was determined that by using modern materials and design details in the deck replacement, the load carrying capacity of the bridges can be improved, providing a safer transportation network.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing disruptions to traffic, with a solution that will extend the useful life of the structures in the most economically effective way feasible.

A pro-active community outreach approach is being utilized to determine what type of impacts the project will have, and when are the most critical times of year to maintain traffic. Traffic management will be coordinated amongst the two (2) bridges.

Both bridges will be phased, constructing one portion of the bridge at a time while maintaining traffic on the adjacent portion. The Route 202/I-395 will maintain one lane of traffic in each direction during construction which will require three phases. The Route 202/MCRR bridge, on the other hand, will utilize one-way alternating traffic and only require two phases.

The project redevelops the existing infrastructure to remove these two (2) bridges from the list of structurally deficient bridges and return them to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community.

Project Benefits:

- Improved public safety by increasing the load carrying capacity of the structures and replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- Route 202/I-395:
 - 2004 – deck rehabilitation and wearing surface replacement.
 - 2018 – bridge rail parapet top bar replacement.
 - 2021 – Utility site visit, traffic study.
- Route 202/MCRR:
 - 1988 – wearing surface replacement.
 - 2018 – bridge rail parapet top bar replacement.
 - 2021 – Utility site visit, traffic study.

Innovations:

- Bundling of multiple bridges into a single traffic control plan reduces impacts to the public, improves work zone safety, and saves money.
- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvements. The project impacts are expected to stay within the existing State right of way. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: Route 202 over I-395 Bridge



Photos 2 & 3: Route 202 over I-395 Bridge
Numerous Deck Spalls over Travel Lanes of I-395 (left) and
Spalled Deck Overhang (right)



Photo 4: Route 202 over MCR Bridge



**Photos 5 & 6: Route 202 over MCR Bridge –
Deck Condition with Cracking and Efflorescence Staining (left) and
Damaged and Leaking Deck Joint (right)**

Bridge #1524- Route 202 SB/Souadabscook Str. Carries Route 202 southbound over Souadabscook Stream in Hampden.

Year built: 1965.

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 292' long by 30' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 12/02/19
- **Repair history:** Paint 1988
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently **does not** meet acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Condition of the main structural components:** Structure is in overall poor condition with delaminations and heavy rust stained areas on the underside of the deck. Deck fascias and exterior bays have moderate cracking and stained areas. The superstructure has 30% distressed paint and one girder has heavy section loss. The substructure has isolated heavy staining of the back walls and the bridge seat pedestals have moderate cracking. Piers are in satisfactory condition.
- **Scour:** Not Scour critical



Bridge #6079- Route 202 SB/Souadabscook Str. Carries Route 202 southbound over Souadabscook Stream in Hampden.

Year built: 1965.

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 292' long by 30' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 5 Fair, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 12/02/19
- **Repair history:** N/A.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently does **not meet** acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Condition of the main structural components:** Structure is in overall poor condition. The deck underside has areas of heavy staining and leakage. Joints have minor leakage. The superstructure has 30% paint system distress with moderate rusting at high corrosion areas. Beam end web areas at west end have heavy section loss and holes. Substructure has moderate to heavy staining on abutment back walls. Seats have scattered delaminations and spalling pedestals with exposed rebar. Piers are in good condition.
- **Scour:** Not scour critical.



Project Description – Route 202 over the Souadabscook Stream in the Town of Hampden, Maine

This project consists of a bundle of two (2) structurally deficient Route 202 Bridges located in Hampden, Maine. Originally constructed in 1965, the Route 202/Souadabscook Stream Bridges have advanced deck deterioration and require deck replacements. Route 202 is a principal arterial in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the mobility of residents, the viability of businesses in the Town of Hampden, and the movement of freight through the region. Compounding the importance of these structures is their relatively high traffic volumes in a rural location, indicating their importance to the surrounding public. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community.

