INFRASTRUCTURE COMMITTEE
Tuesday September 13, 2016
Immediately Following Airport Committee
City Hall Council Chambers

Agenda

1. **Discussion: Proposed Sidewalk Improvements, Intersection of Court Street and Ohio Street**

2. **MDOT Agreement Modification: 018645.00, Independent Street and Water Street Traffic Signal Improvements**
   (Materials Attached)

3. **MDOT Agreement Modification: 021767.00 Penobscot River Walk Improvements**
   (Materials Attached)

4. **Discussion: Results of Study for Kenduskeag Stream Pedestrian Bridge**

5. **Discussion: Policy for Design Standards for Streets and Right-Of-Ways**

6. **Discussion: Results of Lincoln Street On Street Parking Survey**

To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: September 7, 2016
Re: Discussion of Proposed Sidewalk Improvements at the intersection of Court Street and Ohio Street

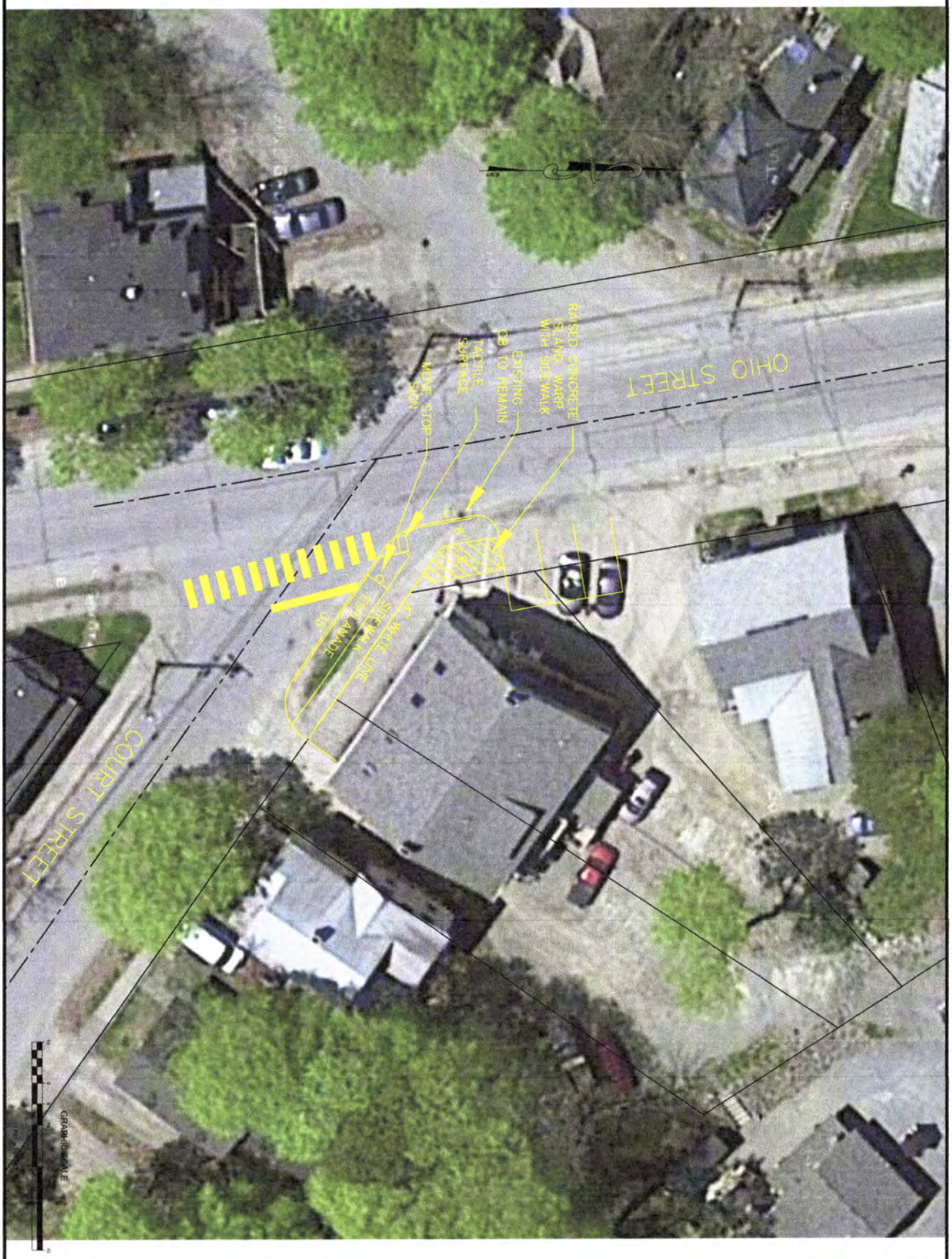
Mr. Nick Busey, a resident that lives within the vicinity of the Court Street and Ohio Street intersection has concerns with the pedestrian accommodations at this intersection and the conflicts between vehicle traffic and pedestrian traffic at the Wee Beez Market located at this intersection.

Mr. Busey has met with City staff to discuss his concerns. The City Engineer, Public Works Director, and City Code Enforcement Officer have met on site and agree that pedestrian improvements should be provided to help define pedestrian routes of travel through the intersection and also help delineate the parking area at the Wee Beez Market.

The Engineering Department has prepared a plan of the recommended improvements which we believe will help improve safety at the intersection while also accommodating the parking needs for the market.

The Engineering Department shared this concept plan with Mr. Busey and Andrew Stevenson, the owner of Wee Beez.

Mr. Busey has requested to have the opportunity to discuss his concerns with the Infrastructure Committee.



Sheet No. C1	Job No.	**WEEBEEZ, COURT STREET** **BANGOR, MAINE**	DESIGNED BY: JMT DRAWN BY: JMT CHECKED BY: APPROVED BY:	No. Date Revision	City of Bangor Maine www.bangormaine.gov **ENGINEERING DEPARTMENT** Bangor, Maine 04401 Tel: (207)992-4250 Fax: (207)992-4194
		CURB AND PARKING LAYOUT PLAN	Date: 7/13/2016 SCALE: AS NOTED	Signed Date	

COUNCIL ACTION

Item No._____

Date: September 26, 2016

Item/Subject: ORDER, Authorizing Execution of Modification Agreement for Maine Department of Transportation Local Project – WIN 018645.00, Independent Street and Water Street Traffic Signal Improvements

Responsible Department: Engineering

Commentary: This order would authorize the City Manager to execute a Local Project Modification Agreement with the Maine Department of Transportation for preliminary engineering and construction work for traffic signal improvements at the intersection of Independent Street and Water Street.

The modification agreement would change the project name from Independence and Water Street Traffic Signal Improvements to read Independent Street and Water Street Traffic Signal Improvements.

No changes have been made to the funds originally agreed upon. The Maine Department of Transportation had approved federal and state funds in an amount not to exceed $262,543.00 which includes a Federal share of $210,034.40 or 80% of construction costs, State share of $26,254.30 or 10% of construction costs, and a City share of funding of $26,254.30or 10% of construction costs.

The original agreement was reviewed and recommended for approval by the Infrastructure Committee at its March 24, 2015 meeting and approved by Council on April 13, 2015, Council Order #15-129.

The modification agreement was reviewed and approved by the Infrastructure Committee on September 13, 2016.

John Theriault, City Engineer
Department Head

Manager's Comments:

City Manager

Associated Information: Councilor Order and Agreement

Budget Approval:

Finance Director

Legal Approval:

City Solicitor

Introduced for
X Passage CONSENT
___ First Reading
___ Referral

Assigned to Councilor

CITY OF BANGOR

(TITLE.) ORDER, Authorizing the Execution of Modification Agreement for Maine Department of Transportation Local Project – WIN #018645.00, Independent Street and Water Street Traffic Signal Improvements

ORDERED,

THAT: the City Manager is hereby authorized and directed to execute a modification agreement with the Maine Department of Transportation for the following:

A Modification Agreement with the Maine Department of Transportation – Independent Street and Water Street Traffic Signal Improvements, WIN# 018645.00

Copy of the agreement is attached.

