



CITY OF BELFAST

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MANAGER'S REPORT
Belfast City Council Meeting
Tuesday, December 16, 2025

6:00 p.m. Council Work Session with the Pedestrian, Transportation, and Accessibility Committee.

7:00 p.m. Regular Council Meeting

TO: Mayor Eric Sanders and Honorable Members of Belfast City Council

FROM: Erin Herbig, City Manager

DATE: Thursday, December 11, 2025

Agenda Items:

10-A Presentation on Contract Rezoning Agreement Amendment #9 at properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132.

Safe Harbors Marinas (SHM) Front Street proposes a change of ownership of the Front Street Shipyard properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132. The existing development, valued by the City Assessor at \$11.5M in 2025, is approximately six acres in size. This development is subject to a Contract Rezoning Agreement between the property owners and the City of Belfast.

Contract Rezoning Agreement Amendment #9 consists of a proposed property ownership transfer from DUBBA, LLC and Building 6, LLC to SHM Front Street, LLC. There are no substantive changes in approved uses and/or operations of the Shipyard at this time.

This review addresses only the financial and technical capacity of SHM Front Street, LLC pursuant to Chapter 102 Zoning, Article X Contract Rezoning, Division 4 Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and the Waterfront Development shoreland zoning district. The entire application can be viewed on the City website here:

<https://www.cityofbelfast.org/651/Front-Street-Shipyard-Change-of-Ownershi>

The Planning Board reviewed Contract Rezoning Amendment #9 at their meeting on November 19, 2025, and issued a recommendation for adoption. The City Council approved the First Reading at the Regular City Council Meeting on December 4th, 2025. There have been no changes to this proposal since the City Council's First Reading.

No City Council action is needed for this agenda item as this is strictly a presentation.

Please see the attached memo and supporting documents (10-A, B and C) from Planning and Codes Director Bub Fournier explaining the request in further detail. Director Fournier will be at the meeting to present.

10-B Public Hearing on Contract Rezoning Agreement Amendment #9 at properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132.

NOTICE OF PUBLIC HEARING
BELFAST CITY COUNCIL

The Belfast City Council, at its meeting of Tuesday, December 16th, 2025, beginning at 7:00 pm in the Belfast City Hall Council Chambers, located at 131 Church Street, Belfast, ME 04915, shall conduct a Second Reading and public hearing on an application submitted by Greg Glavin, regional Vice President of Safe Harbor Marinas, on behalf of SHM Front Street, LLC for a proposed transfer of ownership of Front Street Shipyard owned by DUBBA, LLC and Building 6, LLC at 101 Front Street, 65 Front Street and 45 Front Street, Map 11 – Lots 132, 136, 136A and 136B. The request involves City review pursuant to the Contract Rezoning Process for the Waterfront Mixed Use zoning districts. This property is subject to an approved Contract

Rezoning Agreement and subsequent amendments, most recently Amendment #8 in 2014. City Council will review a recommendation from the Belfast Planning Board including proposed language for the Council to consider adopting. The review is being conducted pursuant to Contract Rezoning for the Waterfront Mixed Use zoning districts in Chapter 102 Zoning, Article X Contract Rezoning, Division 2 Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and the Waterfront Development Shoreland Zoning District.

The City Council, at its meeting, will provide interested parties with an opportunity to offer oral comments on the proposal. The Council will also accept comments in writing or via email. Written comments should be submitted to the City of Belfast, Planning and Codes Department, 131 Church Street, Belfast, ME 04915. Emailed comments should be submitted to directorplanning@cityofbelfast.org. All written comments for this public hearing must be received by 2pm on December 16th, 2025 prior to the City Council meeting.

The Belfast Planning and Codes Department has a copy of the application materials submitted by the applicant and they are available for public inspection in Belfast City Hall during regular business hours, Monday-Thursday 7:00 A.M. – 6:00 P.M. Questions regarding the application should be directed to Bub Fournier, Director of the Planning and Codes Department at 338-3370 x 125 or at directorplanning@cityofbelfast.org

Please see the attached memo and supporting documents (10-A, B and C) from Planning and Codes Director Bub Fournier explaining the request in further detail.

10-C Second Reading on Contract Rezoning Agreement Amendment #9 at properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132.

This is a Second Reading. The First Reading was held at the Regular Council Meeting of December 4th, 2025. At this time, the City Council may discuss, amend, table, or approve the Second Reading of proposed Contract Rezoning Agreement Amendment #9.

If approved by the City Council, the Planning and Codes Director recommends a motion be made to approve the Second Reading of proposed Amendment #9 to the Contract Rezoning Agreement as discussed, and/or amended.

Please see the attached memo and supporting documents (10-A, B and C) from Planning and Codes Director Bub Fournier explaining the request in further detail. Director Fournier and representatives from Safe Harbor Marinas will be at the meeting to answer any questions.

10-D Request from B&B Belfast Homes, LLC, to adopt as City Streets, a continuation of Little River Drive, Little River Drive Extension, and Whitetail Street.

B&B Belfast Homes, LLC, is currently constructing a 48-lot residential subdivision at 68 Little River Drive. In addition to increased housing, this subdivision includes the construction of new streets, public water, electrical service, and privately owned septic.

Street access to the development is solely through Little River Drive, a City Street. The developers have constructed a continuation of Little River Drive, Little River Drive Extension, and Whitetail Street, as part of Phase 1 of this subdivision, to meet City road construction requirements. These requirements include that the roads be paved, have 3-foot gravel shoulders on each side, be composed of the required base material, and include a stormwater management system.

The City Council cannot adopt a road unless it meets these road construction requirements. These requirements are in place to protect taxpayers, as following adoption, the City of Belfast would be responsible for long-term maintenance of the roads.

Public Works Director Kip Faulker and City Engineer Mandy Holway, Olver Associates, have inspected the project and support adoption.

If approved by the City Council, the Planning and Codes Director recommends a motion be made to adopt the newly constructed portions of Little River Drive, Little River Drive Extension, and the entirety of Whitetail Street in Phase 1 of the Little River Subdivision as City Streets.

Please see the attached memo and supporting documents (10-D) from Planning and Codes Director Bub Fournier explaining the request in further detail. Director Fournier will be at the meeting to answer any questions.

10-E Presentation by Vanasse Hangen Brustlin, Inc, on the Armistice Footbridge Inspection Report.

In September of 2006, construction of the Armistice Footbridge was completed. Annual maintenance has been completed by the Harbor and Public Works Departments.

Inspections by a bridge engineer are recommended to assess the impact everyday use and wear and tear from water and weather conditions have on the bridge. The most recent above water inspection was completed in 2014 by Vanasse Hangen Brustlin, Inc. (VHB). At that time, concrete repairs and the expansion joint seals were replaced as recommended. A below water inspection has not been completed since the rebuild.

In the FY2025-2026 budget, City Council authorized funding to support the completion of an above and below water inspection, in part due to the recent damaging winter storms. The inspection was completed in November of 2025.

Please see the attached memo and report (10-E) providing further details. Harbor Master Kathy Given along with representatives from VHB will be at the meeting to present and answer any questions.

10-F Request from the Harbor Master to approve 2026 Charter Vessel and Commercial Contracts.

Per Chapter 30, Marine Ordinance, any commercial use of City of Belfast owned facilities shall be regulated to help protect our public resources. Charter Vessel and Commercial Contracts help

the City achieve this in a fair and equitable manner. They are reviewed annually by the Harbor Advisory Committee and recommendations are made to the City Council for approval.

The Committee reviewed the contracts for 2026 at their last Regular Committee Meeting. They voted unanimously to recommend the following for approval, with no suggested changes:

1. Alex Pelling ('Back and Forth' - custom service) - Concessions Contract - City Landing
2. Alex Pelling ('Out and About' - lobster tours) - Occasional Use Contract - City Landing
3. John Ives (schooner 'Charm' - day sails) - Concessions Contract - Thompson's
4. Leigh Dorsey (guided rowing lessons) - Concessions Contract - Available space
5. Elias Heyns (mast & rigging services) - Commercial Contract - City Landing
6. Kayak/Canoe Rack Storage (up to 45 spaces) - Boathouse/Heritage Park/City Landing
7. Rowing Vessel Storage (number depends on size of vessel) - Puddledock Parking Lot

All contracts recommended for approval are renewals and have been operating successfully without issue. All contracts have provisions to regulate use, liability, or insurance requirements.

If approved by the City Council, the Harbor Master requests that a motion is made to approve the Charter Vessel and Commercial Contracts for 2026 as recommended by the Harbor Advisory Committee, on the condition that any changes will come back to the Council for approval.

Please see the attached memo (10-F) from Harbor Master Kathy Given providing further details. Harbor Master Given will be at the meeting to present and answer any questions.

10-G Presentation by GEI Consultants, Inc, on the Belfast Harbor Flood Vulnerability Assessment Plan.

In October 2024, the City engaged the services of GEI Consultants, Inc. to conduct a flood vulnerability assessment and develop climate adaptation strategies for the City's publicly owned harbor properties. The plan was funded by a \$50,000 community action grant from the

Community Resilience Partnership of the State Office of Policy Innovation and the Future (GOPIF).

The goal of the study was to determine the flood risk impacts on public infrastructure in the areas from the Belfast Boathouse and Steamboat Landing, extending north to the Belfast Harbor Walk and Armistice Bridge, and provide options to develop resilient projects to mitigate anticipated impacts to our shoreline.

With assistance from members of the Belfast Climate Energy and Utilities Committee, GEI has drafted the assessment plan for City Council consideration.

At this time, the Deputy Economic Development Director requests that the City Council approve the Flood Vulnerability Assessment Plan.

Please see the attached memo and plan (10-G) providing further details. Deputy Economic Development Director Joellyn Warren along with representatives from GEI will be at the meeting to present and answer any questions.

10-H Request from the CDBG CEG Community Development Advisory Committee to hire the MidCoast Council of Governments as the Façade Improvement Program Administrator.

In May 2025, the City of Belfast again successfully secured \$100,000 in Community Development Block Grant Community Enterprise Grant (CDBG CEG) funding, to be used to continue the façade improvement program to support Belfast businesses and building owners.

To most effectively and efficiently implement this 2025 CDBG CEG grant, the City included in its grant application hiring a qualified entity to administer the program. Grant recipients may use up to 10% of the award for this purpose.

The City issued a request for qualifications (RFQ) on September 25, 2025, with a submission deadline of October 27, 2025, for this service. One qualification statement was received. It was

reviewed by the CDBG CEG Community Development Advisory Committee and unanimously recommended for approval.

If approved by the City Council, the CDBG CEG Community Development Advisory Committee recommends that a motion is made to hire the MidCoast Council of Governments as the Façade Improvement Program Administrator; and authorize the City Manager to sign any documents related and necessary to the hiring of this Administrator.

Please see the attached memo (10-H) from Deputy Economic Development Director Joellyn Warren explaining the request in further detail. Deputy Director Warren will be at the meeting to present and answer any questions.

10-I Request from the Deputy Economic Development Director to accept \$37,500.00 in Flood Mitigation Assistance Grant Funding and issue a Request for Proposals to hire a consultant to support the creation of a City-specific Hazard Mitigation Plan.

Maine Emergency Management Association (MEMA) officials have notified the City of Belfast that we were awarded \$37,500.00 in funding under the Flood Mitigation Assistance Grant Program (FMA) through the Federal Emergency Management Agency (FEMA). The Grant funding will be used to support the creation of the City-specific Hazard Mitigation Plan.

The Hazard Mitigation Plan will identify key infrastructure impacts, the most effective adaptation practices, local capacities to tackle these challenges, and the steps necessary to implement mitigation measures to protect public health and reduce or eliminate risks to buildings and structures. A consultant would be secured through a Request for Proposal process to assist with developing the Plan.

As a condition of the federal award, the City is required to contribute a non-Federal cost-share of \$12,500.00. This required match will consist of \$10,000 City staff and Committee in-kind donation and a \$2,500 cash match is recommended from Account G1-2026-00 FEMA Storm Damage Reimbursement.

If approved by the City Council, the Deputy Economic Development Director recommends a motion is made to accept the FMA Grant, authorize the \$2,500 cash match from Account G1-2026-00 FEMA Storm Damage Reimbursement; authorize City staff to issue a Request for Proposals to hire a consultant to complete a city-specific Hazard Mitigation Plan; and authorize the City Manager to sign all required documents.

Please see the attached memo (10-I) from Deputy Economic Development Director Joellyn Warren explaining the request in further detail. Deputy Director Warren will be at the meeting to present and answer any questions.

10-J Request from the Fire Chief to approve 2026 Emergency Medical Services Billing Rates.

Each year, ambulance billing rates are assessed by our billing agency, Medical Reimbursement Services, of Windham. These rates are billed to patients and insurance companies for services provided by our ambulance service. This year, our billing agency has recommended a 5% increase in response to a recently enacted State Law concerning reimbursement of non-transport services. The last rate increase was in January 2024.

The proposed 2026 Emergency Medical Services (EMS) Billing Rates are:

<u>Service</u>	<u>Current rate</u>	<u>Proposed rate</u>
Mileage	\$21	\$22
Basic Life Support	\$882	\$927
Advanced Life Support	\$1,100	\$1,155
Advanced Life Support 2	\$1,543	\$1,621
BLS Non Emergency	\$441	\$464
ALS Non Emergency	\$552	\$580
Paramedic Interfacility Transfer (PIFT)	\$2,000	\$2,100
Paramedic Intercept	\$350	\$450
Primary Response	\$325	\$450

If approved by the City Council, the Fire Chief recommends a motion is made to approve the 2026 Emergency Medical Services Billing Rates effective on January 1, 2026.

Please see the attached memo and proposed 2026 rates (10-J) from Fire Chief Patrick Richards providing further details. Chief Richards will be at the meeting to present and answer any questions.

10-K Request to approve the Fiscal Year 2026-2027 City of Belfast Wage and Salary Scale.

In the Fiscal Year 2021-2022 Budget, the City Council approved an updated pay scale for all City of Belfast non-union employees. The updated scale allows for an overall adjustment to be made each year based on the minimum wage set in place by the State of Maine. Maine's minimum wage is informed by the National Average Wage Index.

Effective January 1, 2026, the state minimum wage will increase from \$14.66 to \$15.12 per hour. That increase reflects a 3.1% cost of living adjustment identified in the August 2025 Consumer Price Index for the Northeast region.

If approved by the City Council, I recommend that a motion be made to approve the Fiscal Year 2026-2027 City of Belfast Wage and Salary Scale effective on July 1, 2026.

Approval at this time will allow City Department Heads to most accurately prepare their FY2026-27 Budget Requests.

Please see the attached FY25-26 City of Belfast Wage and Salary Scale and the proposed FY26-27 City of Belfast Wage and Salary Scale (10-K). I will be at the meeting to present and answer any questions.

10-L Request to remove City Street Trees located at 31 Race Street.

The City received a removal request for two City Street Trees and a pruning request for two clusters of City Street Trees located at 31 Race Street. City Tree Warden and Certified Tree Risk Assessor Carol Herwig conducted a tree risk assessment of the trees.

The report recommends removal of one tree, an aspen, as it shows signs of serious decay but does not recommend the removal of the second tree, a black cherry. Further, Tree Warden Herwig does not support pruning the two clusters of Norway maple trees but recommends removal.

If approved by the City Council, a recommended motion would be to authorize the removal of the aspen tree and the clusters of Norway maples located at 31 Race Street as recommended by the City Tree Warden.

Please see the attached tree risk assessment report (10-L) provided by City Tree Warden Carol Herwig. I will be at the meeting to answer any questions.

10-M Signing of Council Orders

This has been one busy year for the City of Belfast!

It has been filled with both blossoming innovations and growing pains, the bustling comings and goings of residents and visitors, and much celebrating togetherness as the spirit of our community continues to gain momentum and admiration.

As 2025 ends, I would like to thank the City Council, staff, business owners, residents and volunteers for their continued dedication, passion, and commitment to our vibrant City over the

past year. I am incredibly grateful to each of you for your service to our community. May your cups be full of both joy and kinship as we close out 2025 and welcome 2026.

Our hardworking City Staff will be doing the same when schedules allow, as our emergency services will be available to you, on call 24/7, as always. City Hall, the Library, and non-emergency City Departments will be closed on Thursday, December 25th in observance of Christmas Day, and Thursday, January 1st for New Year's Day.

My warmest wishes to you all this holiday season. May we continue to create a happy, healthy, and prosperous community in the new year.

**City of Belfast
Consent Agenda
Tuesday, December 16, 2025
Meeting #11**

The following items are proposed as our Consent Agenda. As in the past the items are voted on in one blanket motion to the affirmative. One Councilor makes a motion to approve the items as stated, and then another Councilor will second that motion and the whole Council votes. If a Councilor requests an item be removed from the consent agenda, they do so during the adoption of the agenda. If a member of the public requests that an item be removed from the consent agenda, they can do so in the open to the public section. Suggested motions are listed and supporting material is enclosed.

9) Permits, Petitions and Licenses - Consent Agenda

- A. Request to approve a Facility Use Application by Meg Shorette for use of the City Hall parking lot on High Street for the annual All Roads Music Festival on Friday, October 16, 2026, through Saturday, October 17, 2026.**

Motion to approve a Facility Use Application by Meg Shorette for use of the City Hall parking lot on High Street for the annual All Roads Music Festival on Friday, October 16, 2026, through Saturday, October 17, 2026.

- B. Request to approve an application by Dos Gatos Gastropub LLC d/b/a Dos Gatos Gastropub located at 84 Main Street, Belfast, Maine for a renewal on-premise Malt, Spirituous and Vinous liquor license.**

Motion to approve an application by Dos Gatos Gastropub LLC d/b/a Dos Gatos Gastropub located at 84 Main Street, Belfast, Maine for a renewal on-premise Malt, Spirituous and Vinous liquor license.

- C. Request to approve an application by Winesnak LLC d/b/a Pulling Corks located at 31 Pendleton Street, Belfast, Maine for a renewal on-premise Malt and Vinous liquor license.**

Motion to approve an application by Winesnak LLC d/b/a Pulling Corks located at 31 Pendleton Street, Belfast, Maine for a renewal on-premise Malt and Vinous liquor license.

