

Appendix G

Project Summaries

Bridge #1461- Carries I-95 SB over Webb Road in Waterville.

Lat/Lon: 44.524807, -69.696518

Year built: 1959

Bridge Structure: Multi steel beam, 2 lane roadway with concrete deck and bituminous concrete wearing surface. 138' long by 40.4' wide, curb to curb.

Condition Ratings: Deck = 6 Satisfactory, Superstructure = 5 Fair, Substructure = 5 Fair

- **Date of last inspection report:** 11/13/19
- **Repair history:** Reconstructed 1989
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Urban - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** 1 mile; moderate to severe impact
- **ADT:** 15,250 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall fair condition with moderate deterioration of steel superstructure and its protective coating. Substructure, slope protection and bearing deterioration.
- **Scour:** N/A
- **Economic impacts:** major impact
- **Is located on:** NHS and STRANET
- **Replacement Cost Estimate:** \$5,411,000



Bridge #5813- Carries I-95 NB over Webb Road in Waterville.

Lat/Lon: 44.524715, -69.695663

Year built: 1959.

Bridge Structure: Multi steel beam, 2 lane roadway with concrete deck and bituminous concrete wearing surface. 138' long by 40.4' wide, curb to curb.

Condition Ratings: Deck = 5 Fair, Superstructure = 5 Fair, Substructure = 5 Fair

- **Date of last inspection report:** 11/13/19
- **Repair history:** Reconstructed 1989
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Urban - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** 1 mile; moderate to severe impact
- **ADT:** 15,150 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall fair condition with moderate deterioration of steel superstructure and its protective coating. Substructure and bearing deterioration. Exposed rebar on deck.
- **Scour:** N/A
- **Economic impacts:** major impact
- **Is located on:** NHS and STRANET
- **Replacement Cost Estimate:** \$5,411,000



Project Description – Interstate 95 over Webb Road Bridges in Waterville

Originally constructed in 1959, the bridges carrying Interstate 95 northbound and southbound over Webb Road in Waterville Maine are functionally obsolete with advanced deterioration and require complete 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. 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 the local community, including two nearby colleges (Thomas College and Colby College) which utilize these bridges.

In addition to the concerns summarized above, the vertical clearance beneath these structures is substandard, and has a negative impact to local traffic, particularly due to the presence of a town maintenance facility one quarter of a mile from the bridges. This restriction requires large vehicles to detour away from the bridge and onto nearby local roadways.

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 built to last. A life cycle cost approach has been performed to ensure that the most cost-effective solution can be determined, with the goal being to minimize costs and disruptions to motorists for the next 75 to 100 years.

Several bridge replacement and rehabilitation alternatives have been developed and are being evaluated by the design team, with input being solicited from the community. A pro-active, community outreach approach is being utilized to determine what sort of impacts a replacement would have, and when are the most critical times where traffic must be maintained. An additional goal of the project is to reduce future maintenance needs, therefore jointless simple span structures with span lengths varying between 54' to 70' are being evaluated to replace the existing 3-span structure. All replacement alternatives being developed will maintain current lanes and shoulder widths on I-95, and provide shoulders on Webb Road beneath the bridge, improving safety for bikers and pedestrians on Webb Road. In addition, replacement alternatives include corrosion resistant and durable materials such as stainless-steel reinforcing and metalized steel girders to ensure a lasting solution.

As part of the Preliminary Design Report, conventional and accelerated bridge construction alternatives are being evaluated, including innovative construction techniques which have been successfully used throughout the country. Increasing the substandard vertical clearance beneath these structures is an additional goal of this evaluation. The alternative chosen will be the best value which takes all of the above-mentioned factors into consideration providing a lasting solution for the community and I-95, the State's highest priority freight corridor.



I-95 / Webb Road Bridges in Waterville

Bridge #2504- Main Street. Carries US Route 201 over Fall Brook in Solon

Lat/Lon: 44.95039, -69.860825

Year built: 1931.