MaineDOT

MaineDOT use only
TEDOCS #:
AMS ID #: CTM20150608000000000786
CSN: 34533

MAINE DEPARTMENT OF TRANSPORTATION
Modification 1 to a Locally Administered Project Agreement
With the
City of Bangor
Regarding
Traffic Signal Improvements at Independent Street and Broad Street

(MaineDOT Use Only)

Total Agreement Amount: $262,543.00	MaineDOT WIN: 018645.00
Federal Award Amount: $210,034.40 (80%)	Federal Project Number: NHPP-1864(500)
State Match: $26,254.30 (10%)	Federal Authorization Date: May 22, 2015
Municipal Match: $26,254.30 (10%)	Bangor's Vendor ID: VC1000007010
Effective Date: May 27, 2015	Bangor's DUNS® Number: 07-173-9692
Expiration Date: May 31, 2019	CFDA #20.205: Highway Planning & Construction

Modification 1 applies to an Agreement between MaineDOT and the City of Bangor for the project referenced above that took effect on May 27, 2015. When executed, this modification will revise the scope of work to match the description in the MaineDOT Work Plan, as follows:

❑ Article 1. Project Overview – Section A: Scope of Work.

This section shall be modified to read as follows: "This Agreement shall apply to preliminary engineering and construction work for traffic signal improvements at the intersection of Independent Street and Broad Street (the **Project**.) Any substantial change to this scope of work shall require approval from **BACTS** and **MaineDOT** to be eligible for federal and state funding."

All other terms and conditions of the original Agreement shall remain in effect with no gap. **MaineDOT** and the **City of Bangor**, by their duly authorized representatives, have executed this modification to the original Agreement on the date last signed below.

City of Bangor

By: _____
Catherine M. Conlow, City Manager

Date: _____

Maine Department of Transportation

By: _____
Catherine Rand, Project Manager

Date: _____

COUNCIL ACTION

Item No._____

Date: September 26, 2016

Item/Subject: ORDER, Authorizing Execution of a Modification Agreement for Maine Department of Transportation Local Project – WIN 021767.00, Improvements to the River Walk along the Penobscot River.

Responsible Department: Engineering

Commentary: This order would authorize the City Manager to execute of a Local Project Modification Agreement in the amount of $461,630 with the Maine Department of Transportation for design, right-of-way, construction, and construction engineering for reconstruction of 750 feet of waterfront sidewalk behind the Sea Dog Restaurant, and construction of new sidewalk for 180 feet along Front Street.

If approved the modification agreement would include a reduced Federal share of $369,304 or 80% of Preliminary Engineering and a revised Municipal Share of $92,326 or 20%.

The original agreement was reviewed and recommended for approval by the Infrastructure Committee at its April 12, 2016 meeting and approved by the Council on April 25, 2016, Council Order #16-162.

The modification agreement was reviewed and approved by the Infrastructure Committee on September 13, 2016.

John M. Theriault, City Engineer
Department Head

Manager's Comments:

City Manager

Associated Information: Councilor Order and Agreement

Budget Approval:

Finance Director

Legal Approval:

City Solicitor

Introduced for

X Passage
___ First Reading
___ Referral

Page __ of __

Assigned to Councilor

CITY OF BANGOR

(TITLE.) ORDER, Authorizing Execution of a Modification Agreement for Maine Department of Transportation Local Project – WIN #021767.00, Improvements to the River Walk along the Penobscot River

ORDERED,

THAT: the City Manager is hereby authorized and directed to execute a modification agreement with the Maine Department of Transportation for the following:

A Modification Agreement with the Maine Department of Transportation – Improvements to the River Walk along the Penobscot River, WIN # 021767.00

Copy of the agreement is attached.

MaineDOT

MaineDOT use only
AMS ID: CTM20160804000000000072
CSN: 36344
TEDOCS #:

MAINE DEPARTMENT OF TRANSPORTATION
Modification 1 to a Locally Administered Project Agreement
With
City of Bangor
Regarding
Improvements to the River Walk along the Penobscot River: WIN 021767.00

Modified Agreement Amount: $461,630	Federal Project #: HPP-2176(700)
Federal Share: $369,304 (80%)	Project Authorization Date: May 27, 2016
Municipal Share: $92,326 (20%)	Bangor's Vendor ID: VC1000007010
Effective Date: June 16, 2016	Bangor's DUNS® Number: 07-173-9692
Expiration Date: June 30, 2021	CFDA #20.205: Highway Planning & Construction

Modification 1 applies to a sub-award agreement with the City of Bangor for the project referenced above that took effect June 16, 2016. When executed, this latest modification will add $200,000 to the Agreement, increasing the upset limit to $461,630, as follows:

❑ Article 1, Project Overview – Section B: Funding.

This section shall be modified to read as follows: The estimated cost of the **Project** is four hundred sixty-one thousand six hundred thirty dollars **($461,630)** to be shared as set forth in Article 3, "Financial Provisions." **Project** costs exceeding this upset limit shall require **MaineDOT**'s written approval to be eligible for funding from **MaineDOT**.

❑ Article 3, Financial Provisions – Section A: MaineDOT Share.

This section shall be modified to read as follows: **MaineDOT** will participate financially in **Project** costs eligible for funding from the Federal Highway Administration at the rate of eighty percent (**80%**), up to a maximum contribution at this rate of three hundred sixty-nine thousand three hundred four dollars **($369,304.)**

❑ ARTICLE 3, Financial Provisions – Section B: Local Share.

This section shall be modified to read as follows:

The **City**, with funding other than from the U.S. Department of Transportation, shall share in all federally eligible **Project** costs at the rate of twenty percent (**20%**), or an estimated contribution of ninety-two thousand three hundred twenty-six dollars (**$92,326**).
Furthermore, the **City** shall be responsible in full for any **Project** expenditures:

1. Incurred before the original execution date of the Agreement – June 16, 2016;
2. Deemed ineligible for federal financial participation; and
3. Exceeding the upset limit of this Agreement, as set forth in Article 1B, "Funding."

All other terms and conditions of the original Agreement shall remain in effect with no gap. **MaineDOT** and the **City of Bangor**, by their duly authorized representatives, have executed this latest modification to the original Agreement on the date last signed below.

City of Bangor

By: _____
Catherine M. Conlow, City Manager

Date: _____

Maine Department of Transportation

By: _____
William A. Pulver, P.E., Director
Bureau of Project Development

Date: _____

To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: September 7, 2016
Re: Discussion of the Results from the Study for the Kenduskeag Stream Pedestrian Bridge

Becker Structural Engineers has completed their structural evaluation of the Kenduskeag Stream Pedestrian Bridge which spans the stream between the parking garage and Exchange Street. The pedestrian bridge was built circa 1980 and is 20 feet wide and has an overall length of 409 feet.

The results of the Study found that the concrete bridge deck is in poor condition, the precast ST beams are in fair condition, and the bridge substructure is in satisfactory condition.

Recommendations for improvement include but are not limited to the following:

- Removal and replacement of the bridge deck
- Repair bridge beams and bearings
- Apply corrosion inhibitor to all surfaces of the ST beams
- Construct concrete curbs along bridge
- Repair bridge rail and reduce bridge rail opening to comply with current standards
- Construct barrier membrane between bridge deck and ST beams to reduce impacts from future snow maintenance
- Provide spring and fall power wash of the wearing surface to remove deicing salts and debris

Becker's opinion of probable construction costs for the proposed improvements is $890,000.

The City Engineer has asked Becker Structural Engineers to provide the costs associated with removal of the existing bridge as well as the costs to construct a new bridge utilizing the existing bridge substructure.

BECKER
STRUCTURAL ENGINEERS

ENGINEERING ASSESSMENT

KENDUSKEAG STREAM PEDESTRIAN BRIDGE

BANGOR, MAINE

August 1, 2016

STATE OF MAINE
BRYSON T. WELCH
No. 11799
LICENSED
PROFESSIONAL ENGINEER

Prepared by: Bryson T. Welch, PE

ENGINEERING ASSESSMENT
KENDUSKEAG STREAM PEDESTRIAN BRIDGE
BANGOR, MAINE

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INTRODUCTION

Per the City of Bangor's request Becker Structural Engineers, Inc. (BSE) has performed a condition assessment of the Kenduskeag Stream Pedestrian Bridge. The City raised concerns of the condition of the bridge due to the broad deterioration of the structure. The goal of the assessment is to establish the structure's current condition, identify repairs and provide the City with an opinion of probable repair cost.

