City-Wide Bridge Evaluation
Portsmouth, New Hampshire

Prepared for:
City of Portsmouth, New Hampshire

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APPENDICES

1 INTRODUCTION

1.1 Executive Summary

The City of Portsmouth retained Hoyle, Tanner to evaluate all City-owned bridges and prioritize maintenance, preservation, rehabilitation and replacement projects to be included in a 10-year capital improvement plan. The City currently owns fifteen bridges consisting of twelve vehicular bridges and three pedestrian bridges. Refer to Appendix A for the Recommended 10-Year Bridge Capital Improvement Plan matrix.

Hoyle, Tanner personnel performed limited field observations and reviewed available data to formulate a plan that prioritizes the City's bridges based on recommended work and available funding. Recommended work for each bridge is categorized into short-term, intermediate-term, and long-term needs, which should be addressed within the next 2 years, 2-7 years and beyond 7 years, respectively. Refer to Appendix B for a summary of the recommendations.

Bridges requiring major rehabilitation or complete replacement are eligible for funding through the NHDOT Municipal State Aid Bridge (SAB) Program. Funding for the SAB Program is available to municipalities in New Hampshire and provides 80% of total (eligible) project costs including design and construction. NHDOT has temporarily stopped adding new projects to SAB Program due to funding limitations and the need to balance the program. It is likely that when the SAB funding is restored, some or all of the City's SAB-eligible projects discussed herein would be programmed beyond this 10-year plan. Refer to Section 3 of this report for further discussion of the SAB program.

Based on the field observations, noted conditions of the City-owned bridges, and anticipated available funding, the following priority list is recommended:

Priority	NHDOT Bridge No.	Location
1	240/132	Kearsarge Way over PAR
2	240/106	Market Street EB over Tidal Basin
	241/106	Market Street WB over Tidal Basin
3	231/103	Maplewood Ave over North Mill Pond
4	220/143	Rec Trail over Market Street
5	191/110	Coakley Road over Hodgson Brook
6	204/101	Bartlett Street over Hodgson Brook
7	235/069	NH 1B over South Mill Pond
8	145/115	Rec Trail over PAR
9	154/101	NH 33 over PAR
10	246/083	US 1, Scott Ave over Daniel Street
11	198/107	Cate Street over Hodgson Brook
12	241/069	Peirce Island Road over Little Harbor
13	198/124	Rec Trail over US 4, NH 16 SP TPK
14	198/034	NH 1A over Sagamore Creek

General routine maintenance is suggested to be completed on a regular basis for all bridges and can likely be performed utilizing Public Works Department staff and equipment. These maintenance items, if performed on a routine basis, can significantly prolong the useful life of the City's bridges and postpone significant bridge repair or rehabilitation requirements. Refer to Appendix C for recommended routine bridge maintenance items and a maintenance schedule. Some bridge-specific routine maintenance recommendations are also included for select structures; however, the general routine maintenance recommended in Appendix C is applicable to all bridges, including those with specific maintenance recommendations.

1.2 Inspection Purpose and Methods

A crew of two bridge inspectors from Hoyle, Tanner visited each bridge between July 25, 2018 and August 8, 2018 to perform limited field observations and to gather information for the preparation of this Report. The purpose of the site visits was to identify the necessary work for each bridge and to aid in the development of conceptual cost estimates for the identified work. All short span bridges over low velocity water crossings were inspected using chest waders to gain access within arm's reach to collect inspection data. All other bridges over water crossings were inspected visually from the river banks, as such, not all deficiencies were visible since the inspectors were unable to gain access within arm's reach for these bridges. It should be noted that conceptual estimates of probable construction costs are based on the limited visual inspections performed and associated observations.

Previous NHDOT Bridge Inspection Reports, as well as original drawings if available, were reviewed for each bridge prior to performing the site visits completed for the preparation of this report; NHDOT Bridge Inspection Reports are included for each bridge in Appendix D. Deficiencies noted in the NHDOT Bridge Inspection Reports were reviewed to evaluate if the deficiencies previously identified have been repaired or have increased in size and severity. Each bridge component was observed visually, at a minimum, if hands-on inspection was not feasible; however, visual inspections alone are not likely to reveal deficiencies beyond those that could be noted during a routine inspection.

2 CITY-OWNED BRIDGES EVALUATED

2.1 Recreation Trail over PAR (NHDOT Bridge No. 145/115)

Priority: 8

Introduction

The existing bridge was constructed in 1970 and spans over the Pan Am Railway. The structure is skewed to the railroad by 33 degrees and consists of weathering steel rolled I beams with a concrete deck supported on concrete abutments and piers founded on spread footings. The total length of the bridge is 104' and is comprised of three spans with two end spans of 29' and an interior span of 46'. The overall width of the bridge is 9'-7" and carries pedestrians and bicyclists on an 8'-2" wide paved roadway. Nine telephone conduits and a gas main are suspended from the structure below deck near the center of the structure.

North Elevation

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck, superstructure, and substructure are a 7 or 'good'.

For the purpose of this report, Borthwick Ave is considered to be on the west end of the bridge.

Observations

The pavement has settled in both approaches, causing a tripping hazard at both ends of the deck, with maximum settlements observed at the time of inspection of 2-3/8" and 1-1/2", in the west and east approaches, respectively. Vegetation overgrowth is present on the west approach and continues onto the bridge. The embankment at the northeast quadrant of the bridge has eroded with stormwater runoff appearing to be the cause. There are several isolated locations of abrasion on the concrete deck with exposed aggregate. The galvanized metal rail posts exhibit surface damage, most likely from plow impact, and two pickets on the northwest quadrant are broken.

The expansion joint glands are holed, leaking, and have reached the end of their useful service life. Filler material that appears to have formed the separation between the abutments and brush curbs no longer exists. The east abutment exhibits map cracking, spalling and isolated larger cracking with horizontal movement up to 1/16". The underside of the deck is in generally satisfactory condition with delamination and spalling throughout the underside of the overhangs.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

West End Vegetation

Delamination at Deck Overhang

Tripping Hazard at West End

Recommendations

Short-Term Recommendations:

- Repave both approaches to correct tripping hazard.
- Touch-up the rail system with cold galvanizing compound and replace broken pickets.
- Remove spalling and loose concrete from the deck and seal to prevent further abrasion.
- Regrade the approach shoulders and embankments and add erosion stone (as necessary) to promote proper drainage and minimize erosion.
- Add filler material between abutment and brush curb.
- Clear vegetation overgrowth along west approach.

The short-term recommended work for this bridge is considered maintenance repairs that can likely be completed utilizing Public Works Department personnel and equipment.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

- Replace the expansion joints.

2.2 NH 33 over PAR (NHDOT Bridge No. 154/101)

Priority: 9

Introduction

South Elevation

The existing bridge, constructed in 2010, carries NH 33 over the Pan Am Railroad. This structure is comprised of prestressed voided slabs with concrete overlay superstructure supported on concrete abutments founded on spread footings. The bridge has a total length is 50', skew of 33 degrees, and a total width of 50' that carries two lanes of traffic on a 34' wide paved roadway. A 7' concrete median separates the two travel lanes and a 6' wide concrete sidewalk is located on the north side of the bridge.

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck, superstructure, and substructure are an 8 or 'very good'.

For the purpose of this report, Dodge Ave is considered to be west of the bridge and Islington Street is considered to be the east of the bridge.

Observations

The pavement exhibits minor cracking but is still considered to be in good condition. A large transverse crack is present in the approach pavement at both ends of the bridge, at the ends of the approach slabs, most likely caused by minor settlement of abutment backfill material. The northeast approach curb and sidewalk are settling, creating a tripping hazard at the interface with the bridge curb and sidewalk. The south brush curb and southwest transition rail have minor damage from vehicular and/or plow impact.

The underside of the deck exhibits signs of efflorescence, leaking and rust staining. The as-built drawings indicate that the bridge was constructed in two phases; the leaking appears to be concurrent with the phase construction joint, which is also located near the median curb line. It is likely that water is penetrating the pavement and waterproofing membrane at the median curb line and migrating to the phase construction joint, where it is leaching through the superstructure.

A significant amount of graffiti is present on the abutments and wingwalls, some of which had been painted-over at the time of the inspection.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Underside of Deck Near Centerline

East Transition Joint

North Sidewalk Expansion Joint

Recommendations

Short-Term Recommendations:

None.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

- Replace concrete sidewalk panels on the north sidewalk, adjacent to bridge, and reset the granite curb to remove the tripping hazard by creating a smooth surface.
- Remove pavement along the curb line and reseal the membrane with hot-applied rubberized asphalt material to prevent water from passing through the pavement.

Routine Maintenance:

The following should be completed in the next two years, which can be included with the suggested typical Routine Maintenance procedures included in Appendix C:

- Seal along curb lines, with hot-poured crack sealant, to minimize water intrusion through the pavement. This maintenance fix would be completed as an interim-repair with a more substantial repair completed in the long-term, and would only be effective as long as the pavement remains in good condition.
- Seal transverse cracks in the pavement in the approaches; monitor cracking for additional settlement in the approaches.
- Seal the underside of the deck to prevent future rusting and staining.
- Continue to paint-over or remove graffiti from the abutments.

2.3 Coakley Road over Hodgson Brook (NHDOT Bridge No. 191/110)

Priority: 5

Introduction

Downstream Elevation

The existing bridge was constructed in 1940 and consists of a box culvert with three 11'-0" wide barrels, for a total bridge length of 36'. The bridge has a skew of 10 degrees and carries two lanes of traffic on a 28' wide paved roadway. The bridge rail consists of guardrail with timber posts on each side of the bridge. The bridge has an 'E2' load restriction, and posting signs properly identifying this restriction are installed in both approaches.

The only outlet for Coakley Road is its intersection with Route 1 Bypass approximately 500 feet east of the subject bridge. Therefore, this structure provides a critical connection for the neighborhood located to the west of the structure, and traffic control will be a critical consideration for any major rehabilitation or complete replacement project. If construction of a temporary (or perhaps permanent) connection between Coakley Road and Borthwick Avenue is not feasible to create a temporary detour route, the use of either phased construction or a temporary vehicular bridge will be necessary.

According to the latest NHDOT Bridge Inspection Report, the condition rating of the bridge is a 5 or 'fair'.

For the purpose of this report, upstream is considered north for this bridge.

Observations

The pavement over the bridge is in good condition with minor transverse cracking. There is heavy vegetation along the curb lines across the bridge and on the embankments down to Hodgson Brook in all four quadrants.

During periods of normal flow, Hodgson Brook is slow-moving with a normal water depth of approximately 2' in each of the three barrels of the concrete culvert. The streambed consists of loose sediment and muck near the banks and firm gravel near the center of the channel. The upstream face of the concrete walls of the culverts exhibit loss of fine aggregate and abrasion. Spalling and concrete loss continues into the culverts along the waterline. The underside of the deck exhibits scattered abrasion and light leaking. Rebar is exposed in several isolated locations below and above the waterline. The southwest wingwall exhibits severe spalling around the drainage outlet.

Barrell 2 Abrasion and Exposed Rebar

Loss of Concrete Below Waterline

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Recommendations

Short-Term Recommendations:

None.

Intermediate-Term Recommendations:

- Perform in-depth inspection.
- Load rate to evaluate the structure's vehicular load capacity and potential need for a future strengthening repair project.

Long-Term Recommendations:

- Replace the guardrail with a crash-tested railing system.
- Remove and replace bridge deck membrane.
- Remove and replace bridge and approach pavement.
- Miscellaneous concrete repairs.
- Install erosion control measures.

The City applied to have a rehabilitation project for this bridge added to the NHDOT Municipal SAB program in November 2000. NHDOT processed this application and provided the City with a total project cost estimate of $165,000. To continue with the SAB application process, the City must next notify the NHDOT's Municipal Highways Engineer in the Bureau of Planning and Community Assistance of its intent to conduct the project. However, the estimate prepared by NHDOT in 2000 is outdated and does not reflect any changes in condition of this structure that have occurred over the last 18 years. It is recommended that the City contact NHDOT to express interest in moving forward with SAB funding for this bridge, and to request an updated estimate for a repair or perhaps complete replacement project. The Coakley Road bridge is

currently in fair condition and major repairs or replacement are not anticipated to be necessary within the 10-year period covered by this capital program. However, it is possible that a complete replacement would be recommended in the Engineering Study prepared as the first step in the engineering process for SAB projects. Therefore, the cost for a replacement project is included in the "Beyond Year 10" heading of the Recommended 10-Year Bridge Capital Improvement Program matrix provided in Appendix A.

The waters of Hodgson Brook are impaired and directly affect the environmental quality of the North Mill Pond downstream of the brook. The Hodgson Brook Local Advisory Committee (LAC) was formed in 2002 in an effort to restore Hodgson Brook and its watershed. As part of the Hodgson Brook Restoration Project, the streambank directly downstream of the Coakley Road Bridge was restored with vegetation plantings and the construction of a bioretention area for stormwater treatment. Streambanks disturbed as a result of work performed on the Coakley Bridge should be restored at the completion of the project.

2.4 NH 1A over Sagamore Creek (NHDOT Bridge No. 198/034)

Priority: 14

East Elevation

Introduction

The previous bridge, constructed in 1941, was replaced in 2015 with painted steel I-beams and composite concrete deck. The total bridge length is 424' and is comprised of three spans with a maximum span length of 178'. The bridge has an overall width of 43' and carries two lanes of traffic on a 34' wide paved roadway. A 5'-6" wide sidewalk is located on the south side of the bridge.

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck, superstructure, and substructure are a 9 or 'excellent'. For the purpose of this report, upstream is considered west for this bridge.

Observations

The bridge is generally in excellent condition. There are transverse hairline cracks in the sidewalk and brush curb. The expansion joints have accumulated debris and sand that inhibits proper operation of the joints; the debris reduces the allowable thermal movement of the bridge, inducing thermal stresses into the bridge structure.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Hairline Crack in Brush Curb

Debris in South Expansion Joint

On South Approach Looking North

Recommendations

There are no recommendations at this time beyond general routine maintenance activities, which includes flushing the expansion joints and washing the bridge annually.

2.5 Cate Street over Hodgson Brook (NHDOT Bridge No. 198/107)

Priority: 11

Introduction

The existing bridge was constructed in 1940 and is comprised of painted steel I-beams and concrete deck. The total length of the bridge is 37' and the clear span is 30'. The overall width of the bridge is 28' and carries two lanes of traffic on a 20' wide paved roadway. There is a 4' sidewalk on the east side of the bridge. The bridge is currently load posted at a 3-ton weight limit; signs identifying the load restriction are installed in both approaches. An insulated utility pipe is installed on the exterior face of the upstream exterior girder, assumed to be a water main based on the presence of a fire hydrant on the same side of the road.

West Elevation

According to the latest NHDOT Bridge Inspection Report, the condition rating of the deck is a 2, or 'critical'. The condition rating of the superstructure is a 5 or 'fair' and the substructure is a 6 or 'satisfactory'. The bridge rail, transition rail, approach rail, and rail terminations are substandard. The bridge has an AASHTO sufficiency rating of 26% and is on the NHDOT Municipal Bridge Redlist.

Hoyle, Tanner performed a hands-on field inspection in January 2017 as part of a separate project completed for the City. The inspection was initiated after an approximately 3' diameter hole developed in the concrete bridge deck that was discovered during a biennial NHDOT inspection. Results of Hoyle, Tanner's structural inspection, as well as a summary of the load rating analysis and recommendations for repair of the deck, were summarized the in a Bridge Assessment letter dated April 3, 2017. The City immediately load posted the bridge and completed an emergency repair project that included installation of a steel plate over the hole in the bridge deck. The repair was considered a short-term solution, implemented with the understanding that a more extensive rehabilitation, replacement, or removal project would be necessary within the next several years to address the remaining deficiencies.

For the purpose of this report, upstream is considered west for this bridge.

Observations

The pavement on the bridge deck and in the approaches is cracked and settled. The sidewalk and curb exhibit cracking and spalling and are covered with debris and vegetation. Nuts are missing from the anchor bolts of the steel pipe bridge rail, and the paint system is failing. The underside of the concrete deck exhibits areas of efflorescence indicating that water and chlorides are leaching through the deck. The deck concrete appears to have been poorly consolidated during construction as many patches of exposed aggregate and voids are also

visible on the underside of the deck. All five steel beams exhibit heavy corrosion and section loss with various levels of paint system failure ranging from minimal peeling to 100% failure. Both abutments exhibit spalling and cracking with localized areas of exposed rebar. A horizontal crack extends approximately 75% of the total width of both abutments at a location approximately 1' below the top of the bearing seat. A full-height vertical crack is located at the eastern-most portion of the north abutment.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report and the previous (January 2017) hands-on inspection performed by Hoyle, Tanner.

North Abutment

Looking South from North Approach

Recommendations

Short-Term Recommendations:

None.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

The Cate Street Bridge would require major rehabilitation, or replacement, to address the superstructure deficiencies noted herein and keep the bridge open to vehicular traffic. The Cate Street corridor is currently undergoing significant redevelopment, including construction of several new townhouse-style residential condominium buildings between the Cate Street Bridge and Bartlett Street. It is Hoyle, Tanner's understanding that this development project may include realignment and reconfiguration of Cate Street, including a new connection to US Route 1 Bypass at the existing Borthwick Ave intersection, through the former Frank Jones Center property. If this reconfiguration is constructed, the Cate Street crossing at Hodgson Brook would provide a secondary access to the proposed Portsmouth Senior Activity Center located at the recently acquired Paula A. Doble Army Reserve Center on Cottage Street. If the

Cate Street Bridge is to remain in-service, it is recommended that the structure be upgraded to increase capacity to safely carry loading from the City's feet of emergency response vehicles, at a minimum, through either a major rehabilitation or replacement project.
The City applied to have a rehabilitation project for this bridge added to the NHDOT Municipal SAB program in September 2000. NHDOT processed this application and provided the City with a total project cost estimate of $325,000. To continue with the SAB application process, the City must next notify the NHDOT's Municipal Highways Engineer in the Bureau of Planning and Community Assistance of its intent to conduct the project. However, the estimate prepared by NHDOT in 2000 is outdated and does not reflect any changes in condition of this structure that have occurred over the last 18 years. It is recommended that the City contact NHDOT to express interest in moving forward with SAB funding, and to request an updated estimate for a complete replacement project.

As previously discussed, new projects are not currently being added to the SAB program; the Department has not identified when new projects will be added, or which Fiscal Year they will be added to for construction funding. The Cate Street bridge is currently in fair condition with the deck being repaired; therefore, major repairs or replacement are not anticipated to be necessary within the 10-year period covered by this capital program. However, it is likely that a complete replacement would be recommended in the Engineering Study prepared as the first step in the engineering process for SAB projects. Therefore, the cost for a replacement project is included in the "Beyond Year 10" heading of the Recommended 10-Year Bridge Capital Improvement Program matrix provided in Appendix A.

NHDOT will continue to inspect the Cate Street bridge every 12 months because of the deteriorated condition of the deck (bridges in satisfactory or better condition are inspected on a 2-year cycle, but that frequency is increased when a bridge is added to the Red List). Should the current condition deteriorate further, NHDOT may recommend to the City that the bridge be closed to vehicular traffic.

Routine Maintenance:

In addition to the general routine maintenance procedures listed in Appendix C, continue to inspect the location of the steel plate repair annually to ensure the plate is secured to the deck and the pavement is not cracked around the plate.

2.6 Recreation Trail over US 4, NH 16 SP TPK (NHDOT Bridge No. 198/124)

Priority: 13

Introduction

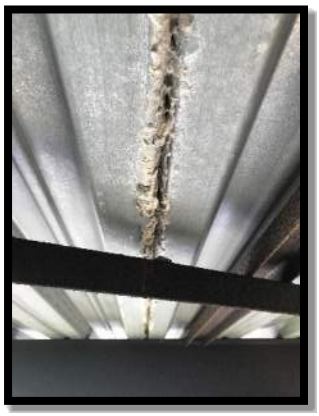
The existing multi-use bridge was installed in 2000 and consists of a weathering steel through truss superstructure with a concrete deck. The total bridge length is 133' and the total bridge width is 12', accommodating pedestrian and bicycle use. The bridge was manufactured by Biltolast Products Inc. of Fort Payne, Alabama in June 1999, as evidenced by the manufacturer's 10-ton maximum load placards installed on the truss verticals at each end of the bridge.

East Approach Looking West

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck and superstructure are a 7 or 'good' and the substructure is an 8 or 'very good'.

Observations

The bridge rail is in good condition and the 42" rail height is acceptable because protective screening is also present (rail systems for bicycle applications are typically required to be a minimum height of 54"). The expansion joints do not have a substantial amount of travel to accommodate thermal expansion with the east expansion joint gap ranging from less than 1/8" to 3/8" (as measured on 7/25/18 with the ambient air temperature at approximately 75°F). A continuous transverse hairline crack extends along the entire width of the concrete bridge deck at a location approximately 16'-0" west of the centerline of the east expansion joint.
The weathering steel superstructure is in good condition. Although the beam seats are fairly clean, rust staining has developed on both abutments. Efflorescence is visible on the underside of the deck between the stay-in-place form joints. The slotted holes in the sole plates are



Efflorescence on Underside of Deck

West Expansion Joint

Typical Bent Anchor Bolt

either undersized or the anchor bolts are in the incorrect location as evidenced by the bent anchor bolts at the west abutment bearings; the anchor bolts bear against the side of the slotted holes and do not leave any room for additional expansion of the superstructure.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Recommendations

There are no recommendations at this time beyond the general routine maintenance listed in Appendix C, and the bridge-specific routine maintenance and bridge monitoring plan suggested in the following sections.

Routine Maintenance:

Remove the tree growing behind the northeast wingwall and east abutment backwall. The expanding root mass of this tree will increase the lateral pressure on the adjacent substructure elements, potentially causing distresses such as wall rotation, bulging, and/or cracking.

Bridge Monitoring Plan:

The narrow width of the expansion joints at deck level and bent anchor bolts at the bearings indicate the structure may not be accommodating thermal movement as intended. When the superstructure expands as the ambient air temperature increases, steel plates attached to the truss bottom chord (sole plates) slide over lower steel plates that are bolted to the abutment beam seats (masonry plates). The sole plates have slotted holes, as shown in the "Typical Bent Anchor Bolt" photo above, and for a properly designed and installed bearing system the length of the slotted holes exceeds the expected thermal movement of the structure. At the time of observation, the inside edges of the slotted holes of the sole plate were bearing against the anchor bolts, restraining the structure against further expansion and bending the anchor bolts. Restraint against thermal movement can induce additional stress into the structure, in particular the truss bottom chord and concrete deck.

Repairs to correct the expansion joint and bearing deficiencies are likely to be challenging and costly to construct. The subject bridge has been in-service for the past 18+ years and distress has not been observed in either the truss bottom chord or the concrete deck. Therefore, though the expansion joint and bearing system may not be operating as intended, it is not critical at this time to address these issues. It is recommended that the City implement a monitoring plan, to be completed on an annual basis, that includes the following:

- Monitor the width of the expansion joints at various temperatures and note if new cracks form in the concrete bridge deck.
- Observe anchor bolts and truss bottom chord bi-annually, in winter and summer months, to evaluate expansion and contraction conditions and monitor for distresses that may be caused by restraint against thermal expansion.

2.7 Bartlett Street over Hodgson Brook (NHDOT Bridge No. 204/101)

Priority: 6

Introduction

The existing bridge, constructed in 1901, consists of a 10' span masonry slab structure supported by stacked granite block abutments with a skew of 12 degrees. The bridge has an overall width of 32' (within the limits of City ownership; see below for further information) and carries two lanes of traffic and a 6' wide sidewalk on the east side. The bridge has an 'E2' load restriction, and a posting sign identifying this restriction is installed in the south approach; the sign in the north approach is missing.

East Elevation

The bridge carries several underground utilities, some within the hydraulic opening of the bridge and the remainder installed in the roadbed material above the top slab. Field observation of DigSafe markings, manholes, and valve boxes indicates the bridge carries telephone/data conduits in the area of the downstream sidewalk, water mains near both the downstream and upstream curblines, a 4" dia. plastic gas main near the upstream sidewalk, and a gravity sewer main near the centerline of roadway. The upstream water and gravity sewer mains are located within the hydraulic opening. There is also a closed storm drainage system at the bridge, with an outfall penetrating through the northern stone masonry wall into the bridge.

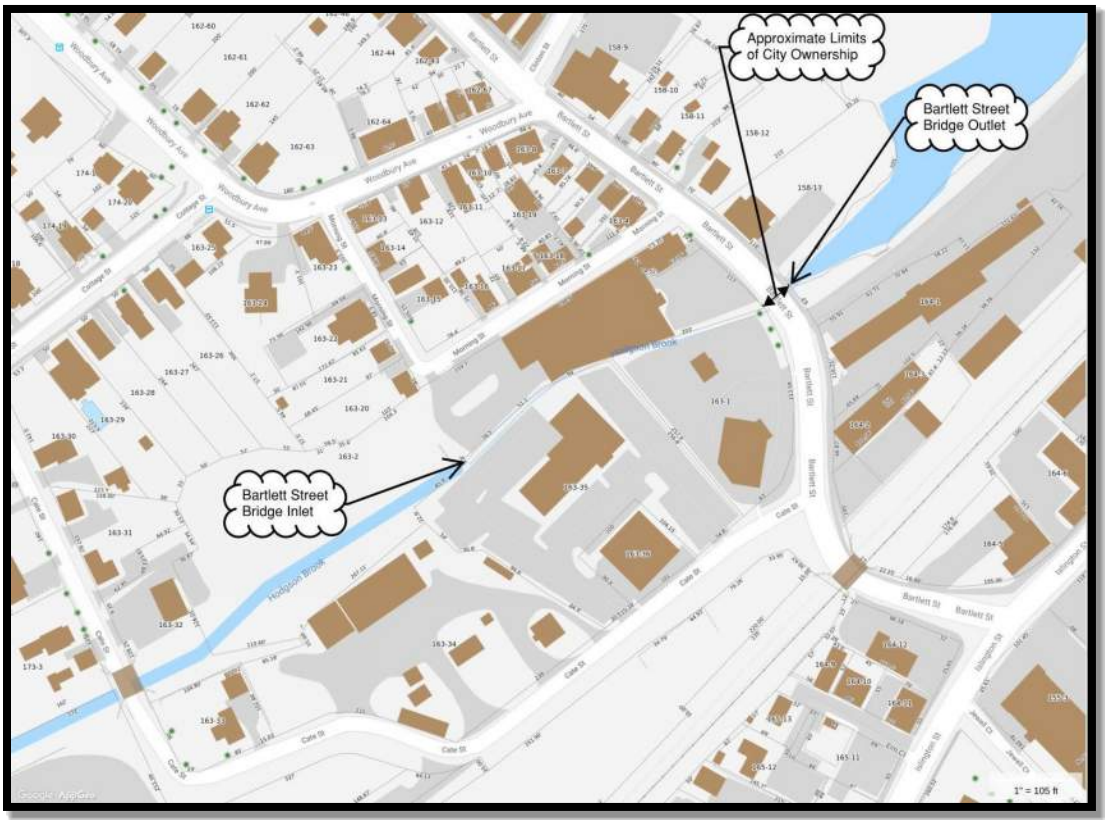
Utility in Hydraulic Opening Near Outlet

The total length of the Bartlett Street Bridge is approximately 500', though the extent of City ownership is understood to be limited to the portion of the structure within the Bartlett Street right-of-way. The inlet end of the overall structure is located west of the Eldredge Park building (1 Cate Street), and the bridge extends under the 68 Morning Street property, including under a portion of the building and parking area located on this parcel. The bridge outlets to North Mill Pond on the east side of Bartlett Street.

The portion of the bridge located outside of the City right-of-way is a concrete box structure and is potentially Federally-owned; the original design drawings for that portion of the structure were prepared for the U.S. Army Corps of Engineers in 1956 as part of a project along Hodgson Brook to improve drainage from the Portsmouth Air Force Base to North Mill Pond. **The observations presented herein are only for the 32' length of the structure for which the City is responsible for maintaining.**

The latest NHDOT Bridge Inspection Report encompasses only the portion of the bridge in the City right-of-way and assigns a culvert condition rating of 6 or 'satisfactory'. The bridge approach rail and approach rail ends are listed as substandard.

For the purpose of this report, upstream is considered west for this bridge.



Bartlett Street Bridge Layout

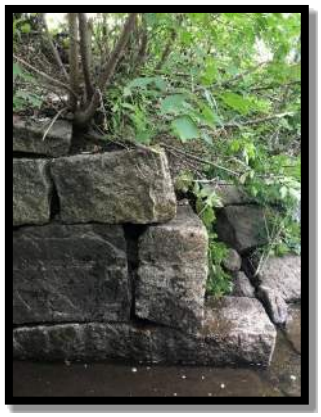
Observations

The span of the structure narrows from 11'-6" to 10'-6" at the transition between the upstream concrete box culvert to the City-owned stacked granite abutment bridge. The granite stones of the masonry abutments are cracked with voids and the mortared joints between stones are deteriorated. Large granite blocks form the bottom of the channel at the outlet. Heavy vegetation is present around the outlet of the structure and is likely a cause of the rotation that is occurring in some of the granite blocks of the east wingwalls.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

North Approach Looking South

Voids Between Granite Blocks of Abutment



Wingwall Stone Rotation

Recommendations

Short-Term Recommendations:

- Confirm that the extent of City ownership for this bridge terminates at the western right-of-way boundary of Bartlett Street, and determine ownership of the remaining portion of the bridge.

  It is important to fully understand the limits of City and either Federal or potentially ownership of the Bartlett Street Bridge, particularly regarding maintenance responsibilities and costs, and the potential risks associated with this unique structure. The portion of the bridge located outside of the right-of-way supports a parking lot and a building, and the performance of those features is highly dependent on the bridge remaining in good condition. Further, if the upstream portion of the structure falls into disrepair, it could have detrimental impact on the City-owned portion.