Bridge Structure: Concrete Tee-Beam, 2 lane roadway with concrete deck and bituminous concrete wearing surface. 50' long by 38' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 5 Fair, Substructure = 4 Poor

- **Date of last inspection report:** 11/13/19
- **Repair history:** wearing surface replaced in 1976.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Scour Critical:** No
- **Functional Classification:** Rural - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** greater than 100 miles; moderate impact
- **ADT:** 4081 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall poor condition. Advanced deterioration on the deck and substructure, including severe shear cracking. Superstructure has spalled concrete with exposed rebar.
- **Scour:** none
- **Economic impacts:** major impact
- **Is Located on:** NHS
- **Replacement Cost Estimate:** \$4,363,500



Solon, Main Street Bridge #2504 (WIN 22260.00)**Project Description:**

The Solon, Main Street Bridge #2504 is an 89-year old, single span, cast-in-place concrete T-beam bridge built in 1931 with a concrete deck, reinforced concrete wearing surface, concrete bridge rail, and a raised concrete sidewalk. The bridge is sitting on pre-existing stacked stone abutments with reinforced concrete cast-in-place facing that was added in 1931 when the previous crossing was replaced by this bridge. The substructure is founded on bedrock.

The bridge carries Route 201, a primary commercial trucking route that connects the southern coastal region of Maine to points north in Quebec, Canada. Heavy commercial trucking accounts for fifteen percent of the daily vehicle use on this route.

The T-beam superstructure is in fair condition with spalled concrete and exposed rebar with rust staining. The concrete deck is in poor condition and the underside of the deck has several large areas of full depth patching with areas of cracking and efflorescence. The concrete sidewalk is in satisfactory condition; however, it is only 3' wide and does not meet ADA compliance. Fifteen percent of the concrete wearing surface shows signs of cracking.

The substructure is in poor condition. There is a 4" gap between the south wingwall and the abutment. Abutments have moderate cracking throughout, with isolated to severe shear cracking. There are areas of spalled concrete on the north abutment with exposed rebar and heavy cracking and scaling in the wingwalls.

The T-beam bridge has a 47' span that rises 12' over Fall Brook, a tributary located 4/10ths of a mile above a confluence with the Kennebec River. Anecdotal evidence suggests the location is prone to swift water velocities and rapid rises in water elevation during spring freshet and storm events; however, there is no record of flooding or bridge overtopping in recent history. Hydraulic reports indicate a water velocity of 5.8ft/s and water level increases of 4.2' at Q1.1. The existing bridge creates a localized contraction in the stream due to the abutment locations in comparison to the channel upstream of the crossing.

The bridge is not identified as being historic; however, it does reside within the Solon Historic District and is in near proximity to historic structures.

Project's history including a description of any previously completed components:

The Solon, Main Street Bridge #2504 project was initiated in the MaineDOT 2017-2018-2019 Work Plan as a bridge replacement project due to the advanced concrete deterioration noted in the bi-annual bridge inspection reports.

The bridge was constructed in 1931, replacing a previous bridge crossing while reutilizing the existing stacked-stone abutments.

In 1967 the Solon Water District mounted a 6" diameter insulated iron pipe to the downstream fascia of the concrete T-beam. The Solon Water District maintains use of this pipe to this day.

Prior to 2006, Region Maintenance installed steel thrie-beam guardrail on the inside face of the existing concrete bridge rail and along the road approaches due to the concrete bridge rails advanced deterioration. Installation of the thrie-beam guardrail has limited the bridge sidewalk width.

Transportation Challenges it is intended to address and how it will address those challenges:

- a) Replace the structurally deficient 1931 single span T-beam bridge with a modern bridge capable of meeting commercial, commuter, and pedestrian needs with a design life expectancy of 100-years.
 - a. avert potential bridge load postings which may force Route 201 commercial vehicles, emergency response vehicles and buss traffic on an 18-mile detour through Bingham and over Route 16
- b) Improve the vertical and horizontal alignment
 - a. The current posted speed is 35mph and the existing roadway geometry does not meet the standards for a 35mph zone
 - i. Project will shift alignment approximately 24' downstream of existing alignment with 800' of approach work to improve horizontal alignment
 - ii. Project will raise the elevation of the bridge to improve the vertical alignment and improve sight line distances created by the sag curve
 - iii. Project will widen road shoulders from 3' to 5' (minimum) to increase commuter comfort and accommodate commercial vehicle off-tracking
 - iv. Project will Increase commuter comfort by increasing travel lane widths from 11' to 12'
- c) Improve pedestrian access through the community
 - a. Project will provide a wider, safer sidewalk that meets ADA requirements and satisfies the Department's Complete Streets Policy. Project will also maintain pedestrian access though the site during construction to maintain access between residential communities and commercial and municipal locations
- d) Maintain traffic on site during construction through staged construction with a single lane of alternating, one-way traffic and temporary signals
 - a. Project will divert commercial truck traffic on to Route 16 from Bingham to Madison during construction to reduce traffic volumes at the project site and reduce the length idling vehicle queues
 - b. Emergency response vehicles and busses will be able to maintain access through the project site during construction

Additional project benefits:

- a) Increase the hydraulic capacity through the bridge structure for Fall Brook
- b) Maintain bridge-mounted, town owned utilities

Innovations:

- a) Stainless steel rebar (i.e. corrosion resistant reinforcing) in the superstructure.

b) Fiber Reinforced Polymer (FRP) bridge drains

Photos:

Looking upstream.