- D. Request to approve an off-premises catering permit for FFS LLC d/b/a Nautilus Seafood & Grill for the Waldo County YMCA 2025 Ugly Sweater Holiday Party on December 11, 2025, from 5:30 p.m. to 7:30 p.m. located at the Belfast Boathouse, 34 Commercial Street, Belfast, Maine.**

Motion to approve an off-premises catering permit for FFS LLC d/b/a Nautilus Seafood & Grill for the Waldo County YMCA 2025 Ugly Sweater Holiday Party on December 11, 2025, from 5:30 p.m. to 7:30 p.m. located at the Belfast Boathouse, 34 Commercial Street, Belfast, Maine.

- E. Request to approve an off-premises catering permit for Bell the Cat, Inc d/b/a Bell the Cat for the Glow Salon Giving Tree Social on November 28, 2025, from 4:00 p.m. to 6:00 p.m. located at the Glow Salon, 149 High Street, Belfast, Maine.**

Motion to approve an off-premises catering permit for Bell the Cat, Inc d/b/a Bell the Cat for the Glow Salon Giving Tree Social on November 28, 2025, from 4:00 p.m. to 6:00 p.m. located at the Glow Salon, 149 High Street, Belfast, Maine.

- F. Request to approve an application by V.F.W. Randall-Collins Post #3108 d/b/a V.F.W. Randall-Collins Post #3108 located at 34 Field Street, Belfast, Maine for a renewal on-premise Malt, Spirituous and Vinous liquor license.**

Motion to approve an application by V.F.W. Randall-Collins Post #3108 d/b/a V.F.W. Randall-Collins Post #3108 located at 34 Field Street, Belfast, Maine for a renewal on-premise Malt, Spirituous and Vinous liquor license.

- G. Request to approve an application by Belfast Theatre Arts Company d/b/a Colonial Theatre located at 163 High Street, Belfast, Maine for a renewal Malt and Vinous liquor license.**

Motion to approve an application by Belfast Theatre Arts Company d/b/a Colonial Theatre located at 163 High Street, Belfast, Maine for a renewal Malt and Vinous liquor license.

9.A



Facilities Use Request City of Belfast, Maine



The City of Belfast owns streets, sidewalks, parks, land, and buildings. It is the policy of the City that property belonging to the citizens of Belfast be available to the public. Unless specifically approved to the contrary, no public property will be set aside for the exclusive use of any individual or group and the general public will at all reasonable times have access to City property.

This application is specifically for City property such as waterfront parks, pavilions, streets, sidewalks, etc. This application is NOT for the Belfast Boathouse, but it may be required in addition to the Belfast Boathouse Rental Application if you are planning an event that includes both the Belfast Boathouse and Steamboat Landing Park.

This application must be submitted 60 days or more before the proposed event date. This allows for the application to be reviewed by all departments and to be reviewed and approved by the Belfast City Council.

EVENT NAME: All Roads Music Fest

BRIEF EVENT DESCRIPTION: Celebration of Maine and indie music with one full day of music across 3-4 venues on Saturday, October 17, 2026 with an open party at Marshall Wharf on Friday, October 16 2026.

DATES and TIMES:

Friday, October 16, 2026: 7pm-12am

Saturday, October 17, 2026: 12pm-12am

PROPOSED LOCATIONS/AREAS TO BE USED:

Marshall Wharf, First Church, City Hall Lot - High Street

American Legion Hall , Belfast Maskers/The Bazz,

ORGANIZING GROUP (if applicable): All Roads Presents

GROUP REPRESENTATIVE/INDIVIDUAL NAME: Meg Shorette

MAILING ADDRESS: PO Box 22, 04402

PHONE NUMBER:n/a CELL PHONE: 207-462-0524

All applications and related documents must be returned to the Belfast Parks and Recreation Office at City Hall, 131 Church Street, Ground Level (drop off at City Clerk's office). Questions? Please call 207- 338-3370 Ext. 127 or parksandrec@cityofbelfast.org.

This is a planning checklist for your benefit as well as the City's. **All activities must be included in the event description; anything not included cannot be approved and cannot be added later unless a second or revised application is submitted. Approvals will not be provided to individuals or groups who are uncertain of their plans.**

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When you are ready to submit your application, please attach maps, additional sheets, event outlines etc. which will help to explain your request. If any of the following questions do NOT apply to your event, simply write N/A (not applicable) in the space provided. Thank you.

Describe in detail the activities within your event and the schedule you are

proposing. Based on the facilities noted above, how do you intend to use the

spaces requested? Live music performances, panels and artist development

sessions

Are you asking to close off any City Streets? If so, please list by street name (include from where-to-where the street will be blocked, days, times, etc.). No

If yes, who will be managing the street closures? N/A

How many people do you expect at your event? 1200

How many volunteers do you expect at your event? 20-25

Will you be selling things at this event? If yes, what will you be selling, and please provide

descriptions. Festival merch, local art vendors, band merch (at venues)

If you will not be selling anything, will others at this event be selling items? If yes, please provide

details. Typically 1-2 food vendors park in the city hall lot on High St w/ the main box office/info table,

art vendors, local makers.

Will you be renting spaces to vendors on City property? If yes, please provide for the type of vendors and your fees. Typically 1-2 food vendors park in the city hall lot on High St w/ the main box office/info table, art vendors, local makers. Food vendors pay a flat \$100-\$150 rate. They plug into city electricity at the city hall lot. We also use electricity here for our box office pop-up.

Please provide an explanation of vendor space sizes, locations, load-in/load-out details, etc.

10x10 spaces or smaller

Does this event call for any type of open fire, including for cooking purposes? If so, please describe what fire safety measures you plan on employing associated with this potential hazard? NOTE: a fire permit may be required. No

How do you propose to handle garbage removal? City bins, venue bins or we remove large items (very rare)

How do you propose to handle parking and how will parking instructions be communicated to vendors, volunteers, service providers, and your customers? Street parking and city lots. We mark these on our venue map that is available online and in our physical programs/social media posts.

How do you propose to handle security, if needed.

We hire and/or train volunteers at venues

How do you propose to handle the need for regular and accessible restrooms?

All venues are indoors and attendees use these if not the public restrooms which are also noted on our festival maps and info pages

What are your electrical needs, and how will you provide electricity?

City Hall lot has been used in the past and a plug has been left accessible

What kind of noise do you expect to generate at this event and during which specific period of time? All venues are indoors and slowly wrap as the day progresses with just one final venue at Marshall Wharf.

What are your event safety protocols (i.e., weather, injury), and will you have a First Aid tent?
Yes

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Have you spoken to the neighbors in the area of this event regarding traffic, noise, parking etc.?

NOTE: You may need to provide parking lot monitors and signage for your event.

We do work local groups like Our Town Belfast to help us get the word out, flier and speak to venues before festival weekend.

Will any alcohol be served or consumed at this event? If yes, please provide details on who will be providing that service, including their contact information (phone and email). NOTE: Additional permits may be required for your event based on your service provider, their liability insurance coverages, and any existing permits they may have. We typically only serve at the Legion Hall and Marshall Wharf. We provide a license for the legion hall.

Please attach a map that shows your event's boundaries, how you will set-up your event (vendors, beer/wine garden, restrooms, where activities will be located, your access points, and any other pertinent details).

Are you able to provide a Certificate of Insurance in the amount of \$1,000,000 that also lists the City of Belfast as an additional insured to hold the City of Belfast harmless from any and all injuries that may occur as the result of any negligence on your part in conducting this event? Yes, our insurance agent provides this the month of the event.

Who is your insurance agent that will provide the Certificate of Insurance as proof of this policy?
Quirk historically, may switching providers - TBD

Who will be in charge of the event and on-site for the majority of the event's duration? Please include cell phone numbers and an email address. Meg Shorette / 207-462-0524 / meg@allroadsmusicfest.com

Are you asking the City for any additional services over and above the request to use the facilities you have described above? If so, please be specific. (Examples: barricades, security/street closures, electrical access, etc.) No

Are there any other details you haven't addressed and that you would like to include? No

Have you reviewed the specific policies for use of City-owned property, located in Appendix A? Yes

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Department and Services Requested

City Manager: _____

Police: _____

Fire/ Ambulance: _____

Parks _____ and _____ Rec.:

_____ Public Works:

_____ Harbor

Master: _____

Other: _____

Remember, if any aspect of the activity you wish to conduct is not specifically listed on this checklist, then there will be no permission to conduct that activity unless an amended form or an addendum is filed for approval by City Council. Any amendments or addenda must be filed more than 60 days prior to the event date.

I certify that I am at least twenty-one (21) years of age. I have read and fully understand the Facilities Request Application and also the rules and regulations utilizing Belfast Parks and Recreation's facilities and property. I am an authorized representative of above listed business, organization, or event and will abide by all rules and regulations set forth by this agreement. I understand and fully agree to forfeiture of any or all deposits if I am not in compliance with the terms set forth by this agreement. In signing this form as an individual or as a representative of the above listed business or organization, release the City of Belfast from any and all liability in case of death or injury during the use of any City-owned facility or property.



SIGNATURE:

DATE: 11/24/2025

REVIEW #1:

DATE: _____

REVIEW #2:

DATE: _____

APPROVAL:

DATE: _____

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APPENDIX A:
SPECIFIC POLICIES RELATED TO
USE OF CITY PARKS AND PROPERTY FOR SPECIAL EVENTS AND FUNDRAISERS

The purpose of this policy is to specify and clarify procedures regarding the use of City parks for special events or fundraising events and to ensure these activities meet the requirements of the City ordinances. **A Special Event or Fundraiser can be defined as any event that exceeds 75 people, and which is open to the general public, and/or where fundraising may occur through an event pre- registration, and/or where donations will be accepted in advance or on-site.**

This policy applies to:

- all City parks and park areas;
- the City pool;
- and for other City-owned property utilized for special events or fundraisers (i.e., sidewalks, streets, city parking lots).

Reservations must be secured for special events/fundraisers AT LEAST 60 days in advance. Some events may require additional lead time and should be discussed in advance. This time frame allows the Department to review requirements with organizers, secure paperwork and deposits, and then forward to City Council for approval for any atypical details or waiver requests.

NOTE: Several waterfront parks are also designated as special event spaces since they provide the most space for the larger events held in the City of Belfast. Special requirements are necessary to balance the use at the various City parks and to ensure that the parks are still open to the general public and that parking is available for all events and for general users.

The following types of large group events are subject to the provisions of this policy: •

- Community events sponsored by Belfast-based civic or social organizations, •
- Fundraising events sponsored by a Belfast-based non-profit organization to benefit a Belfast-based program,
- Special athletic or sporting events by a Belfast-based group,
- Concerts or public performance events at any park,
- Special events at the Belfast Dog Park,
- Other events as determined by the Parks and Recreation Director or the Parks, Trails, and Recreation Committee.

The following rules apply:

- Since each event is somewhat unique, the Director of Parks & Recreation will determine if the planned event shall be covered by this policy.
- Belfast-based groups organizing a large special event/fundraiser will have priority over non-Belfast-based groups.
- Special events/fundraisers are booked on a first-come, first-served basis EXCEPT three annual events with a long event history and schedule—Arts In The Park, Maine Celtic Celebration, and the Belfast Harbor Fest.
- All special events/fundraisers must be reviewed in advance to ensure that they meet this

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policy and the City ordinances regarding public safety, alcohol, permitting, etc.

Scheduling

Special Events/Fundraisers can be scheduled up to one (1) year in advance. The appropriate rental form (either Special Event/Facility Request or a Belfast Boathouse Rental Application, or in some cases both forms) must be completed to secure a date. The Parks and Recreation Director will determine when rental deposit, security deposit, final payment, and insurance certificate will be

due. The rental date(s) will not be secure until rental deposit and/or full payment (depending on lead time) is paid.

Reservations must be secured for special events/fundraisers AT LEAST 60 days in advance. In addition, the Director and/or City Manager/City Council may:

- deny or revoke reservations to any event which is not compatible with the facility or other scheduled events;
- restrict the total number of Special Events/Fundraisers which may be held per year at each park;
- deny or revoke reservations to any event with the potential of overloading park visitor capacity with respect to public safety or facility capacity or parking accommodations; • suggest alternate locations in order to better accommodate Special Events/Fundraisers with respect to public safety, parking, visitor capacity;
- move activity locations or cancel specific activities if inclement weather has created hazardous conditions or the potential for excessive facility damage;
- all cases of reservation denial or revocation may be appealed to the Belfast City Council at their next regularly-scheduled meeting.

Event Planning

Special event/fundraiser organizers shall meet with the Director **at least 60 days** prior to the event to review preliminary event plans, determine activity locations in the park, and confirm all operational details. A second meeting 7-10 days prior to the event may also be scheduled. Provisions for inclement weather/heavy rain should be made by the sponsoring group with regard to all event operations (parking areas, activities, food service, etc., to include moving activity locations or canceling specific activities if inclement weather has created hazardous conditions or the potential for excessive facility damage.). The Department Director must approve event details in advance.

Tent Policy

If you intend to erect tents of your own or rented tents from a third-party, you will need to adhere to the following recommendations:

- All tents, no matter the size, should be staked properly to avoid any accidental fly-aways during windy days. Tent stakes should be marked clearly to avoid any tripping hazards. • Large tents (larger than 20' x 20'/400 sq. ft.) installed without sides do not need any additional inspections or permits; these tents must be staked properly.
- Large tents (larger than 20' x 20'/400 sq. ft.) installed with sides, sides that will be on 100% of the time, fall into the Assembly Use category for the Maine State Fire Marshall's office. These tents would need to have a plan review for egress paths and fire retardation

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certification. This would be coordinated well in advance of the event. These tents must also be staked properly.

- Large tents (larger than 20' x 20'/400 sq. ft.) with or without sides should have one (1) fire extinguisher on-hand; large tents (larger than 40' x 40'/1,600 sq. ft) with or without sides should have two (2) fire extinguishers on-hand.

- Tent stakes/support guy wires must be 12' or more from any structures, parking lots, trees, vehicles, signage, etc. Any stakes/support guy wires must be marked well for pedestrians' needs.
- Installation areas must be marked for utilities in advance of any tent installation if there is even the slightest chance that underground utilities are in the area. Utility marking is the sole responsibility of the reservation holder and should only be scheduled once reservation holder has an approved tent location from the Department.
- Additional rental fees may be required if a tent must be installed several days in advance of a special event/fundraiser, and only if the space is available.

Park Operations

Belfast Parks and Recreation is not able to financially assist special event or fundraising events. The Department may assign staff for park maintenance before, during, and after the event (for assistance with trash collection, restroom maintenance, special setups/take downs, facility maintenance, electrical needs), based on the potential number of visitors the event may generate.

The Department will invoice the event sponsors for all expenses incurred that were in excess of the normal level of park operations or that generated overtime. Only Department employees are permitted to operate Department vehicles and equipment. The large event organizers may also be required to provide volunteers to direct event parking and pedestrian access or to provide overflow parking at a non-municipal owned area, and to assist with trash collection duties. Therefore, the organizing group can expect to pay for these functions:

- Permits for alcohol/catering services; these may need to be paid by renter and/or by individual vendors participating in the fundraising or special event being sponsored by renter.
- Extra Department staff: expense depends on event details; an estimate can be provided in advance,
- Repairs to park facilities, as required, and if resulting from the group's use, • Portable toilet rentals (supplemental) from a private supplier, pending event details, • Trash dumpsters (supplemental) from a private supplier, pending event details, and • Additional insurance premiums for coverage of the event with indemnification to the City of Belfast, and, if needed, for any private parking areas near the facility (see below) and/or for a liquor liability endorsement.

Insurance

All rentals that are open to the public except family rentals (non-public) shall provide to the Department, in advance of the event, a Certificate of Insurance which:

- Provides evidence of coverage in both commercial general liability insurance and automobile liability insurance (if applicable) for a minimum coverage amount of \$1,000,000 per occurrence, combined single limit;

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- A Certificate of Insurance must include adding the City of Belfast as an additional insured;
- For events that are hosting alcohol-related activities such as a beer garden or wine tasting, the Certificate of Insurance will also need to demonstrate a liquor liability endorsement

which may increase the insurance premium.

The minimum coverage amount that is required by the Department may be increased pending the type of event and level of risk or an additional rider may be requested. Food service and liquor operations may require additional permits, and these are typically processed by the Belfast City Clerk's office and approved by the Belfast City Council. Additional insurance coverage for food service (as well as meeting the requirements of the City and state health codes) may be required. In addition, other groups or businesses which use park facilities during special events (i.e., third-party concessionaires like food vendors) must also present in advance to the event organizer a similar Certificate of Insurance for their operations. Please contact the Department regarding specific insurance requirements for the planned event.

Parking and Vehicle Access

Very few of the Special Event areas have their own parking, especially those in the waterfront area. To host an event at Steamboat Landing Park, an event organizer will be required to rent the Belfast Boathouse to secure handicap parking and to have load-in and load-out access.

Event organizers will be required to follow the soon-to-be-created parking plan during large and multi-day events (as of 2025). Once that parking plan is in place, the Belfast Parks and Recreation Department will update this policy with those details. Parking is permitted only in designated spaces or areas. No parking on the grass or in driveways is permitted during a large group event, except with the express written permission of the Department. Tasks may also include providing appropriate signage during events, hosting volunteers for parking tasks (see below), and communicating the parking information to patrons.

The organizers should also make arrangements to furnish Parking Guides (volunteer or paid) to safely direct vehicles to the proper spaces, as well as providing safe pedestrian crossings on various roadways around the event site.

- Considerations should be given to making directional and information signs for your event.
- Vehicles parked illegally on City or private property will be ticketed by police and are subject to towing at the owner's expense.
- It is especially important that emergency access remain available at all times during your event, and that the event organizers follow the new event parking plan (2025).
- Vehicular access to any areas off the paved roadways must be approved by the Department in advance, including by event contractors, caterers, concessionaires, event leaders, etc.