Route 202 improves access and efficiency of transportation by providing direct, efficient connections between communities. If 202 were to be closed, traffic would likely divert through the I-95/I-395 interchange which is already near capacity. Diverting traffic through this interchange would increase delay for drivers. This loss of efficiency will increase fuel usage, negatively impacting the environment. Additionally, the deteriorating structures cause additional damage to vehicles, requiring maintenance and increasing the overall environmental impact. Rehabilitating these structures with properly designed and constructed deck systems will reduce environmental impact by maintaining efficient access through the state for the public and freight and reduce the maintenance needs on passing vehicles ultimately reducing the carbon footprint of the structures and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove these two (2) bridges from the list of structurally deficient bridges and return them to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed. Additionally, by re-using the existing in-water piers, this eliminates more invasive in-water temporary impacts.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing disruptions to traffic, with a solution that will extend the useful life of the structure in the most economically effective way feasible.

A pro-active community outreach approach is being utilized to determine what type of impacts the project will have, and when are the most critical times of year to maintain traffic. Traffic management will be coordinated amongst the two (2) bridges.

Innovative use of Route 202 median crossovers will be utilized by bundling both bridges carrying Route 202 together into a single traffic control plan, reducing the overall environmental impact. These Route 202 median crossovers will be constructed and used to divert traffic onto the adjacent barrel, maintaining a single lane of traffic in both directions for the entirety of the project, and eliminating the need for complete closures and detour routes. By utilizing the crossovers, the project can avoid costly temporary bridges in the median that would have been needed otherwise to maintain two lanes of traffic

in each direction. The design team is also investigating whether the crossovers can remain in place at the conclusion of the project so they can be utilized for future bridge preservation operations.

The project redevelops the existing infrastructure to remove these two (2) bridges from the list of structurally deficient bridges and return them to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community.

Project Benefits:

- Improved public safety by replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- 1988 – Painting of steel superstructures.
- 2020 – Initial Environmental Survey completed
- 2021 – Utility site visit, traffic study.

Innovations:

- Bundling of multiple bridges into a single traffic control plan reduces impacts to the public, improves work zone safety, and saves money.
- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvements. The project impacts are expected to stay within the existing State right of way. Environmental permitting is anticipated for the construction of the Route 202 median crossovers. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: Route 202/Soudabscook Stream Bridges



**Photos 2 & 3: Route 202/Soudabscook Stream Bridges –
Condition of Deck Underside with Cracking and Efflorescence Staining (left) and
Failed Bridge Joint (right)**

Bridge #1447- I-95 SB/Somerset Ave. Pittsfield. Carries I-95 Southbound over Somerset Avenue in Pittsfield.

Year built: 1964

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 147' long by 40.1' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 12/18/19
- **Repair history:** Wearing Surface and Joint Repairs in 1989 and 2015. Paint in 1989. Concrete protective coating in 2018.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently **does not** meet acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Scour Critical:** N/A
- **Condition of main structural components:** Structure is in overall poor condition. Deck bottom has several areas of delaminations 1-2 SF in size. Extensive fine cracking and efflorescence in last 6' of deck at both ends. 30% paint distress in superstructure. Sheet failures in web areas. In the substructure, backwalls have moderate cracking and piers have minor cracking.



Bridge #1449- I-95 SB/Webb Road. Carries Routes I-95 Southbound over Webb Road in Pittsfield.

Year built: 1964

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 138.6' long by 40' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 5 Fair, Substructure = 5 Fair; Structurally Deficient.

- **Date of last inspection report:** 12/02/20
- **Repair history:** deck rehabilitation and new wearing surface -1989. Paint 1991. Wearing surface and joint repairs in 2015. Concrete protective coating in 2018.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently **does not** meet acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Scour Critical:** N/A
- **Condition of main structural components:** Structure is in overall poor condition. The deck bottom has areas of spalling. The superstructure has 30% paint system distress of the girders and heavy rusting of the fixed bearings. Substructure piers are in satisfactory condition and the abutments have isolated moderate to severe spalls and cracking.



Bridge #5984- I-95 NB/Webb Road. Carries Routes I-95 Northbound over Webb Road in Pittsfield.