Ibid.

2509

SOLON

Main Street

10272006





General

East side view

2504

Solon

Main Street

5-9-2013

Bridge #2514- Martins Bridge. Carries US Route 2 over the Ellis River in Rumford

Lat/Lon: 44.50639, -70.677086

Year built: 1928

Bridge Structure: Multi Span, Concrete Tee-Beam, 2 lane roadway with concrete deck and bituminous concrete wearing surface. 165' long by 30.4 wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 5 Fair, Substructure = 4 Poor with channel condition rating 6- Bank Slump

- **Date of last inspection report:** 6/3/19
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Scour Critical:** no
- **Functional Classification:** Rural - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** 52 miles; moderate impact
- **ADT:** 4239 vehicles, volume of heavy truck traffic: 5%
- **Condition of main structural components:** Structure is in overall poor condition. Severe cracking and delamination on the deck. Superstructure has delamination, deep spalling and exposed rebar. Tee-Beams under current wheel path have large sections of spalling/exposed rebar. Substructure has severe including cracking, spalling and exposed rebar.
- **Scour:** Some bank erosion and undercutting
- **Economic impacts:** major impact
- **Is Located on:** NHS
- **Replacement Cost Estimate:** \$5,990,000



Rumford, Martins Bridge #2514, WIN 024775.00**(Route 2 over Ellis River)****Existing conditions**

Built 1928 and widened in 1954

Age: 92 years old

Deck: 4 (poor condition)

Superstructure: 5 (fair condition)

Substructure 4: (poor condition)

Existing Bridge Description:

Length: 165', 4 span bridge (30'-49'-49'-30')

Width: Curb to curb width on bridge 30' (Approaches are 40' wide)

Superstructure Description: Reinforced concrete T beams with concrete deck and bituminous wearing surface

Substructure Description:

Abutments: Stub abutments on spread footings

Piers: Wall type piers supported on timber piles

Project History

Project included in the 2020-2022 MaineDOT work plan as a bridge replacement. STIP authorization/project kickoff anticipated in the Spring of 2020.

Proposed Bridge

Replace Martins Bridge # 2514 in Rumford, Maine.

Width: 36' curb to curb (12' travel lanes and 6' shoulders)

Length: 180' +/- . Either a single span bridge or a two span bridge with a pier in the middle of the river

Superstructure: weathering steel welded plate girders with concrete deck and bituminous wearing surface.

Substructure:

Abutments: Integral abutments supported on steel H piles to bedrock

Pier: Note: A pier is only needed for the two-span alternative.

Option #1 - Wall type pier with tremie seal support on steel H piles to bedrock

Option #2 - Pile bent type pier using stainless steel pipe piles

Alignment: Horizontal : Same as existing

Vertical: The finished grade of the bridge to be raised up between 1' to 3' for the two-span bridge. The single span bridge will require the grade to be raised up between 4' and 6'. The increase in the proposed finished grade is due to deeper beams with longer spans and the desire to eliminate a flat bridge to improve drainage.

Maintenance of traffic

Single lane temporary bridge located downstream of existing bridge in the approximate location of the former bridge pre 1929. A temporary traffic signal will be needed at the end of Route 5.

Safety improvements

Wider shoulders (6' versus 3')

Crashworthy bridge rail that is 42" tall.

Improved sight distance at intersection with Route 5 immediately west of the bridge

Fewer piers to catch debris (i.e. Less maintenance required)

Improved drainage on the bridge

Innovations

Integral abutments (i.e. a jointless bridge)

Stainless steel rebar (i.e. corrosion resistant reinforcing) in the superstructure.

Use of 2D modeling for the hydraulic analysis of the bridge

Fiber Reinforced Polymer (FRP) bridge drains

Investigating the possible use of A709 50 CR for use as a pipe pile for a pile bent for a possible two span option.

Bundle the project with Rumford-Mexico, Red Bridge #2702, WIN 021700.00. The two bridges will go out to bid as one project.