If you plan to submit a request that is outside the boundaries of this policy, please submit it at least 60 days in advance.

10. A, B+C



CITY OF BELFAST, MAINE 04915
131 Church Street

PLANNING AND CODES DEPARTMENT

Phone: (207) 338-3370 ext. 125

Fax: (207) 338-2419

Email:

planningandcodes@cityofbelfast.org

MEMORANDUM

DATE: December 9, 2025

TO: Mayor, City Council, and City Manager

FROM: Bub Fournier, Director of Planning and Codes

CC: Kristin Collins, City Attorney and Alexandra E. Sykes, City Planner

RE: Second Reading – Contract Rezoning Agreement Amendment #9 – Front Street Shipyard

BACKGROUND INFORMATION

There have been no changes to this proposal since the City Council's First Reading on December 4th, 2025.

SHM Front Street, LLC, Applicant, is proposing a change of ownership of the Front Street Shipyard properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132. The existing development, valued by the City Assessor at approximately \$11.5M in 2025, is approximately 6 acres in size and located on the Belfast Waterfront with road frontage on Front Street. The development is subject to a Contract Rezoning Agreement between the property owners and the City of Belfast, most recently amended in 2014 with Amendment #8. The currently proposed Amendment #9 consists of proposed property ownership transfer from DUBBA, LLC and Building 6, LLC to SHM Front Street, LLC. There are no substantive changes in approved uses and/or operations for the Shipyard at this time; therefore, this review addresses only the financial and technical capacity of SHM Front Street, LLC pursuant to Chapter 102 Zoning, Article X Contract Rezoning, Division 4 Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and the Waterfront Development shoreland zoning district. The subject properties are located in the Waterfront Mixed Use 1 zoning district and the Waterfront Development shoreland zoning district.

Historically, the property underwent a detailed Contract Rezoning process as it was redeveloped after the Stinson Seafood sardine packing plant closed in 2001. In 2005, the City began controlling the defunct railyard in this area, and in 2006 renovations to the footbridge were completed. Also in 2005, the City adopted the first Contract Rezoning Agreement for the property, although the current owners, DUBBA, LLC, did not take over control of the property until Amendment #3 to the Contract Rezoning Agreement for the property in 2011. Over the course of a series of Contract Rezoning Amendments, the project developed into the Front Street Shipyard many are familiar with currently.

The proposed new owner and Applicant has submitted the following documents, unchanged from the First Reading of this proposal:

- 1) A letter to the Planning Board (and City Council) describing the request from Safe Harbor Marinas to transfer ownership of the Shipyard.
- 2) A Letter from JB Turner, President and General Manager of the Shipyard, to the Planning Board and City Council describing his intent to remain full time in his current position with public facing operations continuing unchanged including plans for current employee retention.
- 3) An Excerpt from Safe Harbor Marinas Sustainability Report describing their company structure, and financial and technical capability.
- 4) A Contract Rezoning Agreement matrix describing different rights and responsibilities of the different parties outlined in the complex Contract Rezoning Agreements and Amendments.
- 5) A redacted purchase and sale agreement between the current owner and the proposed owner.

The Planning Board reviewed the proposed change of ownership for the Shipyard on November 19, 2025 and issued the enclosed recommendation for adoption of a Contract Rezoning Amendment #9 to incorporate the change pursuant to Chapter 102 Zoning, Article X Contract Rezoning Division 4 Waterfront Mixed Use 1 and Waterfront mixed Use 2 zoning districts and Waterfront Development shoreland zoning district.

The City Council conducted a First Reading at the December 4th, 2025 meeting and voted to schedule a Second Reading and Public Hearing for the December 16, 2025 meeting.

I am including a copy of the abutters notice that was sent to all property owners within 250' of the subject properties for the December 16th, 2025 meeting as well as the ad that was placed in the Midcoast Villager.

REQUESTED COUNCIL ACTIONS

Staff would like to briefly describe the proposal and recommendations by the Planning Board at your upcoming meeting of December 16, 2025. Representatives for Safe Harbor Marinas will also be present at the meeting if the Council has any specific questions regarding the project. I respectfully ask the Council to conduct a public hearing and Second Reading of the proposed Amendment #9 to the Contract Rezoning Agreement. After the Public Hearing and the Second Reading, I respectfully ask the Council to discuss the proposal and consider taking a vote **to approve the proposed Amendment #9 to the Contract Rezoning Agreement as discussed and/or amended and to direct staff to finalize documents for such approval.**



CITY OF BELFAST, MAINE 04915
131 Church Street

PLANNING AND CODES DEPARTMENT

Phone: (207) 338-3370 ext. 125

Fax: (207) 338-2419

Email:

planningandcodes@cityofbelfast.org

December 1, 2025

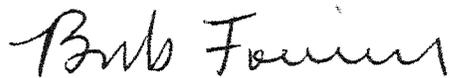
**NOTICE TO PROPERTY OWNERS
CITY COUNCIL SECOND READING
AND PUBLIC HEARING
TUESDAY DECEMBER 16, 2025**

The Belfast City Council, at its meeting of Tuesday, December 16th, 2025, beginning at 7:00 pm in the Belfast City Hall Council Chambers, located at 131 Church Street, Belfast, ME 04915, shall conduct a Second Reading and public hearing on an application submitted by Greg Glavin, regional Vice President of Safe Harbor Marinas, on behalf of SHM Front Street, LLC for a proposed transfer of ownership of Front Street Shipyard owned by DUBBA, LLC and Building 6, LLC at 101 Front Street, 65 Front Street and 45 Front Street, Map 11 – Lots 132 , 136, 136A and 136B. This property is subject to an approved Contract Rezoning Agreement and subsequent amendments, most recently Amendment #8 in 2014. City Council will review a recommendation from the Belfast Planning Board including proposed language for the Council to consider adopting. The review is being conducted pursuant to Contract Rezoning for the Waterfront Mixed Use zoning districts in Chapter 102 Zoning, Article X Contract Rezoning, Division 2 Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and the Waterfront Development Shoreland Zoning District.

The City Council, at its meeting, will provide interested parties with an opportunity to offer oral comments on the proposal. The Council will also accept comments in writing or via email. Written comments should be submitted to the City of Belfast, Planning and Codes Department, 131 Church Street, Belfast, ME 04915. Emailed comments should be submitted to directorplanning@cityofbelfast.org All written comments for this public hearing must be received by 2pm on December 16th, 2025 prior to the City Council meeting.

The Belfast Planning and Codes Department has a copy of the application materials submitted by the applicant and they are available for public inspection in Belfast City Hall during regular business hours, Monday-Thursday 7:00 A.M. – 6:00 P.M. Questions regarding the application should be directed to Bub Fournier, Director of the Planning and Codes Department at 338-3370 x 125 or at directorplanning@cityofbelfast.org

On behalf of the City Council,

A handwritten signature in black ink that reads "Bub Fournier". The signature is written in a cursive, flowing style.

Bub Fournier, Director of Planning and Codes Department

**BELFAST CITY COUNCIL
DRAFT FINDING OF FACTS AND CONDITIONS OF APPROVAL
SHM FRONT STREET, LLC
CONTRACT REZONING AMENDMENT #9 - CHANGE OF OWNERSHIP
101, 65 and 45 FRONT STREET MAP 11, LOTS 136, 136-A, 136-B and 132**

1. Applicant: SHM Front Street, LLC
14785 Preston Road, Suite 975
Dallas, TX 75254

2. Description of Project:

SHM Front Street, LLC is proposing a change of ownership of the Front Street Shipyard properties located at 101, 65, and 45 Front Street, Map 11 Lots 136, 136-A, 136-B and 132. The existing development is approximately 6 acres in size and located on the Belfast Waterfront with road frontage on Front Street. The development is subject to a Contract Rezoning Agreement between the property owners and the City of Belfast, most recently amended in 2014 with Amendment #8. Amendment #9 consists of proposed property ownership transfer from DUBBA, LLC and Building 6, LLC to SHM Front Street, LLC. There are no substantive changes in approved uses and/or operations for the Shipyard at this time; therefore, this review addresses only the financial and technical capacity of SHM Front Street, LLC.

3. Planning Board Actions:

The Belfast Planning Board, pursuant to requirements of the City Code of Ordinances, Chapter 102, Zoning, Article X, Contract Rezoning, Division 4, Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and Waterfront Development shoreland district, was responsible for preparing a Contract Rezoning Agreement for presentation to the City Council as a proposed Contract Rezoning Ordinance amendment. Said Agreement must define specific terms that the Applicant must satisfy, including but not limited to the uses permitted for the site, permitted structures, required site plan improvements, a schedule for the construction of public and private improvements, and a list of all conditions that apply to this application.

The Planning Board, at its meeting on November 19, 2025, determined that the materials for their review were complete for the Board to proceed. The Board acknowledged that Contract Rezoning Amendment #9 for the Shipyard properties is limited to a change in ownership. Thus, the project's uses, structures, site plan improvements, and construction were not within the Board's purview at this time.

The Planning Board, pursuant to requirements of Chapter 102, Zoning, Article X, Contract Rezoning, Division 4, at its meeting of November 19, 2025, adopted Conditions of Approval which it is recommending the Belfast City Council adopt as provisions of Amendment #9. The Planning Board recommends that the Council require the Applicant to satisfy the Conditions of Approval as requirements of Amendment #9 to the adopted Contract Rezoning Agreement. It is

expected that the Applicant must comply with these Conditions to obtain all necessary permits for project development and operation. Planning Board review and approval includes its review and approval of letters from the Applicant to the Planning Board, a summary of the proposed new ownership structure and company, a responsibility matrix for ongoing operational considerations, and a redacted purchase and sale agreement submitted by the Regional Vice President of Safe Harbor Marinas, Greg Glavin.

The Board also noted that the Planning and Codes Department provided notification to abutters within 250 feet of the project and notified the public of the hearing date in the Midcoast Villager.

4. Financial and Technical Ability: The Belfast Planning Board found that SHM Front Street, LLC, a subsidiary of Blackstone, Inc. has the financial and technical ability to comply with all requirements of the Contract Rezoning Agreement including all amendments. The Board found that the company provided information regarding its 138 properties across the US serving more than 39,000 clients, as well as its ability to fund annual operating costs for the project. The Board found that the Contract Rezoning Agreement including all amendments shall require any proposed new owners moving forward to be subject to the same review.

5. Specific Findings: Pursuant to section Sec. 102-1454. Minimum goals that the applicant shall satisfy and that the City shall address in establishing conditions for a contract rezoning request, the Board found that the Applicant proposes a change in ownership only and proposes no changes that invoke any of the standards set forth in Section 102-1454.

6. Planning Board Decision and Recommendation: The Belfast Planning Board found that the Applicant's request for a change in ownership satisfies all requirements of the approved Contract Rezoning Agreement Amendment and all applicable amendments, specifically Amendment #4 approved June 21, 2011, including:

- Condition #2 regarding a change in ownership and the new owner's demonstration that they have the financial and technical ability to successfully operate the approved project.

This finding of the Board is subject to Applicant compliance with all other conditions of approval established by subsequent Contract Rezoning Agreements and all applicable amendments.

The Belfast Planning Board, pursuant to requirements of the City Code of Ordinances, Chapter 102, Zoning, Article X, Contract Rezoning, Division 4, Waterfront Mixed Use 1 and Waterfront Mixed Use 2 zoning districts and Waterfront Development shoreland district, is responsible for preparing a Contract Rezoning Agreement for presentation to the City Council as a proposed Contract Rezoning Amendment. Said Agreement must define specific terms that the Applicant must satisfy, including but not limited to the uses permitted for the site, permitted structures, required site plan improvements, a schedule for the construction of public and private improvements, and a list of all conditions that apply to this application. The Applicant here seeks only a change in ownership and does not request any change to the substance of the Contract Zoning Agreement as last amended.

Based on these findings of fact, the Board recommends the following Amendment #9 to the Contract Zoning Agreement, subject to City Council approval:

**AMENDMENT #9
APPROVING CHANGE IN OWNERSHIP
CONTRACT REZONING AGREEMENT
FRONT STREET SHIPYARD PROJECT
MAP 11, LOT 132**

The Belfast Planning Board and City Council find that SHM Front Street, LLC, a subsidiary of Blackstone, Inc. has the financial and technical ability to comply with all requirements of the Contract Rezoning Agreement including all amendments. The Board finds that the company has provided information regarding its 138 properties across the US serving more than 39,000 clients, as well as its ability to fund annual operating costs for the project.

SHM Front Street, LLC is hereby substituted as the approved Applicant and project owner for all purposes of the Contract Rezoning Agreement and amendments thereto, and subject to all obligations of the project owner (Applicant) as set forth in said Agreement and amendments.

This Amendment incorporates by reference previous Conditions of Approval adopted by the City Council. The terms of this Amendment #9, in conjunction with the terms of Amendment #3 through Amendment #8, shall constitute the terms of the Contract Rezoning Agreement that shall apply to the Front Street Shipyard project. The Applicant must comply with the Agreement and all Amendments and conditions to obtain any subsequent building or occupancy permits for project development or any further amendment to previously approved Site Plans for the Front Street Shipyard prepared by Gartley & Dorsky Engineers.

Any subsequent change in the controlling ownership shall require review and approval by the Planning Board and City Council to ensure that the new owner has the financial and technical ability to successfully operate the approved project. This Condition of Approval, along with Conditions unchanged by this amendment in the Contract Rezoning Agreement, shall be binding on the Applicant and any and all future owners of this property.

7. City Council Action: The Belfast City Council, at its meeting of December 4, 2025, held a First Reading of the above proposed Amendment #9 to the Contract Rezoning Agreement between the City and SHM Front Street LLC for the Front Street Shipyard project.

On December 16, 2025, the City Council held a public hearing and Second Reading of Amendment #9 to the Contract Rezoning Agreement between the City and SHM Front Street LLC for the Front Street Shipyard project. The Council, in adopting Amendment #9 to the Contract Rezoning Agreement, voted to require that the Applicant comply with Conditions of Approval recommended by the Planning Board at its meeting of November 19, 2025. All terms

for Amendment #9, Conditions of Approval as adopted by the City Council are contained in the adopted Amendment #9 to the Contract Rezoning Agreement.

This Amendment incorporates by reference previous Conditions of Approval adopted by the City Council. The terms of this Amendment #9, in conjunction with the terms of Amendment #3 through Amendment #8, shall constitute the terms of the Contract Rezoning Agreement that shall apply to the Front Street Shipyard project. The Applicant must comply with the Agreement and all Amendments and conditions to obtain any subsequent building or occupancy permits for project development or any further amendment to previously approved Site Plans for the Front Street Shipyard prepared by Gartley & Dorsky Engineers.

10.D



CITY OF BELFAST, MAINE 04915
131 Church Street

PLANNING AND CODES DEPARTMENT

Phone: (207) 338-3370 ext. 125

Fax: (207) 338-2419

Email:

planningandcodes@cityofbelfast.org

MEMORANDUM

TO: Belfast City Council, Mayor and City Manager

CC: City Engineer Mandy J Holway, Olver Associates Inc. and
Public Works Director Kip Faulkner

FROM: Bub Fournier, Director of Planning and Codes Department

DATE: December 8, 2025

RE: Proposed City adoption of a portion of Little River Drive, a portion of Little River Drive Extension and Whitetail Street – Little River Subdivision Phase 1

BACKGROUND

B&B Belfast Homes, LLC, a real estate development company formed by Ben Hooper and Brad Lindelof for the development of the 100-acre property at 68 Little River Drive, Map 4 Lot 62-G, are building a 48-lot residential subdivision at the end of Little River Drive. The property was formerly owned by the County. The subdivision includes construction of new roads totaling approx. 6,700 linear feet with private septic systems, public water and electrical service to accommodate residential development. The owners are also constructing a stormwater collection system consisting of underdrain soil filters, buffers and wet ponds designed to meet the applicable City and State standards. On November 1, 2023, this project was approved by the Planning Board as a Planned Unit Development (cluster development) in which the project's designers set aside 35% of the initial site as open space, including an area that the Little River Trail passes through as well as high value shoreland and flood plain areas adjacent to the river and Reservoir Number Two. The subdivision was amended 3 times since then to accommodate name changes in the ownership LLC, remove the proposed public sewer component, and change some specifications on the road design.

Little River Drive, a City maintained road to the entrance of the Mowi Ducktrap plant, constitutes the access for all of the proposed lots, with a network of streets that would also serve the development. The developers built a continuation of Little River Drive, then Little River Drive Extension on to their property as well as a new road called Whitetail Street as part of Phase 1 of

this subdivision. I am enclosing a map that identifies the location of the subdivision, as well as a map that identifies the layout including phasing.

Mr. Hooper and Mr. Lindelof arranged to have the new streets within the subdivision built to City road construction specifications. The roads are paved, and the paved surface is 18' in width. There are 3-foot gravel shoulders on each side of the road, and the road will have the required base material and a stormwater management system. City Engineer Mandy Holway, Olver Associates, directed all inspections of the project as it was being built and does not have any objection to the City adopting the road at this time. Public Works Director Kip Faulkner has no objection to City adoption either.

At this time, this proposal has been brought to the City Council to request that the City accept Phase 1 of these subdivision roads as City roads. Additional phases are expected to commence when earthwork is possible next spring. The proposal does not include adoption of open space or stormwater management areas at this time, although the developer intends to have the City take ownership of them as well when the time comes.

The City Council expressed its intent to support City adoption of these roads, should they be built to the project's approved specifications and supported by the City Engineer and Public Works Director, at their meeting of August 15, 2023. The Council at the time expressed its intent to adopt phases of the road if 25% of any phase received occupancy permits, and 4 out of 6 of the lots have newly constructed homes that have received occupancy permits. A fifth home is currently underway in this phase.