Intermediate-Term Recommendations:

- Load rate to evaluate the structure's vehicular load capacity.
- Perform hydraulic analysis to determine the structure's capacity to convey flow.
- Evaluate condition of utilities within the hydraulic opening and determine if a utility repair, replacement, or relocation project may be necessary.
- Chink and repoint the masonry stone abutments and wingwalls. Special attention should be made to the utility penetrations where there are large voids around the pipes.

Long-Term Recommendations:

The current 10-year planning period of the Bridge Capital Improvement Plan does not include recommendations for the Bartlett Street Bridge. However, the City applied to have a rehabilitation project for this structure added to the NHDOT Municipal SAB program in September 2000. NHDOT processed this application and provided the City with a total project cost estimate of $285,000. Though a specific project is not identified for this bridge, it is recommended that the City contact NHDOT to express interest in moving forward with SAB funding for this bridge, and to request an updated estimate. Depending on the findings of the tasks completed under the Short- and Intermediate-Term Recommendations, a repair, rehabilitation, or replacement project requiring capital planning or SAB funding may be necessary, and the process for obtaining SAB funding should be started as early as possible based on the current status of the program.

Routine Maintenance:

The following should be completed in the next two years, which can be included with the suggested typical Routine Maintenance procedures included in Appendix C:

- Removal of trees and vegetation around the structure and within the outlet.
- Replace the missing E2 Posting sign in the north approach.

2.8 Recreation Trail over Market Street (NHDOT Bridge No. 220/143)

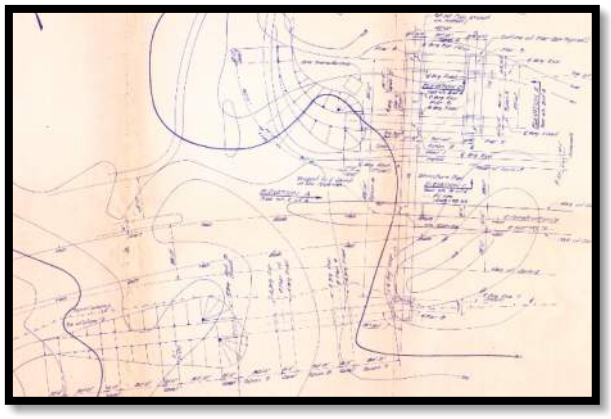
Priority: 4

North Elevation from North Approach

Introduction

The existing bridge was constructed in 1985 and consists of a weathering steel girder superstructure with stay-in-place steel deck forms and cast-in-place concrete deck. The bridge is comprised of 8 approach spans and a 128' main span for a total structure length of 445'. The structure carries pedestrian and bicycle traffic on a total bridge width of 10'-8", connecting the primarily residential neighborhood on the north side of Market Street to Alumni-Wentworth field, and points beyond, on the south side. The grade separation of the main span over Market Street is achieved by the use of "switchback" approach bridges north of the main span and approach ramp bridges on the south.

The structure is comprised of nine simply supported spans supported by two abutments and ten piers. The southern approach consists of a built-up trail approach to three ramp approach bridge spans. The main bridge spans in the north-south direction, and according to the existing preliminary plans, provides approximately 18'-8" minimum clearance over Market Street. The northern approach consists of a built-up trail approach to five "switchback" approach bridge spans, which make-up the grade separation to the main bridge.



Plan View from Existing Preliminary Plans

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck and superstructure are a 7 or 'good', while the substructure is a 5 or 'fair'.

For the purpose of this report, the bridge is considered to span in the north-south direction.

Observations

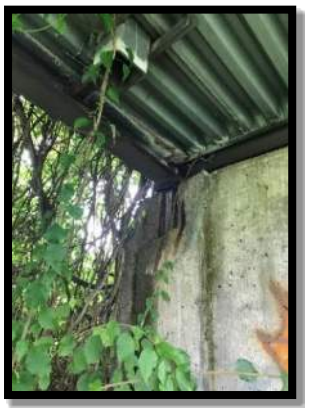
The asphalt pavement exhibits cracking and settlement in both approaches. The expansion joint at the south abutment of the main span was closed at the time of inspection and did not appear able to accommodate further expansion (as observed with the ambient air temperature at approximately 72°F).

The approach railing consists of two galvanized steel pipes attached to timber posts on the approaches and galvanized steel posts on the wingwalls. The top pipe of the approach rail is carried onto the bridge approach spans and attaches to chain link fence, and the welds

connecting the pipe rail to the chain link fence are damaged at numerous locations. The bridge rail system has signs of previous repair, damage and isolated paint failure along the length of the bridge.

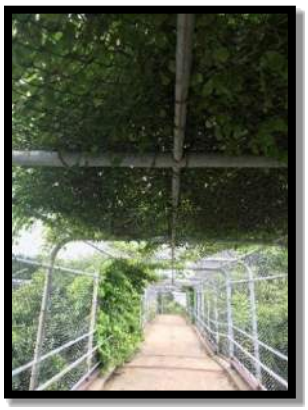
A chain link fence system encloses the bridge and the vertical posts of the fence system are attached to the top flanges of the exterior girders. Vines from vegetation adjacent to the bridge have grown through the chain link fence; it appears the weight of this vegetation, particularly in winter months when the vegetation holds snow, has deformed the top horizontal portion of the fence enclosure. Although the chain link fence enclosure is not a typical feature of pedestrian bridges in this area, the system allows for adequate vertical clearance on the bridge and reduces the risk of projectiles being thrown from the bridge. The gate systems located at the level landing areas of the approach spans, over the piers, provide for emergency access and facilitate snow removal but are in poor condition.

Elastomeric sealant installed between the concrete curb and the exterior steel girder is failing, allowing water infiltration between the concrete curb and girder webs that the curbs are cast against. Abrasion from snow removal appears to be the causing failure of the concrete coating system on the curbs. The stay-in-place steel deck pans are in generally good condition, with the edges exhibiting rusting in some locations where the deck pans connect with the girders and beams. The ends of the girders and beams at these locations exhibit laminar corrosion and minor section loss, indicating runoff from deck level is migrating through the deck and deck pans.



Exposed Anchor Bolts at Concrete Spall

South Abutment Expansion Joint



Sagging Fence due to Overgrown Vegetation

Both abutments and four piers exhibit conical failure of the concrete at a total of six bearing locations, which has resulted in large spalls with exposed anchor bolts. Six of the approach bridge spans exhibit the concrete failure at one of the four bearing locations, at the fixed end of the span. A number of other bearing locations are experiencing some level of distress as evidenced by cracking in the general shape of the spalled sections. The purpose of the anchor bolts is to accommodate thermal movement and resistance against lateral loads, such as, wind and earthquake. For this structure, one end of the span accommodates the total thermal movement by fixing one end and allowing movement on the other end through the use of slotted holes in the steel plates. At the time of the observation, the bearings appear to be accommodating thermal movement as intended. The apparent cause of the concrete failure at the bearings is not known and requires further investigation.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Recommendations

Short-Term Recommendations:

- Perform pedestrian counts to evaluate the use of this structure
  - Completed by the City and provided on 9/26/18
- Perform an in-depth inspection to further evaluate the substructure distress observed during the initial cursory site visit.

Intermediate-Term Recommendations

- Review findings from the in-depth inspection recommended above, evaluate potential Intermediate-Term Recommendation(s), and implement the preferred alternative. Alternatives to be considered may include:
  - Repair/rehabilitate the existing structure;
  - Replace the structure in its entirety; and,
  - Remove the structure in its entirety and replace with an at-grade crossing.

The City completed a pedestrian count at the Recreation Trail Bridge over a 59-hour span and found that a total of 141 pedestrians and 17 bicyclists used the bridge. The peak hour during this span occurred when a baseball game was played at Alumni-Wentworth field and at this time a total of 24 pedestrians used the bridge, 12 from either direction. Outside the hours of the baseball game, the peak hour volume was 8 pedestrians or less. Based on these counts, there appears to be low demand for the recreation trail and an at-grade crossing at Market Street could accommodate the pedestrian demand.

The cost to repair or replace the Recreation Trail Bridge could be found to be similar to the cost to remove the existing structure and install an at-grade crossing, eliminating the long-term maintenance costs of the bridge structure with potentially similar initial capital expenditure. For these reasons, the Recommended 10-Year Bridge Capital Improvement Program includes removing the Recreation Trail Bridge and installing an at-grade crossing as the Intermediate-Term Recommendation for this bridge; however, this recommendation will be further evaluated after findings of the in-depth inspection are available.

Long-Term Recommendations:

None.

Routine Maintenance:

In addition to the general routine maintenance listed in Appendix C, vegetation overgrowth should be cleared around the approaches.

2.9 Maplewood Avenue over North Mill Pond (NHDOT Bridge No. 231/103)

Priority: 3

Introduction

West Elevation

The existing bridge was constructed in 1940 and, and according to NHDOT records, rehabilitated in 1976. The structure consists of a single masonry arch with a grouted corrugated metal plate arch (CMPA) liner founded on concrete footings. The 1976 rehabilitation consisted of the installation of the CMPA liner and construction of the concrete footings. The bridge has a total span length of 25' and carries two lanes of traffic on a 32' wide paved roadway. A 5'-11" wide sidewalk is located on the west side of the bridge and a 6'-8" sidewalk is located on the east. The bridge has an 'E2' load restriction, and posting signs properly identifying this restriction are installed in both approaches.

According to the latest NHDOT Bridge Inspection Report, the condition rating of the culvert is a 3, or 'serious', and has an AASHTO sufficiency rating of 43%. The bridge rail, rail transition, bridge rail approach, and approach rail ends are substandard. The bridge is listed on the NHDOT Municipal Bridge Redlist.

For the purpose of this report, upstream is considered south for this bridge.

Observations

The pavement is in poor condition with cracking, settlement, and potholes throughout the approaches and on the bridge; pavement repairs have been completed in several locations. There is poor stormwater drainage at the bridge as evidenced by ponding on the west side and vegetation growth on and around the curbs. The sidewalks are rotating towards the road with significant settlement along both the west and east curb lines at the north and south ends. This settlement/rotation creates uneven walking surfaces on the sidewalk (i.e. tripping hazards). A section of the vertical granite curb is missing on the east side. The rail system, though substandard, is in good condition with minor plow damage.

Northeast Seawall

On the east side of the bridge there is an exposed out-of-service sewer main that is severely deteriorated with extensive cracking and complete section loss along the invert. An active sewer main is located within the hydraulic opening and there is evidence that roadway backfill material is migrating through the culvert walls at the sewer main penetration. Bricks used to infill voids in the granite block headwall and seawall are missing in areas of the northwest seawall. The MPA liner exhibits heavy corrosion and several scattered holes, with 100% section loss at the bottom 6". The bolt heads along the seams in the bottom two-thirds of the MPA liner exhibit section loss. The concrete pedestals have exposed rebar, heavy deterioration, and marine growth.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Typical Pavement Condition

East Intrados of Arch

Recommendations

Short-term Recommendations:

The bridge is in serious condition and should be replaced or repaired as soon as possible. Due to the complexity and cost of the project, it may not be feasible to design, permit and construct the replacement structure within the next 2 years; however, the process of replacing the bridge should begin as soon as possible.

Intermediate-term Recommendations:

Due to the complexity and cost of the project, it is likely the bridge will be replaced in the intermediate-term.

The City applied to have a repair or replacement project for this bridge added to the NHDOT Municipal SAB program in November 2000. NHDOT processed this application and provided the City with a total project cost estimate of $1,100,000. To continue with the SAB application process, the City must next notify the NHDOT's Municipal Highways Engineer in the Bureau of Planning and Community Assistance of its intent to conduct the project. However, the estimate

prepared by NHDOT in 2000 is outdated, and may not reflect the scope or anticipated complexity of this project. It is recommended that the City contact NHDOT to express interest in moving forward with SAB funding, and to request an updated estimate for a complete replacement project.

As previously discussed, new projects are not currently being added to the SAB program; the Department has not identified when new projects will be added, or which Fiscal Year they will be added to for construction funding. If the City decides to utilize SAB funding to replace the Maplewood Avenue bridge, it is recommended that an interim repair project be completed to avoid deterioration of the structure to the point where closure is required. The design of the repair project should be started in the short-term with the repair being completed in the intermediate-term.

NHDOT will continue to inspect the Maplewood Ave bridge every 12 months because of its deteriorated condition (bridges in satisfactory or better condition are inspected on a 2-year cycle, but that frequency is increased when a bridge is added to the Red List). Should the current condition rating of 3 (serious) be reduced to 2 (severe), NHDOT will recommend to the City that the bridge be closed to vehicular traffic.

Two scenarios for the Recommended 10-Year Bridge Capital Improvement Program are presented in Appendix A; the first assumes the Maplewood Avenue bridge is replaced in the intermediate-term with City-only funds and the second assumes replacement with NHDOT Municipal SAB funding (80% reimbursable from the NHDOT) and a repair project is completed with City-only funds in the intermediate-term to prolong the life of the structure until SAB funding is available for the replacement project. The City may choose to upgrade the underground sewer main and water main within the limits of the Maplewood Avenue bridge replacement project; however, costs for upgrading the public utilities outside of work necessary to replace the bridge may not be eligible for NHDOT Municipal SAB funding.

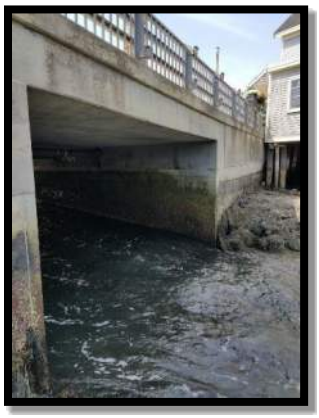
Long-term Recommendations:

None.

2.10 NH 1B over South Mill Pond (NHDOT Bridge No. 235/069)

Priority: 7

Introduction



East Elevation

The existing bridge, located immediately downstream of the South Mill Pond Dam, was constructed in 1985 and consists of a 20' clear span concrete box bridge with a skew of 22 degrees. The sidewalks and wingwalls have a masonry stone façade. The bridge carries two lanes of traffic on a 48' paved roadway and 6'-3" wide sidewalks are located on each side of the bridge. The bridge has an 'E2' load restriction, and posting signs properly identifying this restriction are installed in both approaches.

The bridge carries several underground utilities. The 1983 design plans (prepared by the State of NH Department of Public Works) indicate the bridge carries ten-4" diameter steel telephone ducts in the east sidewalk, a 6" diameter sewer force main in the northbound lane, two-6" gas pipes in the southbound lane, and a 12" diameter water main in the west sidewalk.

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck, superstructure, and substructure are a 7 or 'good'. The bridge approach rail and approach rail ends are substandard.

For the purpose of this report, upstream is considered west for this bridge.

Observations

The pavement exhibits cracks, potholes, and prior patch work. The west sidewalk over the bridge exhibits transverse hairline cracks spaced at approximately 4' on-center. On the east sidewalk there is abrasion with some previous patching. Settlement has occurred in the approach sidewalk pavement creating tripping hazards at the sidewalk transitions onto the bridge.

The aluminum rail system on the bridge and in the approaches is in overall good condition with only isolated locations of bent rail pickets. NHDOT discontinued the use of aluminum rail systems on new bridges in June 2014 because the system was not crash tested for the AASHTO and FHWA design requirements at that time. However, NHDOT determined it to be acceptable to maintain, repair, or rehabilitate aluminum rail systems currently in use. Historically aluminum rail systems were used in low-speed applications, such as the NH 1B bridge, and the existing aluminum rail is an acceptable system for this crossing.

The wingwalls and abutments are in good condition with isolated hairline cracking and minimal efflorescence on the abutments. There is heavy marine growth on the masonry stone façade of the sidewalks, vertical abutment walls, and wingwalls.

The sewer force main and gas piping are exposed through the hydraulic opening of the bridge and appear to be in good condition.

Water flow is controlled at the upstream end of the bridge via the South Mill Pond Dam. The weir of the dam structure has marine growth and the gate exhibits surface rust. The west fascia of the deck exhibits minor vertical cracking near midspan and minor diagonal cracking on both the north and south ends; this cracking appears to be from the initial curing and long-term shrinkage of the concrete and is not a result of structural distress of the bridge.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Typical Transverse Sidewalk Cracking

Minor Cracking on West Fascia

North Mill Pond Dam

Recommendations

Short-term Recommendations:

None.

Intermediate-term Recommendations:

- Load rate to evaluate the structure's vehicular load capacity.
- Remove pavement and membrane, patch the concrete deck, install new membrane and repave roadway surface on the bridge and in the roadway and sidewalk approaches.

Long-term Recommendations:

None.

2.11 Market Street (EB and WB) over Tidal Basin (NHDOT Bridges No. 240/106 and 241/106)

Priority: 2

Introduction

South Elevation

The existing three-span bridges were constructed in 1971 and consists of painted steel rolled I beams with a concrete deck. The eastbound bridge has a skew of 33 degrees and the westbound bridge has a skew of 37 degrees. The bridges share the pile-supported concrete abutments and have separate piers, which are comprised of concrete encased steel piles with concrete cap. The total bridge length is approximately 128'-6" and 135'-0", for the eastbound and westbound, respectively. The eastbound bridge has two end spans of 39'-6" and a middle span of 49'-6", and the westbound bridge has two end spans of 41'-6" and a middle span of 52'. The bridges have variable overall width and carries two lanes of traffic on a roadway width of 36'-6" and 30'-9", for the eastbound and westbound bridges, respectively. A 6'-5" wide sidewalk was constructed on the north side of the westbound bridge at an unknown date.

The eastbound bridge carries a 12" sewer pipe and the westbound bridge carries 2 electrical conduits. The conduits are located in the bay between bridges, under the median, and the utility supports are attached to the underside of the deck.

According to the latest NHDOT Bridge Inspection Report, the eastbound bridge condition rating of the deck and superstructure are a 6 or 'satisfactory' and the substructure is a 7 or 'good'. The westbound bridge condition rating of the deck is a 6 or 'satisfactory', and the superstructure and substructure is a 7 or 'good'. For both bridges, the approach rail, bridge rail, transition, and end units are substandard.

For the purpose of this report, upstream is considered west for this bridge.

Observations

The pavement has both transverse and longitudinal cracks that have been sealed. The bridge railing is substandard, but is in good condition. The bridge rail transitions directly to w-beam guardrail without proper approach or transition rail. The pedestrian fence on the westbound bridge meets current standards. The concrete sidewalk has consistent temperature and shrinkage cracks in the transverse direction. The rail platform has a number of spalls with exposed aggregate next to the sidewalk as well as cracking near the railing posts. There is evidence of standing water along the eastbound bridge curb on the south side of the bridge with sediment accumulation and vegetation growth along the curb.

The expansion joint has reached the end of its useful service life. The armoring of the expansion joint has been damaged and the gland material has failed. Due to the condition of the expansion joint, water leaks through the joint and impacts the beam ends and abutments. The beam ends, end diaphragms, and bearings exhibit laminar corrosion and section loss at the east abutment. Debris has accumulated on the abutment bearing seats due to the beam and diaphragm corrosion.

The underside of the concrete deck is in satisfactory condition with some hairline cracking. There is a green mildew growing on the bottom of the deck in the exterior bay. The exterior stringer has paint system failure and exhibits corrosion with some laminar corrosion near the abutments. The interior stringers are generally in satisfactory condition. The end diaphragms in the exterior bays have heavy corrosion with some laminar corrosion on the bottom flange.

The abutments exhibit severe map cracking, concrete deterioration, and rust staining. There is heavy cracking in the backwall around the electrical conduits. A large spall with exposed and corroded rebar was observed on the southwest wingwall. Areas of the sewer main supports exhibit heavy corrosion. Both abutments are scoured beneath the pile caps on the north ends of the abutments. This is likely due to general erosion.

An additional inspection was performed at the lowest tide of the month to inspect the piers. Waders were used to get within an arm's reach of the pier columns. The reinforced concrete pier columns are protected by a weathering steel covering that is in satisfactory condition with marine growth and some areas of minor corrosion and section loss. The steel coating is protected by a zinc paint system. The pier caps are protected with an epoxy coating system and exhibit minor horizontal cracking. The pier caps appear to be in satisfactory condition with minor spalling at the interface between the pier caps and the columns. The pier columns are supported by square footings that are doweled into bedrock.

South Expansion Joint

Spall on Southwest Wingwall

Beam End Deterioration

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Short-Term Recommendations:

The expansion joints at the east abutment, for both bridges, continue to leak and contribute to corrosion of the beams ends, bearings, and end diaphragms. A short-term repair project is recommended to prevent further corrosion and section loss of the steel elements in the vicinity of the expansion joint and prolong the service life of the bridge. An in-depth inspection is recommended prior to completing the small-scale bridge repair/rehabilitation project to identify other areas of the structure that may need to be or could be addressed during the small-scale project.

- Perform an in-depth inspection.
- Review findings from the in-depth inspection, and implement a small-scale bridge repair/rehabilitation project, anticipated to include:
    - Replace corroded bearings located at both abutments.
    - Remove and replace the south abutment expansion joint.
    - Repair concrete backwall.
    - Install an asphaltic plug joint at the west abutment pavement transition
    - Remove the debris on the top of each abutment bearing seat.
    - Clean and paint the ends of the beams and end diaphragms.
    - Replace transition rail, approach guardrail, and w-beam guardrail in the immediate approaches not recently replaced by the City's Market Street project.
    - Clean the vegetation and sediment along the curb lines.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

- Replace bridge rail.
- Remove and replace bridge deck membrane and pavement.
- Perform concrete deck repairs, as needed.
- Clean and paint all beams.
- Clean and paint pier bearings.
- Clean pier columns and remove marine growth, repair where necessary, and apply a new protective coating system.

2.12 Kearsarge Way over PAR (NHDOT Bridge No. 240/132)

Priority: 1

Introduction

North Elevation

The existing bridge was constructed in 1979 and is comprised of weathering steel rolled I beams composite with a concrete deck. The bridge has two 75' spans and a total structure length of 152'. The bridge carries two lanes of traffic on a 31'-3" wide paved roadway. A 6' sidewalk is located on the west side of the bridge. The bridge has an 'E2' load restriction, and posting signs properly identifying this restriction are installed in both approaches.

According to the latest NHDOT Bridge Inspection Report, the condition rating of the deck is a 4 or 'poor', the superstructure is a 7 or 'good' and the substructure is an 8 or 'very good'. The bridge rail and approach rail ends for this bridge are substandard. The bridge is on the NHDOT Municipal Bridge Redlist due to the poor condition of the deck.

For the purpose of this report, the Kearsarge Way Bridge spans in the east-west direction with Market Street located to the west.

Observations

The pavement exhibits cracking and settlement and has been sealed and patched in various locations. There is a localized area of the bridge deck pavement that is potholed with the concrete deck exposed. Settlement has occurred on the northwest sidewalk approach causing a tripping hazard at the transition onto the bridge. Depressions are most prominent where the potholes have been repaired. The east expansion joint is corroded with plow damage and is filled with debris.

The underside of the concrete deck exhibits cracking with efflorescence and leakage, with the most severe cracking and leakage present in the three interior bays. The steel girders are in good condition. The substructure (abutments, piers and wingwalls) is in good to very good condition. Map cracking and rust stains are present in the abutments.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Deck Overview

East Expansion Joint

Underside of Deck

Recommendations

Short-Term Recommendations:

- Perform an in-depth inspection and load rating.
- Review findings from the in-depth inspection, and implement a bridge rehabilitation project, anticipated to include:
    - Major deck repairs or complete deck replacement;
    - Bridge and approach rail replacement;
    - Isolated substructure repairs; and,
    - Joint replacements.

The Recommended 10-Year Bridge Capital Improvement Program matrix provided in Appendix A includes the higher cost of a bridge deck replacement project (versus a deck repair project) since it is more conservative for financial planning purposes.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

None.

2.13 Peirce Island Road over Little Harbor (NHDOT Bridge No. 241/069)

Priority: 12

Introduction

South Elevation

The Peirce Island Bridge was constructed in 1958, rehabilitated in 1968, and rehabilitated again in 2016. The structure consists of four spans of painted steel rolled I beams with a non-composite concrete deck. The two end spans are 66'-6" long and the two interior spans are 70'-0" long, for a total bridge length of 273'. The overall bridge width is 32'-6" and carries two lanes of traffic on a 24' wide paved roadway. A 5' wide sidewalk is located on the north side of the bridge. The bridge has an 'E2' load restriction, and posting signs properly identifying this restriction are installed in both approaches; however, the bridge no longer carries an 'E2' load restriction and these signs may be removed.

The 1968 rehabilitation project included repairs to the bearings, construction of buried approach slabs, installation of riprap embankment protection, repairs to the joints at the ends of the bridge, and repairs to the jacketed concrete casings around the steel pier columns. The original steel bridge rail system was replaced with NHDOT 3-bar aluminum bridge rail at an unknown date, presumably in the late 1990s. A small-scale rehabilitation project was completed in 2016 consisting of partial and full depth concrete deck repairs, replacement of the barrier membrane and pavement, and replacement of the expansion joint at the west abutment with a prefabricated strip seal expansion joint.

The bridge carries three utilities servicing the Peirce Island Waste Water Treatment Facility, and the configuration of the utilities on the bridge has been rearranged since the bridge was originally constructed. The bridge originally only carried an 8" cast-iron waterline in the northern exterior bay and in 1965 a 16" cast-iron force main was installed in the northern exterior bay. In 1973, a 16" cast-iron sewer force main was installed in the southern exterior bay. The 16" cast-iron sewer force main and 8" cast-iron sewer force main located in the northern exterior bay were replaced in 1998. The 16" sewer force main was replaced with a 24" ductile-iron glass-lined pipe and the 8" waterline was replaced with a 10" ductile iron pipe. In 2017, the 16" diameter sewer force main in the southern exterior bay was replaced with a 16" cement lined ductile iron pipe.

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck and superstructure are a 5 or 'fair' and the substructure is a 6 or 'satisfactory'. The approach rail ends are listed as substandard.

For the purpose of this report, the island side of the bridge is considered to be the east end.

Observations

The new bridge deck pavement, installed in 2016, is in good condition. The concrete bridge deck is considered to be in satisfactory condition based on observations made during the 2016 rehabilitation. A spall in the concrete deck underside is present at the northern sewer force main air release valve. The west expansion joint, replaced as a part of the 2016 rehabilitation project, is in good condition. There is no expansion joint on the east end of the bridge; installation of an asphaltic plug joint at the east end was removed from the 2016 rehabilitation project to avoid damage from excavation necessary for the 2017 force main replacement project.

The 3-bar aluminum bridge rail is in good condition with minor areas of impact from plow damage. NHDOT discontinued the use of aluminum rail systems on new bridges in June 2014 because the system was not crash tested for AASHTO and FHWA design requirements at that time. However, NHDOT found it acceptable to maintain, repair, or rehabilitate aluminum rail systems currently in use. Historically the aluminum rail systems were used in low-speed applications, such as in the application for the Pierce Island bridge, therefore, the aluminum rail system is acceptable for this bridge.

The steel beams are in fair to satisfactory condition with moderate paint system failure throughout, minor surface rusting and some laminar corrosion.

Typical Beam Corrosion

Deck Spall at Northern Air Release Valve

The substructure consists of two abutments, and three piers comprised of steel pile supported bents. The steel piles below mean lower low water (MLLW) are in good condition per the underwater inspection performed by Appledore Marine Engineering in 2015 included in Appendix E. Above MLLW, the steel piles are in satisfactory condition with one instance of poor condition isolated to pier 2. Pile deficiencies noted include missing portions of the protective fiberglass jacket with the concrete casing spalled and exposed portions of the steel piles and section loss of the weld between the piles and lateral bracing members. Moderate to severe laminar corrosion is located at Pier 2 in the vicinity of the northern (24" dia.) sewer force main air release valve, presumably from historic leakage from the valve. The abutments are in satisfactory condition with isolated map and hairline cracking, efflorescence and some spalling, cracking and delamination of previously repaired areas.

For a detailed list of observations, see the inspection report prepared by Hoyle, Tanner dated June 2018, entitled: "2018 Routine Inspection; Peirce Island Bridge, NHDOT Bridge N. 241/069, Portsmouth, NH".

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Recommendations

Short-term Recommendations:

None.

Intermediate-term Recommendations:

None.

Long-Term Recommendations:

The City applied to have a rehabilitation or replacement project for this bridge added to the NHDOT Municipal SAB program in November 2000. NHDOT processed this application and provided the City with a total project cost estimate of $2,500,000. To continue with the SAB application process, the City must next notify the NHDOT's Municipal Highways Engineer in the Bureau of Planning and Community Assistance of its intent to conduct the project. However, the estimate prepared by NHDOT in 2000 is outdated and does not reflect any changes in condition of this structure that have occurred over the last 18 years. It is recommended that the City contact NHDOT to express interest in moving forward with SAB funding for this bridge, and to request an updated estimate for a rehabilitation or complete replacement project, if this request has not already been submitted.

The Peirce Island Bridge is currently in fair to satisfactory condition, having recently undergone a small-scale rehabilitation project. Major repairs or replacement are not anticipated to be necessary within the 10-year period covered by this capital program; however, a large-scale project (either major rehabilitation or complete replacement) will likely be necessary within the next 10 to 20 years. Rehabilitation is feasible and would be less costly than replacement. However, based on the age of the existing structure, significance and importance of the crossing, and potential desire to improve pedestrian, marine, and vehicular accommodations, complete replacement could be recommended over another rehabilitation project. It is recommended that a comprehensive Engineering Study be completed that evaluates all alternatives, whether funding from the SAB program is utilized or not. For budgetary planning, the cost for a major rehabilitation project is included in the "Beyond Year 10" heading of the Recommended 10-Year Bridge Capital Improvement Program matrix provided in Appendix A.

Routine Maintenance:

In addition to the general routine maintenance listed in Appendix C:

- Inspect the bridge every 12 to 18 months until the completion of the construction of the WWTF upgrade project to ensure the increased construction vehicle traffic associated with the Peirce Island WWTF upgrade project has not had a deleterious effect on the Peirce Island Road Bridge.
- Repair or replace the leaking air release valve on the 24" dia. sewer force main located in the northern exterior bay of the bridge to prevent further deterioration of Pier 2.