Project Readiness

This is a new project to MaineDOT. No engineering has been done, but MaineDOT has done many bridge projects of this type in the past. Project included in the 2020-2022 MaineDOT work plan as a bridge replacement

No road blocks anticipated. No 4(f) issues, no 6 f properties, no historic properties, no buried utilities.

Risks and Mitigation

Risk: Poor soils with risk for liquefaction

Mitigation: Geotechnical engineering will be an early focus during preliminary design.

Bridge #2707- Red Bridge. Carries US Route 2 over the Swift River in Rumford

Lat/Lon: 44.555508, -70.54631

Year built: 1952

Bridge Structure: Steel two span riveted thru girder and floor beam system, 2 lane roadway with concrete deck and integrated concrete wearing surface. 176' long by 28.1' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 4 Poor, Substructure = 6 Satisfactory. Channel condition rating 6- Bank Slump

- **Date of last inspection report:** 5/17/19
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** Yes
- **Presence of fatigue prone details:** Yes
- **Scour Critical:** no
- **Functional Classification:** Urban - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** 0 miles; minor to moderate impact
- **ADT:** 10,165 vehicles, volume of heavy truck traffic: 5%
- **Condition of main structural components:** Structure is in overall poor condition. Advanced spalling and delamination on the deck. Superstructure has heavy rust pack with warping between rivets on the bottom flanges. Holes at web stiffeners at roadway and bottom flange areas. Protective coating failure. Deterioration of concrete abutments. West abutment of footing is moving. Minor rip rap damage in the channel.
- **Scour:** Some bank damage
- **Economic impacts:** major impact
- **Is located on:** NHS
- **Replacement Cost Estimate:** \$6,530,500



Rumford-Mexico, Red Bridge #2702, WIN 021700.00**Existing conditions**

Built 1954

Age: 66 years old

Deck: 4 (poor condition)

Superstructure: 4 (poor condition)

Substructure 6: (satisfactory condition)

Existing Bridge Description:

Length: 165' 2 spans (82.5'-82.5')

Width: Curb to curb width on bridge 28' with 2- 5' sidewalks

Superstructure Description: Two-span, non-continuous painted steel thru-girder with concrete deck and concrete wearing surface.

Substructure Description: Combination of full height, mass concrete on H-piles placed each side of stacked granite masonry from the previous structure.

Project History

Project included in the 2020-2022 MaineDOT work plan as a bridge replacement. Project kickoff in August of 2016. Preliminary public meeting held on March 21, 2017. Preliminary design nearly complete. A draft preliminary design report by T.Y. Lin is pending review and approval by MaineDOT.

Proposed Bridge

Width: 36' curb to curb (12' travel lanes and 6' shoulders) with 2- 5' sidewalks.

Length: 155'

Superstructure: Constant depth welded weather steel plate girders with concrete deck and bituminous wearing surface. 4 bars steel traffic/pedestrian rail on both sides.

Substructure: Full height cantilever wall abutments supported on steel H pile driven to bedrock.

Alignment: Horizontal : Same as existing

Vertical: Bridge on a vertical crest curve that is about 3' higher than the existing bridge.

Maintenance of traffic

Two lane temporary bridge with a 5' sidewalk located downstream of the existing bridge.

Safety improvements

Wider shoulders (6' versus 2') to accommodate all users of the roadway including bicyclists.

Crashworthy bridge rail that is 42" tall.

Eliminate a non-redundant bridge.

Improved drainage on the bridge

Innovations

Corrosion resistant reinforcing (either GFRP or stainless steel) in the superstructure.

Fiber Reinforced Polymer (FRP) bridge drains

Bundle the project with Rumford, Martins Bridge #2514, WIN 024775.00. The two bridges will be bid as one project.

Project Readiness

A draft preliminary design report is available for this project. A preliminary public meeting has been held along with initial discussions with town and school officials.

Risks and Mitigation

Risk: 4(f) issues with baseball fields at southwest corner of bridge

Mitigation: Frequent and close communications with town officials and school officials. Provide stakeholders with detailed updated construction schedules. De Minimis impact is anticipated with the section 4(f) properties.

Bridge #5789- I 95/ Broadway. Carries I-95 over Route 15 in Bangor.

Lat/Lon: 44.819256, -68.775368

Year built: 1960

Bridge Structure: Multi Span Steel multi girder, 4 lane roadway with concrete deck and bituminous concrete wearing surface. 157' long by 90.1' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 satisfactory, Substructure = 5 fair.