If the Council agrees to accept these roads, it means that the public (the taxpayers) will be responsible for their long-term maintenance including snow plowing. The City Council does not have a specific road construction standard identified by Ordinance which it must use to determine if a road can be accepted by the City. When I stated that these roads have been built to City specifications, I am referring to specifications in both the Subdivision Ordinance and the Technical Standards Ordinance, (Chapter 98 of City Code of Ordinances) that the Planning Board uses to determine if a road meets City requirements. I believe the above standards are good guidelines that the Council should follow, but there are no guidelines that the Council must follow. Both the City Engineer and Public Works Director have indicated that they have no objections to the adoption requested by the developer. It should be noted that the developer requested and received a waiver, unanimously supported by the Planning Board, for technical standards after their initial subdivision approval to make the roads slightly narrower (20' of pavement down to 18' of pavement) for traffic calming on June 18, 2025.

As I stated in 2023, I believe that City acceptance of roads and other infrastructure, if they are well-built and constructed to the right specifications, is an area where the Council might have leverage to encourage new housing. This project represents an increase in our housing options in Belfast, protects public access to high level natural areas, and creates additional tax base for the future of Belfast. City acceptance of the road would allow the Council to support their intentions expressed in 2023. The City Attorney has asked that the developer file a transfer deed in the Registry, a draft copy of which is attached, should the Council vote to adopt this section of roads.

REQUESTED ACTION

I respectfully ask that the City Council consider a **motion to accept, as City maintained roads, the newly constructed portions of Little River Drive, Little River Drive Extension and the entirety of Whitetail Street in Phase 1 of the Little River Subdivision as described in supporting materials.**

Little River phase 1 road adoption.

From hoopersonchard@gmail.com <hoopersonchard@gmail.com>

Date Thu 11/20/2025 9:15 AM

To Bub Fournier <directorplanning@cityofbelfast.org>

Cc lindelofbrad@yahoo.com <lindelofbrad@yahoo.com>

Benjamin Hooper

Partner, Little River Subdivision

Belfast, Maine

856 Back Brooks Rd, Belfast ME 04951

Belfast City Council

131 Church Street

Belfast, Maine 04915

Dear Members of the Belfast City Council,

I am writing in my capacity as a partner in the Little River Subdivision to formally request that the City of Belfast take possession of the completed Phase 1 roadway infrastructure within the development. Specifically, this request applies to:

- **Whitetail Street**, and
- **The completed portion of the Little River Drive extension** constructed as part of Phase 1.

These roadways were designed, engineered, and constructed to meet the City of Belfast's approved subdivision plans and roadway standards. All required improvements for Phase 1—including roadway construction, drainage infrastructure, and associated right-of-way work—have been completed in accordance with the conditions of subdivision approval. The roads have been inspected during construction, and all punch-list items identified by the City's representatives have been addressed.

With Phase 1 infrastructure complete, we respectfully request that the City Council accept these roadway segments as public ways and incorporate them into the City's road system for maintenance and management going forward. This acceptance is consistent with the approved subdivision phasing plan and is necessary to support ongoing development of future phases as well as to ensure continued safe access for new homeowners, municipal services, and emergency response vehicles.

Thank you for your consideration of this request and for your continued partnership in the successful build-out of the Little River Subdivision. We look forward to working collaboratively with the City to complete this process.

Respectfully submitted,

Benjamin R. Hooper

Partner

B&B Belfast Homes | 856 Back Brooks Rd. | Monroe, ME 04951 | +1 (207) 323-0645



Re: Little River phase 1 road adoption.

From Kip Faulkner <publicworks@cityofbelfast.org>
Date Mon 12/1/2025 11:40 AM
To Bub Fournier <directorplanning@cityofbelfast.org>

Bub,

I see no problems with that

Thanks Kip

From: Bub Fournier <directorplanning@cityofbelfast.org>
Sent: Monday, December 1, 2025 10:56 AM
To: Kip Faulkner <publicworks@cityofbelfast.org>
Subject: Fw: Little River phase 1 road adoption.

Hi Kip,

Just following up on this. Can you please let me know if you have any comments on City adoption of the section of road mentioned below? The City Engineer has no objections. If you could respond to this email, I can use that in my materials for the Council to consider. Please feel free to call if you would like to discuss as well. Thanks.

Bub Fournier
Director, Planning and Codes Department
City of Belfast
131 Church Street Belfast, ME 04915
(207) 338-3370 X125
directorplanning@cityofbelfast.org

From: Bub Fournier <directorplanning@cityofbelfast.org>
Sent: Thursday, November 20, 2025 9:34 AM
To: Mandy Olver <mandy@olverassociatesinc.com>; Kip Faulkner <publicworks@cityofbelfast.org>
Cc: Erin Herbig <citymanager@cityofbelfast.org>
Subject: Fw: Little River phase 1 road adoption.

Hi Mandy and Kip,

Can you please respond to me in writing regarding the request below for City road adoption? We will need to have documents for Council to consider at an upcoming agenda item to adopt Little River Drive extension and Whitetail Lane as City roads. The request does not include stormwater detention ponds or the open space at this time, just phase 1 of the roads.

I am attaching my memo from 2023 to the Council when they indicated they would adopt the roads as well as the subdivision plan that shows Phase 1 on page C2.

Please let me know if you have any questions. Thanks.

Sincerely,

Bub Fournier
Director, Planning and Codes Department
City of Belfast
131 Church Street Belfast, ME 04915
(207) 338-3370 X125
directorplanning@cityofbelfast.org

From: hoopedorchard@gmail.com <hoopedorchard@gmail.com>
Sent: Thursday, November 20, 2025 9:15 AM
To: Bub Fournier <directorplanning@cityofbelfast.org>
Cc: lindelofbrad@yahoo.com <lindelofbrad@yahoo.com>
Subject: Little River phase 1 road adoption.

Benjamin Hooper
Partner, Little River Subdivision
Belfast, Maine
856 Back Brooks Rd, Belfast ME 04951

Belfast City Council
131 Church Street
Belfast, Maine 04915

Dear Members of the Belfast City Council,

I am writing in my capacity as a partner in the Little River Subdivision to formally request that the City of Belfast take possession of the completed Phase 1 roadway infrastructure within the development. Specifically, this request applies to:

- **Whitetail Street**, and
- **The completed portion of the Little River Drive extension** constructed as part of Phase 1.

These roadways were designed, engineered, and constructed to meet the City of Belfast's approved subdivision plans and roadway standards. All required improvements for Phase 1—including roadway construction, drainage infrastructure, and associated right-of-way work—have been completed in accordance with the conditions of subdivision approval. The roads have been inspected during construction, and all punch-list items identified by the City's representatives have been addressed.

With Phase 1 infrastructure complete, we respectfully request that the City Council accept these roadway segments as public ways and incorporate them into the City's road system for maintenance and management going forward. This acceptance is consistent with the approved subdivision phasing plan and is necessary to support ongoing development of future phases as well as to ensure continued safe access for new homeowners, municipal services, and emergency response vehicles.

Thank you for your consideration of this request and for your continued partnership in the successful build-out of the Little River Subdivision. We look forward to working collaboratively with the City to complete this process.

Respectfully submitted,

Benjamin R. Hooper

Partner

B&B Belfast Homes | 856 Back Brooks Rd. | Monroe, ME 04951 | +1 (207) 323-0645



RE: Little River phase 1 road adoption.

From Mandy Holway <Mandy@olverassociatesinc.com>

Date Thu 11/20/2025 9:48 AM

To Bub Fournier <directorplanning@cityofbelfast.org>; Kip Faulkner <publicworks@cityofbelfast.org>

Cc Erin Herbig <citymanager@cityofbelfast.org>

Good morning-

Based on our periodic site inspections, we feel that the phase 1 roadways (Whitetail and section of Little River Drive) have been constructed per the approved plans.

Please let me know if you need anything more formal or detailed than this reply.

Thanks, Mandy

MANDY J. HOLWAY, P.E. (ME, MA)
OLVER ASSOCIATES INC.
P. O. Box 679
290 S MAIN STREET
WINTERPORT, MAINE 04496
(207)223-2232
(207)949-4680 CELL

From: Bub Fournier <directorplanning@cityofbelfast.org>

Sent: Thursday, November 20, 2025 9:35 AM

To: Mandy Holway <Mandy@olverassociatesinc.com>; Kip Faulkner <publicworks@cityofbelfast.org>

Cc: Erin Herbig <citymanager@cityofbelfast.org>

Subject: Fw: Little River phase 1 road adoption.

Hi Mandy and Kip,

Can you please respond to me in writing regarding the request below for City road adoption? We will need to have documents for Council to consider at an upcoming agenda item to adopt Little River Drive extension and Whitetail Lane as City roads. The request does not include stormwater detention ponds or the open space at this time, just phase 1 of the roads.

I am attaching my memo from 2023 to the Council when they indicated they would adopt the roads as well as the subdivision plan that shows Phase 1 on page C2.

Please let me know if you have any questions. Thanks.

Sincerely,

Bub Fournier
Director, Planning and Codes Department
City of Belfast

131 Church Street Belfast, ME 04915
(207) 338-3370 X125
directorplanning@cityofbelfast.org

From: hoopersorchard@gmail.com <hoopersorchard@gmail.com>
Sent: Thursday, November 20, 2025 9:15 AM
To: Bub Fournier <directorplanning@cityofbelfast.org>
Cc: lindelofbrad@yahoo.com <lindelofbrad@yahoo.com>
Subject: Little River phase 1 road adoption.

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Respectfully submitted,

Benjamin R. Hooper

Partner

B&B Belfast Homes | 856 Back Brooks Rd. | Monroe, ME 04951 | +1 (207) 323-0645

10.E

December 9, 2025

Memo to Erin Herbig, Belfast City Manager
City of Belfast Mayor
Belfast City Council

From Katherine Given, Belfast Harbor Master

Re: Council agenda December 16, 2025
Armistice Bridge Inspection Presentation

The Armistice Bridge, (also commonly called the 'Footbridge') rebuild was completed in September of 2006. Annual maintenance and occasional inspections are recommended and necessary to accommodate the heavy everyday use, access to the east side, and wear and tear from the water and weather conditions.

The annual maintenance is primarily taken care of by a joint effort of the Harbor Department and Public Works. Proper inspections require knowledgeable bridge engineers, and the most recent above water inspection was completed in 2014 by Vanasse Hangen Brustlin, Inc. (VHB), who engineered the rebuild in 2006. Concrete repairs and the expansion joint seals were replaced as recommended by that inspection. A below water inspection, aside from checking piling zincs, hasn't been completed since the rebuild.

The Belfast City Council during their 2025-26 budget sessions discussed having another inspection done, to include an underwater inspection in part due to the recent damaging winter and spring storms. The Council approved funding to be taken from the Footbridge Capital Reserve Account: 660-705. VHB completed both the above and below water inspection in November of 2025 and will be present to answer any questions regarding the findings in their inspection report.

Routine Bridge Inspection Report

Lower Bridge (Footbridge) over Passagassawakeag River Bridge No. 2477 Belfast , Maine



Prepared for **City of Belfast**
Belfast, Maine

Prepared by  **vhb** South Portland, Maine

Report Date: November 28, 2025

Inspection Date: September 9, 2025 & Octboer 15, 2025

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Location Map

**Lower Bridge (Footbridge) over Passagassawakeag River
Bridge #2477
Belfast, Maine**



Latitude: 44° 25' 55" N, Longitude: 69° 0' 29" W

Introduction

Project Description

The City of Belfast engaged VHB to perform a routine visual condition inspection of the Lower Bridge (Footbridge) over Passagassawakeag River, Bridge No. 2477. The bridge carries pedestrian and bicycle traffic only. The bridge is approximately 1030' long with eighteen spans. Seventeen of the spans have steel beam and concrete deck superstructures and one span is a movable bascule span. Construction of the current pedestrian bridge was completed in 2006. The bascule span superstructure is supported on pipe pile and concrete cap piers constructed in 2006. The superstructure in all other spans is supported on stone masonry piers and abutments from the original 1920's highway bridge that were rehabilitated in 2006. Selected plan sheets from the 2005 Contract Plans are attached in Appendix B.

Inspection Procedure

The inspection was performed by Brian Reeves, P.E. and Thomas Rioux, P.E. on September 9, 2025. The VHB inspection team performed a routine visual condition inspection of the entire bridge. In general the inspection included observing and recording in written notes and with representative digital photographs the overall condition of the deck, superstructure and substructure. All significant deficiencies observed were noted and photo documented. The bridge components that were inspected included the concrete bridge railing, lighting, concrete deck, deck joints, steel beams, bearings, abutments, piers, the fender system, both bridge approaches, and the bascule span superstructure. A detailed "hands on" inspection (in which the inspectors get close enough to touch all bridge components) was not conducted. The bridge was inspected in accordance with the specifications for the National Bridge Inventory (SNBI). Major components were assigned condition ratings according to the National Bridge Inventory (NBI) guidance which uses a numerical rating scale ranging from 0 (bridge closed) to 9 (excellent).

The access equipment used to complete the inspection was waders and a small two-person inspection boat. The inspectors used the boat to inspect the bearings, beam ends, underside of the deck and the deck joints, and the concrete pier caps. During low tide the visible stone masonry portions of the piers and abutments were inspected using waders to determine if any of the stones have shifted, or if there has been deterioration of the mortar in the joints that were repointed as part of the 2006 bridge rehabilitation project.

To complete the inspection of the piers that were not accessible or exposed at low tide, VHB teamed with GEI Consultants, Inc. to perform an underwater inspection. The structural inspection was performed by VHB on September 9, 2025, and the underwater inspection was performed on October 15, 2025. See Appendix C for the underwater inspection report.

VHB did not inspect the mechanical and electrical systems of the bascule span. The inspectors coordinated with the Harbor Master to observe the bascule span moving through one complete cycle of opening and closing only. VHB inspected only the structural components of the bascule span.

Inspection Summary

Deck: Good Condition = 7

The bridge is in generally good condition overall. A breakdown of individual components of the deck can be found below.

Deck

Good Condition = 7

Photos: 7, 11-14

The concrete deck surface is in good condition in all spans. There are scattered deck pop-outs up to 3" in diameter in Spans 4, 14, 15, and 16. There are hairline transverse and longitudinal cracks throughout the bridge deck. Transverse cracks are spaced 4'-12' apart. Spalls are noted up to 3'-1" long, particularly in Spans 6, 8, and 9. There is a spall on the north fascia of Span 14, approximately 1/3rd the distance to Pier 13. The galvanized steel stay-in-place deck forms below the deck are in good condition with corrosion noted due to previous leaks near joints, however no active leakage is noted.

Deck Joints

Satisfactory Condition = 6

Photos: 8-10, 31

The flexible joint sealant is sunk below the deck surface in multiple locations due to the failure of the backer rod at Piers 1 and 5.

The neoprene joint seals were replaced since the last inspection. Seals in all spans are in satisfactory condition, showing signs of wear, debris accumulation, and exposed foam interior due to the rubber cover being torn or missing in scattered locations. At Piers 5 and 12, the old joint seal is on top of the pier, as it was replaced in the 2014 rehabilitation project. The galvanized steel angles at all of these joints are in satisfactory condition, with minor corrosion and impact damage.

Superstructure: Good Condition = 7

The superstructure is in generally good condition overall. A breakdown of individual components of the superstructure can be found below.

Beams

Good Condition = 7

Photos: 26-33

The beams are galvanized and painted, and the diaphragms are galvanized. The paint and galvanized coatings are in satisfactory condition, with paint chipping and flaking noted on the bottom flanges. There is one minor area on the south bottom flange of the south beam in Span 11 with paint peeling. In multiple locations, steel was welded or torch cut during construction and not re-painted, causing corrosion. There is corrosion on the diaphragm connection plate to bottom flange weld, the beam bottom flange to sole plate weld, and at the bottom of the bearing stiffeners that were torch cut for the anchor bolts. In Span 16, at midspan on the south beam, there is an upward deflection of up to 1/4".

Bearings

Good Condition = 7

Photos: 34-36

Minor corrosion is noted on the sole plate at the beam bottom flange to sole plate weld and anchor bolts. The hex nut is missing from both interior anchor bolts on the south beams at Pier 1. The previous inspection report noted missing hex nuts. The assistant harbor master states that he replaced up to 10 hex nuts and added Loctite.

There is a split starting in the elastomer on the interior face near the anchor bolt on the south beam at Pier 6. The split is approximately 1/4" wide by 1/4" deep.

Bridge Lighting

Good Condition = 7

Photos: 21

The precast concrete light posts were in good condition. There is a small gap between the top of each light post dedication plaque and the face of the post that allows water in behind the plaque.

Bridge Railing

Good Condition = 7

Photos: 15-20

The bridge railing consists of cast-in-place concrete expansion posts, and precast concrete intermediate posts and rail panels. The concrete bridge railing is generally in good condition. There are scattered intermediate posts with vertical cracks up to 2' long. There is an intermediate post on the north side of Span 2 that has a full-width crack up to 1/4" wide. There is an intermediate post on the south rail in Span 1 with a large spall exposing the reinforcing. The "feet" of the precast concrete rail panel adjacent to the Memorial Tablet in Span 14 are spalled on both the interior and exterior faces. The precast concrete rail panels are connected to the expansion and intermediate posts with stainless steel rods and bushings that are grouted into blockouts in the posts. In scattered locations, there are posts with missing grout in the blockouts, allowing water to enter. The majority of post blockouts were repaired in the previous rehabilitation project, but multiple locations were missed, or the grout is failed. At the north post in Span 14 near Pier 13, the Korolath white PTFE expansion material is sliding out up to 1".

Substructure: Satisfactory Condition = 6

The substructure is generally in satisfactory condition overall. A breakdown of individual components of the substructure can be found below.

Abutments – Cheekwalls/Backwalls/Wingwalls

Fair Condition = 5

Photos: 37-39, 51, 52

The concrete bridge seats, cheekwalls and backwalls are in good condition. The stone masonry abutment stems and wingwalls are in fair condition, with up to 80% mortar loss, especially below the high tide line. All wingwalls tip outward, with large gaps in between stones in all courses. There is a 5" gap in the Abutment 2 northwest wingwall. There is a fractured stone on the Abutment 1 northwest wingwall, causing a gap of up to 4". At Abutment 1, the concrete backwall is notched to fit the beam ends.