The Kenduskeag Stream Pedestrian Bridge carries pedestrian traffic over the Kenduskeag River from Pickering Square to Exchange Street. Built circa 1980, the bridge is 36 years old. The bridge is 20'-0" wide and has five spans with a total length of 409'-0". The bridge superstructure consists of precast prestressed concrete single tee (ST) beams and a variable depth non-composite cast-in-place (CIP) concrete wearing surface. The bridge substructure consists of CIP concrete piers and abutment elements.

EXECUTIVE SUMMARY

BSE visited the bridge to observe the bridge condition and perform material testing. Overall, we found the bridge CIP concrete wearing surface to be in poor (4) condition, the precast ST beams to be in fair (5) condition and the bridge substructure is in satisfactory (6) condition.

The test results indicate there has been significant deicing salt applied to the structure during its lifespan. Chlorides from the deicing salts have infiltrated the CIP wearing surface and the structural elements below. The average chloride content well exceeds the threshold to initiate corrosion of the reinforcement in the wearing surface, single tee beam flanges and the pier cap. Approximately 40% of the CIP wearing surface has delaminated from the top of the precast ST beams. The delaminated wearing surface and the failed expansion joints have provided a path for water and chlorides to infiltrate the structure exposing the precast ST beams and CIP pier cap.

The following recommended bridge repair work is intended to improve safety, address the chloride infiltration, and extend the service life of the pedestrian bridge.

- Remove entire CIP wearing surface.
- Apply corrosion inhibitor to all surfaces of the ST beams
- Repair precast ST beam flanges, stems and bearings.
- Repair failed welded plate splice connections.
- Repair top of concrete pier caps under wearing surface.
- Repair concrete beam over the service entrance at Span No. 5.
- Construct concrete curbs to control water and reduce rail opening size.
- Provide barrier membrane on top of the ST beams.
- Construct bituminous wearing surface.
- Replacement compression seal expansion joints.
- Repair miscellaneous rail damage and provide detail to decrease the minimum opening size to meet IBC pedestrian rail geometry.

- Install removable bollards at the bridge approaches to prevent vehicle access.

It is our opinion the expected current costs to implement all of these repairs would be approximately $890,000.00, see Appendix F for detailed breakdown of our opinion of probable repair cost. The repair cost is based on performing all work during the upcoming year. In our opinion the repairs will keep the Kenduskeag Stream Pedestrian Bridge in service for approximately 20 or more years.

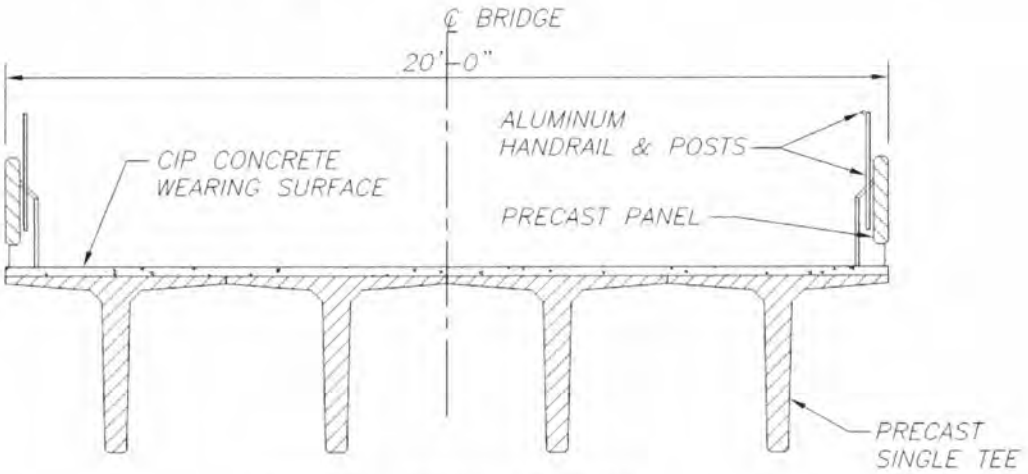
The long term success of these repairs will be greatly improved with the implementation of a maintenance plan to protect your investment into the bridge. This should include:

- Annual spring and fall power wash of the wearing surface to remove deicing salts and debris
- Annual review of ST beams for concrete spalls and delaminations, compression seals, wearing surface, bridge railings and substructure elements
- Five year structural review to evaluate how the bridge is performing.

Finally, we recommend one safety item be addressed as soon as possible for public safety concerns. We recommend removal of all existing spalled and deteriorated concrete on the underside of the bridge with a mallet or light pneumatic hammer. This is recommended to prevent spalling concrete from the ST beams from falling on pedestrians or vehicles below.

EXISTING BRIDGE INFORMATION

Built in 1980, The Kenduskeag Stream Pedestrian Bridge carries pedestrian traffic over the Kenduskeag River from Pickering Square to Exchange Street. The bridge has five spans with a total length of 409'-0", see "As-Built" bridge plans in Appendix A. The bridge deck is 20'-0" wide with four 5'-0" wide precast prestressed concrete singe tee (ST) beams and a variable depth (2 1/2" min) non-composite cast-in-place (CIP) concrete wearing surface.



TYPICAL DECK SECTION

The length of spans No. 1, 2, 3 and 4 are 82'-0" and the length of span No. 5 is 81'-0". The ST beams are supported by four CIP concrete inverted T-beam pier caps and columns founded on pile supported footings. At the Pickering Square end of the bridge, span No. 1 is supported by a CIP concrete cantilevered abutment founded on pile supported footings. At the Exchange Street end of the bridge, span No. 5 is supported by a beam that spans over a service entrance to for the former Merrill Center.

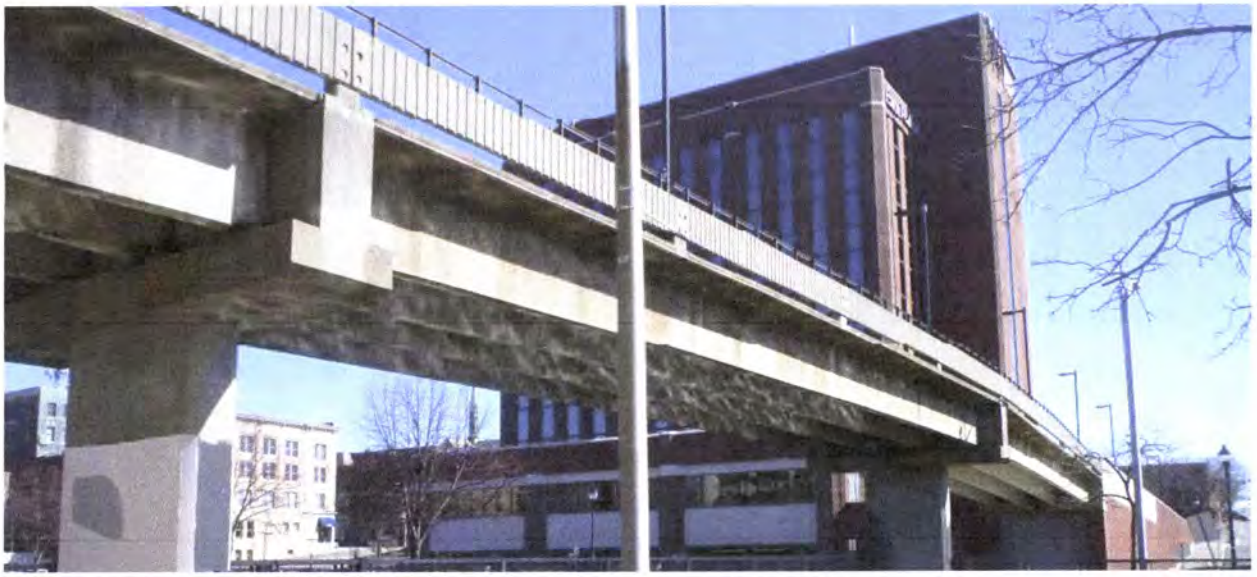


Photo 1: Span No. 4 over Kenduskeag stream and Span No. 5 south elevation.

The bridge railings are comprised of 2'-6" tall precast concrete panels that span 20'-6" to CIP concrete posts. Continuous aluminum handrails are attached to the inside face of the precast panels with aluminum posts spaced at 2'-6". The height of aluminum handrail is 3'-6". Ten aluminum light standards are founded on CIP concrete pedestals spaced equally along the south side of the span 41'-0".