2.14 US 1, Scott Avenue over Daniel Street (NHDOT Bridge No. 246/083)

Priority: 10

Introduction

West Approach

The Scott Avenue bridge, originally constructed in 1921, was replaced in 2013 with a two-span painted curved steel plate girder superstructure composite with a concrete deck. The total bridge length varies with a maximum length of 146'-6" and a minimum length of 103'. Due to the curvature of the bridge, the abutments and piers are not parallel; the typical skew to the chord is approximately 27 degrees. The overall bridge width and paved roadway width varies. The bridge carries two traffic lanes of 14' minimum width, and 8'-5" wide concrete sidewalks are located on each side of the structure.

According to the latest NHDOT Bridge Inspection Report, the condition ratings of the deck, superstructure, and substructure are an 8 or 'very good'.

For the purpose of this report, the Memorial Bridge is located at the north approach to the bridge.

Observations

Longitudinal and transverse hairline cracks are present in the sidewalk, some of which have been previously sealed. There is minor longitudinal cracking in the pavement along the pavement joint at the crown of the bridge. The bridge and approach rail are in good condition.

Sidewalk Cracking

Rotated Southwest Wingwall Coping

Underside of Deck

The underside of the deck exhibits cracking with efflorescence and staining within the exterior bays. It is likely water that water is penetrating between the pavement and curbing along the gutter line, migrating under the bridge deck waterproofing membrane at the curb interface, and then leaking through the cracks visible on the underside of the concrete deck. Graffiti on the underside of the deck has previously been covered. The precast concrete coping at the southwest wingwall is rotating; however, the coping is an aesthetic feature and does not contribute to the structural capacity of the wingwall.

The field observations made for this report are in general agreement with the latest NHDOT Bridge Inspection Report.

Recommendations

Short-Term Recommendations:

None.

Intermediate-Term Recommendations:

None.

Long-Term Recommendations:

- Remove pavement along the curb line and reseal along the membrane with hot-applied rubberized asphalt material to prevent water from passing through the pavement.

Routine Maintenance:

In addition to the general routine maintenance listed in Appendix C:

- Within the next two years, seal along the curb lines with hot-poured crack sealant to minimize water intrusion through the pavement. This maintenance fix would be completed as an interim-repair with a more substantial repair completed in the long-term and would only be effective as long as the pavement remains in good condition.

2.15 Noteworthy Culverts

Though the purpose of this project is to evaluate and prioritize the City's bridge inventory, it may be prudent to also consider larger culverts and include critical structures in the Bridge Capital Improvement Plan. Rehabilitating or replacing large culverts can be costly, and capital planning for those projects may be necessary.

Hoyle, Tanner personnel performed cursory site visits to the City's large or significant culverts to investigate their condition and to gather data to evaluate hydraulic capacity. Culverts inventoried were those with 48" or greater diameter/span for a single culvert, or crossings comprised of multiple-culvert systems. A list of 17 locations was developed from a desktop review of potentially significant culverts, and a site visit was made to each location. From those visits, four culverts were identified as potentially undersized due to either having insufficient hydraulic capacity, or because the culvert does not appear to meet current stream crossing regulations (i.e. the culvert size is substantially smaller than the bank-full width of the stream). Initial observations for these five culverts include:

Junkins Ave over South Mill Pond (South End)

Lang Road over Branch of Berry's Brook

Junkins Ave over South Mill Pond

- There are two structures that allow tidal water to flow in and out of South Mill Pond; one on the North end of Junkins Ave and one on the South end.
- Both structures are concrete box culverts with hydraulic width (span) of 8'-2".

Gosling Road over Brook

- The existing box culvert span is 5'. However, the bankfull width of the stream conveyed appears to be approximately 12'. The existing structure may be constricting flow of the brook and does not likely meet current stream crossing regulations.
- If necessary, replacement of this structure would likely meet the NHDOT classification for a bridge.

Lang Road over Branch of Berrys Brook

- The existing 4' wide concrete box culvert shows evidence that the structure is constricting flow. The bankfull width up- and downstream of the crossing, outside the area of influence of the culvert, is approximately 8' to 10'.

Lang Road over Berrys Brook

- The existing structure is a 7' diameter corrugated metal pipe.
- Low flow was observed at the time of the site visit; however, a wide pond/wetland is located both up- and downstream of the crossing. It is likely that the structure is constricting the flow of the brook.

Other Noteworthy Observations

- Little Harbor Road over Brook
  - Masonry stone blocks obstruct the inlet and outlet of the brook that would travel under Little Harbor Road; stagnate water was observed at this location with little to now flow passing through the masonry stone blocks.
  - It is likely that these masonry stone blocks were part of headwalls that have collapsed over time.
  - The bankfull width of the brook appears to be 5'-6", therefore, a culvert to convey the brook would not be considered a bridge. However, the City should be aware of this structure and determine if a culvert needs to be installed to prevent erosion of Little Harbor Road.

Little Harbor Road over Brook

It is recommended that the culverts discussed herein be inspected to further determine their condition. Although the culverts do not currently qualify as bridges per NHDOT criteria, the condition of some culverts may warrant eventual replacement with a structure spanning greater than 10', categorizing the replacement as a bridge. A hydrologic and hydraulic analysis and evaluation of the NHDES stream crossing regulations would need to be performed to determine the required span length. If the results of the analysis and evaluation indicate that the culvert should be replaced with a structure meeting the NHDOT definition of a bridge (span length equal to or greater than 10'), then the structures would likely qualify for funding through the NHDOT Municipally-Managed State Bridge Aid Program.

3 SUMMARY

The recommended work is divided into three categories: short-term, intermediate-term, and long-term recommendations. Short-term, intermediate-term and long-term recommendations should be completed within 2 years, 2-7 years, and beyond 7 years, respectively. Although the bridges are prioritized, the recommended work is similar for some bridges and could be completed simultaneously.

It is recommended that load ratings be performed for all bridges that are currently load restricted with an 'E2' posting. In the 1980's, NHDOT began to determine safe load capacities for bridges located on public highways. Bridges that did not have a formal load rating, but were performing well, were sometimes posted with an 'E2' load restriction in lieu of performing detailed load rating calculations to determine actual capacity of the structure. An 'E2' posting excludes all combination and single unit certified vehicles from crossing the bridge. The purpose of this recommendation is to investigate if the 'E2' posting is necessary. If it is not critical that a bridge be able to legally carry certified loads, and the City is satisfied with the current 'E2' restrictions, completing some or all of the load ratings may not be necessary.

Bridges requiring rehabilitation or replacement are eligible for the NHDOT Municipal State Aid Bridge (SAB) funding, a program that provides 80% reimbursement for eligible design and construction costs. Bridges that may be considered for SAB funding include:

- 191/110 Coakley Road over Hodgson Brook
- 198/107 Cate Street over Hodgson Brook
- 231/103 Maplewood Avenue over North Mill Pond
- 240/132 Kearsarge Way over PAR
- 241/069 Peirce Island Road over Little Harbor

SAB is currently over programmed through Fiscal Year 2029. NHDOT has temporarily stopped adding new projects to the SAB Program due to funding limitations and the need to balance the program. It is likely that when SAB funding is restored, some or all of the City's SAB-eligible projects would be programmed beyond this 10-year plan.

The City applied to have five rehabilitation or replacement bridge projects added to the NHDOT Municipal SAB program in 2000; 191/110 Coakley Road over Hodgson Brook (Bridge Rehabilitation), 198/107 Cate Street over Hodgson Brook (Bridge Rehabilitation), 204/101 Bartlett Street over Hodgson Brook (Bridge Rehabilitation), 231/103 Maplewood Avenue over North Mill Pond (Repair/Replacement), and 241/069 Peirce Island over Little Harbor (Repair/Replacement). NHDOT processed these five applications and provided the City with total project cost estimates for each bridge project. To continue with the SAB application process, the City must next notify the NHDOT's Municipal Highways Engineer in the Bureau of Planning and Community Assistance of its intent to conduct these projects. However, the estimates prepared by NHDOT in 2000 are outdated, and may not reflect the current scope of each project. It is recommended that the City contact NHDOT to express interest in moving forward with projects for 191/110 Coakley Road over Hodgson Brook, 204/101 Bartlett Street over Hodgson Brook and 241/069 Peirce Island Road over Little Harbor, and to request updated estimates. The City may elect to also notify the NHDOT of their interest to move forward with

a project for 231/103 Maplewood Avenue over North Mill Pond if the City does not move forward with a replacement project in the short-term. However, NHDOT has not identified when new projects will be added to SAB program, or which Fiscal Year they will be added to for construction funding.

In order to determine the new span requirements of the noteworthy culverts, it is recommended to prepare Hydrologic and Hydraulic Studies for the culverts mentioned in Section 2.16. If the results of the Study indicate that the culvert would need to be replaced with a bridge under the NHDOT criteria, then these structures may also qualify for funding from the SAB Program. Due to the state of the SAB program, rehabilitation alternatives for the noteworthy culverts that are in need of replacing due to their condition should be evaluated to extend the structure's service life 10 to 15 years until the SAB funding levels improve.

The Recommended 10-Year Bridge Capital Improvement Program matrix is located in Appendix A, and two scenarios are presented. The first scenario assumes the Maplewood Avenue Bridge (NHDOT Bridge. No. 231/103) is replaced in the intermediate-term with City-only funds, while the second scenario assumes this bridge is repaired in the intermediate-term with City-only funds and replaced beyond the 10-year BCIP planning period with NHDOT Municipal SAB funds. The estimated 10-Year Bridge Capital Improvement Program projects costs, including general routine maintenance, is $16,830,000 and $6,430,000 for the first and second scenarios, respectively. Costs for projects recommended beyond 10 years are included in the Recommended 10-Year Bridge Capital Improvement Program; however, these costs are inflated to FY 29 since it is unknown when these projects will be completed.

The estimated probable construction costs are based on Hoyle, Tanner's experience with similar construction projects and the NHDOT weighted average unit prices. A 20% contingency is included because the conceptual cost estimates were prepared using the limited data collected during field observations completed for this report and are not based on detailed designs with estimated quantities. The estimated project costs are based on 2019 dollars, therefore, an inflation rate of 3% has been applied to increase the cost for the anticipated construction year.

APPENDIX A

Recommended 10-Year Bridge Capital Improvement Plan

Scenario 1:
Maplewood Avenue Bridge City-Funded

Hoyle, Tanner & Associates, Inc.

RECOMMENDED 10- YEAR BRIDGE CAPITAL IMPROVEMENT PROGRAM (SCENARIO 1)*

CITY OF PORTSMOUTH, NH

Priority	Project Name	Project Costs	Year 0 FY 19	Year 1 FY 20	Year 2 FY 21	Year 3 FY 22	Year 4 FY 23	Year 5 FY 24	Year 6 FY 25	Year 7 FY 26	Year 8 FY 27	Year 9 FY 28	Year 10 FY 29	Beyond Year 10 (Costs at Year 2029)
		In-Depth Inspection and Load Rating	$ 50,000											
		Design & Bidding	$ 45,000											
		Construction Engineering		$ 110,000										
		Construction		$ 1,100,000										
	Kearsarge Way over PAR	Contingency (20%) & 3%/Yr. Inflation												
1	NHDOT Br. No. 240/132	***Total NHDOT Br. No. 240/132***	***$ 95,000***	***$ 1,210,000***										
		In-Depth Inspection	$ 15,000											
		Design & Bidding	$ 55,000									$ 100,000		
		Construction Engineering		$ 30,000									$ 125,000	
		Construction		$ 460,000									$ 1,250,000	
	Market St EB / WB over Tidal Basin	Contingency (20%) & 3%/Yr. Inflation										$ 50,000	$ 750,000	
2	NHDOT Br. Nos. 240/106 & 241/106	***Total NHDOT Br. Nos. 240/106 & 241/106***	***$ 70,000***	***$ 490,000***								***$ 150,000***	***$ 2,125,000***	
		Bridge and Seawall Design		$ 300,000										
		Permitting/Mitigation			$ 50,000									
		Bidding & Construction Engineering					$ 300,000							
		Construction (Bridge and Seawalls)					$ 6,000,000							
		Water Main Design and Construction			$ 100,000		$ 1,100,000							
		Sewer Main Design and Construction			$ 100,000		$ 1,100,000							
	Maplewood Ave over North Mill Pond	Contingency & Inflation			$ 50,000		$ 1,800,000							
3	NHDOT Br. No. 231/103	***Total NHDOT Br. No. 231/103***		***$ 300,000***	***$ 300,000***		***$ 10,300,000***							
		In-Depth Inspection	$ 10,000											
		Design & Bidding					$ 50,000							
		Construction Engineering						$ 50,000						
		Construction						$ 500,000						
	Recreation Trail over Market Street	Contingency (20%) & 3%/Yr. Inflation					$ 20,000	$ 200,000						
4	NHDOT Br. No. 220/143	***Total NHDOT Br. No. 220/143***	***$ 10,000***				***$ 70,000***	***$ 750,000***						
		In-Depth Inspection and Load Rating							$ 15,000					
		Engineering Study												$ 85,000
		Design								$ 25,000				$ 120,000
		Permitting								$ 5,000				$ 5,000
		Bidding & Construction Engineering								$ 15,000				$ 80,000
		Construction								$ 150,000				$ 800,000
	Coakely Road over Hodgson Brook	Contingency (20%) & 3%/Yr. Inflation							$ 5,000	$ 84,000				$ 590,000
5	NHDOT Br. No. 191/110	***Total NHDOT Br. No. 191/110***							***$ 20,000***	***$ 279,000***				***$ 1,680,000***
		Load Rating and Hydraulic Analysis							$ 25,000					
		Design and Bidding							$ 5,000					
		Permitting							$ 10,000					
		Construction Engineering								$ 5,000				
		Construction								$ 25,000				
	Barlett Street over Hodgson Brook	Contingency (20%) & 3%/Yr. Inflation							$ 20,000	$ 13,000				
6	NHDOT Br. No. 204/101	***Total NHDOT Br. No. 204/101***							***$ 60,000***	***$ 43,000***				
		Load Rating							$ 10,000					
		Bidding & Construction Engineering							$ 15,000					
		Construction							$ 100,000					
	NH 1B over South Mill Pond	Contingency (20%) & 3%/Yr. Inflation							$ 49,000					
7	NHDOT Br. No. 235/069	***Total NHDOT Br. No. 235/069***							***$ 174,000***					
		Maintenance Repairs		$ 10,000										
		Design and Bidding									$ 25,000			
		Construction Engineering									$ 10,000			
		Construction									$ 35,000			
	Recration Trail over PAR	Contingency (20%) & 3%/Yr. Inflation									$ 30,000			
8	NHDOT Br. No. 145/115	***Total NHDOT Br. No. 145/115***		***$ 10,000***							***$ 100,000***			

***Note: This CIP assumes funding from the NHDOT Municipal State Aid Bridge program is <u>not</u> available for the replacement of the Maplewood Avenue Bridge.**

Hoyle, Tanner & Associates, Inc.

RECOMMENDED 10- YEAR BRIDGE CAPITAL IMPROVEMENT PROGRAM (SCENARIO 1)*

CITY OF PORTSMOUTH, NH

Priority	Project Name	Project Costs	Year 0 FY 19	Year 1 FY 20	Year 2 FY 21	Year 3 FY 22	Year 4 FY 23	Year 5 FY 24	Year 6 FY 25	Year 7 FY 26	Year 8 FY 27	Year 9 FY 28	Year 10 FY 29	Beyond Year 10 (Costs at Year 2029)
		Design and Bidding									$ 15,000			
		Construction Engineering									$ 5,000			
		Construction									$ 30,000			
	NH 33 over PAR	Contingency (20%) & 3%/Yr. Inflation									$ 20,000			
9	NHDOT Br. No. 154/101	***Total NHDOT Br. No. 154/101***									***$ 70,000***			
		Design & Bidding									$ 15,000			
		Construction Engineering									$ 5,000			
		Construction									$ 40,000			
	US 1, Scott Avenue over Daniel Street	Contingency (20%) & 3%/Yr. Inflation									$ 30,000			
10	NHDOT Br. No. 246/083	***Total NHDOT Br. No. 241/069***									***$ 90,000***			
		Design & Bidding												$ 165,000
		Permitting / Easements												$ 15,000
		Construction Engineering												$ 110,000
		Construction												$ 1,100,000
	Cate Street over Hodgson Brook	Contingency (10%)												$ 140,000
11	NHDOT Br. No. 198/1007	***Total NHDOT Br. No. 241/069***												***$ 1,530,000***
		Engineering Study												$ 150,000
		Design & Bidding												$ 200,000
		Permitting												$ 20,000
		Construction Engineering												$ 200,000
		Construction												$ 2,000,000
	Peirce Island Road over Little Harbor	Contingency (20%) & 3%/Yr. Inflation												$ 1,400,000
12	NHDOT Br. No. 241/069	***Total NHDOT Br. No. 241/069***												***$ 3,970,000***
	General Routine Maintenance		$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	
		Yearly Total Cost =	**$ 185,000**	**$ 2,020,000**	**$ 310,000**	**$ 10,000**	**$ 10,380,000**	**$ 760,000**	**$ 264,000**	**$ 332,000**	**$ 270,000**	**$ 160,000**	**$ 2,135,000**	**$ 7,180,000**
												Total Cost =	**$ 16,830,000**	

***Note: This CIP assumes funding from the NHDOT Municipal State Aid Bridge program is <u>not</u> available for the replacement of the Maplewood Avenue Bridge.**

Scenario 2:
Maplewood Avenue Bridge SAB-Funded

Hoyle, Tanner & Associates, Inc.

RECOMMENDED 10- YEAR BRIDGE CAPITAL IMPROVEMENT PROGRAM (SCENARIO 2)*

CITY OF PORTSMOUTH, NH

Priority	Project Name	Project Costs	Year 0 FY 19	Year 1 FY 20	Year 2 FY 21	Year 3 FY 22	Year 4 FY 23	Year 5 FY 24	Year 6 FY 25	Year 7 FY 26	Year 8 FY 27	Year 9 FY 28	Year 10 FY 29	Beyond Year 10 (Costs at Year 2029)
		In-Depth Inspection and Load Rating	$ 50,000											
		Design & Bidding	$ 45,000											
		Construction Engineering		$ 110,000										
		Construction		$ 1,100,000										
	Kearsarge Way over PAR	Contingency (20%) & 3%/Yr. Inflation												
1	NHDOT Br. No. 240/132	***Total NHDOT Br. No. 240/132***	***$ 95,000***	***$ 1,210,000***										
		In-Depth Inspection	$ 15,000											
		Design & Bidding	$ 55,000									$ 100,000		
		Construction Engineering		$ 30,000									$ 125,000	
		Construction		$ 460,000									$ 1,250,000	
	Market St EB / WB over Tidal Basin	Contingency (20%) & 3%/Yr. Inflation										$ 50,000	$ 750,000	
2	NHDOT Br. Nos. 240/106 & 241/106	***Total NHDOT Br. Nos. 240/106 & 241/106***	***$ 70,000***	***$ 490,000***								***$ 150,000***	***$ 2,125,000***	
		Engineering Study												$ 150,000
		Repair Design		$ 50,000										
		Bridge and Seawall Design												$ 300,000
		Permitting/Mitigation			$ 10,000									$ 50,000
		Bidding & Construction Engineering			$ 50,000									$ 300,000
		Construction (Bridge and Seawalls Only)			$ 300,000									$ 6,000,000
		Water Main Design and Construction												$ 1,200,000
		Sewer Main Design and Construction												$ 1,200,000
	Maplewood Ave over North Mill Pond	Contingency (20%) & 3%/Yr. Inflation			$ 90,000									$ 5,000,000
3	NHDOT Br. No. 231/103	***Total NHDOT Br. No. 231/103***		***$ 50,000***	***$ 450,000***									***$ 14,200,000***
		In-Depth Inspection	$ 10,000											
		Design & Bidding					$ 50,000							
		Construction Engineering						$ 50,000						
		Construction						$ 500,000						
	Recreation Trail over Market Street -	Contingency (20%) & 3%/Yr. Inflation					$ 20,000	$ 198,000						
4	NHDOT Br. No. 220/143	***Total NHDOT Br. No. 220/143***	***$ 10,000***				***$ 70,000***	***$ 750,000***						
		In-Depth Inspection and Load Rating							$ 15,000					
		Engineering Study												$ 85,000
		Design								$ 25,000				$ 120,000
		Permitting								$ 5,000				$ 5,000
		Bidding & Construction Engineering								$ 15,000				$ 80,000
		Construction								$ 150,000				$ 800,000
	Coakely Road over Hodgson Brook	Contingency (20%) & 3%/Yr. Inflation							$ 5,000	$ 84,000				$ 590,000
5	NHDOT Br. No. 191/110	***Total NHDOT Br. No. 191/110***							***$ 20,000***	***$ 279,000***				***$ 1,680,000***
		Load Rating and Hydraulic Analysis							$ 25,000					
		Design and Bidding							$ 5,000					
		Permitting							$ 10,000					
		Construction Engineering								$ 5,000				
		Construction								$ 25,000				
	Barlett Street over Hodgson Brook	Contingency (20%) & 3%/Yr. Inflation							$ 20,000	$ 13,000				
6	NHDOT Br. No. 204/101	***Total NHDOT Br. No. 204/101***							***$ 60,000***	***$ 43,000***				
		Load Rating							$ 10,000					
		Bidding & Construction Engineering							$ 15,000					
		Construction							$ 100,000					
	NH 1B over South Mill Pond	Contingency (20%) & 3%/Yr. Inflation							$ 49,000					
7	NHDOT Br. No. 235/069	***Total NHDOT Br. No. 235/069***							***$ 174,000***					
		Maintenance Repairs		$ 10,000										
		Design and Bidding									$ 25,000			
		Construction Engineering									$ 10,000			
		Construction									$ 35,000			
	Recration Trail over PAR	Contingency (20%) & 3%/Yr. Inflation									$ 30,000			
8	NHDOT Br. No. 145/115	***Total NHDOT Br. No. 145/115***		***$ 10,000***							***$ 100,000***			

***Note: This CIP assumes funding from the NHDOT Municipal State Aid Bridge program is available for the replacement of the Maplewood Avenue Bridge.**

Hoyle, Tanner & Associates, Inc.

RECOMMENDED 10- YEAR BRIDGE CAPITAL IMPROVEMENT PROGRAM (SCENARIO 2)*

CITY OF PORTSMOUTH, NH

Priority	Project Name	Project Costs	Year 0 FY 19	Year 1 FY 20	Year 2 FY 21	Year 3 FY 22	Year 4 FY 23	Year 5 FY 24	Year 6 FY 25	Year 7 FY 26	Year 8 FY 27	Year 9 FY 28	Year 10 FY 29	Beyond Year 10 (Costs at Year 2029)
		Design and Bidding									$ 15,000			
		Construction Engineering									$ 5,000			
		Construction									$ 30,000			
	NH 33 over PAR	Contingency (20%) & 3%/Yr. Inflation									$ 20,000			
9	NHDOT Br. No. 154/101	***Total NHDOT Br. No. 154/101***									***$ 70,000***			
		Design & Bidding									$ 15,000			
		Construction Engineering									$ 5,000			
		Construction									$ 40,000			
	US 1, Scott Avenue over Daniel Street	Contingency (20%) & 3%/Yr. Inflation									$ 30,000			
10	NHDOT Br. No. 246/083	***Total NHDOT Br. No. 241/069***									***$ 90,000***			
		Design & Bidding												$ 165,000
		Permitting / Easements												$ 15,000
		Construction Engineering												$ 110,000
		Construction												$ 1,100,000
	Cate Street over Hodgson Brook	Contingency (10%)												$ 140,000
11	NHDOT Br. No. 198/1007	***Total NHDOT Br. No. 241/069***												***$ 1,530,000***
		Engineering Study												$ 150,000
		Design & Bidding												$ 200,000
		Permitting												$ 20,000
		Construction Engineering												$ 200,000
		Construction												$ 2,000,000
	Peirce Island Road over Little Harbor	Contingency (20%) & 3%/Yr. Inflation												$ 1,400,000
12	NHDOT Br. No. 241/069	***Total NHDOT Br. No. 241/069***												***$ 3,970,000***
	General Routine Maintenance		$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	
		Yearly Total Cost =	**$ 185,000**	**$ 1,770,000**	**$ 460,000**	**$ 10,000**	**$ 80,000**	**$ 760,000**	**$ 264,000**	**$ 332,000**	**$ 270,000**	**$ 160,000**	**$ 2,135,000**	**$ 21,380,000**
												Total Cost =	**$ 6,430,000**	

***Note: This CIP assumes funding from the NHDOT Municipal State Aid Bridge program is available for the replacement of the Maplewood Avenue Bridge.**

APPENDIX B

Summary of Recommendations

Hoyle, Tanner & Associates, Inc.

SUMMARY OF RECOMMENDATIONS (SCENARIO 1)*

CITY OF PORTSMOUTH, NH

Priority	Project Name	Year 0 FY 19	Year 1 FY 20	Year 2 FY 21	Year 3 FY 22	Year 4 FY 23	Year 5 FY 24	Year 6 FY 25	Year 7 FY 26	Year 8 FY 27	Year 9 FY 28	Year 10 FY 29	Beyond Year 10 (Costs at Year 2029)
1	Kearsarge Way over PAR NHDOT Br. No. 240/132	In-Depth inspection, load rate, deck replacement, bridge and approach rail replacement, substructure repair, joint replacement $ 95,000	$ 1,210,000										
2	Market Street EB and WB over Tidal Basin NHDOT Br. Nos. 240/106 and 241/106	In-Deth inspection, replace bearings, replace expansion joint, repair backwall, add asphaltic plug joint, paint beam ends $ 70,000	$ 490,000								Replace bridge and approach rail, replace membrane and pavement, paint all beams and bearings, clean piers $ 150,000	$ 2,125,000	
3	Maplewood Avenue over North Mill Pond NHDOT Br. No. 231/103		Replacement $ 300,000	$ 300,000		$ 10,300,000							
4	Recreation Trail over Market Street NHDOT Br. No. 220/143	In-Depth inspection $ 10,000				Removal $ 70,000	$ 750,000						
5	Coakely Road over Hodgson Brook NHDOT Br. No. 191/110							In-Depth inspection, load rate $ 20,000	Replace rail system, remove / replace membrane, remove / replace pavement, misc. concrete repairs $ 279,000				Replacement $ 1,680,000
6	Barlett Street over Hodgson Brook NHDOT Br. No. 204/101							Load rate $ 60,000	Perform hydraulic analysis, chink and repoint substructure $ 43,000				
7	NH 1B over South Mill Pond NHDOT Br. No. 235/069							Load rate, remove / replace membrane, remove / replace pavement, misc concrete repairs $ 174,000					
8	Recration Trail over PAR NHDOT Br. No. 145/115		Repave approaches, repair rail system, scrape deck, add drainage path, clear vegetation $ 10,000							Replace expansion joints $ 100,000			
9	NH 33 over PAR NHDOT Br. No. 154/101									Replace select sidewalk concrete panels, reset sidewalk granite curb, seal along median curb lines $ 70,000			
10	US 1, Scott Avenue over Daniel Street NHDOT Br. No. 246/083									Repair / replace membrane along curblines $ 90,000			
11	Cate Street over Hodgson Brook NHDOT Br. No. 198/107												Replacement $ 1,530,000
12	Peirce Island Road over Little Harbor NHDOT Br. No. 241/069												Major rehabilitation $ 3,970,000

***Note: This CIP assumes funding from the NHDOT Municipal State Aid Bridge program is <u>not</u> available.**

APPENDIX C

General Routine Maintenance

General Routine Maintenance:

The City should continue to perform routine maintenance of all their bridges in order for the structures to reach their intended design service life and, therefore, attain the lowest life-cycle cost of each bridge investment. Routine maintenance is scheduled work at regular intervals with the goal to preserve structures in their present condition and protect them from inevitable deterioration due to environmental factors, traffic, and deicing chemicals. This type of work is typically performed on structures in 'fair' or better condition with significant remaining service life. Minor repairs may be necessary to maintain the integrity of the structure and prevent major rehabilitation. Structures that are not maintained are more likely to deteriorate at a faster rate and requires costlier treatments sooner than maintained structures. Therefore, it is cost effective to maintain structures to avoid the need for replacement or major rehabilitation. A routine maintenance plan is presented below summarizing suggested maintenance tasks and the recommended frequency for each.

SUGGESTED GENERAL ROUTINE MAINTENANCE PLAN

Annual Routine Maintenance		
Maintenance Task	**Date Completed**	**Notes/Identified Issues**
General: Remove brush and vegetation around structure.		
Bridge Deck & Sidewalks: Sweep clean sand and other debris. Power wash with water to remove salt residue.		
Wearing Surface (Pavement): Check for excessive cracking and deterioration. Seal any cracks with a flexible asphaltic sealer.		
Expansion Joint: Power wash with water to remove debris, sand and salt residue.		
Bridge Seats: Clean around bearings by flushing with water or air blast cleaning.		
Bridge & Approach Rail: Inspect for damage, loose or missing bolts, sharp edges or protrusions.		

Note: annual routine maintenance is typically completed in the spring.

Biennial Routine Maintenance		
Maintenance Task	**Date Completed**	**Notes/Identified Issues**
Routine Inspection: Structural and functional inspection of the bridge and approach roadway.		This is completed at no cost to the City by NHDOT.