Piers

Fair Condition = 5

Photos: 33, 40-42, 45-50

The piers are generally in fair condition. The new concrete pier caps are in very good condition with only minor shrinkage cracking noted at some piers. The top course of stone masonry at each pier is bonded tightly to the concrete cap above and shows no signs of distress. At Pier 1, the concrete cap overhangs the northeast end of the masonry pier by up to 6". All of the piers have up to 80% mortar loss, especially below the high tide line, with daylight visible through lower courses of various piers. Piers 9, 10, and 13 have undermining below their bottom course, at the south, south, and both ends respectively. The largest undermining is at the north end of Pier 13, up to 2'-10" deep by up to 5" high. On the west face of various piers, there are multiple blocks with full height cracks, typically two to three stones from the north nose. At Pier 1, in the 2nd course on the west face, there is a block with a full height crack. Stones in the 2nd, 3rd, and 5th courses on the west face of Pier 12 under the center beam have full height cracks up to 1" wide. Under the center beam on the west face of Pier 13, there is a full height crack up to 1/4" wide on the 2nd course block. After a review of photos taken during the

previous inspection, it does not appear that the condition of the pier stone masonry has changed significantly since 2014. The stone masonry pier stems are in satisfactory condition.

Piers 3A and 3B support the bascule span. These piers have concrete caps supported by six, epoxy coated steel pipe piles. The concrete pier caps are in good condition, with pigeon nesting and excrement noted, particularly on Pier 3A. The visible portions of the steel pipe piles are in fair condition. The majority of the steel pipe piles have epoxy coating failures near the top of the piles with corrosion and rust staining. At Pier 3A, the largest epoxy coating failure is at the center west pile, with a 12" high by full circumference area 12" from the pier cap noted. At Pier 3B, the largest epoxy coating failure is at the northeast corner pile, with an 18" high by high by full circumference area at the pier cap noted.

Fender System

Good Condition = 7

Photos: 43,44

The timber pile and waler fender system is generally in good condition. Two of the conical pile caps are broken near the south end of the Pier 3A, with all other pile caps intact. All of the horizontal timber walers are intact and fully bolted to the fender piles.

Bascule Span

Good Condition = 7

Photos: 22-25

VHB inspected only the structural components of the bascule span. VHB coordinated with the harbor master to view one full cycle of the bridge operation. The aluminum bascule superstructure, including the aluminum decking, and the lockable gates are in good condition. One of the anchor bolts on the north lifting cylinder has failed and is loose.

Approaches

Satisfactory Condition = 6

Photos: 2-6

The general condition of both the east and west bridge approaches is satisfactory. The opening between the vertical granite posts at the west approach is 7'-7", however there is an opening of 9'-6" to the adjacent electrical panel. The west approach is approximately 1 1/2" lower than the bridge, causing impact damage to the deck. The opening between the granite blocks at the east approach is 6'-3". Both approaches have signs indicating no thru vehicles are allowed through. Both approaches have undermining on the north side of the approach. The undermining is up to 3'-4" wide by 1'-6" deep on the west approach and up to 9'-0" wide by 3'-0" deep on the east approach.

Repair and Maintenance Recommendations

Repair Recommendations

VHB recommends that the City make the following repairs to the footbridge based on the findings of the inspection. The recommended repairs are listed in order from highest priority to lowest.

1. West Approach Vehicle Access Restriction:
 - a. Add a bollard/granite post to reduce the 9'-6" space between the vertical granite post and the electrical panel at the west approach to ensure that motor vehicles cannot pass through. The bascule span was not designed to carry motor vehicles, it is important to prevent them from accessing the bridge.
2. Approach Repairs:
 - a. Fill the voids on the north side of both east and west concrete approaches using granular material.
3. Substructure Repairs:
 - a. Remove corrosion from and apply an epoxy repair coating on all piles supporting Piers 3A and 3B to prevent further corrosion.
 - b. Armor the south nose of Piers 9, 10, 13 and the north nose of Pier 13 to prevent further undermining. Use riprap meeting MaineDOT standard specifications for plain riprap.
 - c. Repoint all stone masonry missing mortar to prevent movement of stones in all piers and abutments. Use a mortar listed on the MaineDOT Qualified Products List for Preblended Mortar Mixes.
4. Bascule Span Repairs:
 - a. Drill out and install the new or replacement anchor bolt in the north bearing for the bascule span lifting cylinders.
5. Bridge Joint Repairs:
 - a. Add sealant to the fixed joints at Piers 1 & 5 to prevent water leakage. Replace backer rod if necessary after existing sealant removal. Use a silicone-based sealant listed on the MaineDOT Qualified Products List for Joint Sealants, such as Wabo SiliconeSeal.
6. Bridge Rail Concrete Repairs:
 - a. Repair various cracked or spalled intermediate concrete rail posts as noted, particularly in Spans 1,2, and 9. Perform concrete patch repairs in general conformance with MaineDOT Standard Specifications Section 518 and use only products listed on the MaineDOT Qualified Products List for Concrete Patching Materials.
 - b. Repair the spalled areas on the "feet" of the precast concrete rail panel adjacent to the Memorial Tablet in Span 14. Perform concrete patch repairs in general conformance with MaineDOT Standard Specifications Section 518 and use only products listed on the MaineDOT Qualified Products List for Concrete Patching Materials.

7. Concrete Deck Repairs:
 - a. Repair the scattered deck popouts and spalls. Patch with a polymer-modified concrete patching material listed on the MaineDOT Qualified Products List for Concrete Patching Materials. Perform concrete patch repairs in conformance with MaineDOT Standard Specifications Section 518.
8. Beam and Bearing Repairs:
 - a. Replace the missing hex nuts on the Pier 1 south bearings.
 - b. Remove corrosion from, and repaint the diaphragm connection plate to bottom flange weld, the beam bottom flange to sole plate weld, and the bottom of the bearing stiffeners where they were torch cut for the anchor bolts. Use a MaineDOT approved paint mixture.
9. Rail Post Blockout Sealing:
 - a. Reseal the scattered rail post blockouts where the existing grout is recessed or partially missing. A polyurethane-based, non-sag elastomeric sealant such as Sikaflex-15 LM or Sikaflex-1a may be used to seal recesses and voids 0.5" deep or less. Use a non-shrink grout listed on the MaineDOT Qualified Products List for Grout Materials for all other blockout sealing.

Maintenance Recommendations

VHB recommends that the City consider the following maintenance actions for the footbridge based on the findings of the inspection. The recommended maintenance actions are listed in order from highest priority to lowest.

1. Continue to follow the recommendations outlined in the November 2006 Operations and Maintenance Plan, including performing a comprehensive routine inspection of the bridge every two years.
2. Concurrent with the next biennial routine inspection, perform an underwater inspection of the portions of Piers 2, 3A, 3B, 4, 5, and 6 that are not exposed at low tide. During this inspection inspect the aluminum anodes on the steel pipe piles supporting Piers 3A and 3B and replace them if they are less than 10% of their original size.
3. Continue to follow the maintenance recommendations in the bascule span Operations and Maintenance Plan.
4. Seal the small gap between the top of each light post dedication plaque and the face of the concrete light post to prevent moisture infiltration. Use a polyurethane-based, non-sag elastomeric sealant such as Sikaflex-15 LM or Sikaflex-1a.

GEI Recommends that the City consider the following maintenance actions for the footbridge based on the findings from the underwater inspection. See Appendix C for the full underwater inspection report.

1. Repoint between all joints in the stone masonry and between concrete curb seat and stone masonry on abutments.
2. Monitor lateral displacement of abutments and wingwalls.
3. Monitor coating loss on the steel piles – future repairs may be required to extend life.
4. Replace zinc anodes on pier piles.
5. Monitor deterioration of fender system connections below water.
6. Perform regularly scheduled underwater inspections of the bridge.

Appendices

Appendix A – Inspection Photos

Appendix B – Selected Existing Bridge Plans

Appendix C – Underwater Inspection Report

Appendix A – Inspection Photos



Description: South Elevation looking west.

Photo No. 1 - 0187



Description: East Approach looking east.

Photo No. 2 - 9850



Description: East Approach looking west.

Photo No. 3 - 9853



Description: Undermining up to 9' long by 3' deep at the north side of the East Approach.

Photo No. 4 - 9859



Description: West Approach, looking east.

Photo No. 5 - 0135



Description: Undermining up to 3'-4" wide by 1'-6" deep at the north side of the West Approach.

Photo No. 6 - 0128



Description: Condition of deck in Span 1.

Photo No. 7 - 0124



Description: Typical condition of neoprene expansion joint with impact damage, tears, and debris accumulation. Pier 4 joint shown, other expansion joints similar.

Photo No. 8 - 0067



Description: Typical condition of the silicone fixed joint with depression of the seal and debris accumulation. Pier 5 joint shown, other fixed joints similar.

Photo No. 9 - 0059



Description: Fixed joint seal pushed out up to a third of the joint length at Pier 1.

Photo No. 10 - 0108



Description: Typical deck condition, looking east.

Photo No. 11 - 9976



Description: Deck spall up to 3'-1" long and longitudinal crack along the north rail in Span 9.

Photo No. 12 - 0029



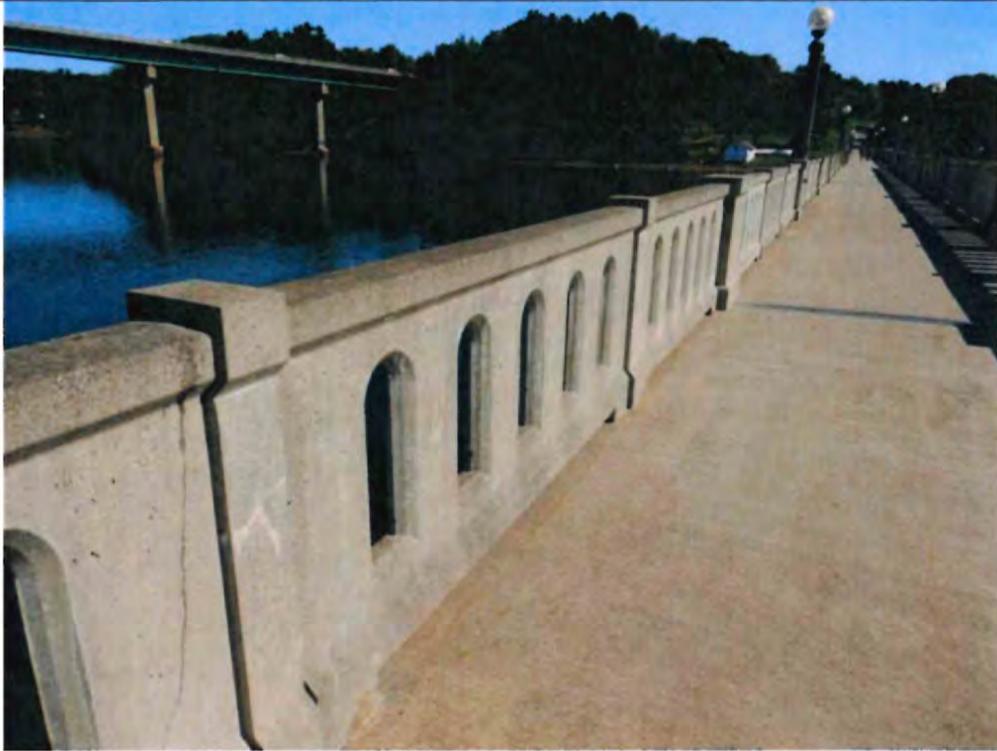
Description: 3" popout in deck surface, transverse crack, and trowel lines in Span 16.

Photo No. 13 - 9912



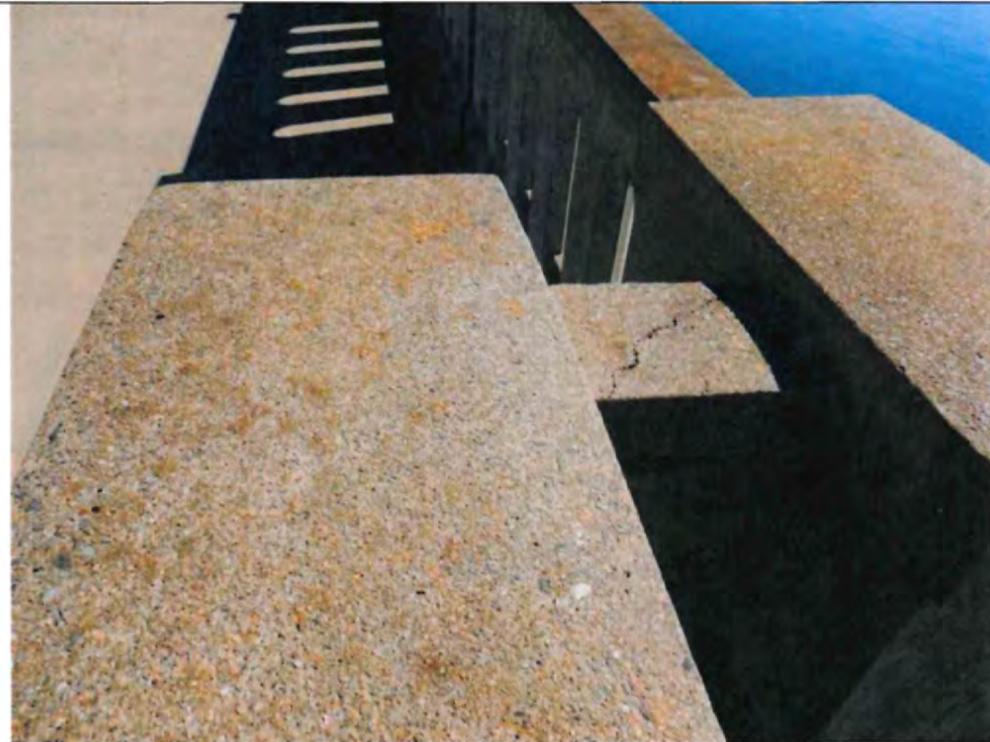
Description: Spall up to 2'-4" long and exposed PTFE up to 1" wide on the north side of Span 14.

Photo No. 14 - 9941



Description: Typical condition of concrete bridge rail. Note scattered efflorescence, minor cracking, and water staining. Span 9 shown.

Photo No. 15 - 0020



Description: Full-width crack in the bridge rail top cap in the south rail of Span 12.

Photo No. 16 - 9971



Description: Typical missing grout in intermediate rail post blackout. Span 9 north rail post shown, others similar.

Photo No. 17 - 0023



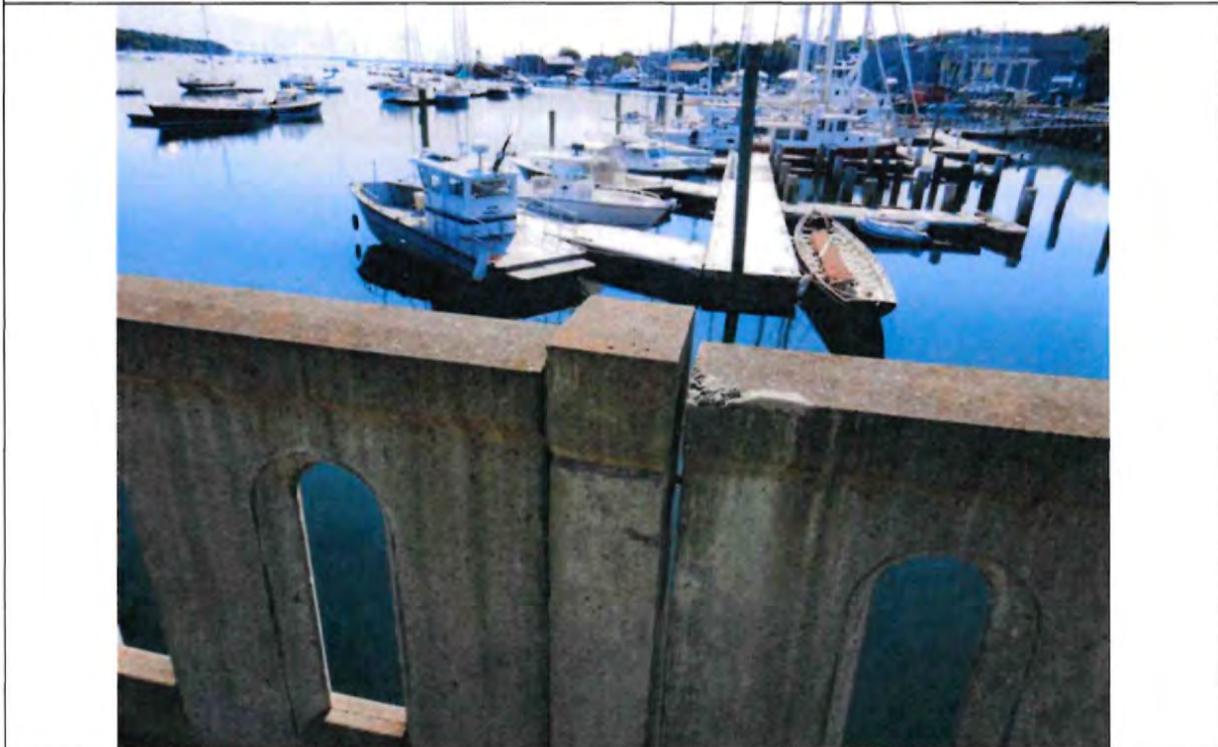
Description: Full-width crack between intermediate post cap and stem, up to 1/4" wide. Span 2 north rail post shown.