The existing bridge plans note the following design loading:

- Design live load for tees = 100psf
- Design dead load for topping = 38 psf
- Design dead load for railing = 250 plf

FIELD INVESTIGATION

A field visit was made on April 6, 2016 to perform a chain drag of the CIP wearing surface, conduct visual review of the bridge components and to collect samples for testing. A summary of our observations is provided in this section of the assessment.

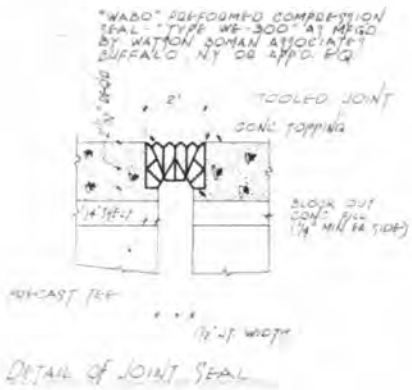
Based on the visual review the bridge, components will be given a condition rating based on the MaineDOT scale from zero to nine. Zero representing "failed" condition to 9 representing "excellent" condition. The following is a summary of the condition rating definitions.

Condition rating summary

N/A Not Applicable
9 **Excellent Condition**
8 **Very Good Condition** - no problems noted.
7 **Good Condition** - some minor problems.
6 **Satisfactory Condition** - structural elements show some 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 Condition** - 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 acting 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 may put back in light service.
0 **Failed Condition** - out of service and beyond corrective action.

CIP WEARING SURFACE

The CIP wearing surface, located on top of the ST beams and the pier caps, is variable in depth and reinforced with 4x4 welded wire fabric (WWF). The wearing surface has tooled joints with a grid pattern of 5 feet square. A compression seal joint is located at each span end, between the end of the ST beams and the pier cap.



BSE sounded the CIP wearing surface by dragging chains across the surface. The purpose of the chain drag is to locate delaminations or horizontal cracks below the surface of the slabs. When reinforcement begins to corrode (rust) it expands exerting a significant amount of pressure on the surrounding concrete. This can result in horizontal cracking below the surface as shown in Figure 1. By dragging a chain over the surface of the slabs delaminations can be located by listening for a dull or hollow sound. The approximate locations can be determined before they become spalls and are visible on the surface.

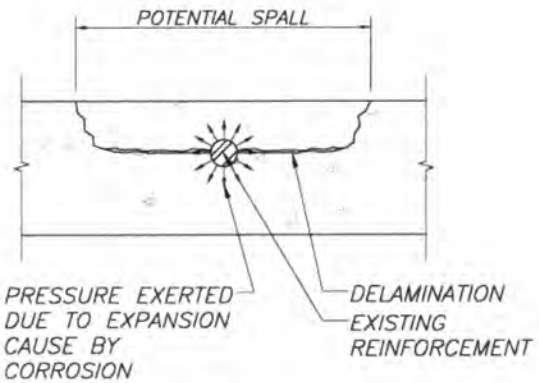


Figure 1: Concrete Spall

The chain drag for the Kenduskeag Bridge yielded interesting results. We did not find the typical delaminations resulting from corrosive expansion as shown in Figure 1. We found approximately 40% of the wearing surface delaminated from the ST beams, see Appendix C for field notes. These findings were supported when voids were found between the wearing surface and the ST beams while taking concrete test samples. Based on the field observations and testing results the WWF was placed in the lower half or bottom of the wearing surface where the pressure from corroding WWF spalled the bottom of the concrete wearing surface resulting in delamination from the ST beams. The void between the wearing surface and the ST beams likely provide a way for water and chlorides to infiltrate the structure exposing the ST beams to chloride.

While performing the chain drag, we also completed a visual review of the wearing surface to check for visible deterioration such as cracks, spalls and scaling. Scaling is a surface defect that is generally the result of over-finishing of the concrete which reduces the air voids (content) at the surface making it more susceptible to freeze/thaw damage, see Photo 2.

BSE found the wearing surface to be in poor (4) condition due to delamination from the ST beams and the concrete scaling. The wearing surface located over the pier caps and the compression seal expansion joints have failed (0), see Photo 3. The failed expansion joints and wearing surface over the piers provide a way for water and chlorides to infiltrate into the structure exposing the ST beams, pier cap and connections to chloride.

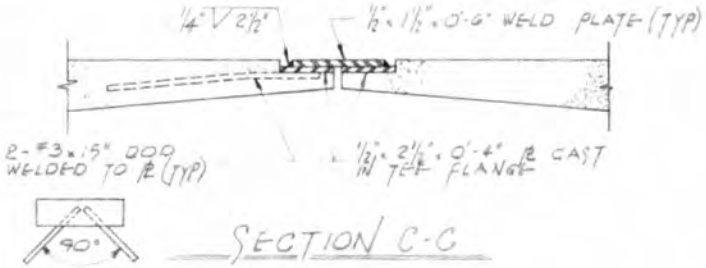
Photo 2: CIP wearing surface scaling

Photo 3: Failed CIP wearing surface and joints at pier

PRECAST SINGLE TEE

The bridge is consists of five singles spans with four 5'-0" wide, 4'-0" tall precast ST beams. Each span has a fixed end and an expansion end, see Beam & Support Details on Sheet 6 of the "As Built" plans, with a center line of bearing to bearing dimension of 79'-0". The ST beams were manufactured in a plant, transported to the site and erected. The ST beams, on their own, are unstable until they are connected together in the field at their flanges using field welded plates, see Section C-C below from the "As Built" plans. Each flange has seven welded plate splices spaced at approximately 12'-0" O.C.

The welded plate splices serve multiple purposes. First, transfers vertical load from one ST beam to the adjacent ST beam. Second, it's used to link adjacent ST beams together to form horizontal diaphragms that transfer lateral wind loads to the foundations. Third, it's used to brace the external precast ST beams from rotating.



Because the precast components are joined together in the field using welded plate splices, the connections and waterproofing of the joints are critical for the long term performance of the bridge. Especially vulnerable are the horizontal joints between adjacent ST beams. Steel rusts when it is exposed to chlorides and moisture. The expansive force of the rust causes the concrete to crack and spall away. These cracks in turn provide more pathways for moisture and chlorides to reach the steel connections and accelerate the corrosion process. If joint leaks are allowed to continue for an extended period of time, the rusting will reduce the connection capacity, increase the amount of concrete cracking and possibly lead to spalling concrete which could fall from the underside of the STs and/or a failure of the welded plate connection. All of which were noted in our visual review of the bridge.

BSE found the ST beams to be in fair (5) condition. The ST beams showed many signs of deterioration including: efflorescence, rust staining, cracking, spalling and failed welded plate connections, see Photo 4. We identified approximately 1,000sf of flange that will require repair. This area is approximately 1/8 of the total square footage of the bridge. We also identified approximately 100lf of the stems and all 40 bearing locations requiring repair, see Photo 5. The spalling concrete from the ST beams is and will continue to be a safety concern until repairs are complete. While on site we noted a pile of small concrete pieces spalled from the ST beams placed neatly at the base of one of the piers.

Photo 4: ST beam flange accelerated deterioration

Photo 5: ST beam bearing deterioration

SUBSTRUCTURE

BSE performed visual reviews of the bridges substructure components during the field visit and found the CIP concrete piers to be in satisfactory (6) condition with the primary structural elements in sound condition with isolated areas of deterioration.

The face of the pier caps behind the ST beams show signs of deterioration with minor cracking and efflorescence, see Photos 5 and 6. The bearing seats show signs of minor deterioration and are typically covered in bird guano which can accelerate the corrosion process. It was not possible to observe the top of the pier caps under the wearing surface, but we anticipate areas of deterioration under the failed wearing surface and expansion joints.

Photo 5: Pier cap with minor cracking

Photo 6: Pier cap with efflorescence

At the Pickering Square end of the bridge, the CIP concrete cantilevered abutment appears to be in good (7) condition with some minor cracking and efflorescence at the backwall face behind the ST beams. At the Exchange Street end of the bridge, the concrete beam that span over a service entrance to for the former Merrill Center is in poor (4) condition. The concrete beam shows signs of advanced deterioration including efflorescence, rust staining, cracking, spalling and exposed reinforcement. The brick façade under the beam shows signs of deterioration including mortar failure and voids under the beam bearings seat.