Periodic (~5 Year) Routine Maintenance)		
Maintenance Task	**Date Completed**	**Notes/Identified Issues**
Exposed Concrete Surfaces: Power wash exposed concrete surfaces and re-apply water repellent.		
Exposed Concrete Surfaces: Inspect and repair areas of deterioration and seal all cracks		

APPENDIX D

NHDOT Bridge Inspection Reports

Bridge Inspection Report

NBI Structure Number: 021701450011500

Portsmouth 145/115

Date of Inspection: 10/18/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

RECREATION TRAIL
over
PAR

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99 Under: 18.93 Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	7 Good
Superstructure:	7 Good
Substructure:	7 Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	-2 %
NBI Status:	Not Applicable
Bridge Rail:	N/A or Not Required
Rail Transition:	N N/A or not required
Bridge Approach Rail:	N/A or Not Required
Approach Rail Ends:	N/A or Not Required

Structure Type and Materials:

Number of Main Spans: 3
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Monolithic Concrete
Membrane:	None
Deck Protection:	None
Curb Reveal:	Not Measured
Plan Location:	unknown
Total Bridge Length:	108.0 ft
Right Curb/Sidewalk Width:	0.0 ft
Total Bridge Width:	9.6 ft
Median:	No median
Bridge Skew:	33.00 °
Year Built/Rebuilt:	1970
Detour Length:	0.0 mi

Bridge Dimensions:

Length Maximum Span:	46.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	8.2 ft
Approach Roadway Width: (W/Shoulders)	8.0 ft

Bridge Inspection Report

NBI Structure Number: 021701450011500

Portsmouth 145/115

Bridge Service:

Type of Service on Bridge:	Pedestrian-bicycle				
Type of Service Under:	Railroad				
Lanes on Bridge:	0				
Lanes Under:	0				
AADT:	0	Percent Trucks:	4 %	Year of AADT:	2007
Future AADT:	0			Year of Future AADT:	2038

Federal or State Definition Bridge:	NH-Definition Bridge
National Highway System:	Bridge does not carry NHS
Roadway Functional Class:	Rural Local
New Hampshire Bridge Tier:	5
Eligibility for the National Register of Historic Places:	Possibly eligible
Traffic Direction:	Not hwy traffic

Bridge Inspection Report

NBI Structure Number: 021701450011500

Portsmouth 145/115

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	EXPOSED CONCRETE HAS LIGHT CRACKS AND MINOR SCALING. DECK UNDERSIDE HAS LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE. LIGHT SPALLS AND DELAMINATIONS AT EXTERIORS ALONG BEAM EDGES.
└1080	Delamination/Spall/Patched Area	
└1120	Efflorescence/Rust Staining	
└1130	Cracking (RC and Other)	
└1190	Abrasion/Wear(PSC/RC)	
107	Steel Open Girder/Beam	*2 GIRDERS* WEATHERING STEEL IS UNIFORMLY COATED, BROWN IN COLOR WITH A GRANULAR TEXTURE IN AREAS. MINOR SCALE UNDER LEAKAGE.
└ 517	Weathering Steel Protective Coating	
└1000	Corrosion	
205	Reinforced Concrete Column	FINE CRACKS.
215	Reinforced Concrete Abutment	LIGHT MAP CRACKING AND MINOR SPALLS. SMALL DELAMINATION AT SOUTHEAST, TOPSIDE.
└1080	Delamination/Spall/Patched Area	
└1130	Cracking (RC and Other)	
234	Reinforced Concrete Pier Cap	FINE CRACKS.
302	Compression Joint Seal	EXPANSION GLAND IS HOLED, LEAKING AND WORN.
└2310	Leakage	
└2340	Seal Cracking	
311	Movable Bearing	LIGHT SCALE. ONE LOOSE ANCHOR NUT.
└ 515	Steel Protective Coating	
└1000	Corrosion	
330	Metal Bridge Railing	*** Steel Baluster ** GALVANIZED* NORTHWEST TERMINAL END IS BENT AND HAS A CRACKED WELD AT BOTTOM SECTION TO POST.
└1010	Cracking	
└7000	Damage	

Bridge Inspection Report

NBI Structure Number: 021701450011500

Portsmouth 145/115

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	1,033	sq.ft	82%	18%	0%	0%
└1080	Delamination/Spall/Patched Area	30	sq.ft	0%	100%	0%	0%
└1120	Efflorescence/Rust Staining	25	sq.ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	100	sq.ft	0%	100%	0%	0%
└1190	Abrasion/Wear(PSC/RC)	30	sq.ft	0%	100%	0%	0%
107	Steel Open Girder/Beam	217	ft	0%	100%	0%	0%
└ 517	Weathering Steel Protective Coating	---	---	0%	100%	0%	0%
└1000	Corrosion	216	each	0%	100%	0%	0%
205	Reinforced Concrete Column	2	each	100%	0%	0%	0%
215	Reinforced Concrete Abutment	30	ft	42%	58%	0%	0%
└1080	Delamination/Spall/Patched Area	2	ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	15	ft	0%	100%	0%	0%
234	Reinforced Concrete Pier Cap	20	ft	100%	0%	0%	0%
302	Compression Joint Seal	20	ft	3%	0%	97%	0%
└2310	Leakage	9	ft	0%	0%	100%	0%
└2340	Seal Cracking	10	ft	0%	0%	100%	0%
311	Movable Bearing	8	each	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	0%	100%	0%	0%
└1000	Corrosion	8	each	0%	100%	0%	0%
330	Metal Bridge Railing	249	ft	99%	1%	0%	0%
└1010	Cracking	1	ft	0%	100%	0%	0%
└7000	Damage	2	ft	0%	100%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

Inspection Notes: 10/18/2017

MAS - inspection comments -
DECK: EXPOSED CONCRETE - LIGHT CRACKS AND MINOR SCALING. JOINT - DAMAGED, HOLED AND LEAKING. RAIL - NORTHWEST TERMINAL END DAMAGED, CRACKED WELD AT BOTTOM SECTION TO POST. SOFFIT - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE; SMALL DELAMINATIONS AND LIGHT SPALLS AT EXTERIORS.
SUPERSTRUCTURE: WEATHERING STEEL COATING - BROWN IN COLOR WITH A GRANULAR TEXTURE IN AREAS. BEAMS - GOOD CONDITION, LIGHT SCALE IN AREAS UNDER LEAKAGE. BEARINGS - LIGHT SCALE, ONE LOOSE NUT.
SUBSTRUCTURE: ABUTMENTS - LIGHT MAP CRACKS, SMALL DELAMINATION AT SOUTHEAST TOPSIDE, MINOR SPALLS. PIERS - FINE CRACKS.

PICTURES: C576-
01. SPALL AT SOFFIT EXTERIOR AT NORTHWEST. TYPICAL OF SEVERAL AREAS.
02. LIGHT MAP CRACKING AT EAST ABUTMENT.

Previous Inspection Notes: 10/05/2015

KJT - inspection comments -
DECK: EXPOSED CONCRETE - LIGHT CRACKS AND MINOR SCALING. JOINT - DAMAGED, HOLED AND LEAKING. RAIL - NORTHWEST TERMINAL END DAMAGED, CRACKED WELD AT BOTTOM SECTION TO POST. SOFFIT - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE; SMALL DELAMINATIONS AND SPALLS.
SUPERSTRUCTURE: WEATHERING STEEL BEAMS ARE UNIFORMLY COATED AND IN GOOD CONDITION. BEARINGS HAVE LIGHT SCALE.
SUBSTRUCTURE: ABUTMENTS - LIGHT CRACKS, SMALL DELAMINATION AT SOUTHEAST TOPSIDE, MINOR SPALLS. PIERS - FINE CRACKS.

Approach and Roadway Notes:

ASPHALT - (6) CRACKS, SETTLED AND PATCHED.
EROSION AT NORTHEAST.
HEAVY VEGETATION WITH TRESS GROWING AROUND ABUTMENTS.

Bridge Inspection Report

NBI Structure Number: 021701450011500

Portsmouth 145/115

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/18/2017	MAS	☑	☑	☐	☐	7	7	7	N	☐	No Posting Req'd
10/05/2015	KJT	☑	☑	☐	☐	7	7	7	N	☐	No Posting Req'd
10/07/2013	MAS	☑	☑	☐	☐	7	7	7	N	☐	No Posting Req'd
10/20/2011	MAS	☑	☑	☐	☐	7	8	8	N	☐	No Posting Req'd
08/07/2009	KJT	☑	☑	☐	☐	7	8	8	N	☐	No Posting Req'd
10/19/2007	DPC	☑	☑	☐	☐	7	8	8	N	☐	No Posting Req'd
08/29/2005	DPC	☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd
09/16/2003	RLM	☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd
02/20/2001	RLM	☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd
02/01/1997		☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd
01/01/1995		☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd
03/01/1993		☑	☑	☑	☐	7	8	8	N	☐	No Posting Req'd

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021701540010100

Portsmouth 154/101

Date of Inspection: 10/18/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

NH 33
over
PAR

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 17.09, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	8 Very Good
Superstructure:	8 Very Good
Substructure:	8 Very Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	83 %
NBI Status:	Functionally Obsolete
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Meets Standards

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Concrete Slab

NH Bridge Type:	PVS (Prestressed Voided Slabs)
Deck Type:	Concrete Precast Panel
Wearing Surface:	Bituminous
Membrane:	None
Deck Protection:	None
Curb Reveal:	8 in
Plan Location:	ON FILE
Total Bridge Length:	50.0 ft
Right Curb/Sidewalk Width:	0.8 ft
Total Bridge Width:	50.0 ft
Median:	Open median
Bridge Skew:	33.00 °
Year Built/Rebuilt:	2010
Detour Length:	4.0 mi

Bridge Dimensions:

Length Maximum Span:	45.0 ft
Left Curb/Sidewalk Width:	6.0 ft
Width Curb to Curb:	40.0 ft
Approach Roadway Width: (W/Shoulders)	46.0 ft

Bridge Inspection Report

NBI Structure Number: 021701540010100

Portsmouth 154/101

Bridge Service:

Type of Service on Bridge: Highway
Type of Service Under: Railroad
Lanes on Bridge: 2
Lanes Under: 0
AADT: 22,000 Percent Trucks: 5 % Year of AADT: 2012
Future AADT: 32,560 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Not Eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021701540010100

Portsmouth 154/101

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
104	Prestressed Concrete Closed Web/Box Girder	*14 PCS SECTIONS.* ASPHALT IS IN GOOD CONDITION. CURB / SIDEWALK HAVE FINE CRACKS.
└1120	Efflorescence/Rust Staining	
215	Reinforced Concrete Abutment	*Element record added 2010-11-24.* FINE VERTICAL CRACKS.
301	Pourable Joint Seal	*PLUG TYPE AT EACH END.* SETTLED AREA AT NORTHEAST CURB LINE.
330	Metal Bridge Railing	*T-4 AT NORTH. T-2 AT SOUTH. GALV. BOX BEAMS AND CHAIN LINK FENCE.* GOOD CONDITION.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
104	Prestressed Concrete Closed Web/Box Girder	50	ft	80%	20%	0%	0%
└1120	Efflorescence/Rust Staining	10	ft	0%	100%	0%	0%
215	Reinforced Concrete Abutment	730	ft	100%	0%	0%	0%
301	Pourable Joint Seal	104	ft	100%	0%	0%	0%
330	Metal Bridge Railing	650	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

On October 15, 2001, NHDOT assumed Maintenance Responsibility for this bridge.
BRIDGE REPLACEMENT COMPLETED 11/24/10.
Municipality assumed maintenance responsibility for this bridge upon 2010 construction completion per previous agreement.
RAIL ROAD RAILS REMOVED.

Inspection Notes: 10/18/2017

KJT - inspection comments -
DECK / SUPERSTRUCTURE: ASPHALT - GOOD CONDITION. CURB / SIDEWALK - FINE CRACKS. JOINT - SETTLED AREA AT NORTHEAST CURB. RAIL - GOOD CONDITION. SOFFIT - MINOR LEAKING AT JOINTS.
SUBSTRUCTURE: FINE CRACKS.

Previous Inspection Notes: 10/07/2015

MAS - inspection comments -
DECK / SUPERSTRUCTURE: ASPHALT - GOOD CONDITION. CURB / SIDEWALK - FINE CRACKS. JOINT - SETTLED AREA AT NORTHEAST CURB. RAIL - GOOD CONDITION. SOFFIT - MINOR LEAKING AT JOINTS.
SUBSTRUCTURE: FINE CRACKS.

PICTURE: C541-
37. WEST ELEVATION, RAILS REMOVED.

Approach and Roadway Notes:

ASPHALT - (8) CRACKS
W- BEAM RAIL - MINOR DAMAGE.
SIDEWALK - GRANITE FACE IS CRACKED AT EDGES AND SETTLED.

Bridge Inspection Report

NBI Structure Number: 021701540010100

Portsmouth 154/101

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/18/2017	KJT	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/07/2015	MAS	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/07/2013	MAS	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/20/2011	KJT	☑	☑	☐	☐	9	9	9	N	☐	No Posting Req'd
11/24/2010	DPC	☑	☑	☐	☐	9	9	9	N	☐	No Posting Req'd

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021701910011000

Portsmouth 191/110

Date of Inspection: 10/31/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

COAKLEY ROAD
over
HODGSON BROOK

Recommended Postings:

Weight: **E-2** ☐ Weight Sign OK

SIGN IS MISSING AT NORTH 10/31/2017.

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99 Under: 0.00 Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	N N/A (NBI)
Superstructure:	N N/A (NBI)
Substructure:	N N/A (NBI)
Culvert:	5 Fair
Sufficiency Rating:	71 %
NBI Status:	Not Deficient
Bridge Rail:	N/A or Not Required
Rail Transition:	N N/A or not required
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Meets Standards

Structure Type and Materials:

Number of Main Spans: 3
Number of Approach Spans: 0

Main Span Material and Design Type
Concrete Culvert

NH Bridge Type:	CB (Concrete Box)
Deck Type:	No Deck (N/A - NBI)
Wearing Surface:	Bituminous
Membrane:	Other
Deck Protection:	None
Curb Reveal:	Not Measured
Plan Location:	unknown
Total Bridge Length:	36.0 ft
Right Curb/Sidewalk Width:	0.0 ft
Total Bridge Width:	0.0 ft
Median:	No median
Bridge Skew:	10.00 °
Year Built/Rebuilt:	1940
Detour Length:	0.0 mi

Bridge Dimensions:

Length Maximum Span:	11.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	0.0 ft
Approach Roadway Width: (W/Shoulders)	28.0 ft

Bridge Inspection Report

NBI Structure Number: 021701910011000

Portsmouth 191/110

Bridge Service:

Type of Service on Bridge:	Highway				
Type of Service Under:	Waterway				
Lanes on Bridge:	2				
Lanes Under:	0				
AADT:	530	Percent Trucks:	4 %	Year of AADT:	2013
Future AADT:	784			Year of Future AADT:	2038

Federal or State Definition Bridge:	Fed-Definition Bridge
National Highway System:	Bridge does not carry NHS
Roadway Functional Class:	Urban Local
New Hampshire Bridge Tier:	5
Eligibility for the National Register of Historic Places:	Possibly eligible
Traffic Direction:	Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021701910011000

Portsmouth 191/110

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
215	Reinforced Concrete Abutment	LIGHT CRACKS AND LARGE SPALL WITH REBAR EXPOSED AT SOUTHWEST WING JOINT. LIGHT TO MODERATE SPALLING AND SCALING AT AND BELOW WATERLINE AT EACH BARREL. LIGHT LEAKING. WING SPALLED WITH REBAR EXPOSED AT SOUTHEAST.
└1080	Delamination/Spall/Patched Area	
└1090	Exposed Rebar	
└1130	Cracking (RC and Other)	
└1190	Abrasion/Wear(PSC/RC)	
241	Reinforced Concrete Culvert	***CONCRETE BOX** 3-CELL* ASPHALT GOOD CONDITION. CONCRETE BOX HAS LIGHT CRACKS AND LEAKING; HEAVY SCALING AND LIGHT SPALLS WITH REBAR EXPOSED AT WATERLINE. FINE CRACKS AND MINOR LEAKING WITH LIGHT SCALING AT SOFFIT.
└1080	Delamination/Spall/Patched Area	
└1090	Exposed Rebar	
└1130	Cracking (RC and Other)	
└1190	Abrasion/Wear(PSC/RC)	

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
215	Reinforced Concrete Abutment	39	ft	1%	56%	43%	0%
└1080	Delamination/Spall/Patched Area	15	ft	0%	0%	100%	0%
└1090	Exposed Rebar	10	ft	0%	80%	20%	0%
└1130	Cracking (RC and Other)	5	ft	0%	100%	0%	0%
└1190	Abrasion/Wear(PSC/RC)	9	ft	0%	100%	0%	0%
241	Reinforced Concrete Culvert	144	ft	0%	48%	52%	0%
└1080	Delamination/Spall/Patched Area	25	ft	0%	0%	100%	0%
└1090	Exposed Rebar	10	ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	10	ft	0%	100%	0%	0%
└1190	Abrasion/Wear(PSC/RC)	75	ft	0%	33%	67%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

Inspection Notes: 10/31/2017

MAS - inspection comments -
CULVERT: ASPHALT - GOOD CONDITION. CONCRETE BOX - LIGHT CRACKS, HEAVY SCALING AND LIGHT TO MODERATE SPALLS WITH REBAR EXPOSED AND RUSTED AT AND BELOW WATER LINE. MODERATE SPALL WITH REBAR EXPOSED AT SOUTHWEST. SOFFIT HAS AREAS OF LEAKING AND LIGHT SCALING.

PICTURES: C576-
48. LARGE SPALL WITH REBAR EXPOSED AT SOUTHWEST.
49. AREA OF LIGHT SCALING AT SOFFIT, BARREL #3. TYPICAL OF FEW AREAS.
50. NORTH APPROACH, E-2 SIGN IS MISSING.

Bridge Inspection Report

NBI Structure Number: 021701910011000

Portsmouth 191/110

Previous Inspection Notes: 10/05/2015

KJT - inspection comments -
CULVERT: ASPHALT - GOOD CONDITION. CONCRETE BOX - LIGHT CRACKS, HEAVY SCALING AND LIGHT SPALLS WITH REBAR EXPOSED AND RUSTED AT WATER LINE. MODERATE SPALL WITH REBAR EXPOSED AT SOUTHWEST. SOFFIT HAS AREAS OF LEAKING AND LIGHT SCALING.

Approach and Roadway Notes:

ASPHALT - (7) GOOD CONDITION, FEW CRACKS.
W- BEAM RAIL - MINOR DAMAGE, LEANING AT EAST.
HEAVY VEGETATION.

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/31/2017	MAS	☑	☑	☐	☐	N	N	N	5	☐	E-2
10/05/2015	KJT	☑	☑	☐	☐	N	N	N	5	☐	E-2
10/07/2013	MAS	☑	☑	☐	☐	N	N	N	5	☐	E-2
10/20/2011	MAS	☑	☑	☐	☐	N	N	N	6	☐	E-2
08/07/2009	KJT	☑	☑	☐	☐	N	N	N	6	☐	E-2
10/23/2007	DPC	☑	☑	☐	☐	N	N	N	6	☐	E-2
08/26/2005	DPC	☑	☑	☐	☐	N	N	N	6	☐	E-2
09/16/2003	DPC	☑	☑	☐	☐	N	N	N	6	☐	E-2
02/16/2001	RLM	☑	☑	☐	☐	N	N	N	6	☐	E-2
02/16/1999	FNM	☑	☑	☐	☐	N	N	N	6	☐	E-2
02/01/1997		☑	☑	☐	☐	N	N	N	6	☐	E-2
01/01/1995		☑	☑	☐	☐	N	N	N	6	☐	E-2
03/01/1993		☑	☑	☐	☐	N	N	N	7	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021701980003400

Portsmouth 198/034

Date of Inspection: 10/31/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

NH 1A
over
SAGAMORE CREEK

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	9 Excellent
Superstructure:	9 Excellent
Substructure:	9 Excellent
Culvert:	N N/A (NBI)
Sufficiency Rating:	97 %
NBI Status:	Not Deficient
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Meets Standards

Structure Type and Materials:

Number of Main Spans: 3
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete Precast Panel
Wearing Surface:	Bituminous
Membrane:	Preformed Fabric
Deck Protection:	Epoxy Coated Reinforcing
Curb Reveal:	8 in
Plan Location:	TBD
Total Bridge Length:	424.0 ft
Right Curb/Sidewalk Width:	0.5 ft
Total Bridge Width:	43.0 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	2015
Detour Length:	3.0 mi

Bridge Dimensions:

Length Maximum Span:	178.0 ft
Left Curb/Sidewalk Width:	5.5 ft
Width Curb to Curb:	34.0 ft
Approach Roadway Width: (W/Shoulders)	34.0 ft

Bridge Inspection Report

NBI Structure Number: 021701980003400

Portsmouth 198/034

Bridge Service:

Type of Service on Bridge:	Highway and Pedestrian				
Type of Service Under:	Waterway				
Lanes on Bridge:	2				
Lanes Under:	0				
AADT:	6,500	Percent Trucks:	5 %	Year of AADT:	2013
Future AADT:	9,620			Year of Future AADT:	2038

Federal or State Definition Bridge:	Fed-Definition Bridge
National Highway System:	Bridge does not carry NHS
Roadway Functional Class:	Urban Minor Arterial
New Hampshire Bridge Tier:	5
Eligibility for the National Register of Historic Places:	Not Eligible
Traffic Direction:	Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021701980003400

Portsmouth 198/034

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	*DECK PANELS WITH OVERLAY. CAST IN PLACE AT EXTERIORS AND ENDS. 8 in. TOTAL THICKNESS.* ASPHALT IS IN NEW CONDITION. CURB IS IN NEW CONDITION. SIDEWALK IS IN NEW CONDITION.
└ 510	Wearing Surfaces	
107	Steel Open Girder/Beam	*TAPERED GIRDER @ ABUT.* *DEPTH - 48 in.. F WIDTH 18 in.. F THICKNESS 0.75 in. TOP, 1.5 in. BOTTOM. WEB 0.5 in.. SPACING 9' CTR TO CTR. TOTAL NUMBER 5.* PAINT IS IN NEW CONDITION. GIRDERS ARE IN NEW CONDITION.
└ 515	Steel Protective Coating	
205	Reinforced Concrete Column	NEW CONDITION.
215	Reinforced Concrete Abutment	*CONCRETE CAST IN PLACE.* NEW CONDITION.
234	Reinforced Concrete Pier Cap	NEW CONDITION.
300	Strip Seal Expansion Joint	*Element record added 2015-10-06.* *AT NORTH AND SOUTH DECK ENDS.* DEBRIS FILLED.
└2350	Debris Impaction	
310	Elastomeric Bearing	*Element record added 2015-10-06.* NEW CONDITION.
330	Metal Bridge Railing	*T-4 GALVANIZED.* NEW T-4 GALVANIZED.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	18,232	sq.ft	99%	1%	0%	0%
└ 510	Wearing Surfaces	---	---	100%	0%	0%	0%
107	Steel Open Girder/Beam	2,097	ft	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
205	Reinforced Concrete Column	4	each	100%	0%	0%	0%
215	Reinforced Concrete Abutment	173	ft	100%	0%	0%	0%
234	Reinforced Concrete Pier Cap	86	ft	100%	0%	0%	0%
300	Strip Seal Expansion Joint	86	ft	7%	93%	0%	0%
└2350	Debris Impaction	80	ft	0%	100%	0%	0%
310	Elastomeric Bearing	20	each	100%	0%	0%	0%
330	Metal Bridge Railing	850	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

REMOVED FROM MUNICIPAL RED LIST 10/6/2015 - NEW BRIDGE.
BRIDGE REPLACED UNDER NHDOT PROJECT 14493 (LPA).

Inspection Notes: 10/31/2017

KJT - inspection comments -
DECK: ASPHALT - NEW CONDITION. CURB / SIDEWALK - NEW CONDITION. JOINTS - STRIP SEAL, NEW CONDITION. RAIL - T-4 GALVANIZED, NEW CONDITION. SOFFIT - NEW CONDITION, NO LEAKING.
SUPERSTRUCTURE: PAINT - NEW CONDITION. GIRDERS - NEW CONDITION, HAUNCHED AT PIERS. BEARINGS - ELASTOMERIC, NEW CONDITION.
SUBSTRUCTURE: ABUTMENTS - NEW CONDITION. PIERS - NEW CONDITION. SEE UNDERWATER INSPECTION REPORT.

Bridge Inspection Report

NBI Structure Number: 021701980003400

Portsmouth 198/034

Previous Inspection Notes: 10/06/2015

MAS - inspection comments -
DECK: ASPHALT - NEW CONDITION. CURB / SIDEWALK - NEW CONDITION. JOINTS - STRIP SEAL, NEW CONDITION. RAIL - T-4 GALVANIZED, NEW CONDITION. SOFFIT - NEW CONDITION, NO LEAKING.
SUPERSTRUCTURE: PAINT - NEW CONDITION. GIRDERS - NEW CONDITION, HAUNCHED AT PIERS. BEARINGS - ELASTOMERIC, NEW CONDITION.
SUBSTRUCTURE: ABUTMENTS - NEW CONDITION. PIERS - NEW CONDITION. SEE UNDERWATER INSPECTION REPORT.

PICTURES: C541-
28 - 36.

Approach and Roadway Notes:

ASPHALT - (8) GOOD CONDITION.
T-4 GALVANIZED - NEW CONDITION.
W- BEAM RAIL - NEW CONDITION.

Unusual or experimental features:

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/31/2017	KJT	☑	☑	☐	☐	9	9	9	N	☐	No Posting Req'd
10/06/2015	MAS	☑	☑	☐	☐	9	9	9	N	☐	No Posting Req'd
07/28/2015	NBG	☑	☑	☐	☑	9	9	9	N	☐	No Posting Req'd

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	60

Terracon
Consulting Engineers & Scientists

TERRACON UNDERWATER SUBSTRUCTURE INSPECTION FORM

Date: 28 July 2015 **Work Order #** **N1159086 - J1159086**
Structure ID # 198/034 **Inspection performed for: (Client)**
GPS COORDIATES: 43. 054750 (lat), -70.749004 (long) Name: **New Hampshire Dept. of Transportation**
County: Rockingham Address: John O. Morton Bldg.
City: Portsmouth 7 Hazen Drive, PO Box 483 Concord, New Hampshire
Roadway / Hwy #: **NH 1-A** Field Representative: Jeffrey E. Lorden
Waterway: Sagamore Creek Telephone: 603-419-9539 Cell
Assessment Team: Brad Walden, Casey Redden, Diver Jason Hickey E.I.
Previous Inspection Reports Available: **Construction or As-Built Plans / Drawings Available:**
Yes **X** No Yes No **X**
Date of Report: 28 July 10 Originator: Previous Consultant firm Dates:

BRIDGE ACCESS

Boat: Pontoon Jonboat **X** Barge: Other :
Ramp Location: **2 Pierce Island Road, Portsmouth, NH or 43.074746 (lat), -70.748775 (long)**
Ramp: Concrete: **X** Gravel: Dirt: Grade: **ok** Width: **ok** Depth: **ok**
Distance from Ramp to Bridge: **3 miles** **Travel Time:** **30 minutes**
Ramp Fee: **$10.00 Recreational Commercial $50.00** **Lockage Required:** **Yes** **No** **X**
Comments / Directions: Ramp and launch are excellent. The distance to the bridge is approximately 3 miles approximately 30 minutes travel time. The route to bridge has extremely shallow shoals, use caution.

BOAT TRAFFIC

Recreational:	Heavy	**X**	Moderate		Light		N/A	
Fishing:	Heavy	**X**	Moderate		Light		N/A	
Barge:	Heavy		Moderate		Light		N/A	**X**

Comments:

WEATHER

Temperature **82°(F)** Fair **X** Cloudy Ptly. Cldy Windy Rain

WATER CONDITIONS

Temperature: **73°(F)** Visibility: **3'**
Current: Heavy **X** Moderate **X** Light None

WATER ELEVATION

Reference Location: **Bent 1B, From bottom of bent cap to water line.** Reference Point Elevation See Sketch
Distance To Water: **10.6** Water Elevation

BANK / SHORE

Grass **X** Rock **X** Gravel Dirt/Mud **X** Other

INSPECTION METHOD

Surface Supplied Air _____ Scuba **X** Wading _____ Other _____

BRIDGE TYPE

Continuous Plate Girder _____ Suspension _____ Steel Truss _____
Steel Beam _____ Wood Truss _____ Other **IB – Steel Deck**

BRIDGE SUPPORT TYPE

Masonry _____ Closed Web _____ Open Web _____ Steel Piles
Reinforced Concrete **X** Timber Piles _____ Other **Concrete filled cassion**

FOUNDATION TYPE

Pile w/ pile cap _____ Pile w/o pile cap _____ Pier founded on Rock _____ Or Soil _____
Caisson _____ Spread Footing _____ Other **Unknown**

CROSS SECTIONS

Upstream	**X**		**X**		
	5'	**10'**	**25'**	**50'**	**100'**
Downstream	**X**		**X**		

GPS DATA 43. 054750 (lat), -70.749004 (long**)**

SOUNDINGS (Shallow Stream or Culvert)

Equipment Used: **Level Rod,**
(See Attached Drawings)

SCOUR (see field notes for detailed description)

Scour pockets or troughs Yes _____ No **X** _____
Footing or foundation element exposed Yes _____ No **X** _____
Scour increased since last inspection Yes _____ No **X** _____
Comments: _____

PIER / ELEMENT CONDITIONS (see field notes for detailed description)

Biological Growth	**Light**		Zebra Mussel Growth	**None**
Spalling	**None detected**		Honeycombing	**None Detected**
Scaling	**None detected**		Re-Steel Exposed	**No**
Delamination	**None detected**			
Vertical Cracks	Hairline **N/A**	Measurable	**None detected**	
Horizontal Cracks	Hairline **N/A**	Measurable	**None detected**	
Impact Damage	Minor **N0**	Major	**None detected**	
Pier Faces not Inspected	List Piers **N/A**			
Reason for not Inspecting	N/A			

Comments: **Bents are concrete incased in a steel casing. Bents are covered in a light biological (soft & hard) growth. The bents are mildly corroded**

BOTTOM CONDITIONS

Sand	**X**	Cobbles		Gravel	
Clay	**X**	Boulders		Silt	**X**
Bedrock, type				Clay	

Debris:

Sticks	**XX**	Timbers		Steel	
Tree Limbs		Construction Debris		Waste Concrete	
Tree					

Other:

Heavy debris located around element Yes ____ No **X** Elements ____

Photography / Video Documentation

Photographs Taken: Yes **X** No ____

1.	Bridge structure, looking to sea	13.	
2.	Bridge structure, looking to inland	14.	
3.	Water level elevation reference point	15.	
4.	Bent 2 A & B	16.	
5.	Bent 1 A & B	17.	
6.		18.	
7.		19.	
8.		20.	
9.		21.	
10.		22.	
11.		23.	
12.		24.	