Photo No. 18 - 0102



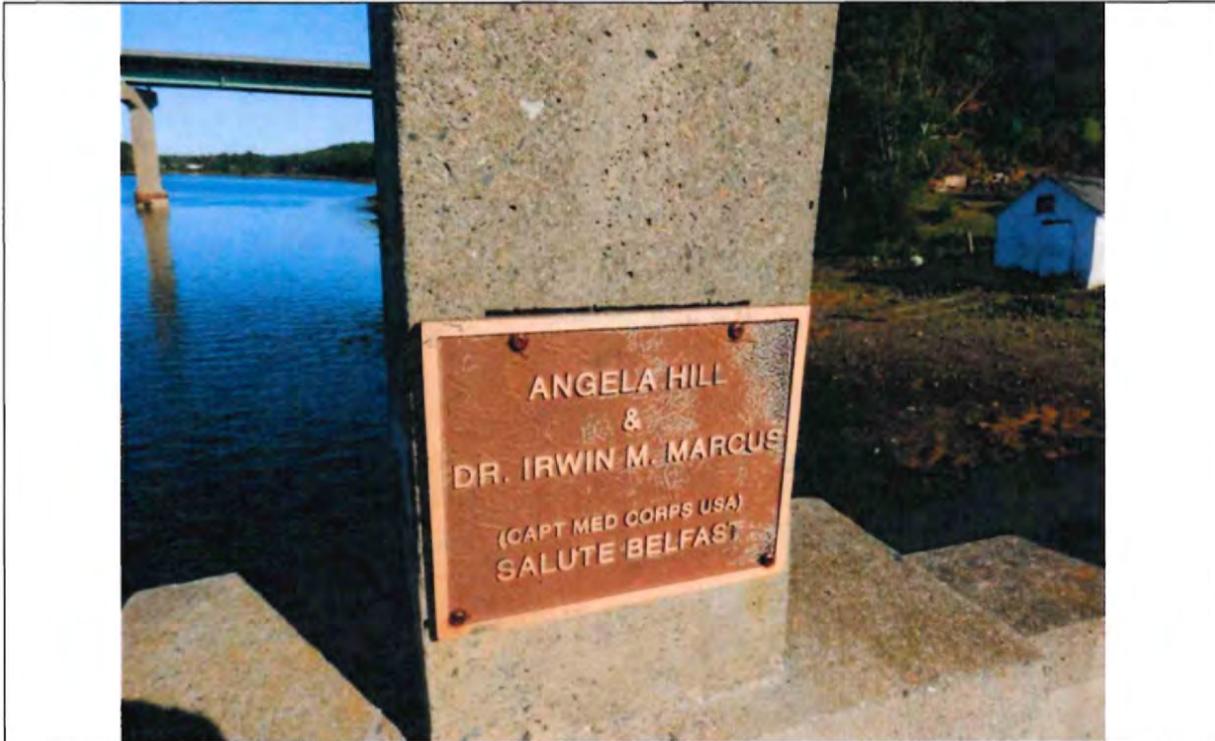
Description: Span 1 south intermediate post with cracks, spalls, and visible reinforcing.

Photo No. 19 - 0115



Description: Span 2 south railing panel with a corner spall up to 3" long.

Photo No. 20 - 0103



Description: Typical gap behind the plaque on a light post in Span 18, others similar.

Photo No. 21 - 9879



Description: Span 4 aluminum deck and railing.

Photo No. 22 - 0082



Description: Pier 3A bascule span joint in good condition.

Photo No. 23 - 0137



Description: General condition of bascule span underside and lifting hydraulic cylinders. Pier 3A shown.

Photo No. 24 - 0265



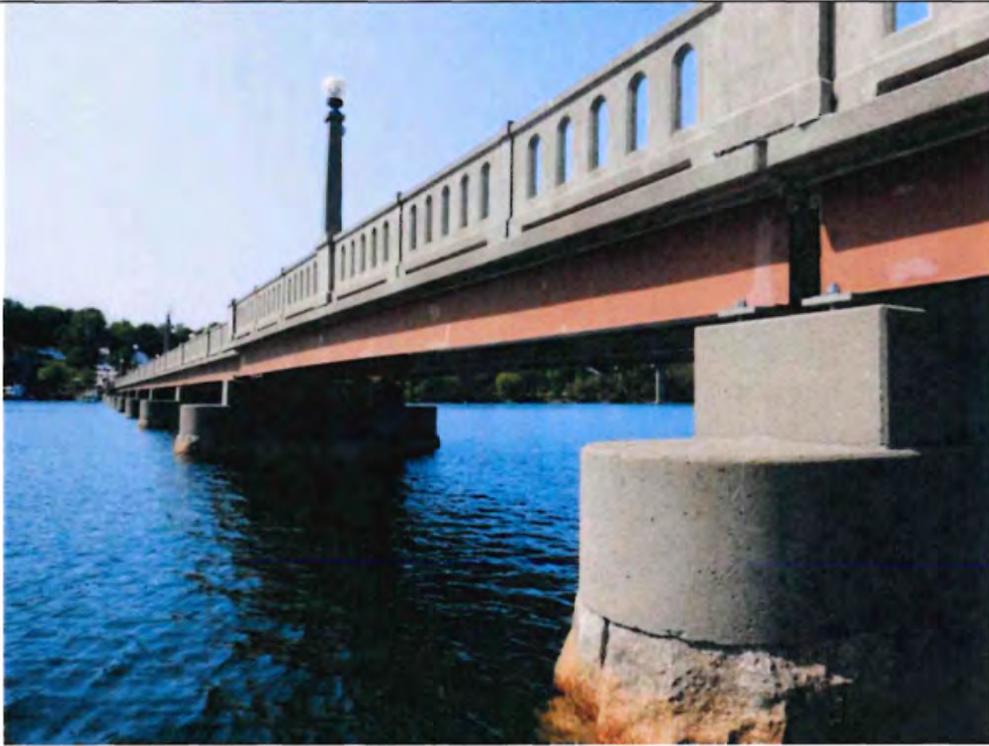
Description: Failure of anchor bolt on sole plate of north lift cylinder on Pier 3A.

Photo No. 25 - 0238



Description: Typical condition of beams, SIP forms, and diaphragms. Span 11 shown, others similar.

Photo No. 26 - 0191



Description: Typical condition of exterior beams in Span 13. Note previous paint repairs.

Photo No. 27 - 0181



Description: Span 16 south beam with up to 1/4" upward deflection at midspan.

Photo No. 28 - 0164



Description: Paint chipping and flaking on interior bottom flange of south beam in Span 18.

Photo No. 29 - 0152



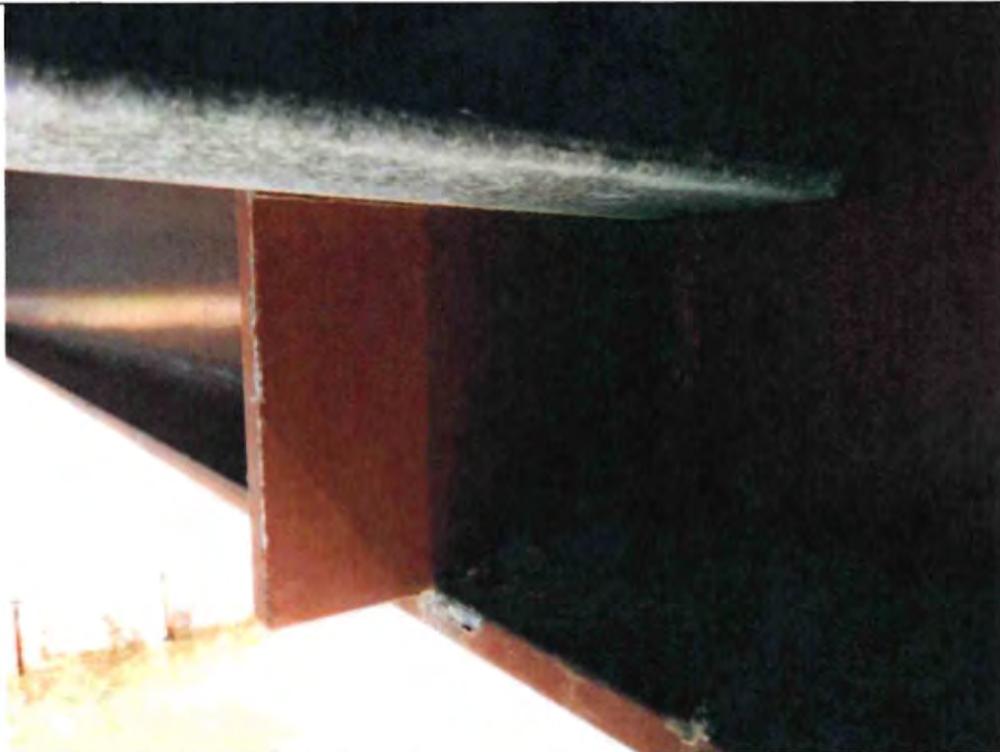
Description: Failed backer rod causing corrosion and rust staining at the end diaphragm of Span 6 over Pier 5.

Photo No. 30 - 0219



Description: View of deck underside, end diaphragms, and bearings at Pier 12, looking north. Note previously replaced neoprene joint seal.

Photo No. 31 – 0179



Description: Corrosion on the diaphragm connection plate to bottom flange weld. Span 15 south beam shown, others similar.

Photo No. 32 - 0169



Description: Typical condition of pier cap, end diaphragms, and pier cap. Pier 7 shown, others similar.

Photo No. 33 - 0207



Description: Up to 1/4" wide by 1/4" deep split in elastomer in south beam at Pier 6.

Photo No. 34 - 0215



Description: Corrosion on Span 7 north beam to sole plate weld due to removal of paint during construction. Other welds similar.

Photo No. 35 - 0218



Description: Typical condition of bearing stiffeners, torch cut to allow anchor bolt clearance. Pier 1 south bearings shown, others similar. Note missing anchor bolt hex nuts.

Photo No. 36 - 0253



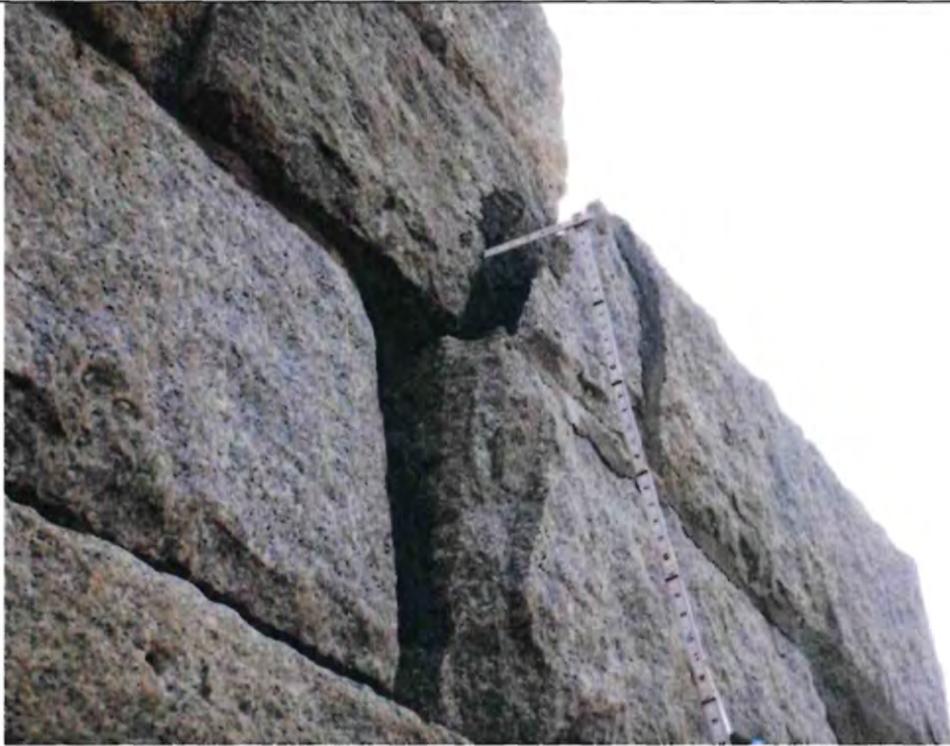
Description: East elevation of Abutment 1 with missing mortar below the water line and shifted stones.

Photo No. 37 - 0281



Description: General condition of the north wingwall at Abutment 1 with missing mortar and shifted stones.

Photo No. 38 - 0290



Description: Fractured block in the 3rd course of the north wingwall at Abutment 1, rotated out up to 4"

Photo No. 39 – 0287



Description: West elevation of Pier 1. Note missing mortar throughout.

Photo No. 40 - 0295



Description: North elevation of Pier 1, others similar. Concrete cap is misaligned up to 6".

Photo No. 41 - 0301



Description: Northwest elevation of Pier 2. Note typical missing mortar below waterline.

Photo No. 42 - 0325



Description: Typical condition of timber fender system. SW fender shown, others similar. Note two broken pile caps.

Photo No. 43 – 0080



Description: Elevation view of bascule span, fender system, and support structure.

Photo No. 44 - 0342



Description: Scattered epoxy coating failures on steel pipe piles below Pier 3A.

Photo No. 45 – 0340



Description: Scattered epoxy coating failures on steel pipe piles below Pier 3B.

Photo No. 46 - 0360



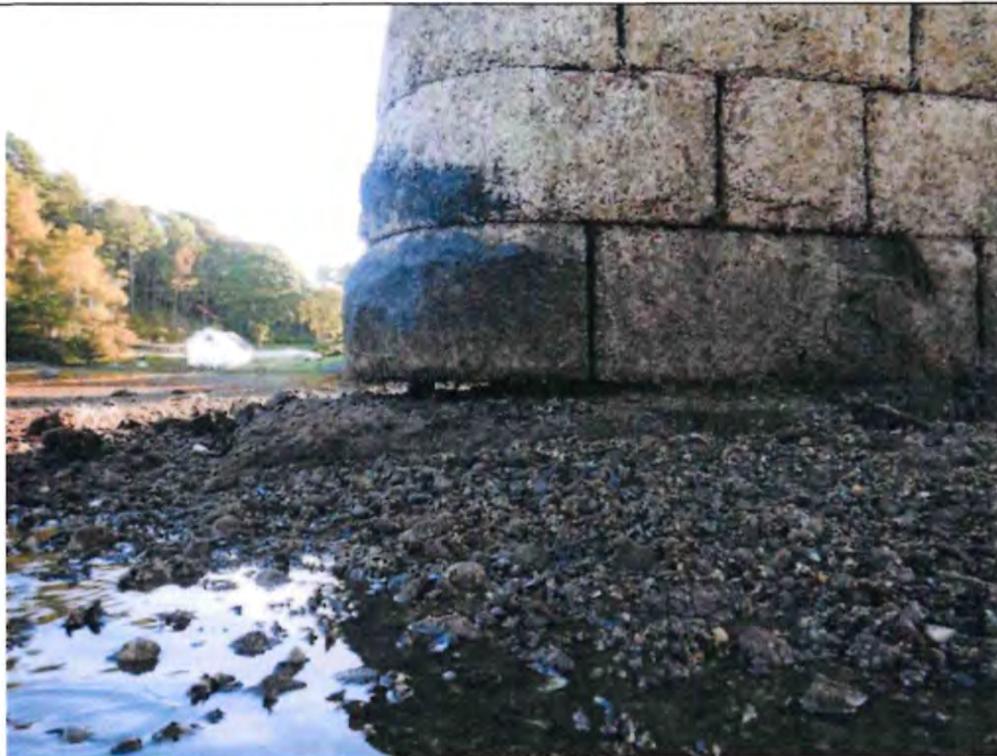
Description: West elevation of Pier 12. Note previously replaced neoprene joint seal and daylight highlighting missing mortar.

Photo No. 47 - 9695



Description: Full height crack up to 1" wide in the 2nd course block on the west face of Pier 13.

Photo No. 48 - 9724



Description: Undermining up to 2'-10" deep at the North face of Pier 13.

Photo No. 49 - 9729



Description: Full-height crack at the bottom course and undermining up to 14" deep on the south face of Pier 9.

Photo No. 50 - 9660



Description: South elevation of Abutment 2 with shifted stones.

Photo No. 51 - 9838

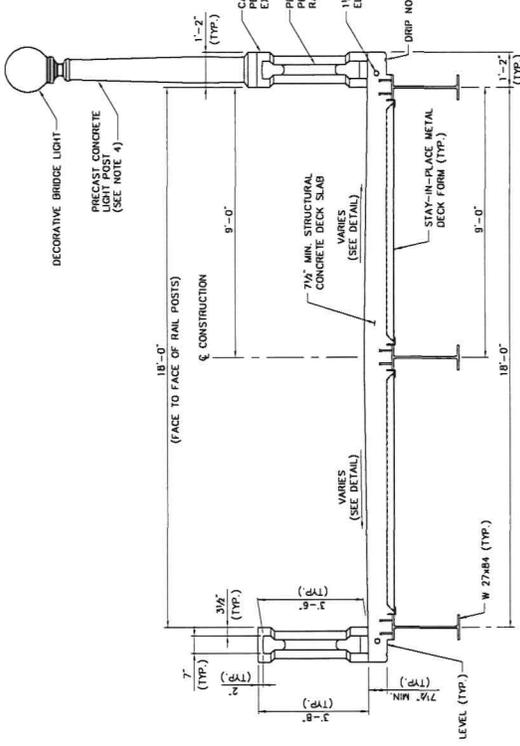


Description: North wingwall of Abutment 2 with shifted stones and missing mortar.