Photo 7: concrete beam over the service entrance

Photo 8: brick deterioration

BRIDGE RAIL

We found the bridge railings to be in (7) good condition with some minor problems with the aluminum handrail posts. We identified isolated locations where the post connections were damaged and one location where a damaged post was replaced with wood post. The bridge railing is 42" tall which meets the minimum height for AASHTO and IBC pedestrian railing geometry. However the opening size between the precast panel and the aluminum railing is approximately 10" and the opening between the precast panel and the wearing surface is 6". The American Association of State Highway and Transportation Officials (AASHTO) Bridge Design Code specification requires a minimum clear opening such that a 6" sphere shall not pass through the lower 27" of the rail and an 8" sphere shall not pass the upper potion. The International Building Code (IBC) specification requires a minimum clear open such that a 4" sphere shall not pass through the full height of the railing. The bridge railing was designed for pedestrian loading; the railing was not intended to resist vehicle impact or forces related to snow removal.

Photo 9: aluminum hand with wood post

Photo 10: isolated connection damage

TESTING

As part of our assessment BSE collected concrete samples from various locations on the bridge for testing. The samples included three 2 1/4" diameter cores, one for petrographic analysis and two for compression testing. We also collected ten powder samples from various locations of the bridge for chloride ion testing; see Appendix C for test locations. The powder samples were forwarded to Dr. David Gress of Portsmouth, NH for testing.

The three core samples were taken from the top of the bridge drilling through the concrete wearing surface into the ST beam flange. Core No. 1 was taken from Span No. 1 and was forwarded to Dr. David Gress of Portsmouth, NH for petrographic analysis. Cores No. 2 and 3 were taken from Span No. 2 and were forwarded to S.W. Cole Engineering for compression strength tests. The results of the testing are summarized below and the complete reports from Dr. Gress and S.W. Cole are included in Appendix D for review.

CHLORIDE ION CONTENT

Chloride ion content testing was performed to determine the potential for reinforcement corrosion. As part of our assessment we collected ten powder samples from the bridge for testing. Tests #1 and #2 were taken under the bridge drilling up into the bottom of the ST beam flange. Tests #2 and #3 were taken on the vertical face of the pier cap behind the ST beams. Tests #5 through #10 were taken from the surface of the wearing surface. At each location we removed a powder samples at depths of 0 to 1", 1" to 2" and 2" to 3". This method provides an indication of the depth of chloride penetration into the concrete. Each of the powder samples were forwarded to Dr. Gress for chloride content testing.

Chlorides are commonly thought to be the sole instigator of corrosion, but it cannot act alone. The concrete pH, water, the amount of oxygen getting to the reinforcement and the presence of voids around the reinforcement all contribute to the rate at which the reinforcement corrodes. The establishment of a chloride content that will initiate corrosion or the "threshold" is very difficult to define. ACI recommends that the chloride content of new concrete be limited to 0.06 percent and 0.15 percent by weight of cement. They also state that "it is generally believed that the corrosion threshold is a chloride ion content of 0.2 percent by weight of cement". This equates to approximately 1.1 pounds/cubic yard (lbs/cy) of concrete. We are using this value for comparison to our test results.

The Chloride Ion testing results indicate the chloride content exceeds the threshold at the wearing surface, ST beam flanges, and pier cap. A summary of the testing results has been provided in Table 1 - Chloride Testing Summary.

The Chloride Ion testing indicates the wearing surface has significant chloride content with five to ten times the threshold amount to initiate corrosion in the reinforcement. Even though the wearing surface has significant chloride content there was minimal evidence of spalling on the surface due to reinforcement expansion. However, we found approximately 40% or more of the wearing surface is delaminated from the ST beams. Based on the cores we removed the WWF was placed in the lower half or bottom of the wearing surface where the pressure from expanding reinforcement spalled the bottom of the wearing surface resulting in delamination of the wearing surface from the ST beams.

The Chloride Ion testing indicates the ST beams have significant chloride content in their flanges with one to five times the threshold amount to initiate corrosion in the reinforcement. The evidence of ST beam corrosion is apparent from the review of the bottom of the beams. As we previously stated, the ST beams flanges showed many signs of accelerated deterioration including: efflorescence, rust staining, cracking, spalling and failed welded plate connections. The ST beam corrosion is concentrated at the ends of the beam flanges where it abuts to the adjacent beams, see Photo 4. The ends of the beam flanges are vulnerable to corrosion because the joint provides a pathway for water and chlorides. It is also where the beams flange are the thinnest, contain field welded plate connections and lines up with the joints in the wearing surface above.

The Chloride Ion testing indicates the pier caps have high chloride content with 1 to 3 times the threshold amount to initiate corrosion in the reinforcement. The amount of chloride indicates water is reaching the pier caps through the failed wearing surface over the pier cap and expansion joints.

Table 1 - CHLORIDE TESTING SUMMARY

		Chloride Content				
Sample	**Depth (in)**	**% Sample Weight**	**lbs/cy***	**Threshold**		**Location**
CL-1	0-1	0.0077	0.3	1.1	OK	Span #1: Precast ST flange
	1-2	0.0370	1.4	1.1	Exceeds	
	2-3	0.0330	1.3	1.1	Exceeds	
CL-2	0-1	0.1410	5.5	1.1	Exceeds	Span #1: Precast ST flange
	1-2	0.0760	3.0	1.1	Exceeds	
	2-3	0.1440	5.6	1.1	Exceeds	
CL-3	0-1	0.0720	2.8	1.1	Exceeds	Pier #1: Face of CIP pier cap
	1-2	0.0440	1.7	1.1	Exceeds	
	2-3	0.0400	1.6	1.1	Exceeds	
CL-4	0-1	0.1520	6.0	1.1	Exceeds	Pier #2: Face of CIP pier cap
	1-2	0.1840	7.2	1.1	Exceeds	
	2-3	0.0860	3.4	1.1	Exceeds	
CL-5	0-1	0.2960	11.6	1.1	Exceeds	Span #3: CIP wearing surface
	1-2	0.3160	12.4	1.1	Exceeds	
	2-3	0.2370	9.3	1.1	Exceeds	
CL-6	0-1	0.0170	0.7	1.1	OK	Pier #2: Top of CIP pier cap
	1-2	0.0440	1.7	1.1	Exceeds	
	2-3	n/a	n/a	n/a	n/a	
CL-7	0-1	0.3590	14.1	1.1	Exceeds	Span #7: CIP wearing surface
	1-2	0.2360	9.2	1.1	Exceeds	
	2-3	0.1420	5.6	1.1	Exceeds	
CL-8	0-1	0.2540	9.9	1.1	Exceeds	Span #3: CIP wearing surface
	1-2	0.2150	8.4	1.1	Exceeds	
	2-3	0.1960	7.7	1.1	Exceeds	
CL-9	0-1	0.1920	7.5	1.1	Exceeds	Span #2: CIP wearing surface
	1-2	0.1770	6.9	1.1	Exceeds	
	2-3	0.1380	5.4	1.1	Exceeds	
CL-10	0-1	0.4000	15.7	1.1	Exceeds	Span #2: CIP wearing surface
	1-2	0.4060	15.9	1.1	Exceeds	
	2-3	0.3670	14.4	1.1	Exceeds	

*Assumed Unit Weight: 145 lbs/cf

PETROGRAPHIC TEST

As part of our assessment Core No. 1 was taken from Span No. 1 and forwarded to Dr. David Gress for petrographic analysis. The concrete core was taken with both the CIP concrete wearing surface and the precast ST beam flange.

The petrographic analysis results for the CIP concrete wearing surface analysis shows natural gravel with a 3/8 inch maximum size aggregate and visually contains air entrainment and entrapped air. The petrographic analysis results for the precast ST beam flange shows a 1/2 inch maximum size aggregate and consists of expanded shale manufactured light weight aggregate. Additional testing showed the depth of carbonation in the precast ST beam flange to be approximately 3/4 inches which for the age of the concrete is significant.

Carbonation is a chemical process in which carbon dioxide (Co_2) in the atmosphere penetrates into the pores of the concrete where it combines with water and reacts with existing chemicals. The result is a drop in the concrete's PH level. When the alkalinity of the carbonation reaches steel reinforcement it initiates corrosion. Corrosion of the steel will become an issue when the depth of carbonation increases to the depth of steel cover.

COMPRESSION TEST

As part of our assessment Cores No. 2 and 3 were taken from Span No. 2 and were forwarded to S.W. Cole Engineering for compression strength tests. The two concrete cores were taken from the ST beam flanges.