Video Documentation Taken: Yes ____ No **X**
Above Surface: Yes ____ No **X**
Below Surface: Yes ____ No **X**
Video Tape Identification ____

Culvert substructure rating is 7.
Channel and Channel Protection Rating is 7.

General Comments (Include any Unusual Conditions Encountered):
The culvert substructure is rated as 7.

The waterway opening is adequate, the channel and channel protection is rated as Code 7.

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Consulting Engineers & Scientists

Structure ID #: **198/034, NH 1-A over Sagamore Creek** Date: **07/28/2015**
County: **Rockingham** State: **New Hampshire**
Description : **Bridge Field Notes**

Bents show similar characteristics.

1. Bents were covered with a light biological (Soft and hard i.e., algae, barnacles and shells) of marine growth.
2. Bents are reinforced concrete incased in a steel casing
3. The bottom material in the channel consisted of sand over a silty clay.
4. The water level elevation reference point is located on ebb side of bent 1A, the distance from the bottom of the bent cap adjacent to the water line is 10.6'.

Culvert substructure is rated as 7.

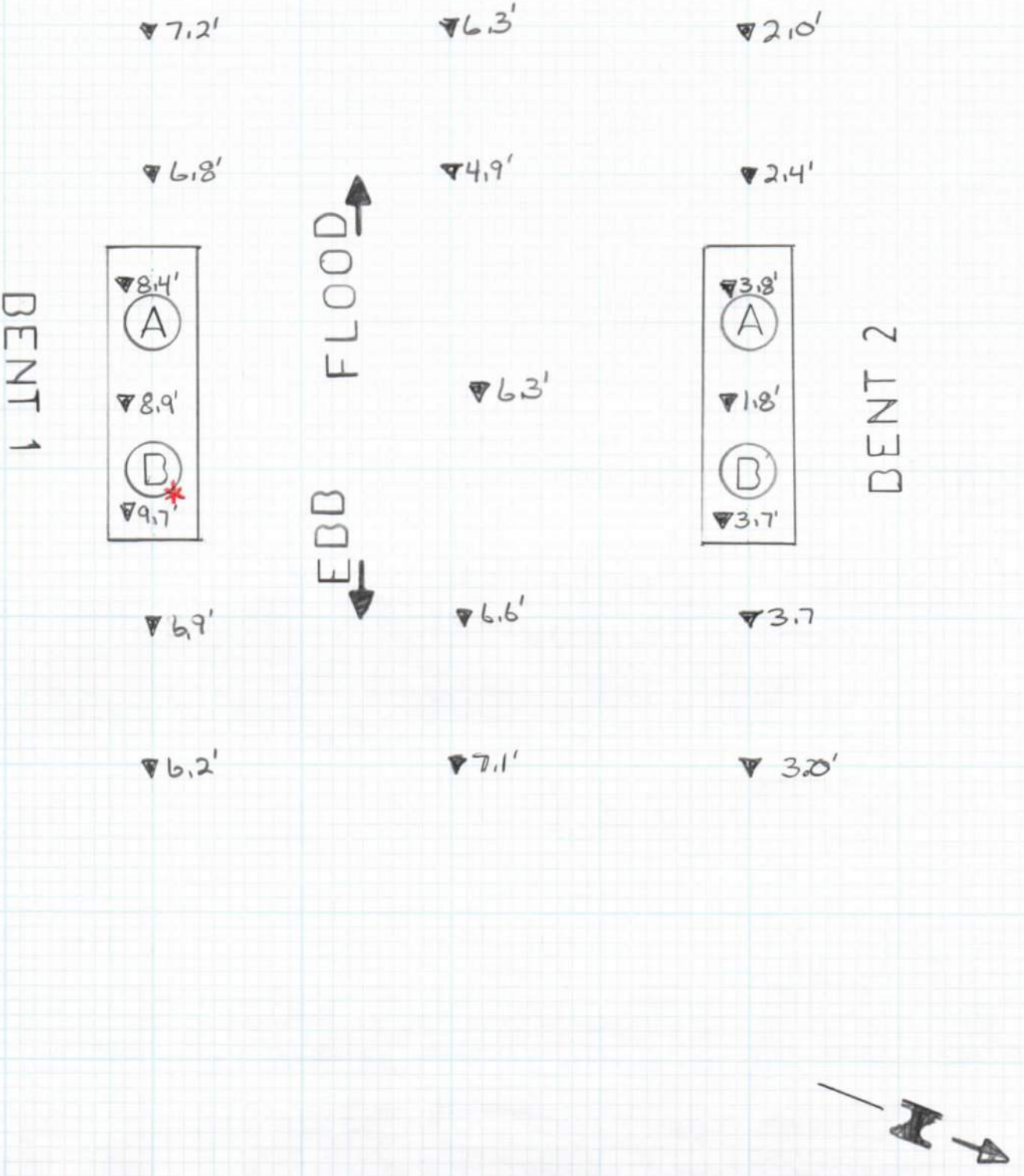
The waterway opening is adequate, Channel and Channel Protection is rated as 7.

See attached drawings, sketches and photographs of the areas to better visualize the conditions at the time of the assessment.

Terracon

PROJECT: Bridge # 198/034, NH 1-A over Sagamore Creek Page 1 of 1

JOB NO. 01159086 Date 28 July 15 Comp. By BTW CHECKED BY: JTH



Structure ID #: **198/034, NH 1-A over Sagamore Creek** Date: **07/28/2015**
County: **Rockingham** State: **New Hampshire**
Description : **Bridge structure, looking to sea**

Photos
TERRACON

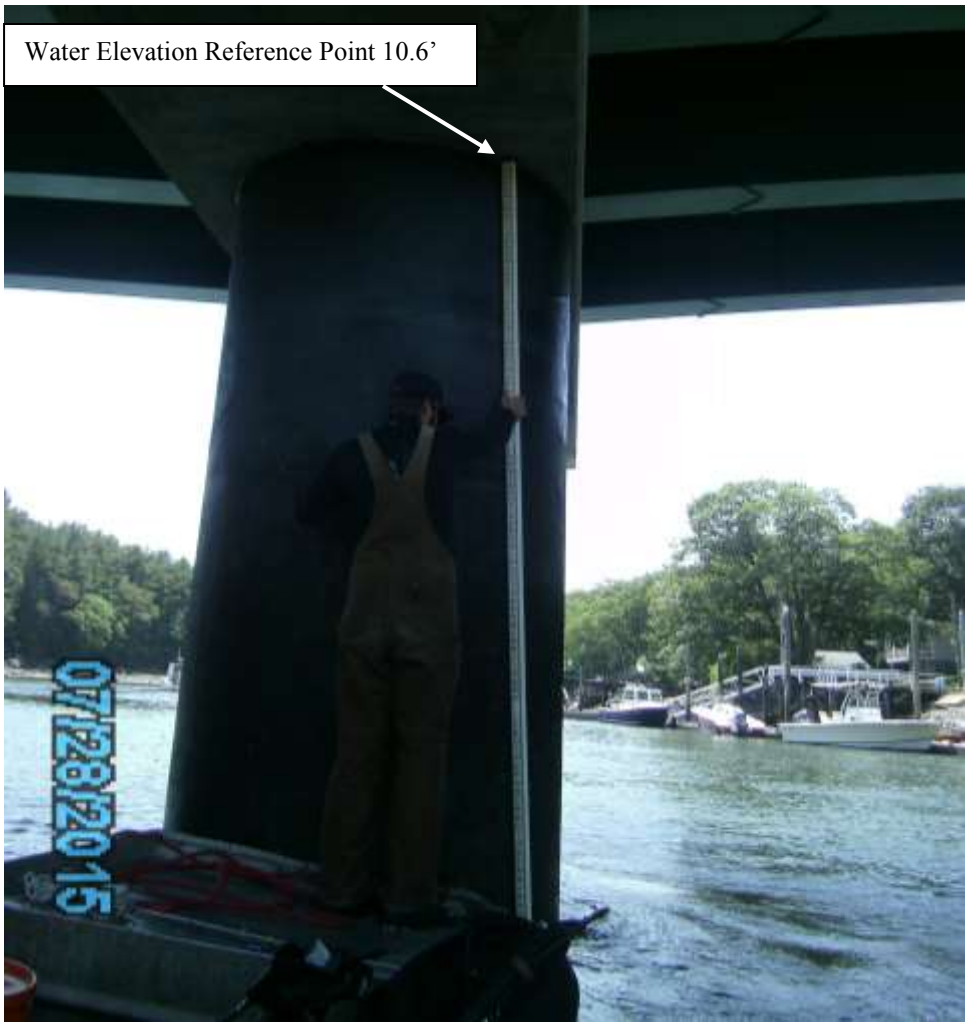
Structure ID #: **198/034, NH 1-A over Sagamore Creek** Date: **07/28/2015**
County: **Rockingham** State: **New Hampshire**
Description : **Bridge structure, looking to inland**

Photos
TERRACON

Structure ID #: **198/034, NH 1-A over Sagamore Creek** Date: **07/28/2015**

County: **Rockingham** State: **New Hampshire**

Description : **Water level elevation reference point**



Photos
TERRACON

Structure ID #: **198/034, NH 1-A over Sagamore Creek** Date: **07/28/2015**

County: **Rockingham** State: **New Hampshire**

Description : **Bent 2 A & B**

Photos
TERRACON

Bridge Inspection Report

NBI Structure Number: 021701980010700

Portsmouth 198/107

Date of Inspection: 10/17/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

CATE STREET
over
HODGSON BROOK

Recommended Postings:

Weight: **Gross Weight Limit 15 Tons or 70% of Legal Loads** ☑ Weight Sign OK
3 TON SIGNS IN PLACE 10/17/17.

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Municipal Redlist
Deck:	2 Critical
Superstructure:	5 Fair
Substructure:	6 Satisfactory
Culvert:	N N/A (NBI)
Sufficiency Rating:	26 %
NBI Status:	Structurally Deficient
Bridge Rail:	Substandard
Rail Transition:	Substandard
Bridge Approach Rail:	Substandard
Approach Rail Ends:	Substandard

This Bridge has temporary shoring or is a temporary bridge!

Bridge Dimensions:

Length Maximum Span:	30.0 ft
Left Curb/Sidewalk Width:	4.0 ft
Width Curb to Curb:	20.0 ft
Approach Roadway Width: (W/Shoulders)	20.0 ft

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	None
Deck Protection:	None
Curb Reveal:	6 in
Plan Location:	unknown
Total Bridge Length:	37.0 ft
Right Curb/Sidewalk Width:	1.5 ft
Total Bridge Width:	28.0 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	1940
Detour Length:	2.0 mi

Bridge Inspection Report

NBI Structure Number: 021701980010700

Portsmouth 198/107

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 1,500 Percent Trucks: 4 % Year of AADT: 2014
Future AADT: 2,220 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Local
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021701980010700

Portsmouth 198/107

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	ASPHALT IS CRACKED AND DEPRESSED, HOLLOW SOUNDING IN AREAS; CURB / SIDEWALK IS CRACKED AND SPALLED WITH HEAVY VEGETATION.
└ 510	Wearing Surfaces	
└1120	Efflorescence/Rust Staining	
107	Steel Open Girder/Beam	*5 - I-BEAMS* PAINT IS IN POOR CONDITION. HEAVILY RUSTED WITH SCALE AND SECTION LOSS. DIAPHRAGMS ARE HEAVILY RUSTED AT ABUTMENT ENDS.
└ 515	Steel Protective Coating	
└1000	Corrosion	
215	Reinforced Concrete Abutment	SOUTH BRIDGESEAT SPALLED WITH REBAR EXPOSED. NORTH ABUTMENT CRACKED AND DELAMINATIONS. BACKWALLS ARE CRACKED AND SPALLED. VERTICAL CRACK AT SOUTHWEST.
311	Movable Bearing	RUSTED UNDER LEAKAGE. ANCHOR BOLTS MISSING SOUTHWEST.
└ 515	Steel Protective Coating	
└1000	Corrosion	BEARINGS HEAVILY RUST UNDER LEAKAGE
313	Fixed Bearing	RUSTED UNDER LEAKAGE.
└ 515	Steel Protective Coating	
330	Metal Bridge Railing	*STEEL PIPE RAIL* PAINT IS IN POOR CONDITION, PEELING. RUSTED; BASE NUTS RUSTED OFF, TYPICAL OF SEVERAL.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	1,033	sq.ft	5%	25%	70%	0%
└ 510	Wearing Surfaces	---	---	63%	37%	0%	0%
└1120	Efflorescence/Rust Staining	50	sq.ft	0%	0%	100%	0%
107	Steel Open Girder/Beam	184	ft	0%	40%	60%	0%
└ 515	Steel Protective Coating	---	---	0%	0%	0%	100%
└1000	Corrosion	184	each	0%	40%	60%	0%
215	Reinforced Concrete Abutment	141	ft	0%	50%	50%	0%
311	Movable Bearing	5	each	0%	0%	0%	100%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
└1000	Corrosion	5	each	0%	0%	0%	100%
313	Fixed Bearing	5	each	0%	0%	0%	100%
└ 515	Steel Protective Coating	---	---	0%	0%	100%	0%
330	Metal Bridge Railing	75	ft	0%	100%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

FORM IN PLACE, NEW ASPHALT PATCH. 3 TON SIGNS 12/28/16.

Bridge Inspection Report

NBI Structure Number: 021701980010700

Portsmouth 198/107

Inspection Notes: 10/17/2017

KJT - inspection comments -
DECK: ASPHALT - CRACKED, PATCHED, HOLLOW SOUNDING; CURB SIDE. CURB / SIDEWALK - CRACKED AND SPALLED WITH HEAVY VEGETATION. RAIL - RUSTED, SEVERAL ANCHOR NUTS RUSTED OFF. SOFFIT - CRACKS AND HEAVY LEAKING WITH EFFLORESCENCE AND SEVERAL RUST STAINS;
SUPERSTRUCTURE: PAINT - POOR CONDITION, PEELING. BEAMS AND BEARINGS - HEAVY RUSTING WITH SCALE AND SOME SECTION LOSS AT ENDS AND IN AREAS UNDER LEAKAGE. DIAPHRAGMS ARE HEAVILY RUSTED AT ABUTMENT ENDS.
SUBSTRUCTURE: CRACKED AND SPALLED WITH REBAR EXPOSED AT SOUTH. HORIZONTAL CRACK AND DELAMINATION ALONG BRIDGESEAT AT NORTH.

PICTURES: C575.
72. FORM IN PLACE.
73. NEW ASPHALT PATCH.

Previous Inspection Notes: 12/27/2016

MAS & BTB - inspection comments -
DECK: ASPHALT - CRACKED, DEPRESSED AND HOLLOW SOUNDING; HOLED AREA IN WHEEL PATH OF SOUTH BOUND LANE, CURB SIDE. CURB / SIDEWALK - CRACKED AND SPALLED WITH HEAVY VEGETATION. RAIL - RUSTED, SEVERAL ANCHOR NUTS RUSTED OFF. SOFFIT - CRACKS AND HEAVY LEAKING WITH EFFLORESCENCE AND SEVERAL RUST STAINS; LARGE SPALL WITH REBAR EXPOSED / HOLE IN BAY #1 MIDSPAN.
SUPERSTRUCTURE: PAINT - POOR CONDITION, PEELING. BEAMS AND BEARINGS - HEAVY RUSTING WITH SCALE AND SOME SECTION LOSS AT ENDS AND IN AREAS UNDER LEAKAGE. DIAPHRAGMS ARE HEAVILY RUSTED AT ABUTMENT ENDS.
SUBSTRUCTURE: CRACKED AND SPALLED WITH REBAR EXPOSED AT SOUTH. HORIZONTAL CRACK AND DELAMINATION ALONG BRIDGESEAT AT NORTH.

PICTURES: C563-
27. LARGE SPALL / HOLE IN DECK IN BAY #1, MIDSPAN.
28. VIEW OF SOFFIT, BAYS #1 AND #2 FROM NORTH ABUTMENT.
29. VIEW OF SOFFIT, BAYS #3 AND #4 FROM NORTH ABUTMENT.
30. HOLE THROUGH DECK IN WHEEL PATH.
31. SOUTH APPROACH.
34. STEEL PLATE IN PLACE WITH 3 TON SIGN.

Approach and Roadway Notes:

ASPHALT - (6) CRACKED AND DEPRESSED.
RAIL - CONCRETE POSTS SPALLED WITH REBAR EXPOSED AT SOUTHEAST. SOUTHWEST TIMBER FAILED BY DECAY.
LIGHT VEGETATION.

Bridge Inspection Report

NBI Structure Number: 021701980010700

Portsmouth 198/107

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/17/2017	KJT	☑	☑	☐	☐	2	5	6	N	☑	15 Tons or 70%
12/27/2016	MAS	☑	☑	☐	☐	2	5	6	N	☑	15 Tons or 70%
10/05/2015	KJT	☑	☑	☐	☐	3	6	6	N	☑	15 Tons or 70%
12/12/2014	KJT	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
10/07/2013	MAS	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
12/18/2012	MAS	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
10/20/2011	KJT	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
12/13/2010	DPC	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
08/07/2009	KJT	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
10/08/2008	DPC	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
10/23/2007	RLM	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
12/15/2006	RLM	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
08/26/2005	DPC	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
10/06/2004	RLM	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
09/16/2003	DPC	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
01/31/2002	RLM	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
02/20/2001	DPC	☑	☑	☐	☐	4	6	6	N	☑	15 Tons or 70%
02/01/2000	RLM	☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%
02/01/1998		☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%
01/01/1997		☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%
03/01/1996		☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%
02/01/1994		☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%
03/01/1993		☑	☑	☐	☐	4	7	7	N	☑	15 Tons or 70%

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
16	16	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021701980012400

Portsmouth 198/124

Date of Inspection: 10/31/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

RECREATION TRAIL
over
US 4,NH 16,SP TPK

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99 Under: 16.31 Route:

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	7 Good
Superstructure:	7 Good
Substructure:	8 Very Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	-2 %
NBI Status:	Not Applicable
Bridge Rail:	N/A or Not Required
Rail Transition:	N N/A or not required
Bridge Approach Rail:	N/A or Not Required
Approach Rail Ends:	N/A or Not Required

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Other (Low Truss)

NH Bridge Type:	LT (Low Truss)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	None
Membrane:	None
Deck Protection:	Epoxy Coated Reinforcing
Curb Reveal:	6 in
Plan Location:	76-4-1with Shop Drawings
Total Bridge Length:	133.0 ft
Right Curb/Sidewalk Width:	0.0 ft
Total Bridge Width:	12.0 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	2000
Detour Length:	mi

Bridge Dimensions:

Length Maximum Span:	130.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	ft
Approach Roadway Width: (W/Shoulders)	ft

Bridge Inspection Report

NBI Structure Number: 021701980012400

Portsmouth 198/124

Bridge Service:

Type of Service on Bridge: Pedestrian-bicycle
Type of Service Under: Highway
Lanes on Bridge:
Lanes Under: 4
AADT: Percent Trucks: % Year of AADT:
Future AADT: Year of Future AADT:

Federal or State Definition Bridge: NH-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class:
New Hampshire Bridge Tier: 6
Eligibility for the National Register of Historic Places: Not Eligible
Traffic Direction:

Bridge Inspection Report

NBI Structure Number: 021701980012400

Portsmouth 198/124

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	*8" deck on 20 gage decking, 2" corrugations* DECK HAS FINE TRANSVERSE CRACKS IN CONCRETE. CURBS HAVE FINE CRACKS.
└1130	Cracking (RC and Other)	
120	Steel Truss	*TUBULAR LOW TRUSS; LOWER CHORD* UNIFORM COATING. GOOD CONDITION.
└ 517	Weathering Steel Protective Coating	
152	Steel Floor Beam	*WEATHERING STEEL FLOOR BEAMS AT 5'-11" C-C* MINOR SCALE.
└ 517	Weathering Steel Protective Coating	
└1000	Corrosion	MODERATE SCALE.
215	Reinforced Concrete Abutment	CONCRETE FACED STONE AT NORTH ABUTMENT SPALLED, DELAMINATED, VOIDS AT BASE WITH ONE FOOT OF EROSION, WINGS SPALLED.
311	Movable Bearing	BEARINGS ARE SHIMMED SEVERAL INCHES.
└ 515	Steel Protective Coating	
313	Fixed Bearing	BEARINGS ARE SHIMMED SEVERAL INCHES.
└ 515	Steel Protective Coating	
330	Metal Bridge Railing	*** Steel Box ** W-BEAM APPROACH RAIL / 3-BAR TUBULAR STEEL BRIDGE RAIL WITH PROTECTIVE SCREENING. WEATHERING STEEL* UNIFORM COATING. GOOD CONDITION.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	1,776	sq.ft	94%	6%	0%	0%
└1130	Cracking (RC and Other)	100	sq.ft	0%	100%	0%	0%
120	Steel Truss	262	ft	100%	0%	0%	0%
└ 517	Weathering Steel Protective Coating	---	---	100%	0%	0%	0%
152	Steel Floor Beam	312	ft	0%	100%	0%	0%
└ 517	Weathering Steel Protective Coating	---	---	0%	100%	0%	0%
└1000	Corrosion	311	each	0%	100%	0%	0%
215	Reinforced Concrete Abutment	167	ft	98%	2%	0%	0%
311	Movable Bearing	2	each	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
313	Fixed Bearing	2	each	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
330	Metal Bridge Railing	262	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

Bridge Inspection Report

NBI Structure Number: 021701980012400

Portsmouth 198/124

Inspection Notes: 10/31/2017

KJT - inspection comments -
DECK: EXPOSED CONCRETE - FINE TRANSVERSE CRACKS. CURBS - FINE CRACKS. RAIL - GOOD CONDITION, UNIFORM COATING.
SOFFIT - FORMS IN PLACE, MINOR RUSTING AT EXTERIORS.
SUPERSTRUCTURE: UNIFORM COATING. FLOOR BEAMS HAVE MODERATE SCALE. BEARINGS ARE SHIMMED SEVERAL INCHES.
SUBSTRUCTURE: FINE CRACKS AND MINOR LEAKING WITH EFFLORESCENCE.

PICTURE: C576.
47. MODERATE SCALE AT FLOORBEAMS.

Previous Inspection Notes: 10/07/2015

KJT - inspection comments -
DECK: EXPOSED CONCRETE - FINE TRANSVERSE CRACKS. CURBS - FINE CRACKS. RAIL - GOOD CONDITION, UNIFORM COATING.
SOFFIT - FORMS IN PLACE, MINOR RUSTING AT EXTERIORS.
SUPERSTRUCTURE: UNIFORM COATING. FLOOR BEAMS HAVE MINOR SCALE. BEARINGS ARE SHIMMED SEVERAL INCHES.
SUBSTRUCTURE: FINE CRACKS AND MINOR LEAKING WITH EFFLORESCENCE.

Approach and Roadway Notes:

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/31/2017	KJT	☑	☑	☐	☐	7	7	8	N	☐	No Posting Req'd
10/07/2015	KJT	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/11/2013	MAS	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
02/22/2013	KJT	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
06/06/2011	MAS	☑	☑	☑	☐	8	8	8	N	☐	No Posting Req'd
10/23/2007	DPC	☑	☑	☑	☐	8	8	8	N	☐	No Posting Req'd
08/26/2005	DPC	☑	☑	☑	☐	8	9	8	N	☐	No Posting Req'd
09/16/2003	RLM	☑	☑	☑	☐	8	9	8	N	☐	No Posting Req'd
07/06/2001	RLM	☑	☑	☑	☐	8	9	8	N	☐	No Posting Req'd
03/27/2000	DPC	☑	☐	☑	☐	9	9	9	N	☐	
03/27/2000	DMB	☑	☑	☑	☐	9	9	9	N	☐	No Posting Req'd

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702040010100

Portsmouth 204/101

Date of Inspection: 10/23/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

BARTLETT STREET
over
HODGSON BROOK

Recommended Postings:

Weight: **E-2** ☑ Weight Sign OK
SIGNS IN PLACE 10/23/2017.

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	N N/A (NBI)
Superstructure:	N N/A (NBI)
Substructure:	N N/A (NBI)
Culvert:	6 Satisfactory
Sufficiency Rating:	62 %
NBI Status:	Not Applicable
Bridge Rail:	N/A or Not Required
Rail Transition:	N N/A or not required
Bridge Approach Rail:	Substandard
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Masonry Culvert

NH Bridge Type:	MS (Masonry Slab)
Deck Type:	No Deck (N/A - NBI)
Wearing Surface:	Bituminous
Membrane:	None
Deck Protection:	None
Curb Reveal:	6 in
Plan Location:	unknown
Total Bridge Length:	10.0 ft
Right Curb/Sidewalk Width:	6.0 ft
Total Bridge Width:	0.0 ft
Median:	No median
Bridge Skew:	12.00 °
Year Built/Rebuilt:	1901
Detour Length:	1.0 mi

Bridge Dimensions:

Length Maximum Span:	10.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	0.0 ft
Approach Roadway Width: (W/Shoulders)	32.0 ft

Bridge Inspection Report

NBI Structure Number: 021702040010100

Portsmouth 204/101

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 17,000 Percent Trucks: 5 % Year of AADT: 2014
Future AADT: 25,160 Year of Future AADT: 2038

Federal or State Definition Bridge: NH-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702040010100

Portsmouth 204/101

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
244	Masonry Culvert	*Granite Slabs with concrete overlay. Masonry abutment. ONE FOOT OF COVER.* ASPHALT HAS FEW CRACKS. GRANITE SLABS ARE IN GOOD CONDITION. CONCRETE OVERLAY. DRAINS ON TOP OF SLABS. MASONRY ABUTMENTS AND WING HAVE FEW CRACKED STONES, VOIDS AND MORTAR IS DETERIORATING. CONCRETE INVERT HAS LIGHT SCALING. CONCRETE CULVERT HAS LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE; MODERATE SCALING AT BASES AND INVERT. FEW SPALLS WITH REBAR EXPOSED.
└1610	Mortar Breakdown (Masonry)	

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
244	Masonry Culvert	49	ft	0%	0%	100%	0%
└1610	Mortar Breakdown (Masonry)	49	ft	0%	0%	100%	0%

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Bridge Notes:

MASONRY SLAB WITH CONCRETE INVERT UNDER ROADWAY AT NORTH, CONCRETE RIGID FRAME WITH CONCRETE INVERT UNDER BUILDING AND PARKING LOT AT SOUTH.
FACILITY CHANGED FROM WOODBURY AVE TO BARTLETT STREET. 1/21/16 JTP

Inspection Notes: 10/23/2017

MAS - inspection comments -
CULVERT: ASPHALT - FEW CRACKS. MASONRY SLAB - FEW CRACKED STONES, VOIDS AND DETERIORATED MORTAR AT WALLS AND WINGS; LIGHT SCALING AT INVERT. CONCRETE - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE. MODERATE SCALING AT BASES AND INVERT. FEW SPALLS WITH REBAR EXPOSED. RAIL AT SOUTH IS DAMAGED WITH POST BROKEN AT BASE.

Previous Inspection Notes: 10/28/2015

KJT - inspection comments -
CULVERT: ASPHALT - GOOD CONDITION. MASONRY SLAB - CRACKED STONES, VOIDS AND DETERIORATED MORTAR; LIGHT SCALING AT INVERT. CONCRETE - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE. MODERATE SCALING AT BASES AND INVERT. FEW SPALLS WITH REBAR EXPOSED. RAIL AT SOUTH IS DAMAGED WITH POST BROKEN AT BASE.

Approach and Roadway Notes:

ASPHALT - (7) CRACKS.
SIDEWALK - CRACKED, PATCHED AND SETTLED.
CHAIN LINK FENCE.