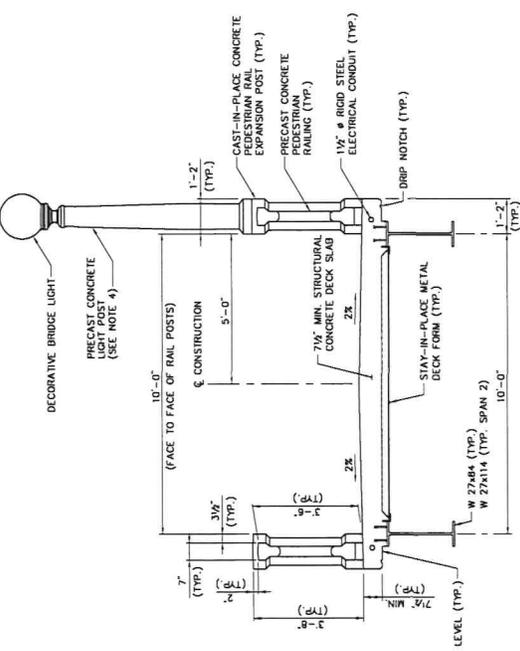
Photo No. 52 - 9822

Appendix B – Selected Existing Bridge Plans

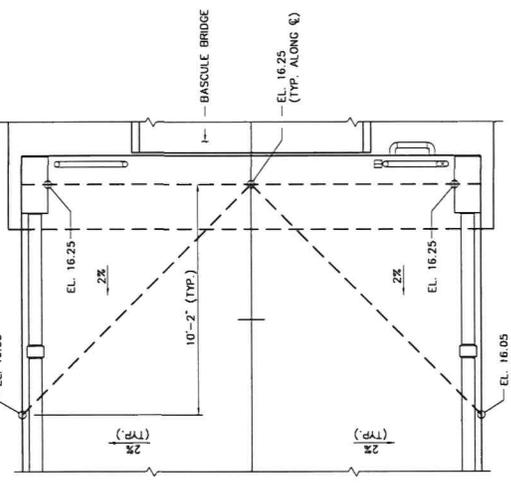
DATE	BY	SCALE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1			STP-782(00)X	29	69
			007824.00		



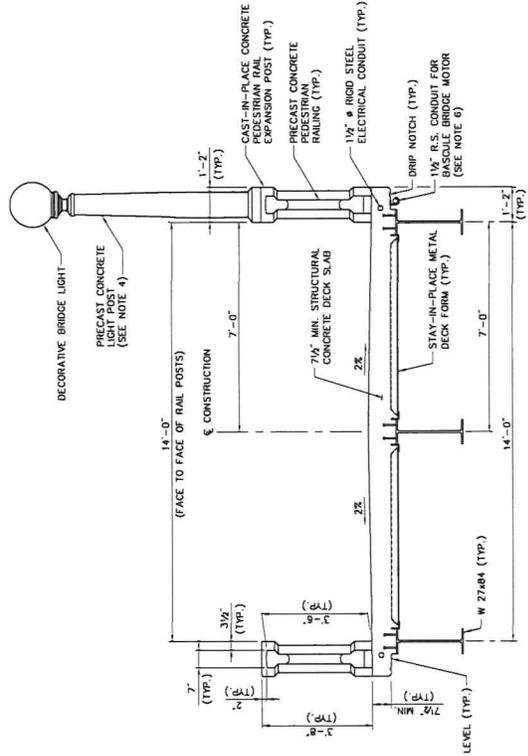
TYPICAL TRANSVERSE SECTION - SPANS 3 & 5
SCALE: 1/2" = 1'-0"



TYPICAL TRANSVERSE SECTION - SPANS 1, 2, 6-12, 15-18
SCALE: 1/2" = 1'-0"



WEARING SURFACE SLOPE TRANSITION
DETAIL - SPANS 3 & 5
SPAN 3 SHOWN, SPAN 5 SIMILAR
SCALE: 3/8" = 1'-0"



TYPICAL TRANSVERSE SECTION - SPANS 13 & 14
SCALE: 1/2" = 1'-0"

- NOTES:
1. THE SURFACE OF THE CONCRETE DECK SLAB SHALL BE FINISHED PERPENDICULAR TO THE CENTERLINE OF CONSTRUCTION.
 2. THE STRUCTURAL CONCRETE DECK SLAB SHALL BE PAID AS ITEM 502.26, STRUCTURAL CONCRETE ROADWAY AND SIDEWALK SLAB ON STEEL BRIDGES.
 3. NOTE NOT USED.
 4. SEE SHEETS 5 & 6 FOR LIGHT POST LOCATIONS.
 5. THE FINISHED CONCRETE DECK SURFACE SHALL BE SLOPED LONGITUDINALLY TO PROVIDE DRAINAGE AWAY FROM THE BASCULE BRIDGE IN SPANS 3 & 5 AS SHOWN IN THE DETAIL ON THIS SHEET.
 6. THE SUPPORTS FOR THE BASCULE BRIDGE MOTOR CONDUIT SHALL BE ATTACHED TO THE UNDERSIDE OF THE CONCRETE DECK SLAB.

CITY OF BELFAST
BRIDGE NO. 2477

**LOWER BRIDGE (FOOTBRIDGE)
OVER
PASSAGASSAWKAG RIVER
IN THE CITY OF
BELFAST**

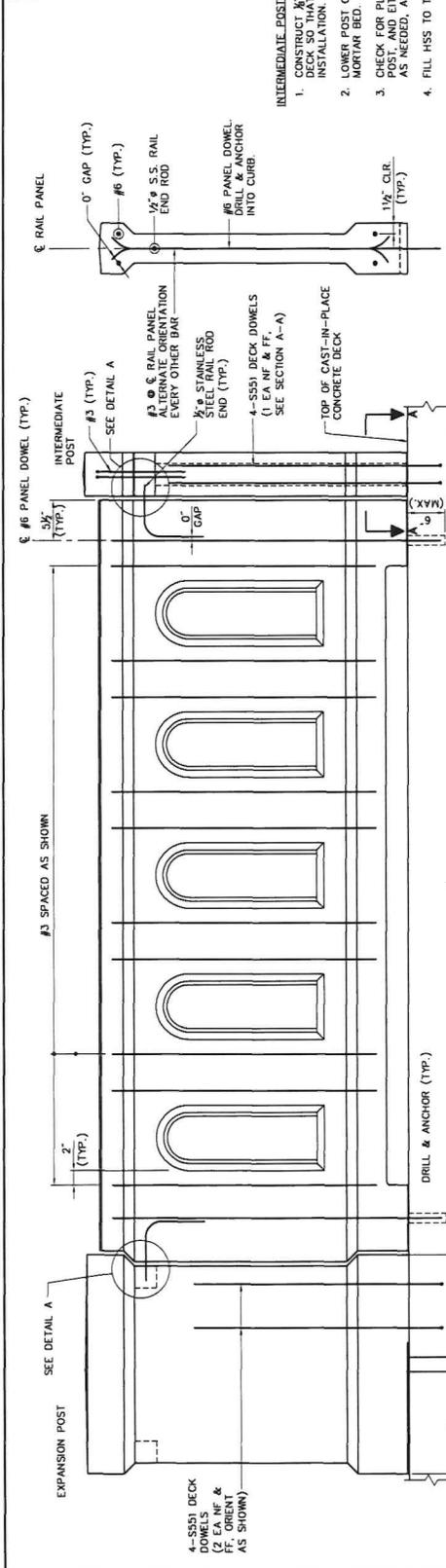
WALDO COUNTY
**SUPERSTRUCTURE TRANSVERSE
SECTIONS**

SHEET 28 OF 69
JUNE 2008
BELFAST, MAINE

VHB Vanasse Hangen Brustlin, Inc.

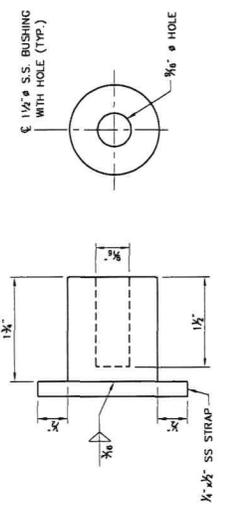
PROJECT DESIGN ENGINEER	1	BRANT	12-18-04
DESIGNED	1	BRANT	12-18-04
CHECKED	1	BRANT	06-28-05
FIELD CHANGES	1	BRANT	06-28-05

DATE	NO.	BY	REVISION
07/28/00	1	STP-7824(D0)X	54
07/28/00			59

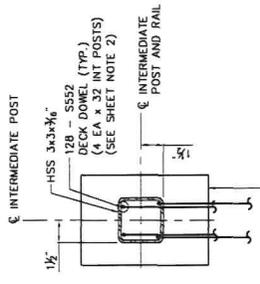


PARTIAL RAIL AND POST REINFORCEMENT ELEVATION
SCALE: 1/2" = 1'-0"

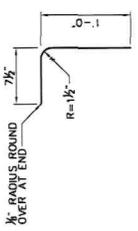
RAIL PANEL END ELEVATION
SCALE: 1/2" = 1'-0"



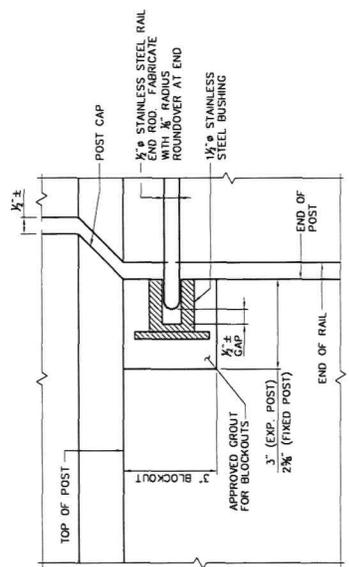
TYPICAL BUSHING DETAILS
SCALE: 1" = 1'-0"



SECTION A-A
SCALE: 3" = 1'-0"



1/2" ϕ STAINLESS STEEL END ROD DETAIL
SCALE: 1/2" = 1'-0"



INTERMEDIATE POST CAP DETAILS
SCALE: 3" = 1'-0"

DETAIL A
SCALE: 6" = 1'-0"

- INTERMEDIATE POST INSTALLATION NOTES:**
- CONSTRUCT "K" MINIMUM THICK MORTAR BED ON DECK SO THAT POST WILL BE PLUMB AFTER INSTALLATION.
 - LOWER POST OVER DECK DOWELS AND SET ON MORTAR BED.
 - CHECK FOR PLUMB AND IF NECESSARY, REMOVE POST AND EITHER SHIM OR PROFILE MORTAR BED AS NEEDED, AND RESET POST.
 - FILL HSS TO TOP WITH APPROVED GROUT.

- RAIL PANEL INSTALLATION NOTES:**
- TEMPORARILY SET PANEL INTO POSITION SO THAT CENTER OF RAIL PANEL IS CENTERED BETWEEN ADJACENT POSTS.
 - MARK LOCATIONS FOR DRILLING AND ANCHORING AND DRILL HOLE INTO DECK AS SHOWN.
 - AFTER DRILLING, CONSTRUCT A "K" MINIMUM MORTAR BED ON DECK AS SHOWN SO THAT RAIL PANEL WILL BE PLUMB AFTER INSTALLATION.
 - PLACE ANCHORING MATERIAL AND LOWER PANEL INTO PLACE. THE ANCHORING MATERIAL SHALL BE PERMITTED TO BE USED IN ACCORDANCE WITH THE DEPARTMENT OF TRANSPORTATION LIST OF PREQUALIFIED TYPE III ANCHORING MATERIALS. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - ENSURE THAT THE CENTERLINE OF THE RAIL PANEL IS AT THE CENTERLINE OF THE POSTS AND ANCHOR THE RAIL PANEL INTO POSITION SECURING THE STRAP. THE STRAP SHALL BE PLUMB AND END RODS INTO THE BLOCKOUTS AS SHOWN.
 - INSTALL POST CAPS AFTER ANCHOR GROUT HAS CURED.

- SHEET NOTES:**
- MINIMUM CLEAR COVER IS 1/2" UNLESS OTHERWISE NOTED.
 - INSTALL SS51 DECK DOWELS WITH TYPICAL OR OTHER APPROVED METHODS TO ENSURE ACCURATE PLACEMENT. DOWELS SHALL BE INSTALLED PLUMB.
 - SEE TABLES ON SHEET 52 FOR DEFINITION OF PRECAST AND CAST-IN-PLACE COMPONENTS.

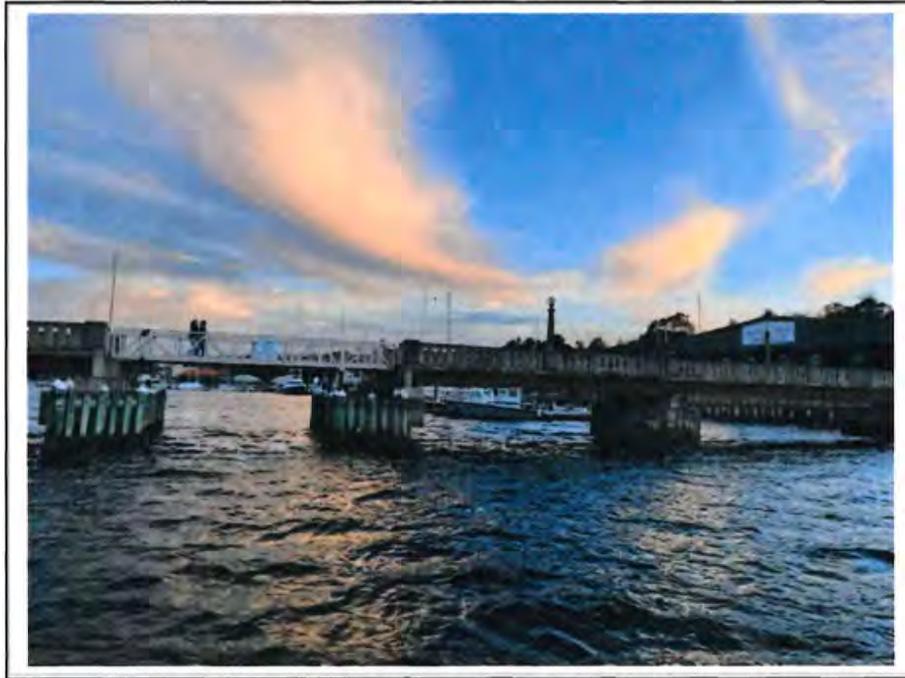
CITY OF BELFAST
LOWER BRIDGE (FOOTBRIDGE)
OVER
PASSAGASSAWAKEAG RIVER
IN THE CITY OF
BELFAST
WALDO COUNTY
BRIDGE RAIL DETAILS (3 OF 4)

SHEET 54 OF 60 BELFAST, MAINE JULY 2000

PROJECT DESIGNER	BY
DESIGNED	BY
REVISION	BY
FIELD CHECKS	BY
DATE	07-2000

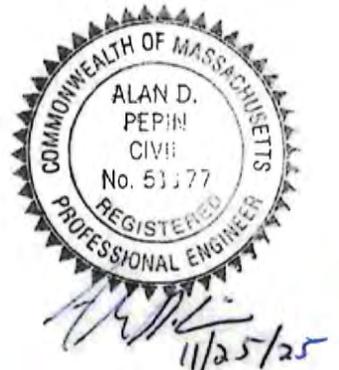
Appendix C – Underwater Inspection Report

VANASSE HANGEN BRUSTLIN, INC.
UNDERWATER BRIDGE INSPECTION



**LOWER BRIDGE
OVER PASSAGASSAWAKEAG RIVER
BELFAST , ME**

BRIDGE NO:	2477
BIN NO:	N/A
MILE POST:	N/A
STRUCTURE NO:	N/A
EQUIPMENT ID:	N/A
DATE OF CONSTRUCTION:	ORIGINAL 1920s, REHABILITATION 2006
STRUCTURE COMP:	CONC, STEEL, STONE
USEAGE:	PEDESTRIAN
STRUCTURE SIZE:	18 SPAN - 1030 FEET
DATE OF INSPECTION:	October 15, 2025



Prepared by:

**GEI CONSULTANTS, INC
FRANKLIN, MA 02038**



CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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UNDERWATER BRIDGE INSPECTION RECORD

BRIDGE NAME: **LOWER BRIDGE** over **PASSAGASSAWAKEAG RIVER**
BRIDGE NO: **2477**

TABLE OF CONTENTS

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Inspection Findings/Recommendations	3-5
Divers Activity Report	6
Photographs	7 - 16
Exhibits	17 - 27

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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INSPECTION FINDINGS RECOMMENDATIONS

DPIC: WG DIVER: MS DIVER: CY ENGINEER: _____ NOTES: _____

GENERAL

The inspection findings are from an underwater inspection performed on October 15, 2025 of the Armistice footbridge over the Passagassawakeag River in Belfast, ME. The river flow was tidal with an southeastward ebb, northwestern flood, and a high current of approximately 2 knots at the time of inspection. The bridge was comprised of two masonry abutments and eighteen piers, including sixteen stone masonry piers, and two pile-supported concrete cap piers. The abutments are labeled East and West, and the piers were labeled 1 through 16, ascending from the Southwest to Northeast. Piers 3A and 3B denote the pile-supported piers that make up the bascule bridge span. The scope of this inspection included a visual and tactile inspection of bridge and channel components below the High Water Mark (HWM), which was taken as mean high water. The item numbers refer to the "Underwater Bridge Inspection Divers Activity Report - Element Rating Sheet", which is attached on Page 6. The previous inspection of this bridge occurred on September 9, 2025, and did not include underwater elements.

ITEM NO.60 SUBSTRUCTURE

1. ABUTMENTS

60.1d (Breastwalls): The breastwalls were found to be in satisfactory condition. Typical conditions include loss of pointing between the stones as was present in other areas. At the West Breastwall, limited movement up to 1" was observed between the concrete bridge seat and adjacent South Wingwall stones (Photo 3).

60.1e (Wingwalls): The wingwalls were in fair condition overall. Typical gaps between joints varied between 1-4" and pointing loss was observed throughout. Both wing walls on the East and West Abutments were found to have lateral movement. Both abutments exhibited signs of bulging in the upper 3-4 courses of stones. Lateral separation in the N/S direction was found between wing walls and the breastwall on both abutments. See Photos 2 through 8.

60.1g (Pointing): Pointing was in poor condition. Loss was typically 30-50% above the high water mark and 80-100% below the high water mark.

60.1j (Scour): Scour was in good condition. No signs of scour were observed.

60.1k (Settlement): Settlement was in satisfactory condition. No settlement was visible during this inspection under the bridge breastwalls, however some limited settlement appeared to be present in the wing walls as noted with the enlarged gaps between the stones.