- **Date of last inspection report:** 8/1/19
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Functional Classification:** Urban - Principal Arterial – Interstate, on NHS
- **Bypass detour length:** 1 mile; severe impact
- **ADT:** 25,340 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall fair/poor condition. Deck has several areas of spalling and exposed rebar. Superstructure has scattered paint failure. Two fascia girders have collision damage. Abutments have moderate cracking with efflo. Pier caps are cracked. Previous pier repairs are delaminating.
- **Scour:** N/A
- **Economic impacts:** major impact
- **Is on:** NHS and on STRAHNET
- **Replacement Cost Estimate:** \$20,177,500



Bangor, I-95/Broadway Bridge #5789 (WIN 22276.00)**Project Description:**

Originally constructed in 1960, the bridge carrying Interstate 95 over State Route 15 (Broadway Avenue) in Bangor, Maine exhibits advanced deterioration necessitating complete replacement. Interstate 95 is the primary interstate highway in Maine, and the interchange with Broadway is a critical link that is of paramount importance to the surrounding rural region. Broadway is a major arterial in and out of Bangor, with many businesses and neighborhoods located on both sides of the bridges. In addition, a Level IV Trauma Center is located on Broadway, less than one-half mile from the bridge and the interchange. The vital connection that this bridge provides to the surrounding community requires the MaineDOT take a pro-active approach to maintaining the connectivity provided by this bridge, which started in 2018 with the development of a Preliminary Design Report.

A major limiting aspect of these bridges is the substandard vertical clearance over Broadway. The bridge has been hit and damaged multiple times, most recently in 2018. This restriction requires large vehicles to bypass the structure with a 7-mile detour onto already congested adjacent roadways. A goal of the MaineDOT for the proposed bridge will be to provide 15'-6" of vertical clearance over Broadway. The existing bridge not only poses a vertical constraint for Broadway, but a horizontal one as well. The City has performed their own master planning and a specific corridor study on Broadway. The results of the study indicate that the horizontal clearance provided by the existing interstate bridge over Broadway is indeed a limiting constraint to their future expansion and development of Broadway which is the City's critical commercial and freight corridor.

A comprehensive and thorough alternatives development process is being undertaken for the Preliminary Design Report for these structures. Multiple project delivery and traffic management solutions are being developed and reviewed. A life cycle cost approach has been performed to ensure that the most cost-effective solution can be determined, with the goal being to minimize costs and disruptions to motorists for the next 75-100 years.

Bridge replacement and rehabilitation alternatives have been developed and are being evaluated by the design team, with input being solicited from the community. Simple span structures with spans varying from 100' to 140' have been developed, with all alternatives increasing the shoulder widths on I-95 and providing room for future corridor improvements along Broadway. All replacement alternatives include jointless bridge systems and durable, corrosion resistant materials such as stainless-steel reinforcing and metalized steel girders to ensure a lasting solution.

In addition, as part of the Preliminary Design Report development, input from all local stakeholders is being considered, including the City of Bangor's goal of reconstructing Broadway to meet the Complete Streets initiative developed by MaineDOT in 2013. The alternative chosen will be the alternative which takes all the above-mentioned considerations into account and provides a lasting solution.

Current Condition:

Geometric Constraints – a November 2017 bridge inspection evaluation reported impact damage to the two southerly facias girders of the center span. With Broadway being a main traffic artery for the city of Bangor, ME and the I-95 overpass providing substandard vertical clearance the likelihood of impact damage like this occurring is compounded. The 14 feet, 5 inches of vertical clearance provided is insufficient to support modern freight vehicles safely or efficiently, and currently requires large vehicles to detour away from the bridge, which places increased traffic demands on smaller roadways.



Poor condition of structural members – in general the steel girders have scattered surface paint failure and minor section loss at their ends; with the girders at pier joints experiencing extensive paint loss and rust. The concrete deck is in fair condition with scattered spalls, delaminations, cracking, exposed rebar, and efflorescence. Deck concrete at the pier joints has extensive cracking and spalling. The piers are in fair to poor condition with map cracking throughout the pier caps. Previous repairs are deteriorating/delaminating, and several cracks have formed directly under the bearings. Pier columns have scattered large areas of delaminations and vertical cracking. Overall the structure is functionally obsolete with advanced stages of deterioration that will require extensive rehabilitation or complete replacement soon.