Bridge Inspection Report

NBI Structure Number: 021702040010100

Portsmouth 204/101

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/23/2017	MAS	☑	☑	☐	☐	N	N	N	6	☐	E-2
10/28/2015	KJT	☑	☑	☐	☐	N	N	N	6	☐	E-2
10/08/2013	MAS	☑	☑	☐	☐	N	N	N	6	☐	E-2
10/20/2011	KJT	☑	☑	☐	☐	N	N	N	7	☐	E-2
08/07/2009	KJT	☑	☑	☐	☐	N	N	N	7	☐	E-2
10/23/2007	RLM	☑	☑	☐	☐	N	N	N	7	☐	E-2
10/03/2005	RLM	☑	☑	☐	☐	N	N	N	7	☐	E-2
09/16/2003	RLM	☑	☑	☐	☐	N	N	N	7	☐	E-2
02/20/2001	RLM	☑	☑	☐	☐	N	N	N	7	☐	E-2
02/16/1999	DPC	☑	☑	☐	☐	N	N	N	7	☐	E-2
02/01/1997		☑	☑	☐	☐	N	N	N	7	☐	E-2
01/01/1995		☑	☑	☐	☐	N	N	N	7	☐	E-2
03/01/1993		☑	☑	☐	☐	N	N	N	7	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702200014300

Portsmouth 220/143

Date of Inspection: 10/18/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

RECREATION TRAIL
over
MARKET STREET

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99 Under: 18.31 Route:

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	7 Good
Superstructure:	7 Good
Substructure:	5 Fair
Culvert:	N N/A (NBI)
Sufficiency Rating:	-2 %
NBI Status:	Not Applicable
Bridge Rail:	N/A or Not Required
Rail Transition:	N N/A or not required
Bridge Approach Rail:	N/A or Not Required
Approach Rail Ends:	N/A or Not Required

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 8

Main Span Material and Design Type
Steel Multiple Beam

Approach Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	BGB (Beam Girder Bridge)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Monolithic Concrete
Membrane:	None
Deck Protection:	None
Curb Reveal:	Not Measured
Plan Location:	unknown
Total Bridge Length:	131.0 ft
Right Curb/Sidewalk Width:	0.0 ft
Total Bridge Width:	10.7 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	1985
Detour Length:	mi

Bridge Dimensions:

Length Maximum Span:	128.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	ft
Approach Roadway Width: (W/Shoulders)	ft

Bridge Inspection Report

NBI Structure Number: 021702200014300

Portsmouth 220/143

Bridge Service:

Type of Service on Bridge: Pedestrian-bicycle
Type of Service Under: Highway
Lanes on Bridge:
Lanes Under: 4
AADT: Percent Trucks: % Year of AADT:
Future AADT: Year of Future AADT:

Federal or State Definition Bridge: NH-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class:
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Not Eligible
Traffic Direction:

Bridge Inspection Report

NBI Structure Number: 021702200014300

Portsmouth 220/143

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
30	Steel Deck Corrugated/Orthotropic/Etc.	CONCRETE - FINE CRACKS, MINOR SPALLS. FEW HOLES IN METAL FORMS. CURBS - LIGHT CRACKS, MINOR SPALLS. DRAINS - MINOR RUST. COMPRESSION SEAL - MINOR DAMAGE AND LEAKING.
└ 510	Wearing Surfaces	
└ 515	Steel Protective Coating	
107	Steel Open Girder/Beam	*TWO GIRDER SYSTEM* STRINGERS- MINOR RUSTING UNDER LEAKAGE WITH SECTION LOSS. BRACING- STEEL ANGLES AND H-BEAMS. BEARINGS- MINOR RUSTING UNDER LEAKAGE. PAINT IS IN GOOD TO FAIR CONDITION.
└ 515	Steel Protective Coating	
205	Reinforced Concrete Column	SPALLS WITH REBAR EXPOSED ON SEVERAL. LEAKING WITH EFFLORESCENCE AND RUST STAINS.
215	Reinforced Concrete Abutment	SPALLED AREAS AT NORTHEAST AND SOUTHEAST UNDER BEARING. BOLTS EXPOSED. MANY AREAS DELAMINATED, SPALLED OR CRACKED UNDER BEARINGS. CRACKS AND LEAKING WITH EFFLORESCENCE AND FEW RUST STAINS.
└ 1080	Delamination/Spall/Patched Area	DELAMINATIONS AT PIERS.
330	Metal Bridge Railing	*** Steel Pipe Rail ** GALVANIZED PIPE AND CHAIN LINK FENCE.* FENCE DAMAGED. BROKEN WELD AT HAND RAILING.
└ 7000	Damage	RAIL DAMAGED WELDS BROKEN.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
30	Steel Deck Corrugated/Orthotropic/Etc.	1,399	sq.ft	0%	100%	0%	0%
└ 510	Wearing Surfaces	---	---	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
107	Steel Open Girder/Beam	259	ft	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	0%	100%	0%	0%
205	Reinforced Concrete Column	9	each	0%	78%	22%	0%
215	Reinforced Concrete Abutment	20	ft	0%	83%	17%	0%
└ 1080	Delamination/Spall/Patched Area	3	ft	0%	100%	0%	0%
330	Metal Bridge Railing	262	ft	100%	0%	0%	0%
└ 7000	Damage	1	ft	0%	0%	100%	0%

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Bridge Notes:

Bridge Inspection Report

NBI Structure Number: 021702200014300

Portsmouth 220/143

Inspection Notes: 10/18/2017

KJT - inspection comments -
DECK: EXPOSED CONCRETE - CRACKS AND MINOR SPALLS, PAINTED AT MAIN SPAN. CURBS - CRACKS AND MINOR SPALLS. JOINTS - TIGHT, CRACKED AND LEAKING. RAIL - DAMAGED AREAS, BROKEN WELDS. SOFFIT - SEVERAL HOLED AREAS IN STAY IN PLACE FORMS.
SUPERSTRUCTURE: PAINT - FAIR TO GOOD CONDITION, CHALKING, MINOR RUSTING. GIRDERS - RUSTED UNDER LEAKAGE WITH MINOR SECTION LOSS ON BEAMS ANGLES. BEARINGS - SEVERAL SPALLED AREAS WITH ANCHOR BOLTS EXPOSED.
SUBSTRUCTURE: ABUTMENTS - CRACKS AND SPALLED UNDER BEARINGS WITH ANCHOR BOLTS EXPOSED. LEAKING WITH EFFLORESCENCE AND RUST STAINS. PIERS - SEVERAL CRACKS, DELAMINATIONS AND SPALLS UNDER BEARINGS. LEAKING WITH EFFLORESCENCE AND RUST STAINS.

PICTURE: C576.
03.BROKEN WELDS AT RAIL.

Previous Inspection Notes: 10/06/2015

MAS - inspection comments -
DECK: EXPOSED CONCRETE - CRACKS AND MINOR SPALLS, PAINTED AT MAIN SPAN. CURBS - CRACKS AND MINOR SPALLS. JOINTS - TIGHT, CRACKED AND LEAKING. RAIL - DAMAGED AREAS, BROKEN WELDS. SOFFIT - SEVERAL HOLED AREAS IN STAY IN PLACE FORMS.
SUPERSTRUCTURE: PAINT - FAIR TO GOOD CONDITION, CHALKING, MINOR RUSTING. GIRDERS - RUSTED UNDER LEAKAGE WITH MINOR SECTION LOSS ON BEAMS ANGLES. BEARINGS - SEVERAL SPALLED AREAS WITH ANCHOR BOLTS EXPOSED.
SUBSTRUCTURE: ABUTMENTS - CRACKS AND SPALLED UNDER BEARINGS WITH ANCHOR BOLTS EXPOSED. LEAKING WITH EFFLORESCENCE AND RUST STAINS. PIERS - SEVERAL CRACKS, DELAMINATIONS AND SPALLS UNDER BEARINGS. LEAKING WITH EFFLORESCENCE AND RUST STAINS.

Approach and Roadway Notes:

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/18/2017	KJT	☑	☑	☐	☐	7	7	5	N	☐	No Posting Req'd
10/06/2015	MAS	☑	☑	☐	☐	7	7	5	N	☐	No Posting Req'd
10/08/2013	MAS	☑	☑	☐	☐	7	7	5	N	☐	No Posting Req'd
10/19/2011	KJT	☑	☑	☐	☐	7	7	5	N	☐	No Posting Req'd
08/07/2009	KJT	☑	☑	☑	☐	7	7	5	N	☐	No Posting Req'd
10/22/2007	DPC	☑	☑	☑	☐	7	7	5	N	☐	No Posting Req'd
08/26/2005	DPC	☑	☑	☑	☐	7	7	5	N	☐	No Posting Req'd
09/15/2003	RLM	☑	☑	☑	☐	7	7	5	N	☐	No Posting Req'd
02/21/2001	RLM	☑	☑	☑	☐	7	7	5	N	☐	No Posting Req'd
02/12/1999	DPC	☑	☑	☑	☐	7	7	7	N	☐	No Posting Req'd
02/01/1997		☑	☑	☑	☐	7	7	7	N	☐	No Posting Req'd
01/01/1995		☑	☑	☑	☐	7	8	7	N	☐	No Posting Req'd
03/01/1993		☑	☑	☑	☐	7	8	7	N	☐	No Posting Req'd

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702310010300

Portsmouth 231/103

Date of Inspection: 10/23/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

MAPLEWOOD AVENUE
over
NORTH MILL POND

Recommended Postings:

Weight: **E-2** ☑ Weight Sign OK
IN PLACE 10/23/17.

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Municipal Redlist
Deck:	N N/A (NBI)
Superstructure:	N N/A (NBI)
Substructure:	N N/A (NBI)
Culvert:	3 Serious
Sufficiency Rating:	43 %
NBI Status:	Structurally Deficient
Bridge Rail:	Substandard
Rail Transition:	Substandard
Bridge Approach Rail:	Substandard
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Masonry Culvert

NH Bridge Type:	MA-CA (Masonry and Conc. Arch)
Deck Type:	No Deck (N/A - NBI)
Wearing Surface:	No Deck (N/A - NBI)
Membrane:	No Deck (N/A - NBI)
Deck Protection:	No Deck (N/A - NBI)
Curb Reveal:	4 in
Plan Location:	5-1-3-3
Total Bridge Length:	25.0 ft
Right Curb/Sidewalk Width:	5.9 ft
Total Bridge Width:	0.0 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	1940/1976
Detour Length:	5.0 mi

Bridge Dimensions:

Length Maximum Span:	25.0 ft
Left Curb/Sidewalk Width:	6.7 ft
Width Curb to Curb:	0.0 ft
Approach Roadway Width: (W/Shoulders)	32.0 ft

Bridge Inspection Report

NBI Structure Number: 021702310010300

Portsmouth 231/103

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 7,200 Percent Trucks: 5 % Year of AADT: 2014
Future AADT: 10,656 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702310010300

Portsmouth 231/103

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
215	Reinforced Concrete Abutment	GROUT UNDER MP-A SPALLED. TOEWALLS SPALLED.
217	Masonry Abutment	STONEWORK / BRICKWORK - VOIDS, SETTLED.
240	Steel Culvert	MP-A LINING HEAVILY RUSTED, HOLED 95% AT BASE BOTH SIDES. 2 FOOT SECTION OF MP MISSING AT NORTHEAST. MP TORN AT SOUTHEAST AND SOUTHWEST. SCATTERED HOLES AND PERFORATIONS. ROOF SAGS AT BOLTS. VOID AROUND PIPELINE.
└1000	Corrosion	HOLED 100% AT BASE, SEVERAL HOLES THOUGH OUT PIPE.
330	Metal Bridge Railing	*** 3-Bar Aluminum ** POSTS HAVE HOLLOW BASE PLATES.* SCRAPES AND MINOR DAMAGE.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
215	Reinforced Concrete Abutment	59	ft	0%	100%	0%	0%
217	Masonry Abutment	200	ft	0%	80%	20%	0%
240	Steel Culvert	26	ft	0%	0%	0%	100%
└1000	Corrosion	26	each	0%	0%	0%	100%
330	Metal Bridge Railing	594	ft	0%	100%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

ADDED TO THE MUNICIPAL RED LIST 10/22/2007.
DUE TO HIGH TIDE, UNINSPECTABLE 12/27/16.

Inspection Notes: 10/23/2017

KJT inspection comments -
CULVERT: ASPHALT - CRACKED, DEPRESSED AND PATCHED AT SIDES. RAIL- MINOR DAMAGE. MASONRY ARCH WITH GROUTED MP-A LINER - SPALLED AT BASES. MP-A LINING IS HEAVILY RUSTED, 100% HOLED AT BASES, BOTH SIDES; SEVERAL SCATTERED HOLES AND PERFORATIONS. 2 FOOT SECTION OF MP MISSING AT NORTHEAST. MP-A TORN AT SOUTHEAST AND SOUTHWEST. ROOF SAGS AT BOLTS. GROUT IS SPALLED. VOID AROUND PIPE. HEADWALLS / WINGS - VOIDS, SETTLED.

PICTURE: C576.
14.100% SECTION LOSS AT BASE OF MP.
15. HOLES THROUGHOUT MP.

Previous Inspection Notes: 12/27/2016

KJT-BTB inspection comments -
CULVERT: ASPHALT - CRACKED, DEPRESSED AND PATCHED AT SIDES. RAIL- MINOR DAMAGE. MASONRY ARCH WITH GROUTED MP-A LINER - SPALLED AT BASES. MP-A LINING IS HEAVILY RUSTED, 95% HOLED AT BASES, BOTH SIDES; SEVERAL SCATTERED HOLES AND PERFORATIONS. 2 FOOT SECTION OF MP MISSING AT NORTHEAST. MP-A TORN AT SOUTHEAST AND SOUTHWEST. ROOF SAGS AT BOLTS. GROUT IS SPALLED. VOID AROUND PIPE. HEADWALLS / WINGS - VOIDS, SETTLED.

PICTURE: C563.
26. ASPHALT CRANKED AND DEPRESSED.

Approach and Roadway Notes:

ASPHALT - (4) CRACKED, SETTLED, POTHOLED AND PATCHED.
TSIDEWALKS - CRACKED, SPALLED, SETTLED AND PATCHED.
RAIL SCAPES AND GOUGES.

Bridge Inspection Report

NBI Structure Number: 021702310010300

Portsmouth 231/103

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/23/2017	KJT	☑	☑	☐	☐	N	N	N	3	☑	E-2
12/27/2016	KJT	☑	☑	☐	☐	N	N	N	3	☑	E-2
10/28/2015	KJT	☑	☑	☐	☐	N	N	N	3	☑	E-2
12/12/2014	MAS	☑	☑	☐	☐	N	N	N	3	☑	E-2
10/08/2013	MAS	☑	☑	☐	☐	N	N	N	3	☑	E-2
03/04/2013	KJT	☑	☑	☐	☐	N	N	N	3	☑	E-2
12/18/2012	KJT	☑	☑	☐	☐	N	N	N	3	☑	E-2
10/21/2011	KJT	☑	☑	☐	☐	N	N	N	4	☑	E-2
12/13/2010	DPC	☑	☑	☐	☐	N	N	N	4	☑	E-2
08/06/2009	KJT	☑	☑	☐	☐	N	N	N	4	☑	E-2
10/08/2008	DPC	☑	☑	☐	☐	N	N	N	4	☑	E-2
10/22/2007	RLM	☑	☑	☐	☐	N	N	N	4	☑	E-2
10/03/2005	DPC	☑	☑	☐	☐	N	N	N	5	☐	E-2
10/01/2003	RLM	☑	☑	☐	☐	N	N	N	5	☐	E-2
02/16/2001	DPC	☑	☑	☐	☐	N	N	N	5	☐	E-2
02/24/1999	FNM	☑	☑	☐	☐	N	N	N	5	☐	E-2
02/01/1997		☑	☑	☐	☐	N	N	N	5	☐	E-2
01/01/1995		☑	☑	☐	☐	N	N	N	5	☐	E-2
03/01/1993		☑	☑	☐	☐	N	N	N	5	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
16	16	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702350006900

Portsmouth 235/069

Date of Inspection: 10/23/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

NH 1B
over
SOUTH MILL POND

Recommended Postings:

Weight: **E-2** ☑ Weight Sign OK
SIGNS IN PLACE 10/23/2017.

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	7 Good
Superstructure:	7 Good
Substructure:	7 Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	83 %
NBI Status:	Not Deficient
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Substandard
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 1
Number of Approach Spans: 0

Main Span Material and Design Type
Concrete Frame

NH Bridge Type:	CB (Concrete Box)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	None
Deck Protection:	None
Curb Reveal:	Not Measured
Plan Location:	4-11-1-5
Total Bridge Length:	26.0 ft
Right Curb/Sidewalk Width:	5.0 ft
Total Bridge Width:	60.5 ft
Median:	No median
Bridge Skew:	22.00 °
Year Built/Rebuilt:	1985
Detour Length:	3.0 mi

Bridge Dimensions:

Length Maximum Span:	22.0 ft
Left Curb/Sidewalk Width:	5.0 ft
Width Curb to Curb:	48.0 ft
Approach Roadway Width: (W/Shoulders)	24.0 ft

Bridge Inspection Report

NBI Structure Number: 021702350006900

Portsmouth 235/069

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 2,900 Percent Trucks: 3 % Year of AADT: 2015
Future AADT: 4,292 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Not Eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702350006900

Portsmouth 235/069

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
38	Reinforced Concrete Slab	ASPHALT IS CRACKED AND SEALED WITH FEW MEMBRANE BLISTERS; CRACKED AT DECK ENDS, POTHOLED AT SOUTH WITH DECK EXPOSED. SIDEWALK HAS LIGHT CRACKS AND MINOR SPALLS, REPAIRED AREAS. SOFFIT - LIGHT CRACKS AND AREAS OF LIGHT LEAKING WITH EFFLORESCENCE. PATCHED AREAS. UTILITY BEAM HANGERS HEAVILY RUSTED WITH THICK SCALE.
└ 510	Wearing Surfaces	
└1080	Delamination/Spall/Patched Area	
└1120	Efflorescence/Rust Staining	
└1130	Cracking (RC and Other)	
217	Masonry Abutment	*CONCRETE ON GRANITE* LIGHT CRACKS, MINOR SPALLS IN GRANITE. MINOR TO LIGHT MORTAR BREAKDOWN IN JOINTS. WINGS HAVE LIGHT CRACKS AND MINOR LEAKING WITH EFFLORESCENCE. DAM AT INLET.
└1120	Efflorescence/Rust Staining	
└1610	Mortar Breakdown (Masonry)	
└1620	Split/Spall (Masonry)	
330	Metal Bridge Railing	*** 3-Bar Aluminum ** FACED WITH TIMBER STOCKADE FENCE FOR AESTHETICS.* GOOD CONDITION.

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
38	Reinforced Concrete Slab	1,572	sq.ft	91%	9%	0%	0%
└ 510	Wearing Surfaces	---	---	84%	15%	0%	1%
└1080	Delamination/Spall/Patched Area	40	sq.ft	0%	100%	0%	0%
└1120	Efflorescence/Rust Staining	32	sq.ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	50	sq.ft	0%	100%	0%	0%
217	Masonry Abutment	141	ft	86%	14%	0%	0%
└1120	Efflorescence/Rust Staining	2	ft	0%	100%	0%	0%
└1610	Mortar Breakdown (Masonry)	10	ft	0%	100%	0%	0%
└1620	Split/Spall (Masonry)	8	ft	0%	100%	0%	0%
330	Metal Bridge Railing	331	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

ASR PRESENT.

Inspection Notes: 10/23/2017

MAS - inspection comments -
DECK / SUPERSTRUCTURE: ASPHALT - CRACKED AND SEALED WITH MEMBRANE BLISTERS; POTHOLED AT SOUTH WITH DECK EXPOSED. SIDEWALKS - LIGHT CRACKS, MINOR SPALLS AND PATCHED AREAS. RAIL - GOOD CONDITION. SOFFIT - LIGHT CRACKS AND LIGHT LEAKING WITH EFFLORESCENCE. PATCHED AREAS.
SUBSTRUCTURE: LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE, MINOR SPALLS. MORTAR BREAKING DOWN IN AREAS.

PICTURE: C576-
16. ASPHALT IS POTHOLED AND DECK IS EXPOSED AT SOUTH.

Bridge Inspection Report

NBI Structure Number: 021702350006900

Portsmouth 235/069

Previous Inspection Notes: 10/28/2015

TDC - inspection comments -
DECK / SUPERSTRUCTURE: ASPHALT - CRACKED WITH MEMBRANE BLISTERS. SIDEWALKS - LIGHT CRACKS, MINOR SPALLS AND PATCHED AREAS. RAIL - GOOD CONDITION. SOFFIT - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE.
SUBSTRUCTURE: LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE, MINOR SPALLS.

Approach and Roadway Notes:

ASPHALT - (7) CRACKED, SOME SEALED, POTHOLED AT SOUTH APPROACH.
ALUMINUM RAIL - GOOD CONDITION.
SIDEWALKS - CRACKED, SETTLED, SMALL DEPRESSIONS.

Unusual or experimental features:

ASR PRESENT

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/23/2017	MAS	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/28/2015	TDC	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/11/2013	MAS	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/19/2011	KJT	☑	☑	☐	☐	7	7	7	N	☐	E-2
08/10/2009	KJT	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/19/2007	RLM	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/03/2005	RLM	☑	☑	☐	☐	7	7	7	N	☐	E-2
10/01/2003	RLM	☑	☑	☐	☐	7	7	7	N	☐	E-2
02/21/2001	RLM	☑	☑	☐	☐	7	7	7	N	☐	E-2
02/24/1999	FNM	☑	☑	☐	☐	7	7	7	N	☐	E-2
02/01/1997		☑	☑	☐	☐	7	7	7	N	☐	E-2
01/01/1995		☑	☑	☐	☐	7	7	7	N	☐	E-2
03/01/1993		☑	☑	☐	☐	7	7	8	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702400010600

Portsmouth 240/106

Date of Inspection: 10/27/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

MARKET STREET EB
over
TIDAL BASIN

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99 Under: 0.00 Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	6 Satisfactory
Superstructure:	6 Satisfactory
Substructure:	7 Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	92 %
NBI Status:	Not Deficient
Bridge Rail:	Substandard
Rail Transition:	Substandard
Bridge Approach Rail:	Substandard
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 3
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	Preformed Fabric
Deck Protection:	None
Curb Reveal:	6 in
Plan Location:	27-2-3
Total Bridge Length:	133.0 ft
Right Curb/Sidewalk Width:	0.8 ft
Total Bridge Width:	47.5 ft
Median:	Closed Med w/o Barrier
Bridge Skew:	38.00 °
Year Built/Rebuilt:	1971
Detour Length:	3.0 mi

Bridge Dimensions:

Length Maximum Span:	49.5 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	36.5 ft
Approach Roadway Width: (W/Shoulders)	36.5 ft

Bridge Inspection Report

NBI Structure Number: 021702400010600

Portsmouth 240/106

Bridge Service:

Type of Service on Bridge: Highway
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 9,000 Percent Trucks: 5 % Year of AADT: 2014
Future AADT: 13,320 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: NHS Roadway on Bridge
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: One-way traffic

Bridge Inspection Report

NBI Structure Number: 021702400010600

Portsmouth 240/106

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	ASPHALT IS CRACKED AT DECK END. CURBS HAVE LIGHT CRACKS AND MINOR SPALLS. SOFFIT HAS FINE AND LIGHT CRACKS, MINOR SPALLS. MODERATE LEAKING.
└ 510	Wearing Surfaces	
└1080	Delamination/Spall/Patched Area	
└1120	Efflorescence/Rust Staining	
└1130	Cracking (RC and Other)	
107	Steel Open Girder/Beam	*7 - I- BEAMS.* PAINT IS IN FAIR CONDITION. HEAVILY RUSTED WITH SCALE UNDER LEAKAGE WITH MINOR SECTION LOSS.
└ 515	Steel Protective Coating	
└1000	Corrosion	
205	Reinforced Concrete Column	FINE CRACKS AND SPALLED AREAS.
└1080	Delamination/Spall/Patched Area	
215	Reinforced Concrete Abutment	LIGHT CRACKS AND MINOR SPALLS.
└1080	Delamination/Spall/Patched Area	
└1130	Cracking (RC and Other)	
234	Reinforced Concrete Pier Cap	FINE CRACKS AND MINOR SPALLS.
└1080	Delamination/Spall/Patched Area	
└1130	Cracking (RC and Other)	
302	Compression Joint Seal	2 FEET OF JOINT MISSING AT SOUTHEAST. DAMAGED AND HEAVY LEAKING.
└2310	Leakage	
└7000	Damage	
311	Movable Bearing	HEAVILY RUSTED UNDER LEAKAGE WITH SECTION LOSS AND PACK RUST BETWEEN PLATES..
└ 515	Steel Protective Coating	
└1000	Corrosion	
313	Fixed Bearing	HEAVILY RUSTED UNDER LEAKAGE WITH SECTION LOSS AND PACK RUST BETWEEN PLATES.
└ 515	Steel Protective Coating	

└1000	Corrosion	
330	Metal Bridge Railing	*** Steel Angle Rail *** RUSTED.
└1000	Corrosion	

Bridge Inspection Report

NBI Structure Number: 021702400010600

Portsmouth 240/106

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	6,318	sq.ft	75%	25%	0%	0%
└ 510	Wearing Surfaces	---	---	95%	5%	0%	0%
└1080	Delamination/Spall/Patched Area	50	sq.ft	0%	100%	0%	0%
└1120	Efflorescence/Rust Staining	20	sq.ft	0%	0%	100%	0%
└1130	Cracking (RC and Other)	1,500	sq.ft	0%	100%	0%	0%
107	Steel Open Girder/Beam	932	ft	0%	86%	14%	0%
└ 515	Steel Protective Coating	---	---	0%	80%	10%	10%
└1000	Corrosion	931	each	0%	86%	14%	0%
205	Reinforced Concrete Column	6	each	67%	33%	0%	0%
└1080	Delamination/Spall/Patched Area	2	each	0%	100%	0%	0%
215	Reinforced Concrete Abutment	95	ft	68%	32%	0%	0%
└1080	Delamination/Spall/Patched Area	10	ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	20	ft	0%	100%	0%	0%
234	Reinforced Concrete Pier Cap	95	ft	82%	18%	0%	0%
└1080	Delamination/Spall/Patched Area	7	ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	10	ft	0%	100%	0%	0%
302	Compression Joint Seal	95	ft	0%	43%	53%	4%
└2310	Leakage	91	ft	0%	45%	55%	0%
└7000	Damage	4	ft	0%	0%	0%	100%
311	Movable Bearing	21	each	0%	67%	33%	0%
└ 515	Steel Protective Coating	---	---	0%	50%	25%	25%
└1000	Corrosion	21	each	0%	67%	33%	0%
313	Fixed Bearing	7	each	0%	86%	14%	0%
└ 515	Steel Protective Coating	---	---	0%	80%	10%	10%
└1000	Corrosion	7	each	0%	86%	14%	0%
330	Metal Bridge Railing	141	ft	0%	100%	0%	0%
└1000	Corrosion	141	each	0%	100%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

Inspection Notes: 10/27/2017

MAS - inspection comments -
DECK: ASPHALT - CRACKED AT DECK END. CURBS - LIGHT CRACKS AND MINOR SPALLS. JOINT - 2 FEET MISSING AT SOUTHEAST, DAMAGED AND HEAVY LEAKING. RAIL - RUSTED. SOFFIT - FINE AND LIGHT CRACKS, MAP CRACKING, MINOR SPALLS AND MODERATE LEAKING WITH RUST STAINS.
SUPERSTRUCTURE: PAINT - FAIR CONDITION. BEAMS - RUSTED WITH SCALE AND MINOR SECTION LOSS UNDER LEAKAGE. BEARINGS - RUSTED WITH SCALE, PACK RUST BETWEEN PLATES AND MINOR SECTION LOSS.
SUBSTRUCTURE: ABUTMENTS - FINE AND LIGHT CRACKS AND MINOR SPALLS. PIERS - FINE CRACKS AND MINOR SPALLS.

PICTURES: C576-
27. FIXED BEARING #1 IS HEAVILY RUSTED WITH SCALE AND PACK RUST BETWEEN PLATES.
28. BEAM ENDS AND MOVEABLE BEARINGS ARE RUSTED WITH SCALE AND PACK RUST BETWEEN PLATES AT EAST. JOINT LEAKING.
29. JOINT IS DAMAGED AND LEAKING.

Bridge Inspection Report

NBI Structure Number: 021702400010600

Portsmouth 240/106

Previous Inspection Notes: 10/06/2015

KJT- inspection comments -
DECK: ASPHALT - CRACKED AT DECK END. CURBS - LIGHT CRACKS AND MINOR SPALLS. JOINT - 2 FEET MISSING AT SOUTHWEST AND HEAVY LEAKING. RAIL - RUSTED. SOFFIT - FINE CRACKS, MINOR SPALLS AND MODERATE LEAKING.
SUPERSTRUCTURE: PAINT - FAIR CONDITION. BEAMS AND BEARINGS ARE RUSTED WITH SCALE AND MINOR SECTION LOSS UNDER LEAKAGE.
SUBSTRUCTURE: ABUTMENTS - FINE CRACKS AND MINOR SPALLS. PIERS - FINE CRACKS AND MINOR SPALLS.

PICTURES: C541.
27. 2 FEET JOINT MISSING AT SOUTHEAST.

Approach and Roadway Notes:

ASPHALT - (6) CRACKED AND SETTLED.
W- BEAM RAIL - DAMAGED AND DECAYED.

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/27/2017	MAS	☑	☑	☐	☐	6	6	7	N	☐	No Posting Req'd
10/06/2015	KJT	☑	☑	☐	☐	6	6	7	N	☐	No Posting Req'd
10/11/2013	MAS	☑	☑	☐	☐	6	6	7	N	☐	No Posting Req'd
10/19/2011	KJT	☑	☑	☐	☐	6	6	7	N	☐	E-2
08/06/2009	KJT	☑	☑	☐	☐	6	6	7	N	☐	E-2
10/22/2007	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
09/30/2005	RLM	☑	☑	☐	☐	6	7	7	N	☐	E-2
09/22/2003	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/21/2001	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/12/1999	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/01/1997		☑	☑	☐	☐	6	7	7	N	☐	E-2
01/01/1995		☑	☑	☐	☐	6	7	7	N	☐	E-2
03/01/1993		☑	☑	☐	☐	6	8	7	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702410010600

Portsmouth 241/106

Date of Inspection: 10/27/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

MARKET STREET WB
over
TIDAL BASIN

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	6 Satisfactory
Superstructure:	7 Good
Substructure:	7 Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	80 %
NBI Status:	Not Deficient
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Meets Standards

Structure Type and Materials:

Number of Main Spans: 3
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	Preformed Fabric
Deck Protection:	None
Curb Reveal:	6 in
Plan Location:	27-2-3
Total Bridge Length:	140.0 ft
Right Curb/Sidewalk Width:	0.8 ft
Total Bridge Width:	47.5 ft
Median:	Closed Med w/o Barrier
Bridge Skew:	38.00 °
Year Built/Rebuilt:	1971
Detour Length:	3.0 mi

Bridge Dimensions:

Length Maximum Span:	52.0 ft
Left Curb/Sidewalk Width:	6.5 ft
Width Curb to Curb:	30.8 ft
Approach Roadway Width: (W/Shoulders)	30.8 ft

Bridge Inspection Report

NBI Structure Number: 021702410010600

Portsmouth 241/106

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 9,000 Percent Trucks: 5 % Year of AADT: 2014
Future AADT: 13,320 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: NHS Roadway on Bridge
Roadway Functional Class: Urban Minor Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: One-way traffic

Bridge Inspection Report

NBI Structure Number: 021702410010600

Portsmouth 241/106

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	ASPHALT IS CRACKED AT DECK END. FINE CRACKS IN SIDEWALK.
└ 510	Wearing Surfaces	
└ 1120	Efflorescence/Rust Staining	
107	Steel Open Girder/Beam	*7- I-BEAMS* PAINT IS IN FAIR CONDITION. RUSTED WITH SCALE AND MINOR SECTION LOSS UNDER LEAKAGE.
└ 515	Steel Protective Coating	
205	Reinforced Concrete Column	FINE CRACKS. MINOR SPALLS.
215	Reinforced Concrete Abutment	UNDERMINED AT NORTHEAST EXTERIOR. H - PILES EXPOSED. LIGHT CRACKS AND MINOR SPALLS.
234	Reinforced Concrete Pier Cap	FINE CRACKS AND MINOR SPALLS.
302	Compression Joint Seal	PLOW DAMAGE AT SOUTHEAST STEEL PLATE. SMALL TORN AREAS, LEAKING.
311	Movable Bearing	RUSTED WITH SCALE AND MINOR SECTION LOSS UNDER LEAKAGE.
└ 515	Steel Protective Coating	
└ 1000	Corrosion	BEARINGS RUSTED WITH MINOR SECTION LOSS UNDER LEAKAGE.
313	Fixed Bearing	RUSTED WITH SCALE AND MINOR SECTION LOSS UNDER LEAKAGE.
└ 515	Steel Protective Coating	
330	Metal Bridge Railing	*** Steel Angle Rail ***** RUSTED.