The compression strength test results were 6,240psi and 4,920psi for Cores No. 2 and 3 respectively. The concrete design strength for the precast ST beams on the "As-Built" plans is 5,000psi. Based on the compression tests, from the two cores, the concrete strength for the ST beams appears to meet design and is not expected to negatively impact the strength of the bridge.

REPAIR RECOMMENDATIONS AND SCHEDULE

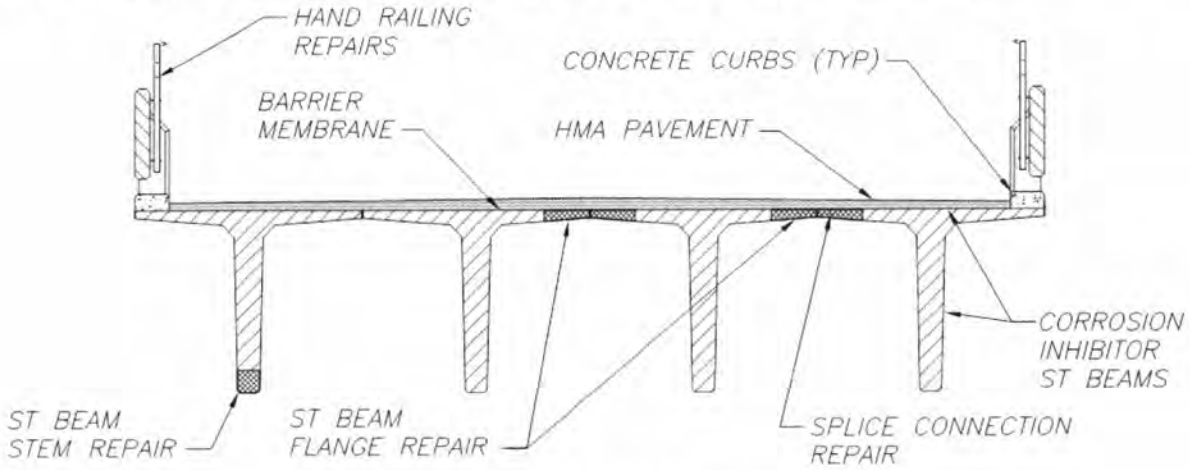
Overall, we found the bridge CIP concrete wearing surface to be in poor (4) condition, the precast ST beams to be in fair (5) condition and the bridge substructure is in satisfactory (6) condition. The testing indicates there have been significant deicing slats applied to the structure during its lifespan with structural elements that have an average chloride content exceeding the threshold to initiate corrosion.

The concrete repair work is planned to control areas of concrete that has been infiltrated with chlorides, repair advanced areas of deterioration, and interrupt the infiltration of the chlorides and carbonates. It includes applying penetrating corrosion inhibitor on all exposed surfaces of the ST beams including the top of the flanges. Concrete corrosion inhibitors are surface-applied and are designed to migrate through existing concrete to seek out and help protect the steel reinforcing by creating a protective layer, on a molecular level, which helps to reduce corrosion due to chlorides and carbonates.

Concrete with areas of advanced deterioration including section loss due to spalling will repaired. Most of the concrete repairs will be for the ST beam flanges and stems. Embedded galvanic anode units will

be utilized in the repair areas to prevent formation of new corrosion adjacent to the completed repair areas. Galvanic anode units consist of a sacrificial zinc core that corrodes preferentially to the surrounding reinforcing steel, thereby providing galvanic corrosion prevention to the adjacent reinforcing steel.

The complete replacement of the CIP wearing surface is recommended due to the delamination from the ST beams and the significant level of chloride content. Providing a new Hot Mix Asphalt (HMA) wearing surface with adequate drainage, barrier membrane and compression seal expansion joints is important to maintain the integrity and service life of the structure. When the surface deteriorates, water, chlorides and other elements can infiltrate the structure resulting in corrosion.



TYPICAL DECK SECTION W/ REPAIRS

We recommend the following bridge repair work be completed next year to address the chloride infiltration, repair deteriorated concrete, improve safety and extend the service life of the pedestrian bridge.

- Remove entire CIP wearing surface.
- Apply corrosion inhibitor to all surfaces of the ST beams
- Repair precast ST beam flanges, stems and bearings.
- Repair failed welded plate splice connections.
- Repair top of concrete pier caps under wearing surface.
- Repair concrete beam over the service entrance at Span No. 5.
- Construct concrete curbs to control water and reduce rail opening size.
- Provide barrier membrane on top of the ST beams.
- Install bituminous wearing surface.
- Replacement compression seal expansion joints.
- Repair miscellaneous rail damage and provide detail to decrease the minimum opening size to meet IBC pedestrian rail geometry.
- Install removable bollards at the bridge approaches to prevent vehicles access.

The quantity breakout for the items above is included in Appendix F.

The success of these repairs will be greatly improved with the implementation of a long term maintenance plan. This plan should include:

- Annual spring and fall power wash of the wearing surface to remove deicing salts and debris
- Annual review of ST beams for concrete spalls and delaminations, compression seals, wearing surface, bridge railings and substructure elements
- Five year structural review to evaluate how the bridge is performing.

Structural reviews will track and evaluate the condition of unrepaired areas of the bridge. Early identification of potential issues is important to extending the service life of a pedestrian bridge and will reduce the quantity and overall cost of future repairs.

Finally, we recommend one safety item be addressed as soon as possible for public safety concerns. We recommend removal of all existing spalled and deteriorated concrete on the underside of the bridge with a mallet or light pneumatic hammer. This is recommended to prevent spalling concrete from the ST beams from falling on pedestrians or cars below.

OPINION OF PROBABLE COST

Our opinion of probable repair cost is approximately $890,000.00 for the repairs noted above. The breakout of costs is included in Appendix F. The estimate is based on performing all of the repairs during the upcoming year.

However, we understanding that funding a large restoration project can be difficult. An alternative to performing all the repairs in one year would be to phase the repairs over a period of multiple years. The bridge lends itself to a phased approach because it has five equal spans with clear phasing limits at the expansion joints. If a phased approach were to be used we would recommend starting with Spans No. 3, 4 and 5 at the top of the bridge elevation profile and then complete Spans No. 1 and 2. A phased approach would spread the cost of rehabilitating the bridge over multiple years but it would also increase the overall cost of the rehabilitation due to the loss of economy of scale and the need for the contractor to mobilize multiple times.

CLOSING

Our directive was to provide an assessment and opinion of probable repair cost for this bridge. However, we believe it is important to present this information with reference to all options available to the City. In addition to the repair option discussed in this report there are two additional options the City may want to consider including: replacing the superstructure and the complete removal of the bridge. Based on our preliminary review replacing the superstructure would be more expense than restoring the bridge, but it would minimize long term maintenance and extend the service life of the bridge another 50 years. The complete removal of the bridge could also be considered as the crossing is redundant, there is another bridge located immediately adjacent to the bridge spanning the Kenduskeag Stream. However, removing the bridge would eliminate the direct route from the Pickering Square to Exchange Street. We would welcome the opportunity to explore these additional options, evaluate the

adjacent existing bridge and perform a life cycle cost analysis on all three options to best help the City make the most informed decision for the future of this river crossing.

It has been a pleasure to work for the City of Bangor on this project and we look forward to working with the City on their plans for this river crossing. We trust that this information addresses your concerns at this time. Please feel free to contact us with any questions or comments you might have.

To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: September 7, 2016
Re: Discussion of Policy for Design Standards for Streets and Right of Ways

The Engineering Department, Planning Department, and Code Office have worked together to develop standards for the development of public and private streets within the City of Bangor. The City of Bangor Code currently states the following with regards to the design of streets within the city.

Code of the City of Bangor §271-15. Construction Standards
"All new public streets and sewers and all reconstructed public streets and sewers shall be constructed in accordance with such minimum standards as may be established from time to time by the City Engineer."

City Staff believes that having the recommended design standards available within a written policy will help formalize these standards and make it easier for Developers within the city to meet city requirements.

The Standards within the policy were developed using existing city standards as well as standards from the Maine Department of Transportation and Standards from the American Association of State Highway and transportation Officials (AASHTO). The policy has been attached to this memo for the Infrastructure Committee's review.

Code of the City of Bangor §271-15. Construction Standards
All new public streets and sewers and all reconstructed public streets and sewers shall be constructed in accordance with such minimum standards as may be established from time to time by the City Engineer.