Extensive Deteriorating Repairs and Retrofits – the bridge has undergone numerous repairs over its 60-year service life. The original finger joint was replaced after 7 years, in 1967. In 1982 the bridge received a new concrete parapet and aluminum rail, as well as, new compression seals over both piers. There has been repair work done to both piers and abutments, assumed to be completed in the mid-1990s, which has since begun to deteriorate and delaminated.



Additional project benefits:

- c) Increase Broadway vertical clearance under I-95 to 15'-6" for improved commercial trucking access.
- d) Reduction to a single span which opens bridge width to provide improved pedestrian access.
- e) Maintain interstate traffic on site with a two-lane temporary bridge to avoid traffic detours.
- f) Reconstruct on alignment to reduce impacts to I-95 approaches.

- g) Potential to coordinate with the City of Bangor's LAPD for Broadway that will increase pedestrian access, reconfigure the Broadway/Center Street intersection, align the southbound on & off ramps, and install a traffic median on Broadway.

Project's History including a description of any previously completed components:

The Bangor, I-95/Broadway Bridge #5789 project was initiated in the MaineDOT 2019-2020-2021 Work Plan as a bridge improvement project.

In 1985 the bridge railing, curb, joints, waterproofing membrane and wearing surface were replaced.

In 1967 finger joints were repaired on the bridge by Lane Construction.

Innovations:

- c) Stainless steel rebar (i.e. corrosion resistant reinforcing) in the superstructure.
- d) Fiber Reinforced Polymer (FRP) bridge drains

Project Readiness:

The preliminary design is underway for this bridge replacement. The bridge replacement project impacts should stay within the existing State right of way. No environmental permitting concerns are anticipated. May require a more involved public process with a focus on public access, traffic control, and construction activities close to nearby neighborhoods.





Bridge #1472- Stillwater # 1. Carries Stillwater Ave. over South Channel of the Stillwater River in Old Town.

Lat/Lon: 44.911507, -68.684929

Year built: 1952

Bridge Structure: Steel multi girder, two lane roadway with concrete deck and monolithic concrete wearing surface. 89' long by 36' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 satisfactory, Substructure = 5 Fair. Channel condition rating 5

- **Date of last inspection report:** 6/6/19
- **Repair history:**
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Scour Critical:** No
- **Functional Classification:** Urban - Minor Arterial
- **Bypass detour length:** 2 miles; moderate impact
- **ADT:** 16,728 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall fair condition. Deck has advanced spalling with joint headers having cracking and seal plow damage. Superstructure has 30% paint system distress, bearing at west abutment not aligned. Vertical cracks on both abutments. Washout behind wing walls.
- **Scour:** Erosion behind wing walls
- **Economic impacts:** major impact
- **Is on:** Critical Urban Freight Corridor on National Highway Freight Network.
- **Replacement Cost Estimate:** \$5,577,000



Bridge #2806- Stillwater # 2. Carries Stillwater Ave. over the North Channel of the Stillwater River in Old Town.

Lat/Lon: 44.912445, -68.684456

Year built: 1952

Bridge Structure: Multi Span Steel multi girder, 2 lane roadway with concrete deck and monolithic concrete wearing surface. 254' long by 26' wide, curb to curb.

Condition Ratings: Deck = 4 Poor, Superstructure = 6 satisfactory, Substructure = 6 Satisfactory. Channel condition rating 4- Protection severely undermined

- **Date of last inspection report:** 6/6/19
- **Repair history:** Girder ends at north abutment rehabilitated at some point in the past.
- **Bridge Posting:** N/A
- **Traffic Safety Features:** does **not** meet currently acceptable standards
- **Presence of fracture critical members:** No
- **Scour Critical:** No
- **Functional Classification:** Urban - Minor Arterial
- **Bypass detour length:** 2 miles; moderate impact
- **ADT:** 16,728 vehicles, volume of heavy truck traffic: 5%
- **Condition of the main structural components:** Structure is in overall poor condition. Deck has scattered areas of pop outs and exposed rebar and delamination. Superstructure has 25% paint system distress and moderate rusting at high exposure areas. Bearings have moderate to severe section loss. Abutments have minor cracks at seats and breast walls have heavy cracks at bearing areas. S. abutment exposed pile has been covered with rip rap. Moderate rip rap damage.
- **Scour:** NBI 5-Scour within pile limits.
- **Economic impacts:** major impact
- **Is on:** Critical Urban Freight Corridor on National Highway Freight Network
- **Replacement Cost Estimate:** \$8,512,000



Old Town, Stillwater Bridge #1, Bridge #1472, WIN 022512.