Year built: 1964

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 137.7' long by 40' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 10/30/20
- **Repair history:** Wearing Surface and rehab 1989. Joints replaced and wearing surface 2017. Concrete Protective Coating 2018
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently **does not** meet acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Rural -Principal Arterial-On NHS
- **Scour Critical:** N/A
- **Condition of the main structural components:** Structure is in overall poor condition. Deck has approximately 20% discoloration with fine map cracking areas. Small spalls and exposed reinforcing steel. Superstructure has approximately 15% paint system distress with sheet failures at exterior girders. Minor beam end paint failure and heavy rust pack on outside bearings. Substructure: abutments have moderate cracking to bearing pedestals. Minor spalling at north abutment and backwalls stained and wet.



Bridge #5985- I-95 NB/Somerset Ave. Pittsfield. Carries I-95 Northbound over Somerset Avenue in Pittsfield.

Year built: 1964

Bridge Structure: Three span, steel continuous multi-beam with concrete deck and bituminous concrete wearing surface, carrying 2 lane roadway. 147' long by 40.1' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 Satisfactory, Substructure = 6 Satisfactory; Structurally Deficient.

- **Date of last inspection report:** 09/18/20
- **Repair history:** Wearing Surface, 1989. Joint Replacement and wearing surface, 2017. Concrete protective coating 2018.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** Currently **does not** meet acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Principal Arterial on NHS
- **Scour Critical:** N/A
- **Condition of main structural components:** Structure is in overall poor condition. Deck has widely scattered delaminations and spalls with exposed reinforcing steel. Haunches have sporadic spalling. Approximately 50% paint scattered paint failures in superstructure. Beam ends and bearing have paint failures. In the substructure, abutments have scattered minor cracking and efflorescence.



Project Description – Interstate 95 in the Town of Pittsfield, Maine

This project consists of a bundle of four (4) structurally deficient Interstate 95 Bridges located in Pittsfield, Maine. Originally constructed in 1964, the I-95/Somerset Avenue Bridges and the I-95/Webb Road Bridges all have advanced deck deterioration and require deck replacements and strengthening. All four bridges carry Interstate 95 over local roads. Interstate 95 is the primary highway corridor in Maine, and any disruption to traffic on this vital transportation link has a severely negative impact to the movement of freight, mobility of residents, and viability of businesses throughout Maine, but in central Maine in particular. Compounding the importance of these structures is their rural location with limited viable detour options. Any disruption to traffic along this corridor creates negative impacts throughout both the Region and the local community, including access to Maine General Medical center in Augusta, access to Eastern Maine Medical Center in Bangor, and access to the U.S.-Canadian border in Houlton, all of which utilize these bridges.

I-95 improves access and efficiency of transportation by providing direct, efficient connections between communities. Somerset Avenue is the only exit that serves the town of Pittsfield. Disruptions to this system requires long detours along local roads. This loss of efficiency will increase fuel usage and wear on vehicle tires, negatively impacting the environment. Additionally, the deteriorating structures cause additional damage to vehicles, requiring maintenance and increasing the overall environmental impact. Finally, the current condition of the structures requires regular maintenance by crews mobilizing equipment to the sites to clean and clear debris spalling from the underside of the concrete decks. Not only is this spalling concrete a safety hazard, but this repetitive mobilization also negatively impacts the environment by using fuel and generating waste. Rehabilitating these structures with properly designed and constructed deck systems will reduce environmental impact by maintaining efficient access through the state for the public and freight, reduce the maintenance needs on passing vehicles, and reduce trips for maintenance crews, all ultimately reducing the carbon footprint of the structures and reducing the impact on climate change.

The project focuses on redeveloping the existing infrastructure to remove these four (4) bridges from the list of structurally deficient bridges and return them to a state of good repair. The scoped deck replacement project provides an additional environmental benefit by innovative reuse of the existing substructure units and structural steel elements with selective rehabilitation of these elements. This economically intelligent and environmentally conscious decision will extend the useful life of the structure by reusing elements that are in satisfactory condition, resulting in fewer materials that will need to be harvested, refined, delivered, and placed.