Bridge Inspection Report

NBI Structure Number: 021702410010600

Portsmouth 241/106

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	6,652	sq.ft	94%	6%	0%	0%
└ 510	Wearing Surfaces	---	---	100%	0%	0%	0%
└1120	Efflorescence/Rust Staining	15	sq.ft	100%	0%	0%	0%
107	Steel Open Girder/Beam	981	ft	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
205	Reinforced Concrete Column	6	each	100%	0%	0%	0%
215	Reinforced Concrete Abutment	95	ft	50%	50%	0%	0%
234	Reinforced Concrete Pier Cap	95	ft	0%	100%	0%	0%
302	Compression Joint Seal	95	ft	0%	100%	0%	0%
311	Movable Bearing	21	each	0%	67%	0%	33%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
└1000	Corrosion	21	each	0%	67%	0%	33%
313	Fixed Bearing	7	each	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
330	Metal Bridge Railing	141	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

NEW SIDEWALK 2011.
THIS PORTION OF MARKET STREET IS ON THE NATIONAL HIGHWAY SYSTEM (NHS) DUE TO ITS ROLE AS A LINK BETWEEN I-95 AND PORT FACILITIES IN PORTSMOUTH HARBOR.

Inspection Notes: 10/27/2017

KJT - inspection comments -
DECK: ASPHALT - CRACKS AT DECK END. CURB / SIDEWALK - FINE CRACKS AND MINOR SPALLS. JOINT - DAMAGED, GLAND TORN AND LEAKING. RAIL - GOOD CONDITION, RUSTED. SOFFIT - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE. HAUNCHES HAVE DELAMINATIONS AND SPALLS WITH REBAR EXPOSED.
SUPERSTRUCTURE: PAINT - FAIR CONDITION. GIRDERS - LIGHT RUST AND SCALE UNDER LEAKAGE. BEARINGS - LIGHT RUST AND SCALE UNDER LEAKAGE.
SUBSTRUCTURE: ABUTMENTS - LIGHT CRACKS AND MINOR SPALLS. SCOURED AREA UNDER ABUTMENT AT NORTHEAST. PIERS - FINE CRACKS AND MINOR SPALLS.

PICTURE:C576.
30.BEARINGS RUSTED.

Previous Inspection Notes: 10/06/2015

MAS - inspection comments -
DECK: ASPHALT - CRACKS AT DECK END. CURB / SIDEWALK - FINE CRACKS AND MINOR SPALLS. JOINT - DAMAGED, GLAND TORN AND LEAKING. RAIL - GOOD CONDITION, RUSTED. SOFFIT - LIGHT CRACKS AND LEAKING WITH EFFLORESCENCE. HAUNCHES HAVE DELAMINATIONS AND SPALLS WITH REBAR EXPOSED.
SUPERSTRUCTURE: PAINT - FAIR CONDITION. GIRDERS - LIGHT RUST AND SCALE UNDER LEAKAGE. BEARINGS - LIGHT RUST AND SCALE UNDER LEAKAGE.
SUBSTRUCTURE: ABUTMENTS - LIGHT CRACKS AND MINOR SPALLS. SCOURED AREA UNDER ABUTMENT AT NORTHEAST. PIERS - FINE CRACKS AND MINOR SPALLS.

PICTURE: C541-
26. TYPICAL BEAM SCALE AT EAST END UNDER LEAKAGE.

Approach and Roadway Notes:

ASPHALT - (7) CRACKS, FEW SMALL POTHOLES.
W- BEAM RAIL - MINOR DAMAGE.
SIDEWALK - CRACKS.

Bridge Inspection Report

NBI Structure Number: 021702410010600

Portsmouth 241/106

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/27/2017	KJT	☑	☑	☐	☐	6	7	7	N	☐	No Posting Req'd
10/06/2015	MAS	☑	☑	☐	☐	6	7	7	N	☐	No Posting Req'd
10/11/2013	MAS	☑	☑	☐	☐	6	7	7	N	☐	No Posting Req'd
10/19/2011	MAS	☑	☑	☐	☐	6	7	7	N	☐	E-2
10/19/2011	KJT	☑	☑	☐	☐	6	7	7	N	☐	E-2
08/06/2009	KJT	☑	☑	☐	☐	6	7	7	N	☐	E-2
10/22/2007	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
09/30/2005	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
09/22/2003	RLM	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/21/2001	DPC	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/12/1999	FNM	☑	☑	☐	☐	6	7	7	N	☐	E-2
02/01/1997		☑	☑	☐	☐	7	7	7	N	☐	E-2
01/01/1995		☑	☑	☐	☐	7	7	7	N	☐	E-2
03/01/1993		☑	☑	☐	☐	7	8	7	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702400013200

Portsmouth 240/132

Date of Inspection: 10/27/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

KEARSARGE WAY
over
PAR

Recommended Postings:

Weight: **E-2** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 22.67, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Municipal Redlist
Deck:	4 Poor
Superstructure:	7 Good
Substructure:	8 Very Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	89 %
NBI Status:	Structurally Deficient
Bridge Rail:	Substandard
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 2
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	Other
Deck Protection:	None
Curb Reveal:	7 in
Plan Location:	4-12-1-12
Total Bridge Length:	152.0 ft
Right Curb/Sidewalk Width:	0.7 ft
Total Bridge Width:	40.5 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	1979
Detour Length:	1.0 mi

Bridge Dimensions:

Length Maximum Span:	75.0 ft
Left Curb/Sidewalk Width:	6.0 ft
Width Curb to Curb:	31.3 ft
Approach Roadway Width: (W/Shoulders)	26.0 ft

Bridge Inspection Report

NBI Structure Number: 021702400013200

Portsmouth 240/132

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Railroad
Lanes on Bridge: 2
Lanes Under: 0
AADT: 3,400 Percent Trucks: 3 % Year of AADT: 2014
Future AADT: 5,032 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Local
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Not Eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702400013200

Portsmouth 240/132

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	ASPHALT HAS SEVERAL CRACKS AND DEPRESSED AREAS. CURB / SIDEWALK HAVE FINE CRACKS AND MINOR SPALLS.
└ 510	Wearing Surfaces	SEVERAL PATCHED AREAS, POTHOLED WITH DECK EXPOSED.
└ 1080	Delamination/Spall/Patched Area	SEVERAL DELAMINATIONS.
└ 1120	Efflorescence/Rust Staining	
└ 1130	Cracking (RC and Other)	MAP CRACKING SEVERAL AREAS.
107	Steel Open Girder/Beam	*6 - I-BEAMS* WEATHERING STEEL COATING IS LIGHT BROWN IN COLOR WITH A GRANULAR TEXTURE. LIGHT SCALE AT GIRDER ENDS UNDER LEAKAGE.
└ 517	Weathering Steel Protective Coating	
205	Reinforced Concrete Column	FINE CRACKS.
215	Reinforced Concrete Abutment	BACKWALLS HAVE FINE CRACKS WITH ASR EVIDENT. LIGHT VERTICAL CRACKS.
234	Reinforced Concrete Pier Cap	FINE CRACKS.
300	Strip Seal Expansion Joint	DAMAGED, LEAKING. DEBRIS FILLED. POTHOLED AT APPROACH.
311	Movable Bearing	LIGHT RUSTING UNDER LEAKAGE.
└ 515	Steel Protective Coating	
313	Fixed Bearing	LIGHT RUSTING UNDER LEAKAGE.
└ 515	Steel Protective Coating	
330	Metal Bridge Railing	*** 3-Bar Aluminum ** W/CHAIN LINK.* MINOR DAMAGE.

Bridge Inspection Report

NBI Structure Number: 021702400013200

Portsmouth 240/132

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	6,157	sq.ft	46%	17%	37%	0%
└ 510	Wearing Surfaces	---	---	73%	17%	10%	0%
└1080	Delamination/Spall/Patched Area	50	sq.ft	0%	0%	100%	0%
└1120	Efflorescence/Rust Staining	120	sq.ft	0%	0%	100%	0%
└1130	Cracking (RC and Other)	100	sq.ft	0%	0%	100%	0%
107	Steel Open Girder/Beam	912	ft	0%	100%	0%	0%
└ 517	Weathering Steel Protective Coating	---	---	100%	0%	0%	0%
205	Reinforced Concrete Column	3	each	100%	0%	0%	0%
215	Reinforced Concrete Abutment	154	ft	96%	4%	0%	0%
234	Reinforced Concrete Pier Cap	39	ft	100%	0%	0%	0%
300	Strip Seal Expansion Joint	39	ft	0%	100%	0%	0%
311	Movable Bearing	6	each	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
313	Fixed Bearing	12	each	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
330	Metal Bridge Railing	741	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

Inspection Notes: 10/27/2017

KJT - inspection comments -
DECK: ASPHALT - CRACKS AND SEVERAL DEPRESSED AREAS. PATCHED AREAS, POTHOLED WITH DECK EXPOSED. CURB / SIDEWALK - FINE CRACKS AND MINOR SPALLS. JOINT - DAMAGED, LEAKING, DEBRIS FILLED; POTHOLED AT APPROACH. RAIL - MINOR DAMAGE. SOFFIT - MAP CRACKING AND HEAVY LEAKING WITH EFFLORESCENCE AND RUST STAINS; SEVERAL LARGE DELAMINATIONS.
SUPERSTRUCTURE: WEATHERING STEEL COATING - LIGHT BROWN IN COLOR WITH A GRANULAR TEXTURE. GIRDERS - LIGHT SCALE AT ENDS UNDER LEAKAGE. BEARINGS - LIGHT RUSTING.
SUBSTRUCTURE: ABUTMENTS - FINE AND LIGHT CRACKS AND MINOR LEAKING. PIER - FINE CRACKS.

PICTURES: C576.
22.ASPHALT POTHOLED DECK EXPOSED.
23. SEVERAL PATCHED AREAS.
24.DELAMINATIONS, MAP CRACKING, LEAKING.
25.WEST ELEVATION.
26.SOUTH APPROACH.

Previous Inspection Notes: 10/07/2015

MAS - inspection comments -
DECK: ASPHALT - CRACKS AND SEVERAL DEPRESSED AREAS. CURB / SIDEWALK - FINE CRACKS AND MINOR SPALLS. JOINT - DAMAGED, LEAKING, DEBRIS FILLED; POTHOLED AT APPROACH. RAIL - MINOR DAMAGE. SOFFIT - LIGHT CRACKS AND HEAVY LEAKING WITH EFFLORESCENCE AND RUST STAINS; SEVERAL LARGE DELAMINATIONS.
SUPERSTRUCTURE: WEATHERING STEEL COATING - LIGHT BROWN IN COLOR WITH A GRANULAR TEXTURE. GIRDERS - LIGHT SCALE AT ENDS UNDER LEAKAGE. BEARINGS - LIGHT RUSTING.
SUBSTRUCTURE: ABUTMENTS - FINE AND LIGHT CRACKS AND MINOR LEAKING. PIER - FINE CRACKS.

PICTURES: C541-
38. JOINT DAMAGED, APPROACH ASPHALT IS POTHOLED.
39. ASPHALT IS CRACKED AND DEPRESSED. TYPICAL OF SEVERAL AREAS.
40. SOFFIT, SPAN #1, HEAVY LEAKING WITH RUST STAINS AND EFFLORESCENCE, DELAMINATIONS.

Approach and Roadway Notes:

ASPHALT - (7) CRACKS, POTHOLED.
SIDEWALK - CRACKED WITH SMALL DEPRESSIONS AND PATCHED. ALLUMINUM RAIL - REPAIRED AREAS.
HEAVY VEGETATION.

Unusual or experimental features:

ASR PRESENT

Bridge Inspection Report

NBI Structure Number: 021702400013200

Portsmouth 240/132

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/27/2017	KJT	☑	☑	☐	☐	4	7	8	N	☑	E-2
10/07/2015	MAS	☑	☑	☐	☐	5	7	8	N	☐	E-2
10/11/2013	MAS	☑	☑	☐	☐	6	8	8	N	☐	E-2
10/19/2011	MAS	☑	☑	☐	☐	6	8	8	N	☐	E-2
08/06/2009	KJT	☑	☑	☐	☐	6	8	8	N	☐	E-2
10/22/2007	RLM	☑	☑	☐	☐	6	8	8	N	☐	E-2
09/16/2005	RLM	☑	☑	☐	☐	6	8	8	N	☐	E-2
10/01/2003	DPC	☑	☑	☐	☐	7	8	8	N	☐	E-2
02/21/2001	DPC	☑	☑	☐	☐	7	8	8	N	☐	E-2
02/12/1999	FNM	☑	☑	☐	☐	7	8	8	N	☐	E-2
02/01/1997		☑	☑	☐	☐	7	8	8	N	☐	E-2
01/01/1995		☑	☑	☐	☐	7	8	8	N	☐	E-2
03/01/1993		☑	☑	☐	☐	7	8	8	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
16	16	N/A	N/A

Bridge Inspection Report

NBI Structure Number: 021702410006900

Portsmouth 241/069

Date of Inspection: 10/31/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

PIERCES ISLAND RD
over
LITTLE HARBOR

Recommended Postings:

Weight: **E-2** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *None*
Optional Centerline Height Sign Rec: *None*

Clearances: (Feet) Over: 99.99, Under: 0.00, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	5 Fair
Superstructure:	5 Fair
Substructure:	6 Satisfactory
Culvert:	N N/A (NBI)
Sufficiency Rating:	43 %
NBI Status:	Not Deficient
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Substandard

Structure Type and Materials:

Number of Main Spans: 4
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	None
Deck Protection:	None
Curb Reveal:	8 in
Plan Location:	3-13-3-1
Total Bridge Length:	281.0 ft
Right Curb/Sidewalk Width:	5.0 ft
Total Bridge Width:	32.3 ft
Median:	No median
Bridge Skew:	0.00 °
Year Built/Rebuilt:	1958/1968
Detour Length:	99.0 mi

Bridge Dimensions:

Length Maximum Span:	68.0 ft
Left Curb/Sidewalk Width:	0.0 ft
Width Curb to Curb:	24.0 ft
Approach Roadway Width: (W/Shoulders)	24.0 ft

Bridge Inspection Report

NBI Structure Number: 021702410006900

Portsmouth 241/069

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Waterway
Lanes on Bridge: 2
Lanes Under: 0
AADT: 1,200 Percent Trucks: 4 % Year of AADT: 2013
Future AADT: 1,776 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: Bridge does not carry NHS
Roadway Functional Class: Urban Local
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702410006900

Portsmouth 241/069

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
29	Steel Deck with Concrete Filled Grid	ASPHALT IS HEAVILY CRACKED WITH POTHOLES. DEPRESSED AREAS. CURBS HAVE FINE CRACKS AND MINOR SPALLS.
└ 515	Steel Protective Coating	
107	Steel Open Girder/Beam	*5 I-BEAMS* PAINT IS IN POOR CONDITION. CRACKED WELDS ON GIRDERS #4 AND #5 AT PIER #1 AND #2. CRACKED WELDS ON BACK UP BARS. PLATED AREAS HAVE PACK RUST AND CRACKED WELDS. SECTION LOSS AT ABUTMENT ENDS OF GIRDERS. EXTERIOR GIRDERS RUSTED WITH SCALE.
└ 515	Steel Protective Coating	
202	Steel Column	PAINT IS IN POOR CONDITION. SEVERAL PLATED AREAS, PACK RUST IN AREAS. CONCRETE ENCASED. RUSTED. SPALLS AT TOPS OF ENCASEMENTS.
└ 515	Steel Protective Coating	
215	Reinforced Concrete Abutment	FINE CRACKS AND MINOR SPALLS.
231	Steel Pier Cap	RUSTED WITH 3/8 INCH CHANNEL WITH 3/16 STEEL LEFT 50% SECTION LOSS.
└ 515	Steel Protective Coating	
300	Strip Seal Expansion Joint	ASPHALT POTHOLED AT JOINT WITH ARMOR LOOSE. JOINTS TIGHT. DEBRIS FILLED AND LEAKING.
311	Movable Bearing	*SLIP BEARINGS* CRACKED WELDS. PACK RUST. MODERATE SECTION LOSS.
└ 515	Steel Protective Coating	
313	Fixed Bearing	CRACKED WELDS. PACK RUST. MODERATE SECTION LOSS.
└ 515	Steel Protective Coating	
330	Metal Bridge Railing	*Element record added 2015-09-17. ALUMINUM THREE BAR WITH BALUSTERS.* NEW THREE BAR ALUMINUM. FEW MINOR SCRAPES.
7357	Pack Rust	*Element record added 2015-09-17.* PACK RUSTING AT BEARINGS, GIRDER PLATED AREAS AND PLATED AREAS AT PIERS. CRACKED WELDS.
7363	Steel Section Loss	CHANNEL CROSS BRACING AT PIERS 50%SECTION LOSS. 3/8 INCH CHANNEL WITH 3/16 INCH REMAINING. PIPE SUPPORTS RUSTED AND HOLED AT SOUTH.

Bridge Inspection Report

NBI Structure Number: 021702410006900

Portsmouth 241/069

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
29	Steel Deck with Concrete Filled Grid	8,428	sq.ft	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
107	Steel Open Girder/Beam	141	ft	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
202	Steel Column	21	each	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
215	Reinforced Concrete Abutment	89	ft	100%	0%	0%	0%
231	Steel Pier Cap	89	ft	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
300	Strip Seal Expansion Joint	30	ft	0%	100%	0%	0%
311	Movable Bearing	20	each	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
313	Fixed Bearing	5	each	0%	100%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
330	Metal Bridge Railing	561	ft	100%	0%	0%	0%
7357	Pack Rust	1	(EA)	0%	0%	100%	0%
7363	Steel Section Loss	1	(EA)	0%	100%	0%	0%

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Bridge Notes:

AERIAL LIFT INSPECTION 10/31/11. 9/17/2015.
UNDERWATER INSPECTION ON 11/16/2012.
CWIP 10/31/2017.

Inspection Notes: 10/31/2017

MAS - inspection comments - ***CWIP***
DECK: ASPHALT - HEAVILY CRACKED AND POTHOLED. CURBS - FINE CRACKS AND MINOR SPALLS. JOINT - DAMAGED, TIGHT, DEBRIS FILLED AND LEAKING. RAIL - NEW THREE BAR ALUMINUM, MINOR SCRAPES. SOFFIT - GALVANIZED STEEL DECKING IS RUSTED WITH SEVERAL SMALL HOLES, MODERATE LEAKING. CONCRETE - VISIBLE AT EXTERIORS ONLY. SPALL WITH REBAR EXPOSED AT SEWER HOLE AND SPAN #3. PIPE HANGERS - RUSTED AND HOLED AT SOUTH, NEW AT NORTH.
SUPERSTRUCTURE: PAINT - POOR CONDITION, RUSTED WITH SCALE AND BARE METAL EXPOSED. GIRDERS - CRACKED SEAL WELDS AT GIRDERS #4 AND #5 AT PIERS #1 AND #2; CRACKED WELDS AT PLATED AREAS DUE TO PACK RUST, PLATES MISSING IN AREAS. SECTION LOSS AT ABUTMENTS. BEARINGS - RUSTED WITH PACK RUST AND MODERATE SECTION LOSS. PACK RUST CAUSING WELDS TO CRACK. CHANNEL LATERAL BRACING - CRACKED WELD AT WEST ABUTMENT GIRDER #4.
SUBSTRUCTURE: ABUTMENTS - FINE CRACKS AND MINOR SPALLS; DELAMINATION AT NORTHEAST BRIDGESEAT. WINGS - LIGHT CRACKS. PIERS - PAINT IS IN POOR CONDITION, RUSTED WITH SECTION LOSS. PLATED AREAS, CRACKED WELDS. CONCRETE ENCASED COLUMNS. SEE UNDERWATER INSPECTION REPORT DATED 8/5/2016.

PICTURE: C576-
51. CWIP.

Bridge Inspection Report

NBI Structure Number: 021702410006900

Portsmouth 241/069

Previous Inspection Notes: 08/05/2016

NBG Office Comments:
MAS was the field representative for the 8/5/2016 U/W inspection performed by Terracon. See U/W inspection report dated 8/5/2016 for complete details.
U/W inspection notes summary:
The bridge substructure consist of three bents with 7 steel H-piles making up each bent. The steel H piles are encase in a fiberglass jacket filled concrete. The concrete filled jackets extend several feet above the water line at high tide.
Bents 1 thru 3 show similar characteristics.
1. The piles were covered with a heavy layer of light layer of marine growth (Aquatic vegetation, barnacles, marine organism and algae).
2. Bent #1, the third pile from the north was missing a portion of the jacket and concrete is being eroded with water movement.
3. The bottom material around the bents was sandy gravel and cobble.
4. No exposed foundation elements were noted.
5. Current was light at the time of the assessment.
6. The water level elevation reference point is located at the flood end of bent 2, the distance was 12.1 from the C-channel to waterline.

Approach and Roadway Notes:

CWIP - 10/31/2017.
ASPHALT - (6) CRACKED, SETTLED AND PATCHED.
ALUMINUM RAIL - MINOR SCRAPES.
W- BEAM RAIL - MINOR SCRAPES.

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/31/2017	MAS	☑	☑	☐	☐	5	5	6	N	☐	E-2
08/05/2016	MAS	☑	☑	☐	☑	5	5	6	N	☐	E-2
10/05/2015	KJT	☑	☑	☐	☐	5	5	6	N	☐	E-2
09/17/2015	MAS	☑	☑	☐	☐	5	5	6	N	☐	E-2
10/17/2013	KJT	☑	☑	☐	☐	6	6	7	N	☐	E-2
11/16/2012	JEL	☑	☑	☐	☑	6	6	7	N	☐	E-2
10/31/2011	KJT	☑	☑	☐	☐	6	6	7	N	☐	E-2
08/06/2009	KJT	☑	☑	☐	☐	6	6	7	N	☐	E-2
10/19/2007	DPC	☑	☑	☐	☐	6	6	7	N	☐	E-2
08/29/2005	DPC	☑	☑	☐	☐	6	6	7	N	☐	E-2
04/19/2004	RLM	☑	☑	☐	☐	6	6	7	N	☐	E-2
09/16/2003	DPC	☑	☑	☐	☐	6	6	7	N	☐	E-2
02/16/2001	RLM	☑	☑	☐	☐	6	6	7	N	☐	E-2
08/15/2000	RLM	☑	☑	☐	☐	6	6	7	N	☐	E-2
02/16/1999	DPC	☑	☑	☐	☐	6	6	7	N	☐	E-2
09/01/1997		☑	☑	☐	☑	6	6	7	N	☐	E-2
05/01/1996		☑	☑	☐	☑	6	6	7	N	☐	E-2
06/01/1994		☑	☑	☐	☑	6	6	7	N	☐	E-2
06/01/1992		☑	☑	☐	☑	6	6	7	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	60

Terracon
Consulting Engineers & Scientists

TERRACON UNDERWATER SUBSTRUCTURE INSPECTION FORM

Date: 5 Aug 2016 **Work Order #** **N1159086 - J1159086**
Structure ID # **241/069** **Inspection performed for: (Client)**
GPS COORDINATES: 43.075289, -70.749468 Name: New Hampshire Dept. of Transportation
County: Rockingham Address: John O. Morton Bldg.
City: Portsmouth 7 Hazen Drive, PO Box 483
Concord, New Hampshire
Roadway / Hwy #: Pierces Island Road Field Representative: Mike Smith
Waterway: Little Harbor Telephone:
Assessment Team: Brad Walden, Jason Hickey P.E. (Diver), Nick DeMeo
Previous Inspection Reports Available: **Construction or As-Built Plans / Drawings Available:**
Yes No **X** Yes No **X**
Date of Report: Originator: Dates:

BRIDGE ACCESS

Boat: Dive Boat **X** Jonboat Barge: Other:
Ramp Location: **Pierces Island Boat Launch, Owned and operated by the City of Portsmouth, NH**
Ramp: Concrete: **X** Gravel: Dirt: Grade: **Ok** Width: **Ok** Depth: **Ok***
Distance from Ramp to Bridge: **200 feet** **Travel Time:** 3 minutes
Ramp Fee: $30.00 **Lockage Required:** **Yes** **No**
Comments / Directions: **Pierces Island road**

BOAT TRAFFIC

Recreational:	Heavy	**X**	Moderate		Light	N/A	**X**
Fishing:	Heavy		Moderate	**X**	Light	N/A	**X**
Barge:	Heavy		Moderate		Light	N/A	**X**

Comments: **N/A**

WEATHER

Temperature **63.8** Fair **X** Cloudy Ptly. Cldy Windy Rain

WATER CONDITIONS

Temperature: **72°F** Visibility: **5'**
Current: Heavy Moderate Light **X** None

WATER ELEVATION

Reference Location: Bent 2, flood end, bottom of c-channel to waterline Reference Point Elevation Unknown
Distance To Water: 12.1' Water Elevation Unknown

BANK / SHORES

Grass **X** Rock **X** Gravel **X** Dirt/Mud **X** Other

INSPECTION METHOD

Surface Supplied Air **X** Scuba ____ Wading ____ Other ____

BRIDGE TYPE

Continuous Plate Girder ____ Suspension ____ IB-C **X**

Reinforced Concrete Beam ____ Wood Truss ____ Other ____

BRIDGE SUPPORT TYPE

Masonry ____ Closed Web ____ Open Web ____ Steel Piles **X with Jacket**

Reinforced Concrete ____ Timber Piles ____ Other ____

FOUNDATION TYPE

Pile w/ pile cap ____ Pile w/o pile cap ____ Pier founded on Rock ____ Or Soil ____

Caisson ____ Spread Footing ____ Other Unknown

CROSS SECTIONS

Upstream	**X**		**x**		
	5'	**10'**	**25'**	**50'**	**100'**
Downstream	**X**		**x**		

GPS DATA 43.075289, -70.749468

SOUNDINGS (Shallow Stream or Culvert)

Equipment Used: Level rod

(See Attached Drawings)

SCOUR (see field notes for detailed description)

Scour pockets or troughs	Yes	____	No	**X**	____
Footing or foundation element exposed	Yes	____	No	**X**	____
Scour increased since last inspection	Yes	____	No	**X**	Unknown

Comments: ____

PIER / ELEMENT CONDITIONS (see field notes for detailed description)

Biological Growth	**Heavy**		Zebra Mussel Growth	**N/A**
Spalling	**None detected**		Honeycombing	**None**
Scaling	**None**		Re-Steel Exposed	**None**
Delamination	**None detected**			
Vertical Cracks	Hairline	**No**	Measurable	
Horizontal Cracks	Hairline	**No**	Measurable	
Impact Damage	Minor	**No**	Major	**No**
Pier Faces not Inspected	List Piers	**Abutments**		
Reason for not Inspecting	Out of water			

Comments: Bent 1, third pile from the north, a large portion of the fiberglass jacket is missing and the Concrete fill is being eroded and forming an hourglass shape near the high tide line.

BOTTOM CONDITIONS

Sand	**X**	Cobbles	**X**	Gravel	**X**
Clay		Boulders		Silt	
Bedrock, type			Clay		

Debris:

Sticks		Timbers		Steel	
Tree Limbs		Construction Debris		Waste Concrete	
Tree					

Other:

Heavy debris located around element Yes ____ No **X** Elements ____

Photography / Video Documentation

Photographs Taken: Yes **X** No ____

1.	**Bridge Structure, looking ebb**	13.	
2.	**Bridge Structure, looking flood**	14.	
3.	**Bent 1**	15.	
4.	**Bent 2**	16.	
5.	**Bent 3**	17.	
6.	**Missing Jacket**	18.	
7.	**Water Elevation Reference Point**	19.	
8.		20.	
9.		21.	
10.		22.	
11.		23.	
12.		24.	

Video Documentation Taken: Yes ____ No **X**
Above Surface: Yes ____ No **X**
Below Surface: Yes ____ No **X**
Video Tape Identification **N/A**

Bridge substructure rating is 6.
Channel and Channel Protection Rating is 6.

General Comments (Include any Unusual Conditions Encountered):

Terracon
Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**
County: **Rockingham** State: **New Hampshire**
Description : **Pier Field Notes**

The bridge substructure consist of three bents with 7 steel H piles making up each bent. The steel H piles are encase in a fiberglass jacket filled concrete. The concrete filled jackets extend several feet above the water line at high tide.

Bents 1 – 3 show similar characteristics.

1. The piles were covered with a heavy layer of light layer of marine growth (Aquatic vegetation, barnacles, marine organism and algae).
2. Bent #1, the third pile from the north was missing a portion of the jacket and concrete is being eroded with water movement.
3. The bottom material around the bents was sandy gravel and cobble.
4. No exposed foundation elements were noted.
5. Current was light at the time of the assessment.
6. The water level elevation reference point is located at the flood end of bent 2, the distance was 12.1' from the C-channel to waterline.

   Inspection is limited to one foot above the water line to the mud line.

Bridge substructure is rated as 6.

The waterway opening is adequate, Channel and Channel Protection is rated as 6.