Old Town, Stillwater Bridge #2, Bridge #2806, WIN 022511.00

Existing conditions

Built 1954

Age: 66 years old

Deck: 4 (poor condition)

Superstructure: 6(satisfactory condition)

Substructure 6: (satisfactory condition)

Note: MaineDOT maintenance forces did extensive deck repairs in June of 2016 to extend the life of the existing bridges until the bridges can be replaced.

Existing Bridge Description:

Curb to curb width on bridge 26'

5' wide sidewalk on the downstream side.

Old Town, Stillwater Bridge #1, Bridge #1472, WIN 022512.00

Length: 85'

Superstructure Description: Painted rolled steel beams with concrete deck and concrete wearing surface with steel bridge rail and concrete posts

Substructure Description:

Abutment #1 & #2: Full height reinforced concrete cantilever abutments

Old Town, Stillwater Bridge #2, Bridge #2806, WIN 022511.00

Length: 250' 3 spans (75'-100'-75')

Superstructure Description: Painted rolled steel beams with concrete deck and concrete wearing surface with steel bridge rail and concrete posts

Substructure Description:

Abutments: Stub abutments supported on steel H-piles

Pier: Wall type pier supported on bedrock

Project History

The bridge projects are included in the 2020-2022 MaineDOT work plan as a bridge replacement project. The projects kicked off in October of 2014. A preliminary public meeting and an informational public meeting have been held. Multiple meetings have been held with the Metropolitan Planning Organization (MPO) Bangor Area Comprehensive Transportation System (BACTS). BACTS completed a corridor study on a section of

Stillwater Avenue that included the bridges on June 26, 2017. A draft preliminary design report by VHB is pending review and approval by MaineDOT. Preliminary design will be completed very soon, and final design will begin later in 2020.

Proposed Bridge Project Description

Replace both bridges (#1472 and #2806) on Stillwater Avenue over the Stillwater River in Old Town, Maine.

Old Town, Stillwater Bridge #1, Bridge #1472, WIN 022512.00

Old Town, Stillwater Bridge #2, Bridge #2806, WIN 022511.00

A small island is located between the two bridges. The roadway on the island shall be reconstructed as part of the bridge project. The total length of the project is approximately 559'. Both bridges and the island will have a 34' curb to curb (11' travel lanes and 6' shoulders) with a 5' sidewalk on the upstream side. The bridges will be built in about the same location as the existing bridges with the finished grade slightly higher. During construction traffic will be maintained on a temporary detour bridge with 2 traffic lanes and a 5' wide sidewalk that is located upstream of the existing bridge.

Old Town, Stillwater Bridge #1, Bridge #1472, WIN 022512.00

Length: 125'

Superstructure Description: Constant depth metallized welded weather steel plate girders with concrete deck and bituminous wearing surface. 4 bars steel traffic/pedestrian rail on both sides.

Substructure Description:

Abutment #1: Semi integral abutment with steel H-piles socketed into bedrock.

Abutment #2: Semi integral abutment with steel H-piles socketed into bedrock.

Old Town, Stillwater Bridge #2, Bridge #2806, WIN 022511.00

Length: 280' (Two 140' spans)

Superstructure: Metalized haunched welded weather steel plate girders with concrete deck and bituminous wearing surface. 4 bars steel traffic/pedestrian rail on both sides.

Substructure:

Abutment #1 & #2: Integral abutment with steel H piles socketed into bedrock.

Pier: Wall type pier with tremie seal on bedrock.

Maintenance of traffic

Two lane temporary bridge with a 5' sidewalk located upstream of the existing bridge. All utilities except for Central Maine Power will be temporarily relocated on to the temporary bridge.

Safety improvements

Wider shoulders (6' versus 2') to accommodate all users of the roadway especially bicycles.

Crashworthy bridge rail that is 42" tall.

Improved drainage on the bridge

Innovations

Corrosion resistant reinforcing (either GFRP or stainless steel) in the superstructure.

Fiber Reinforced Polymer (FRP) bridge drains

The bridge projects will be bundled with the adjacent highway project on Stillwater Avenue in Old Town WIN 022950.00

Project Readiness

A draft preliminary design report (PDR) is available for this project and currently being revised. The preliminary design phase will be complete very shortly. The project has no 4(f) issues, 6 (f) properties or section 106 issues.

Risks and Mitigation

Risk: Section 7 concerns (i.e. Endangered Atlantic Salmon)

Mitigation: MaineDOT will be consulting with the USFWS to clarify all limitations on working in the water.