Currently, all four bridges have inadequate load carrying capacity at the inventory level for HL-93 AASHTO LRFD design loading. While the bridges do not require a posting, this is considered unacceptable due to their integral part in Maine's freight corridor and requires immediate action. As part of the ongoing preliminary design effort, it was determined that by using modern materials and design details in the deck replacement, the load carrying capacity of the bridges can be improved, providing a safer transportation network.

Due to these factors, a study is nearing completion to determine the most practical and viable solution which maintains connectivity for the community during construction, while minimizing disruptions to both local and interstate traffic, with a solution that will extend the useful life of the structure in the most economically effective way feasible.

A pro-active community outreach approach is being utilized to determine what type of impacts the project will have, and when are the most critical times of year to maintain traffic. Traffic management will be coordinated amongst the four (4) bridges.

Innovative use of interstate median crossovers will be utilized by bundling all four bridges together into a single traffic control plan, reducing the overall impact. This also improves safety during construction by having one coordinated traffic pattern. These interstate median crossovers will be constructed and used to divert traffic onto the adjacent barrel, maintaining a single lane of traffic in both directions for the entirety of the project, and eliminating the need for complete closures and detour routes. By utilizing the crossovers, the project can avoid costly temporary bridges in the median that would have been needed otherwise to maintain two lanes of traffic in each direction. The design team is also investigating whether the crossovers can remain in place at the conclusion of the project so they can be utilized for future bridge preservation operations.

The project redevelops the existing infrastructure to remove these four (4) bridges from the list of structurally deficient bridges and return them to a state of good repair. The project scope chosen is the best value which takes all the above-mentioned factors into consideration providing a lasting solution for the community and I-95, the State's highest priority public transportation and freight corridor.

Project Benefits:

- Improved public safety by increasing the load carrying capacity of the structures and replacing substandard bridge rail.
- Improved public safety and reducing maintenance needs by removing and replacing deteriorated components.
- Reduced overall project cost and environmental impact by reusing major bridge components that are in satisfactory condition.

Project History including any previously complete work:

- I-95/Somerset Avenue Bridges:
 - 1989 – painting of steel superstructures, joint repairs, and wearing surface replacement.
 - 2015 – joint repairs and wearing surface replacement.
 - 2018 – application of concrete protective coating to substructures.
 - 2021 – Utility site visit, traffic study.
- I-95/Webb Road Bridges:
 - 1989 – deck rehabilitation and wearing surface replacement.
 - 1991 – painting of steel superstructures.
 - 2017 – joint replacement and wearing surface replacement.
 - 2018 – application of concrete protective coating to substructures.
 - 2021 – Utility site visit, traffic study.

Innovations:

- Bundling of multiple bridges into a single traffic control plan reduces impacts to the public, improves work zone safety, and saves money.
- Selective reuse of major structural elements in satisfactory condition saves materials while simultaneously improving the load carrying capacity of the structure.
- Stainless steel reinforcing bars and FRP bridge drains will be used to ensure a long-lasting product requiring less maintenance.

Project Readiness:

The preliminary design is underway for the bridge improvements. The project impacts are expected to stay within the existing State right of way. Environmental permitting is anticipated for the construction of the interstate median crossovers. An involved public process is required with a focus on public access, traffic control, and freight mobility.



Photo 1: I-95 NB/SB over Somerset Avenue Bridges



**Photos 2 & 3: I-95 NB/SB over Somerset Avenue Bridges –
Deteriorated Underside of Deck with Exposed Reinforcing Steel (left) and
Deteriorated Deck Overhang with Delaminations and Excessive Efflorescent Staining (right)**



Photo 4: I-95 NB/SB over Webb Road Bridges



**Photos 5 & 6: I-95 NB/SB over Webb Road Bridges –
Poor Deck End and Backwall Condition due to Failed Deck Joint (left) and
Deteriorated Deck Overhang (right)**