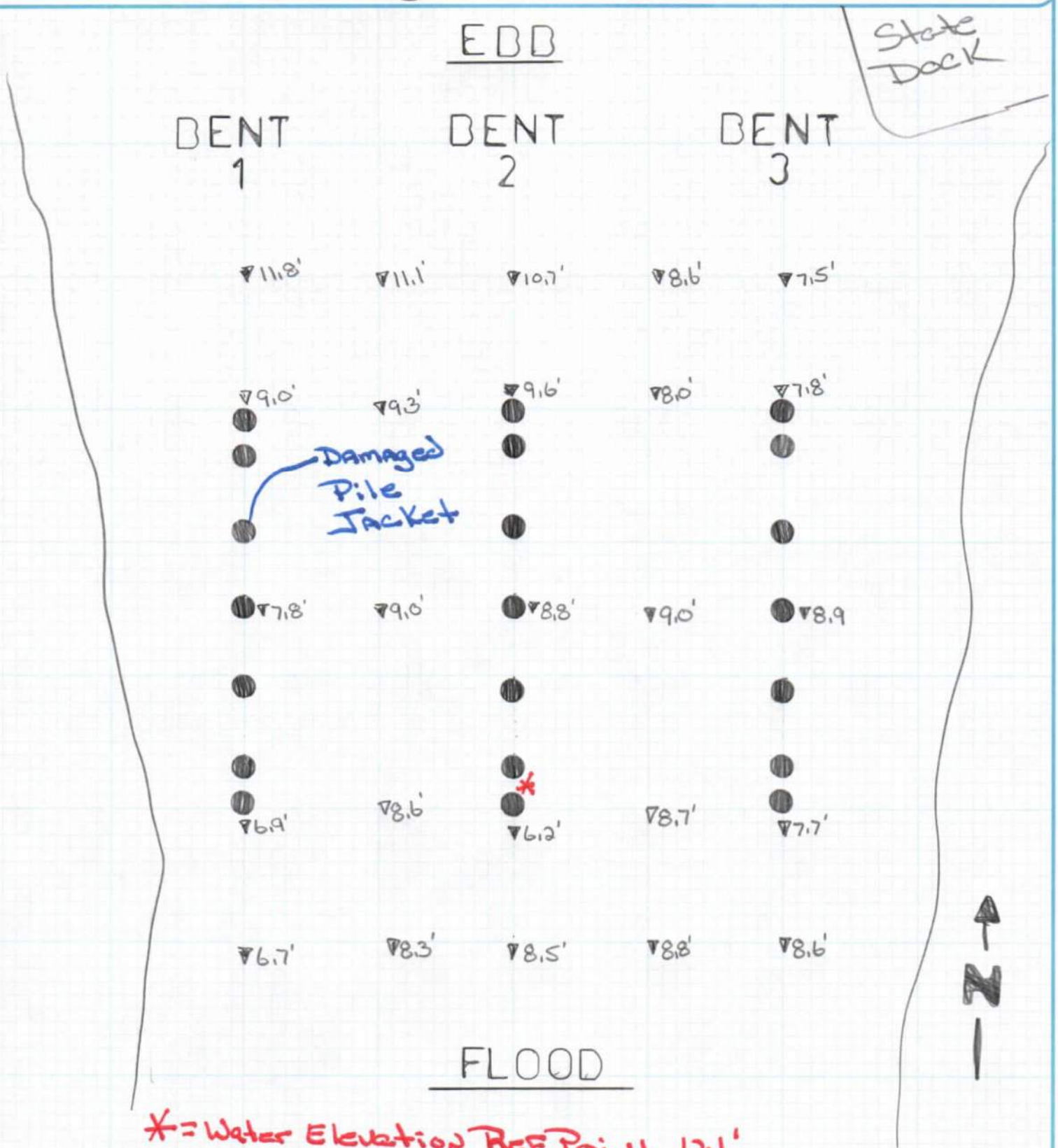
See attached drawings, sketches and photographs of the areas to better visualize the conditions at the time of the assessment.

Terracon

over Little Harbor

PROJECT: Bridge #241/069, Pierces Island Road Page 1 of 1

JOB NO. N1159086 Date 5 Aug 16 Comp. By BTW CHECKED BY: JTH



*= Water Elevation Ref Point 12.1'

Form 112—5-93

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Bridge Structure, looking ebb**

Photos
TERRACON

Terracon
Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Bridge Structure, looking flood**

Photos
TERRACON

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Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Bent 1**

Photos
TERRACON

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Bent 2**

Photos
TERRACON

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Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Bent 3**

Photos
TERRACON

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Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Missing pile jacket, concrete fill being eroded. Bent 1 3rd pile from the north**

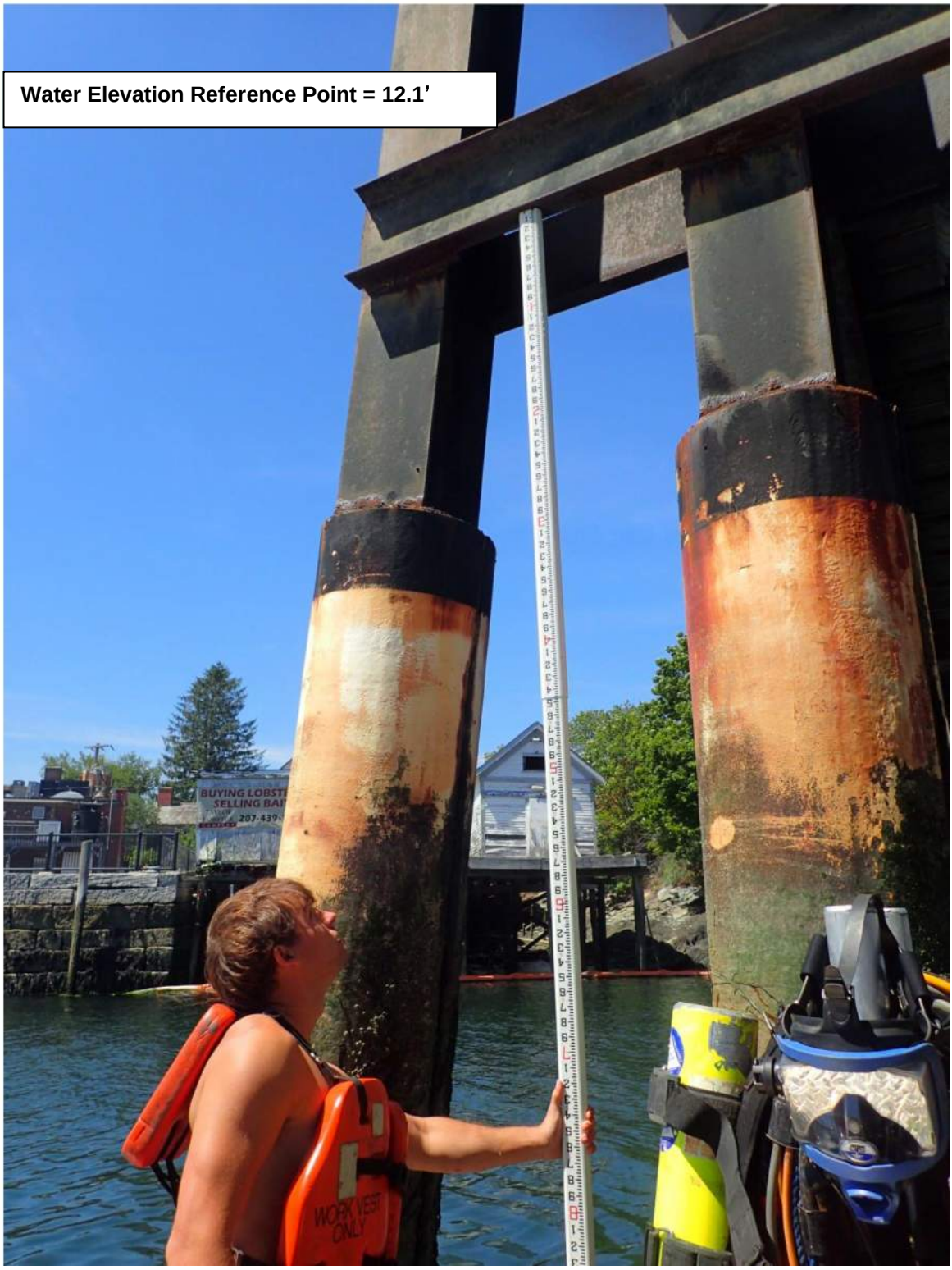
Photos
TERRACON

Terracon
Consulting Engineers & Scientists

Structure ID #: **241-069, Pierces Island Road over Little Harbor** Date: **08/05/2016**

County: **Rockingham** State: **New Hampshire**

Description : **Water Elevation Reference Point**



Photos
TERRACON

Bridge Inspection Report

NBI Structure Number: 021702460008300

Portsmouth 246/083

Date of Inspection: 10/27/2017
Date Report Sent: 01/26/2018
Owner: Municipality
Bridge Inspection Group: C-Team
Bridge Maintenance Crew: OTHER

US 1,SCOTT AVENUE
over
DANIEL STREET

Recommended Postings:

Weight: **No Posting Required** ☑ Weight Sign OK

Width: **Not Required** ☑ Width Sign OK

Primary Height Sign Recommendation: *12'-11"*
Optional Centerline Height Sign Rec: *None*

MEASURED 13' 2.75".
SIGNED 12' 4" 10/27/2017.

Clearances: (Feet) Over: 99.99, Under: 13.24, Route: 99.99

☑ Height Sign OK

Condition:

Red List Status:	Not on the Redlist
Deck:	8 Very Good
Superstructure:	8 Very Good
Substructure:	8 Very Good
Culvert:	N N/A (NBI)
Sufficiency Rating:	88 %
NBI Status:	Functionally Obsolete
Bridge Rail:	Meets Standards
Rail Transition:	Meets Standards
Bridge Approach Rail:	Meets Standards
Approach Rail Ends:	Meets Standards

Structure Type and Materials:

Number of Main Spans: 2
Number of Approach Spans: 0

Main Span Material and Design Type
Steel Continuous Multiple Beam

NH Bridge Type:	IB-C (I Beams w/ Concrete Deck)
Deck Type:	Concrete, Cast in Place
Wearing Surface:	Bituminous
Membrane:	Preformed Fabric
Deck Protection:	Epoxy Coated Reinforcing
Curb Reveal:	7 in
Plan Location:	107-1-1
Total Bridge Length:	133.3 ft
Right Curb/Sidewalk Width:	6.0 ft
Total Bridge Width:	46.5 ft
Median:	No median
Bridge Skew:	27.00 °
Year Built/Rebuilt:	1921/2013
Detour Length:	6.0 mi

Bridge Dimensions:

Length Maximum Span:	70.0 ft
Left Curb/Sidewalk Width:	6.0 ft
Width Curb to Curb:	32.0 ft
Approach Roadway Width: (W/Shoulders)	32.0 ft

Bridge Inspection Report

NBI Structure Number: 021702460008300

Portsmouth 246/083

Bridge Service:

Type of Service on Bridge: Highway and Pedestrian
Type of Service Under: Highway
Lanes on Bridge: 2
Lanes Under: 2
AADT: 7,900 Percent Trucks: 5 % Year of AADT: 2015
Future AADT: 11,692 Year of Future AADT: 2038

Federal or State Definition Bridge: Fed-Definition Bridge
National Highway System: NHS Roadway on Bridge
Roadway Functional Class: Urban Principal Arterial
New Hampshire Bridge Tier: 5
Eligibility for the National Register of Historic Places: Possibly eligible
Traffic Direction: Two-way traffic

Bridge Inspection Report

NBI Structure Number: 021702460008300

Portsmouth 246/083

Element Details (see disclaimer below)

No.	Description	Material Notes and Condition Notes:
12	Reinforced Concrete Deck	*SOUTH END IS 67'* *NORTH END IS 46.5'* *CENTERLINE LENGTH IS 133.333'* *8.25 in. THICKNESS.* ASPHALT IS IN GOOD CONDITION. SIDEWALKS HAVE LIGHT CRACKS, SOME ARE SEALED. SOFFIT IS CRACKED AND LEAKING WITH EFFLORESCENCE.
└ 510	Wearing Surfaces	
└ 1120	Efflorescence/Rust Staining	
└ 1130	Cracking (RC and Other)	
107	Steel Open Girder/Beam	*7 - I-BEAMS.* *DEPTH - 33.875 in.* *FLANGE - 15.75 in.* *FLANGE THICKNESS-1.125 in.* *WEB - 0.6875 in.* *SPACING - 10' 5.375 in.* 7 I-BEAMS PAINTED BLACK. PAINT IS GOOD CONDITION.
└ 515	Steel Protective Coating	
205	Reinforced Concrete Column	*3'-6 in. DIAMETER CONCRETE PIER COLUMNS (DRILLED SHAFT EXTENSIONS)* GOOD CONDITION.
215	Reinforced Concrete Abutment	*C.I.P. CONCRETE STUB ABUTMENT ON DRILLED SHAFTS WRAPPED BY CONCRETE FACED MSE WALLS.* FINE CRACKS.
234	Reinforced Concrete Pier Cap	*NEW C.I.P. CONCRETE CAP AT NORTH PIER SHARED WITH MEMORIAL BRIDGE.* GOOD CONDITION.
301	Pourable Joint Seal	*ASPHALTIC PLUG TYPE AT SOUTH END OF STRUCTURE.* AT SOUTH DECK END. GOOD CONDITION.
303	Assembly Joint With Seal	*AT NORTH END OF STRUCTURE/START OF MEMORIAL BRIDGE.* AT NORTH DECK END. GOOD CONDITION.
310	Elastomeric Bearing	*FIXED AT SOUTH ABUTMENT, EXPANSION BEARINGS AT PIER AND NORTH ABUTMENT.* GOOD CONDITION.
321	Reinforced Concrete Approach Slab	*DIVING APPROACH SLAB AT PORTSMOUTH ABUTMENT (BURIED).*
330	Metal Bridge Railing	*GALVANIZED T-4 RAIL WITH CHAIN LINK FENCE.* GOOD CONDITION.

Bridge Inspection Report

NBI Structure Number: 021702460008300

Portsmouth 246/083

Element States (see disclaimer below)

No.	Description	Quantity	Units	State 1	State 2	State 3	State 4
12	Reinforced Concrete Deck	7,567	sq.ft	97%	3%	0%	0%
└ 510	Wearing Surfaces	---	---	100%	0%	0%	0%
└1120	Efflorescence/Rust Staining	150	sq.ft	0%	100%	0%	0%
└1130	Cracking (RC and Other)	150	sq.ft	50%	50%	0%	0%
107	Steel Open Girder/Beam	886	ft	100%	0%	0%	0%
└ 515	Steel Protective Coating	---	---	100%	0%	0%	0%
205	Reinforced Concrete Column	4	each	100%	0%	0%	0%
215	Reinforced Concrete Abutment	132	ft	100%	0%	0%	0%
234	Reinforced Concrete Pier Cap	55	ft	100%	0%	0%	0%
301	Pourable Joint Seal	58	ft	100%	0%	0%	0%
303	Assembly Joint With Seal	47	ft	100%	0%	0%	0%
310	Elastomeric Bearing	21	each	100%	0%	0%	0%
321	Reinforced Concrete Approach Slab	10,753	sq.ft	100%	0%	0%	0%
330	Metal Bridge Railing	256	ft	100%	0%	0%	0%

Element Disclaimer: NHDOT is transitioning from CoRe elements to AASHTO elements. The AASHTO element data shown above is the product of the automated element migration routine from the AASHTOWare BrM software. This migrated data has undergone limited field verification. Adequate quality control of this element data is not expected to be achieved until the conclusion of the 2020 inspection season. Please utilize element data with caution.

Bridge Notes:

BRIDGE REOPENED TO TRAFFIC ON 8/8/2013. REPLACED AS PART OF MEMORIAL BRIDGE REPLACEMENT, NHDOT PROJECT 13678F
REMOVED FROM MUNICIPAL RED LIST 10/31/2013.
Superstructure replaced with kinked IB-C. Shared Pier with Memorial Bridge retained with new C.I.P. cap--all other substructures replaced.

Inspection Notes: 10/27/2017

MAS - inspection comments -
DECK: ASPHALT - GOOD CONDITION. SIDEWALKS - LIGHT CRACKS, SOME CRACKS ARE SEALED. PLUG JOINT - GOOD CONDITION. MODULAR JOINT - GOOD CONDITION. RAIL - GALVANIZED T-4 WITH CHAIN LINK FENCE, GOOD CONDITION. SOFFIT - LIGHT CRACKS AND LIGHT EFFLORESCENCE UNDER SIDEWALKS.
SUPERSTRUCTURE: PAINT - GOOD CONDITION. BEAMS - GOOD CONDITION. BEARINGS - GOOD CONDITION.
SUBSTRUCTURE: ABUTMENTS - FINE CRACKS. PIER - GOOD CONDITION.

Previous Inspection Notes: 10/05/2015

KJT - inspection comments -
DECK: ASPHALT - GOOD CONDITION. SIDEWALKS - FINE CRACKS, CRACKS SEALED. PLUG JOINT - GOOD CONDITION. MODULAR JOINT - GOOD CONDITION. RAIL - GALVANIZED T-4 WITH CHAIN LINK FENCE. SOFFIT - FINE CRACKS AND MINOR EFFLORESCENCE.
SUPERSTRUCTURE: PAINT - NEW CONDITION. BEAMS AND BEARINGS ARE IN NEW CONDITION.
SUBSTRUCTURE: ABUTMENTS - FINE CRACKS. PIER - GOOD CONDITION.

Approach and Roadway Notes:

ASPHALT - (8) GOOD CONDITION.
W- BEAM RAIL - GOOD CONDITION.

Unusual or experimental features:

75 ksi vert. bars in S. Abut. drilled shafts. DCI corrosion inhibitor in deck, pier cap and cols., abut. cap and backwall conc. Micropiles installed in Abut B shared with Mem. Bridge in 2013 rehab.

Bridge Inspection Report

NBI Structure Number: 021702460008300

Portsmouth 246/083

Inspection History

Inspection Date	Inspector Initials	Inspection Type(s) Performed				Major Element Ratings				Red list	Posting
		NBI	Elem	FCM	U/W	Deck	Super	Sub	Culvert		
10/27/2017	MAS	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/05/2015	KJT	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
10/31/2013	MAS	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
08/08/2013	NBG	☑	☑	☐	☐	8	8	8	N	☐	No Posting Req'd
12/18/2012	KJT	☑	☑	☐	☐	0	0	0	N	☐	Bridge Closed
04/30/2012	NBG	☑	☑	☐	☐	0	0	0	N	☐	Bridge Closed
10/21/2011	MAS	☑	☑	☐	☐	4	4	5	N	☐	Bridge Closed
12/13/2010	DPC	☑	☑	☐	☐	4	4	5	N	☑	E-2
10/29/2009	DPC	☑	☑	☐	☐	4	4	5	N	☑	E-2
08/06/2009	KJT	☑	☑	☐	☐	4	4	5	N	☑	E-2
10/08/2008	KJT	☑	☑	☐	☐	4	4	5	N	☑	E-2
10/19/2007	DPC	☑	☑	☐	☐	4	4	5	N	☑	E-2
07/11/2006	DEP	☑	☑	☐	☑	4	4	5	N	☑	E-2
08/29/2005	DPC	☑	☑	☐	☐	4	4	5	N	☑	E-2
10/07/2003	DEP	☑	☑	☐	☐	4	4	5	N	☑	E-2
10/01/2003	DPC	☑	☑	☐	☐	6	6	6	N	☐	E-2
02/16/2001	DPC	☑	☑	☐	☐	6	6	6	N	☐	E-2
06/16/2000	RLM	☑	☑	☐	☐	6	7	6	N	☐	E-2
02/01/1997		☑	☑	☐	☐	6	7	6	N	☐	E-2
01/01/1995		☑	☑	☐	☐	6	7	7	N	☐	E-2
02/01/1993		☑	☑	☐	☐	6	6	6	N	☐	E-2

Inspection Frequency (mo.)			
NBI	Elem	FCM	U/W
24	24	N/A	N/A

APPENDIX E

Peirce Island Bridge 2015 Underwater Inspection Report

Appledore Marine Engineering, LLC
600 State Street, Suite E | Portsmouth New Hampshire 03801
346 Commerce Boulevard | Port Saint Joe Florida 32456
1700 Seventh Avenue | Suite 2100 | Seattle Washington 98101
Seven Waterfront Plaza | 500 Ala Moana Boulevard Suite 400 | Honolulu Hawaii 96813

June 9, 2015

Aaron Lachance, P.E.
Senior Structural Engineer
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101
E-mail: alachance@hoyletanner.com

Re: Underwater Inspection Letter Report
Peirce Island Bridge Inspection and Rating
Portsmouth, NH
AME Project No. 5178

Dear Mr. Lachance,

This letter report summarizes the underwater inspection of the Peirce Island Bridge, completed on June 8th 2015. The inspection was conducted on the underwater elements of the bridge and therefore focused on the three pile bents from mean high water to river bottom. The two bridge abutments were not included in this inspection as they are both located above the mean high water level.

In general the supporting piles were found to have a NBIS rating of 8 (Very Good Condition).

Introduction:

This letter report presents the findings from the underwater inspection of the Peirce Island Bridge over the Piscataqua River in Portsmouth, NH (Photo 1). Engineer divers from Appledore Marine Engineering, LLC (AME) conducted the field inspection on June 8th 2015. The inspection was completed to assess the general condition of the pile bents below mean high water based on a 100% Level 1 visual/tactile and a 10% Level II and Level III detailed inspection. The Level II inspection consisted of cleaning the piles in order to detect and identify damaged areas which may have been hidden by surface biofouling. Level III inspection involved sounding the fiberglass pile jackets to detect unsound grout material. The inspection procedures were completed in accordance with the National Bridge Inspection System (NBIS).

Observations and Findings:

The Peirce Island Bridge is supported by two landside abutments and three pile supported bents. Each bent consists of seven braced steel w-shaped piles. Water depths range between 4 ft to 9 ft based on Mean Lower Low Water (MLLW) datum (see Sketch 1).

Piles:

The piles are in good condition. The steel w-shaped piles have protective fiberglass jackets that, based on limited excavation, extend at least one foot below the riverbed (Photo 2). Marine growth covered the piles from low water to river bottom (Photo 3). Tactile inspection and select cleaning of the pile jackets

revealed no noticeable defects (broken seems or voids) that would compromise the embedded steel piles (Photo 4).

Riverbed:

The river bottom consists of silty-gravel, shells and mixed cobbles. No scour was observed along the inspected structure. There was no observed drift/debris within the channel.

Recommendations

Based on this inspection, the underwater portion of the Peirce Island Bridge is in overall Good condition. The protective fiberglass jackets appear to be properly embedded into the river bed and protecting the embedded steel piles. No recommendations are required at this time.

If you have any questions, or require additional information, please do not hesitate to contact us.

Regards,

Noah J. Elwood, P.E.
President

Eric T. Levesque, P.E.
Engineer-In-Charge

Photo 1

Overall view of the Peirce Island Bridge (Looking West)

Photo 2

Fiberglass jacket extending at least one foot below riverbed

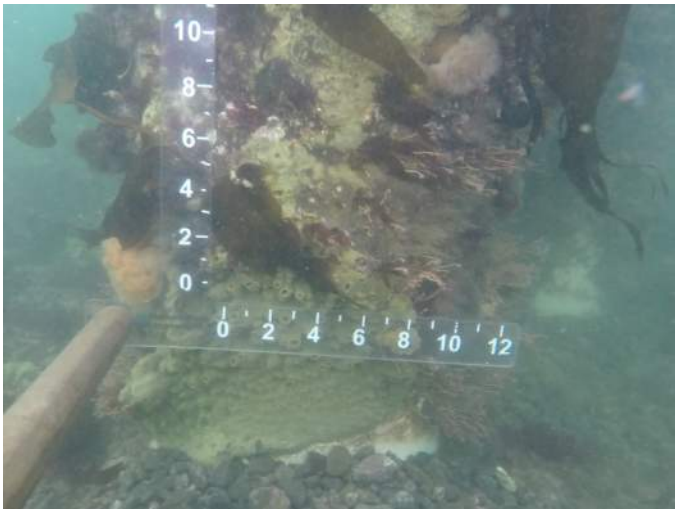
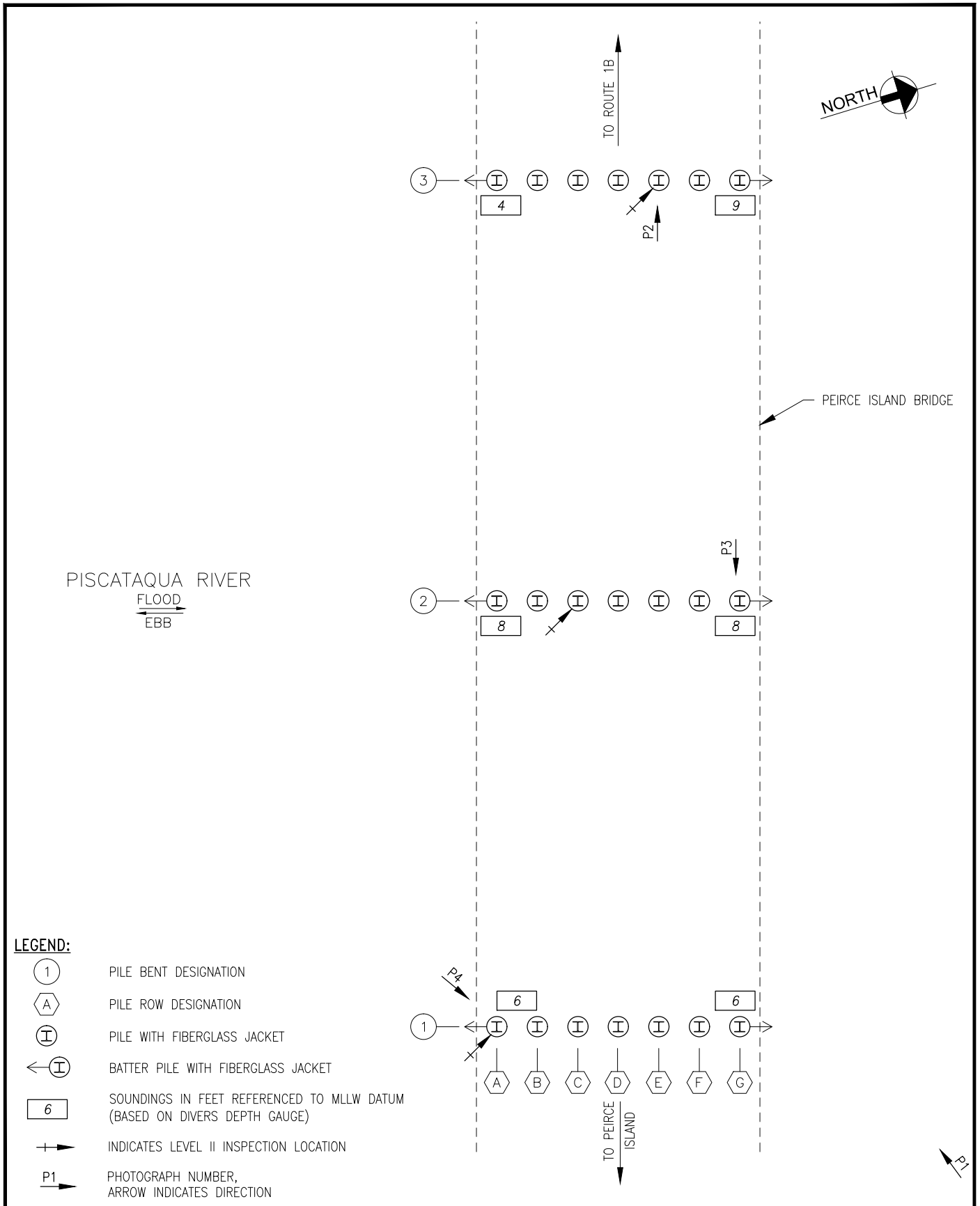


Photo 3

Typical marine growth on pile jackets

Photo 4

Typical cleaned pile jacket with no observed defects



LEGEND:

- (1) PILE BENT DESIGNATION
- (A) PILE ROW DESIGNATION
- PILE WITH FIBERGLASS JACKET
- BATTER PILE WITH FIBERGLASS JACKET
- 6 SOUNDINGS IN FEET REFERENCED TO MLLW DATUM (BASED ON DIVERS DEPTH GAUGE)
- INDICATES LEVEL II INSPECTION LOCATION
- P1 PHOTOGRAPH NUMBER, ARROW INDICATES DIRECTION

GRAPHIC SCALE	DATE	APPLEDORE MARINE ENGINEERING, LLC PORTSMOUTH, N.H.	HOYLE, TANNER & ASSOCIATES, INC. MANCHESTER, NEW HAMPSHIRE	
NOT TO SCALE	JUNE 2015		PEIRCE ISLAND BRIDGE PORTSMOUTH, NH SKETCH: PLAN VIEW	FIG. NO. SK-1

APPENDIX

CONDITION RATING DESCRIPTIONS

Rating	Description
Good	No visible damage, or only minor damage is noted. Structural elements may show very minor deterioration, but no overstressing is observed. No repairs required.
Satisfactory	Limited minor to moderate defects or deterioration are observed, but no overstressing is observed. No repairs required.
Fair	All primary structural elements are sound, but minor to moderate defects or deterioration is observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs are recommended, but the priority of the recommended repairs is low.
Poor	Advanced deterioration or overstressing is observed on widespread portions of the structure, but does not significantly reduce the load-bearing capacity of the structure. Repairs may need to be carried out with moderate urgency.
Serious	Advanced deterioration, overstressing, or breakage may have significantly affected the load-bearing capacity of primary structural components. Repairs may need to be carried out with moderate urgency.
Critical	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a very high priority basis with strong urgency.

From: Underwater Investigations, Standard Practice Manual, ASCE, 2001.

NBIS CONDITION RATINGS

Code	Description
N	NOT APPLICABLE
9	EXCELLENT CONDITION
8	VERY GOOD CONDITION – no problems noted
7	GOOD CONDITION – some minor problems
6	SATISFACTORY CONDITION – structural elements show minor deterioration.
5	FAIR CONDITION – all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
4	POOR CONDITION – advanced section loss, deterioration, spalling, or scour.
3	SERIOUS CONDITION – loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	CRITICAL CONDITIONS – advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	"IMMINENT" FAILURE CONDITION – major deterioration or section loss present in critical structural components, or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action my put bridge back in light service.
0	FAILED CONDITION – out of service; beyond corrective action

From: Bridge Inspector's Reference Manual, FHWA NHI 12-049, 2012

Hoyle, Tanner & Associates, Inc.

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