Stillwater Avenue / College Avenue Intersection Safety Improvements in Old Town

Lat/Lon: 44.914711, -68.683395

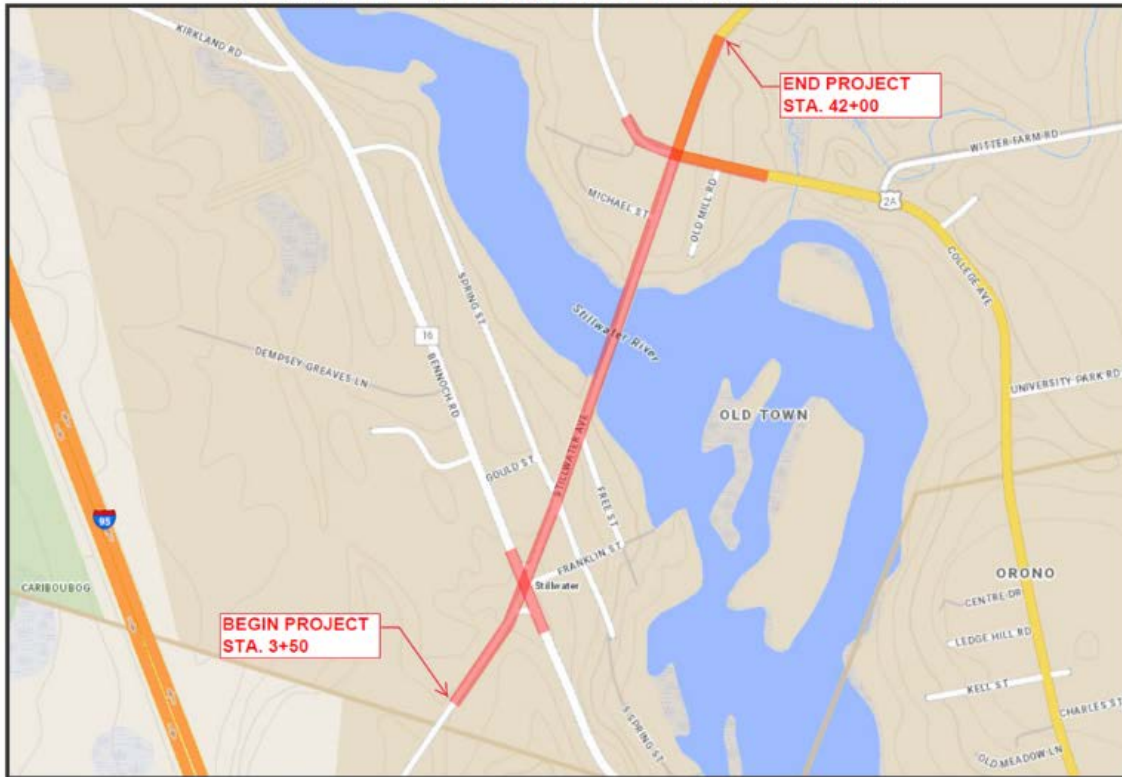
From the Draft Preliminary Design Report

Project History: A pair of projects to address the Stillwater Avenue Bridges, 1 and 2, over the Stillwater River (Bridges #1472 and #2806 respectively) had a kickoff in 2014. In 2015, there was an initial traffic study for the Stillwater Avenue and College Avenue intersection that determined that the intersection needed to be improved. In 2016, repairs were made to both bridge decks and BACTS funded a study for Stillwater Avenue (Bennoch Road to College Avenue). In 2017, there was a kickoff for a Highway/Intersection project that will be advertised with the bridge projects.

Purpose & Need: The purpose of this project is to improve the intersection at Stillwater Avenue and College Avenue and upgrade the existing pavement structure and pedestrian facilities with safety improvements.

Brief Summary of Proposed Scope of Work: The project will mill and overlay or reconstruct Stillwater Avenue, College Avenue and Bennoch Road. Sidewalks within the project limits will be reconstructed. The sidewalk from the bridges over the Stillwater River to the intersection of College Avenue will be widened. The traffic signals at College Avenue and Bennoch Road will be updated with new mast arms, signal, control boxes and detection. Existing drainage will be upgraded or adjusted as needed.

22950.00 - STILLWATER & COLLEGE AVE



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0.2 Miles
1 inch = 0.15 miles

Date: 8/28/2019
Time: 8:00:19 AM