Design Standards for Streets and Right of Ways (Draft)

Sight Distance: Access to a new city street shall provide the appropriate intersection sight distance for the posted speed limit.

Intersection sight distance shall be measured at a distance of 15 feet back from the travel way and at a height of 3.5 feet above the proposed street grade to an object 4.25 feet above the pavement at the center of the travel way. Each direction of travel shall be evaluated in this manner. The required intersection sight distances for the posted speed limits are as follows:

Intersection Sight Distance Table

Design Speed (MPH)	20	25	30	35
Sight Distance (Feet)	225	280	335	390

Design Speed (MPH)	40	45	50	55
Sight Distance (Feet)	445	500	555	610

Skew Angle: Streets shall intersect existing roads at an angle as near to 90 degrees as conditions permit, but not less than 75 degrees.

Sidewalks: Sidewalks will be required on all new streets that intersect with roads that have existing sidewalk. Sidewalk will also be required on properties that provide a connection to an existing public trail network. In locations where sidewalks are required, a sidewalk will be required as a minimum, on one side of the road. Sidewalks shall be required in any major subdivision located in the following districts; Urban Residence One (URD-1), Urban Residence Two (URD-2), multi-Family & Service district (MS&D), Low Density Residential District (LDR), and High Density Residential District (HDR). The applicant may provide cash in lieu of constructing a sidewalk. The cost estimate for the sidewalks shall be approved by the City.

Sidewalk Construction: Sidewalks will be constructed with 12" of MDOT Type A Gravel and 2" of asphalt pavement. Sidewalks will have a minimum width of 6 feet to face of curb. All sidewalks will be constructed with curb or a 4 foot wide grass esplanade. Sidewalks will have a maximum cross slope of 2.0 percent.

All curb shall be constructed with granite or portland cement concrete and provide a 7" curb reveal. Sidewalks and sidewalk ramps will be constructed in accordance with the current ADA Standards for Accessible Design.

Drainage - All roads shall be constructed with a closed drainage system or open ditches to allow for proper drainage of the roadway surface, the roadway gravel base materials, and other anticipated flows. All roadway ditches and culverts shall be designed for a 25-year design storm and checked with a 50-year design storm. Closed drainage systems shall be designed using a 10-year design storm and checked with the 25-year storm. All drainage design and construction must be approved by the City of Bangor.

Storm Water Treatment – All stormwater runoff from new roadways shall be treated in accordance with the Maine Department of Environmental protections best management practices. In locations where new roads are constructed within the watershed of impaired streams, additional stormwater treatment measures may be required by the City of Bangor.

Street Lighting – Overhead street lighting shall be provided on all new city streets. Street lights may be mounted on utility poles at the utility owner's approval or individual light poles may be required. The developer will pay for all street lighting equipment and installation expenses. Luminaires for street lights shall be LED. Once the roadway is accepted by the City, the city will take over the expense and maintenance of operating the street lighting. At a minimum, street lights will be at all intersections and at an interval of one street light every 200 feet or as directed by the City. All street lighting fixtures and supports shall be approved by the City of Bangor.

Driveways – A driveway provides access to a maximum of two primary residential or commercial/retail structures and experiences less than 50 vehicle trips per day. Accesses that provide access to more than two primary structures or experience more than 50 vehicle trips per day will be considered streets. The maximum width of any driveway shall be 36 feet. The location of driveways within the public right of way shall be shown on all subdivision lots. All portions of the driveway within the right of way shall be constructed with the adjacent street.

Cul De Sacs – Cul de sacs shall be provided at the end of all dead end streets. Cul de sacs shall be designed to accommodate the largest vehicle anticipated to routinely access the street. The geometry of the cul de sac shall be approved by the City Engineering Department and the Fire Department.

Hammerhead Turnarounds – Hammerhead turnarounds are permitted at the terminus of dead end streets which have a total length of less than 500 feet. Hammerhead turnarounds shall be designed to accommodate the largest vehicle anticipated to routinely access the street. The geometry of the hammerhead turnaround shall be approved by the City Engineering Department and the Fire Department.

Street Signage – The Developer shall provide street signage on all streets within the City of Bangor as required by the City Engineer. Signage may include but is not limited to; Street name, speed limit, and stop signs. All signage shall be in accordance with the current edition of The Manual on Uniform Traffic Control Devices and be approved by the City of Bangor.

Street Definitions

Minor Street – Minor Streets are defined as streets that do not encourage through traffic based on their layout and design. Short loop roads and dead end streets are within this category. Minor Streets would typically have daily traffic volumes under 1,000 vehicles/day.

Collector Street – A collector street is a street that may receive through traffic and typically connects one or more minor streets. A collector street typically has traffic volumes greater than 1,000 vehicles/day. A large majority of vehicles utilizing collector streets are passenger vehicles and truck traffic is usually limited to deliveries to residents.

Commercial Street - Commercial streets are those roads developed for public access to retail, service, and commercial businesses. The majority of traffic on these roads is passenger vehicles however these streets also experience a significant percentage of truck traffic for deliveries to the businesses. Traffic volumes on commercial streets typically exceed 2,000 vehicles/day.

Industrial Street – An Industrial Street provides access to manufacturing, industrial, and warehousing types of land development. These streets experience a significant percentage of heavy vehicle traffic on a daily basis as part of the developments normal operation. These streets must be designed to accommodate larger and heavier loads associated with the land uses.

Private Street – A Private Street is a right of way that provides access, lot width, and roadway frontage to individual lots. A Private Street is not owned or maintained by the City of Bangor. Private Streets are the sole responsibility of the property owners for which the street exists on and the permitted users of the Private Street.

Design/Construction Standards – Residential Streets

Minimum Design Standards	Minor Streets	Collector Streets
Minimum Right of Way Width	60 feet	80 feet
Minimum Pavement Width	28 feet	34 feet
Minimum Travel Way	11 feet	12 feet
Minimum Paved Shoulder	3 feet	5 feet
Maximum Grade	8.0%	6.0%
Minimum Grade	1.0%	1.0%
Max Grade at Intersections	3.0% for 75 feet	3.0% for 75 feet
Minimum Center Line Radius	100 Feet	250 Feet
Pavement Cross Slope(Travel Way)	2.0%	2.0%
Shoulder Slope	2.0%	5.0%
Gravel Sub Base (MDOT Type D)	18"	18"
Gravel Base (MDOT Type A)	6"	6"
Pavement Thickness (Wearing Course)	1.5"	1.5"
Pavement Thickness Binder Course	2.5"	2.5"

The superelevation of streets shall be based on A Policy on Geometric Design of Highways and Streets by the American Association of State Highway and Transportation officials, (AASHTO).

Design/Construction Standards – Commercial/Industrial Street

Minimum Design Standards	Commercial	Industrial Streets
Minimum Right of Way Width	80 feet	80 feet
Minimum Pavement Width	34 feet	34 feet
Minimum Travel Way	12 feet	12 feet
Minimum Paved Shoulder	5 feet	5 feet
Maximum Grade	6.0%	6.0%
Minimum Grade	1.0%	1.0%
Max Grade at Intersections	3.0% for 100 feet	3.0% for 100 feet
Minimum Center Line Radius	250 Feet	250 Feet
Pavement Cross Slope(Travel Way)	2.0%	2.0%
Shoulder Slope	5.0%	5.0%
Gravel Sub Base (MDOT Type D)	18"	18"
Gravel Base (MDOT Type A)	6"	6"
Pavement Thickness (Wearing Course)	1.5"	1.5"
Pavement Thickness Binder Course	1.5"	2.0"
Pavement Base Course	2.0"	2.0"

The superelevation of streets shall be based on A Policy on Geometric Design of Highways and Streets by the American Association of State Highway and Transportation officials, (AASHTO).

Design/Construction Standards – Private Streets

Minimum Design Standards	Minor Streets
Minimum Right of Way Width	50 feet
Minimum Pavement Width	22 feet
Minimum Travel Way	11 feet
Minimum Gravel Shoulder	1 foot
Maximum Grade	8.0%
Minimum Grade	1.0%
Max Grade at Intersections	3.0% for 75 feet
Minimum Center Line Radius	100 Feet
Pavement Cross Slope(Travel Way)	2.0%
Shoulder Slope	2.0%
Gravel Sub Base (MDOT Type D)	15"
Gravel Base (MDOT Type A)	6"
Pavement Thickness (Wearing Course)	1.5"
Pavement Thickness Binder Course	2.5"

The superelevation of streets shall be based on A Policy on Geometric Design of Highways and Streets by the American Association of State Highway and Transportation officials, (AASHTO).

To: Infrastructure Committee
From: Engineering Department, John Theriault
Date: September 7, 2016
Re: Discussion of Results of Lincoln Street Parking Survey

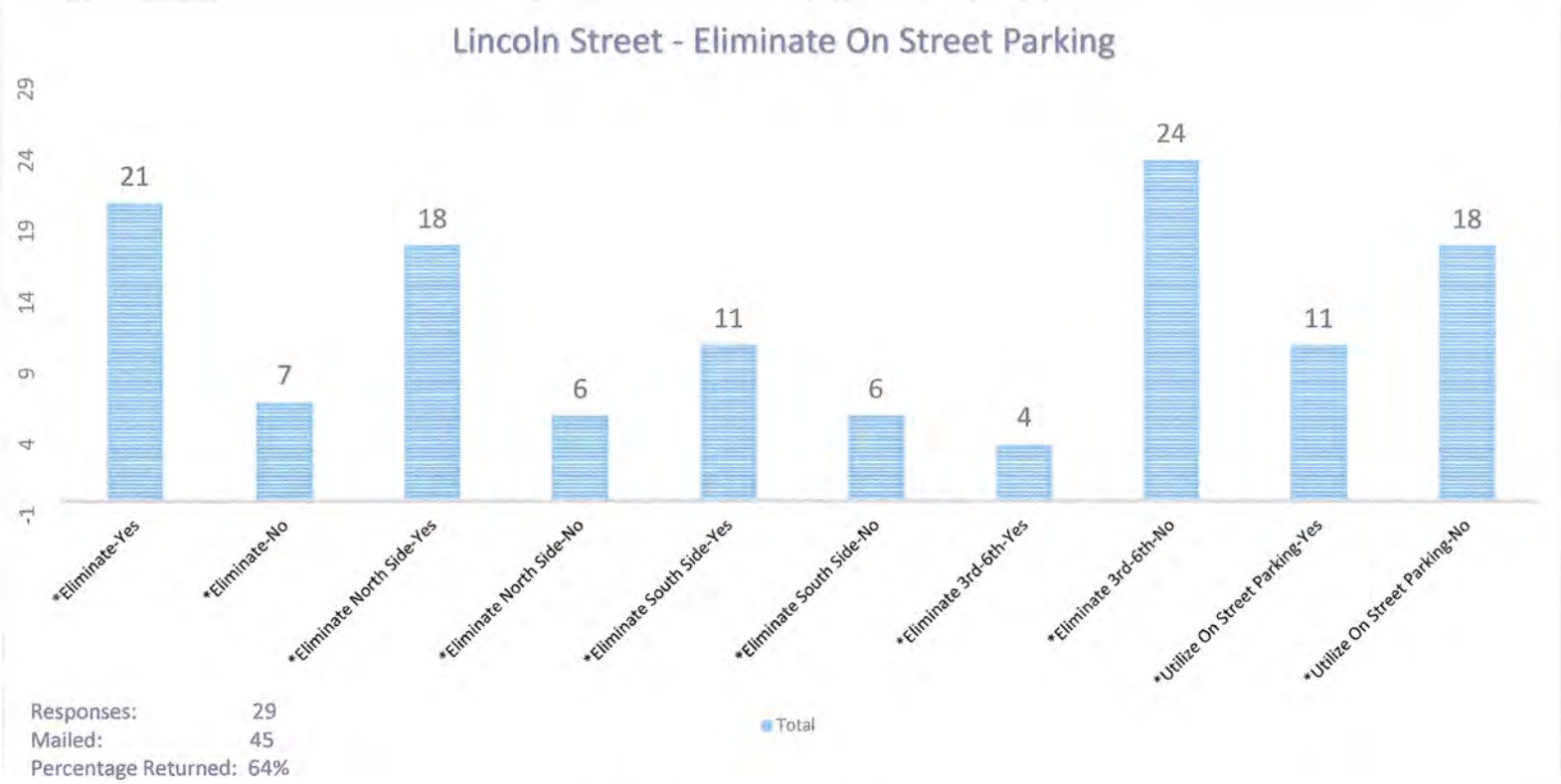
The Engineering Department mailed out a questionnaire to residents of Lincoln Street regarding their preferences with regards to on-street parking and the possibility of limiting on-street parking to only one side of the street. This topic was originally discussed at the June 28, 2016 Infrastructure Meeting and a significant number of residents attended the meeting to express their support for limiting the parking.

Forty-five questionnaires were mailed out to residents of Lincoln Street and 29 were returned to the Engineering Department. Not all of the questions on each survey were answered.

The results of the survey are as follows:

- 21 out of the 29 respondents said that they wished for parking to be limited to one side of the street.
- 18 of the respondents wished that the parking on the north side of the street would be prohibited and 11 respondents requested that parking on the south side (daycare side) be prohibited.
- The vast majority of the residents did not see a need to limit parking along Lincoln Street west of Third Street.
- Only 11 out of the 29 residents responded that they themselves utilize on-street parking on Lincoln Street.

Based on the survey results, the Engineering Department would like to move forward in the process to prohibit parking on the north side of Lincoln Street. We intend to invite the residents of Lincoln Street to an informational meeting to discuss the results of the survey and inform them of the City's intention to move forward with the parking prohibition.



Responses: 29
Mailed: 45
Percentage Returned: 64%

Results		% of Responses
*Eliminate-Yes	21	72%
*Eliminate-No	7	24%
*Eliminate North Side-Yes	18	62%
*Eliminate North Side-No	6	21%
*Eliminate South Side-Yes	11	38%
*Eliminate South Side-No	6	21%
*Eliminate 3rd-6th-Yes	4	14%
*Eliminate 3rd-6th-No	24	83%
*Utilize On Street Parking-Yes	11	38%
*Utilize On Street Parking-No	18	62%

Eliminate On-Street Parking Lincoln St Comments

Could widen the street by taking a foot of room each side of the street. Back the curb side one foot each side & only allow one side parking.

I have no preference as to which side.

I own a 4 unit apartment building @ 104 Lincoln St. We have always used the side of the street in front of my building for parking. The problem is that people park on both sides of the street. Parking should be limited to one side and it should be the side we are on which is the south side. Thank you.

It is about time that this gets taken care of. There are times when parking on both sides of the street makes it for the traffic to flaw on this street.

Never seen on-street parking from 3rd to 6th Street, even during fair.

Odd/Even parking works great in other Cities. Absolutely no need to eliminate parking on both sides - It would immediately become problematic. Thank you.

Parking on one side only will partially fix the problem. The daycare's parking must be addressed to fully repair the dangerous parking.

Parking should be eliminated on both sides as the street is too narrow for even one side parking. Speed is another major issue on Lincoln St., as cars frequently travel too fast.

Presently the situation is really bad.

Something REALLY needs to be done to minimize on-street parking between Main St & Third St. It is a severe safety hazard as is right now. Thank you.

Southerly side has most of the on-street parking. Might as well restrict it (parking) to that side. Daycare seems to be responsible for most of the on-street parking.

There have been a number of instances that I could not get from my home (59 Lincoln) to Third Street because of cars parked on both sides of the street. The street is not wide enough for parking on both sides.

Would prefer parking on one side from Main to Third. Would odd/even be an option too? York St. used to do that.

No parking on Lincoln from 3rd to Main. Thanks for sending this. It is still a huge problem backing out of your driveway and getting down over the hill is dangerous. No safety vehicles could get up or down the hill.

Maybe odd/even parking an potion. But as is, not good one side parking would be much better, be it odd/even or Northside only.

Biggest problem is daycare center where cars are parked both sides. Widening street would eliminate need to eliminate parking one side or the other.

My building is directly across from the daycare. I myself don't like the tight quarters when driving through, but the daycare needs to be able to have people drop & pick kids up. I also need on street parking as I have no room for visitors parking if daycare people parked down the same instead of 2 or 3 deep in front of the building. It would loosen this up. Parents picking up and dropping off feel they shouldn't have to walk more than a few steps to the door. They also parking in my driveway leave their car sometimes for 10 to 20 minutes, blocking me and my tenants in or out. We need another solution as they will be blocking my driveway more often, which is unacceptable.

Grand Total

17

Written as responded