CITY/TOWN NEWBURYPORT	BR#/M.M. 37.50	B.I.N. C9U	BR. DEPT. NO. N-11-012	STRUCTURE NO. N11012-C9U-MBT-RRO	INSPECTION DATE October 15, 2024
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INSPECTION FINDINGS / RECOMMENDATIONS

DPIC: WG DIVER: MK DIVER: WG ENGINEER: CY NOTES: _____

2. PIERS OR BENTS

60.2d (Stems/Webs/Pierwalls): Overall, the piers were found to be in fair condition. Pointing loss was substantial creating voids between stones in all courses. Full height cracks were also observed on several faces of multiple piers. Voids extending through the width (narrow length) were observed through multiple piers. Undermining and erosion of pier footings was observed. Where concrete footings were found the top surfaces exhibited degradation of the concrete resulting in gaps (undermining) below the bottom course of stones. These conditions were noted to be the most severe on the southwest pier faces. Where footings were not found, the gaps were called undermining as voids were present below the stones, upwards of a few inches in height.

60.2e (Pointing): Pointing was in poor condition, with 90-100% loss below the high water mark.

60.2f (Footings): Footings were in fair condition. Scaling and deterioration of the concrete foundation was observed, causing voids and loss of bearing beneath the stones (Photos 9 and 10). These voids were observed on all faces of Pier 2 (Bascule Pier) and Pier 4, with voids up to 5" in height at the southwest side of Pier 4 and Undermining of the pier footing up to 6" in height was observed on the north side of Pier 2 (Photo 11).

60.2g (Piles): Piles supporting pier 3A and 3B were in satisfactory condition, with coating failure and rusting observed only at the top of the pile at the connection to the pile cap. Coating below the waterline was found to be 90% in tact at the time of inspection. Marine growth (Photo 12) below the waterline at the time of inspection was 80-100% covering the piles and zinc anodes welded to piles showed 50%-80% depletion (Photo 14). See 61.8a for evaluation of fender system piles.

60.2h (Scour): Scour was in satisfactory condition. Dumped 1' diameter riprap stone was noted on the east side of Pier 2.

60.2i (Settlement): Settlement overall was in satisfactory condition. The settlement on Pier 4 was in fair condition due to the observation of 1" of settlement of granite blocks on the north face.

ITEM NO.61 CHANNEL & CHANNEL PROTECTION

61.1 (Channel Scour): Scour was in satisfactory condition. The width of the "channel" with the side slopes has encroached past the limits shown on the historical drawings provided.

61.2 (Embankment Erosion): Embankment erosion was in fair condition. The embankments exhibited erosion and there appeared to be additional dumped rip rap varying in sizes near the ends of the wing walls.

61.3 (Drift): Draft was in very good condition. No drift was present at the time of inspection.

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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INSPECTION FINDINGS / RECOMMENDATIONS

DPIC: WG DIVER: MS DIVER: CY ENGINEER: _____ NOTES: _____

61.4 (Vegetation): Vegetation was in good condition. The banks were well vegetated, where vegetation was present.

61.6 (Rip-Rap/Slope Protection) Rip-Rap was in good condition and showed no apparent movement or settlement.

61.7 (Aggradation): Aggradation was in good condition. No aggradation was observed.

61.8 (Fender System): The fender system was in satisfactory condition.

61.8a (Piles): The piles were in satisfactory condition overall with no significant section loss.

61.8b / 61.8c (Diagonal / Horizontal Bracing): The bracing was in satisfactory condition overall. All horizontal timber bracing was in tact and fully bolted to the fender piles.

61.8e (Fasteners): Fasteners were in fair condition overall. Washers were in poor condition and exhibited corrosion reducing the thickness of the materials, especially below the waterline (Photo 15).

RECOMMENDATIONS

1. Repoint between all joints in stone masonry and between concrete curb seat and stone masonry on abutments.
2. Monitor lateral displacement of abutments and wingwalls
3. Monitor coating loss on the steel piles - future repairs may be required to extend life
3. Replace zinc anodes on pier piles.
4. Monitor deterioration of fender system connections below water.
3. Perform regularly scheduled underwater inspections of the bridge.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

UNDERWATER OPERATIONS TEAM

DIVERS ACTIVITY REPORT

2-DIST	B.I.N. 8P9		BR. DEPT. NO. N-04-025
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4-CITY/TOWN Belfast, Maine	5-STRUCTURE NO. No 2477	LEVEL OF INSP I & II	976-INSPECTION DATE 10/15/2025
5-FACILITY CARRIED Belfast Rail Trail	ACCESS TO BRIDGE Bank/ Boat	UNDERWATER OPERATIONS ENGINEER Will H. Green (PE)	
06-FEATURES INTERSECTED Passagassawakeag River	DEPTH 17'	VISIBILITY 10'	TEAM LEADER (DIVE MASTER) Will H. Green
BOTTOM CONDITION Stone/ Gravel/ Sand		CURRENT 2 knots	Report submitted by: GEI Consultants Inc.
TEAM MEMBERS WG MS CY			

ITEM 60 (Underwater) SUBSTRUCTURE	6	
1. Abutments	DEF	
a. Pedestals	N	
b. Bridge Seats	N	
c. Backwalls	N	
d. Breastwalls	6	M
e. Wingwalls	5	M
f. Slope Paving/Rip-Rap	8	M-P
g. Pointing	4	M-P
h. Footings	H	
i. Piles	H	
j. Scour	7	
k. Settlement	6	M-P
l.		
2. Piers or Bents		
a. Pedestals	N	
b. Caps	N	
c. Columns	N	
d. Stems/Webs/Pierwalls	5	M
e. Pointing	4	M
f. Footing	5	S
g. Piles	6	M-P
h. Scour	6	
i. Settlement	6	
j.		
k.		
3. Pile Bents		
a. Pile Caps	N	
b. Piles	N	
c. Diagonal Bracing	N	
d. Horizontal Bracing	N	
e. Fasteners	N	
UNDERMINING (Y=Yes / N=No)		Y

ITEM 61 CHANNEL & CHANNEL PROTECTION	7	
1. Channel Scour	6	DEF
2. Embankment Erosion	5	
3. Drift	8	
4. Vegetation	7	
5. Utilities	N	
6. Rip-Rap/Slope Protection	7	
7. Aggradation	7	
8. Fender System	6	
a. Piles	6	
b. Diagonal Bracing	N	
c. Horizontal Bracing	6	
d. Wales	N	
e. Fasteners	5	M
f. Ladders	N	
ITEM 59 SUPERSTRUCTURE		

ITEM 62 CULVERTS	N	
1. Roof	N	DEF
2. Floor	N	
3. Walls	N	
4. Headwall	N	
5. Wingwall	N	
6. Pipe	N	
7. Protective Coating	N	
8. Embankment	N	
9. Wearing Surface	N	
10. Railing	N	
11. Sidewalks	N	
12. Utilities	N	
13. Member Alignment	N	
14. Deformation	N	
15. Scour	N	
16. Settlement	N	
UNDERMINING (Y=Yes / N=No)		

DEFICIENCY REPORTING GUIDE	
DEFICIENCY: - A defect in a structure that requires corrective action	
CATEGORIES OF DEFICIENCIES:	
M= Minor Deficiency - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor scouring, etc.	
S= Severe Major Deficiency - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroding rebars, Deteriorated timber piles, Considerable settlement, Considerable scouring or undermining, etc.	
C-S= Critical-Structural Deficiency - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.	
C-H= Critical-Hazard Deficiency - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Any part of piles or fender system which are projecting outward and may become a safety hazard for the navigational traffic, etc.	
URGENCY OF REPAIR:	
I= Immediate - [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her]	
A= As soon as possible - [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report]	
P= Prioritize - [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available]	

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 001

East Abutment, Breastwall



Photo 002

West Abutment, Breastwall

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 003

West Abutment, Breastwall: Note separation, 1"

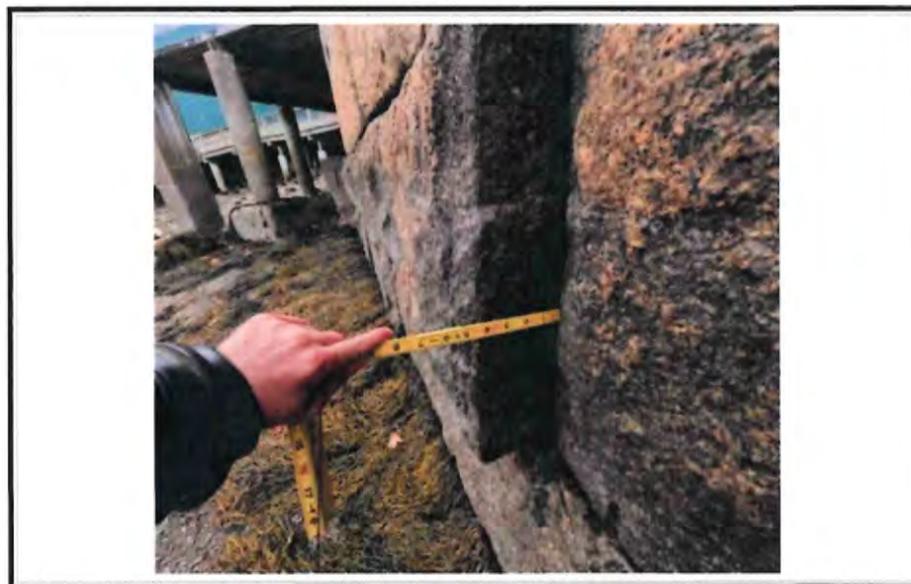


Photo 004

West Abutment, South Wingwall: Outshore movement

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 005

East Abutment, North Wingwall

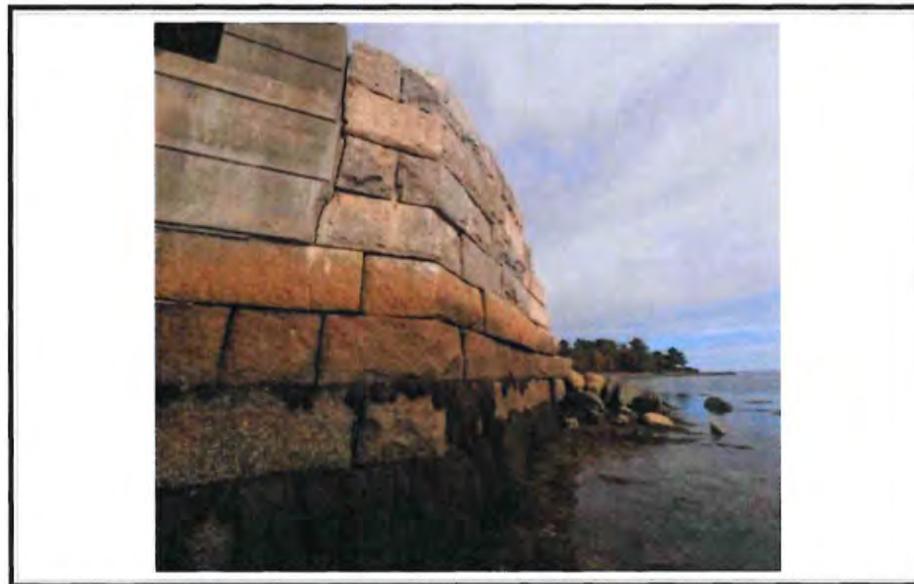


Photo 006

East Abutment, South Wingwall: Note separation of stone from concrete

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 007

West Abutment, North Wingwall: Note separation from concrete



Photo 008

West Abutment, South Wingwall

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS

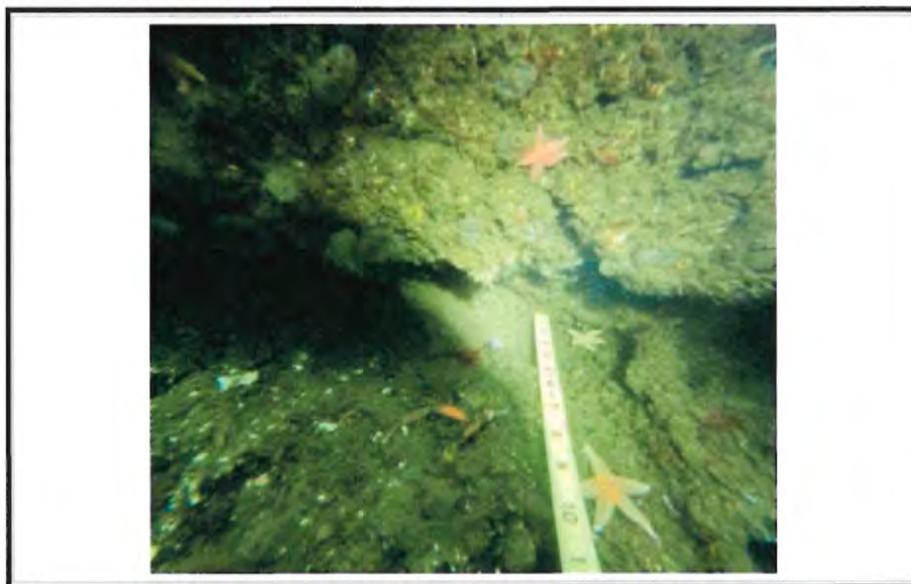


Photo 009

Pier 2: Void between stone course and concrete foundation

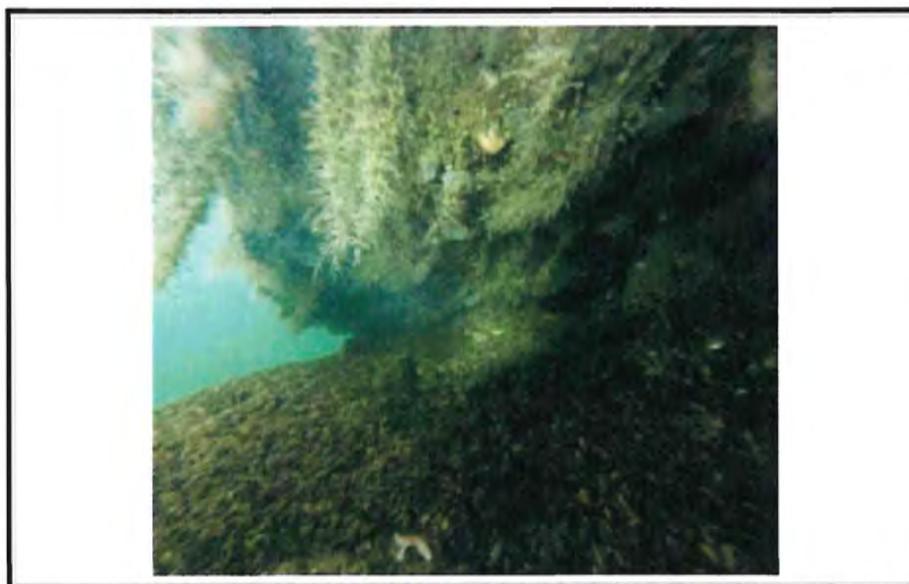


Photo 010

Pier 4: Void between stone course and concrete foundation

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 011

Pier 2: Undermining of footing



Photo 012

Pier 3A: Marine growth

CITY/TOWN BELFAST	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 013

Pier 3A: Marine growth cleared



Photo 014

Pier 3A & 3B: Typical depletion of welded zinc anode

CITY/TOWN Belfast	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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PHOTOGRAPHS



Photo 015

Fender system: Corroded washer

CITY/TOWN	BR#/M.M.	B.I.N.	BR. DEPT. NO.	STRUCTURE NO.	INSPECTION DATE
Belfast	N/A	N/A	2477	N/A	October 15, 2025

DEFECT TABLE

East Abutment

North Wingwall

Gaps in stones 4" wide x 24" high x 30" deep
 Chinking stone present in most gaps
 No pointing remaining below HW line
 50% pointing remaining above HW line
 6th and 7th course have outshore movement up to 6" at the midpoint of the wingwall.
 Outshore movement reduces towards the top of the wall
 Grout present in between gaps of stone indicate wall had historic displacement before
 regrouting occurred

Breastwall

10% of pointing remaining below HW line
 No stone movement noted on stones that are only part of the breastwall (stones at corner of
 north wingwall show movement)
 No intentional gaps between stones present on the breastwall

South Wingwall

Stone at southern end of wingwall (7th course) had 7" of outshore movement.
 6th course bulging outshore starts halfway down wingwall. 3" of outshore movement at end
 Bulging at 5th course & above starts at breastwall corner. Up to 5" at midpoint of wingwall
 Approximately 30% of pointing remaining below HW

West Abutment

South Wingwall

No pointing below HW
 Approximately 30% pointing remaining above HW
 No cracks in blocks present
 10' north of south end. Outshore movement. Approximately 3" outshore based on separation
 between concrete cap and fourth course
 6th course. Block at south end of wingwall. North end of block shifted 4" outshore

Breastwall

South wingwall has shifted 1" to the south based on gap between south wingwall blocks and
 breastwall concrete cap
 8th course vertical crack in line with south end of concrete cap 1/2"Lx24"H

North Wing

wall lateral stone movement, 3rd course up
 max pen between joints 5'
 potential active fill loss

CITY/TOWN Belfast	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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DEFECT TABLE

Pier #	Location	DEFECT	Defect Type
Piers			
General notes - All course (crs) are referenced from the top down, Cl = center line, Pen = Penetration			
Pier 1	N Face W Face Thru NS Faces		lateral westward misalignment of stones up to 6" Stone Fragment
Piers 2-5 are recorded on plans			
Pier 6	North Face Footing All Faces Footing Southern Face		Concrete footing exposed above mudline on all faces undermining of footing 1-3' high above mudline
Pier 7	North Face lines the concrete footing from east to the southwest face		Rip Rap Remains of steel bulkhead scaling on top of footing 6" long x 12" high footing exposed up to 2' high
Pier 8	South Face North Face Thru NS Faces S Face W Face W Face (same location as above crack) Through EW Faces		Daylighting Lateral Stone Movement of multiple courses up to 5" crack 1" wide x 12" long x full height x 8" deep Missing stone Daylighting
Pier 9	North Face East face-4th course 11' from North end east face-3rd course 9' from North end east face-2nd course 15' and 8' from North end		Fill loss at gaps in stones, 30" deep Vertical crack full course height Vertical crack full course height Vertical crack full course height
Pier 10	Thru EW Faces E Face E Face E Face Footing on southern face		Daylighting thru multiple courses crack at 45 degree angle 2' long, full course height, full course depth Timber Sheeting on foundation exposed 6" above mudline

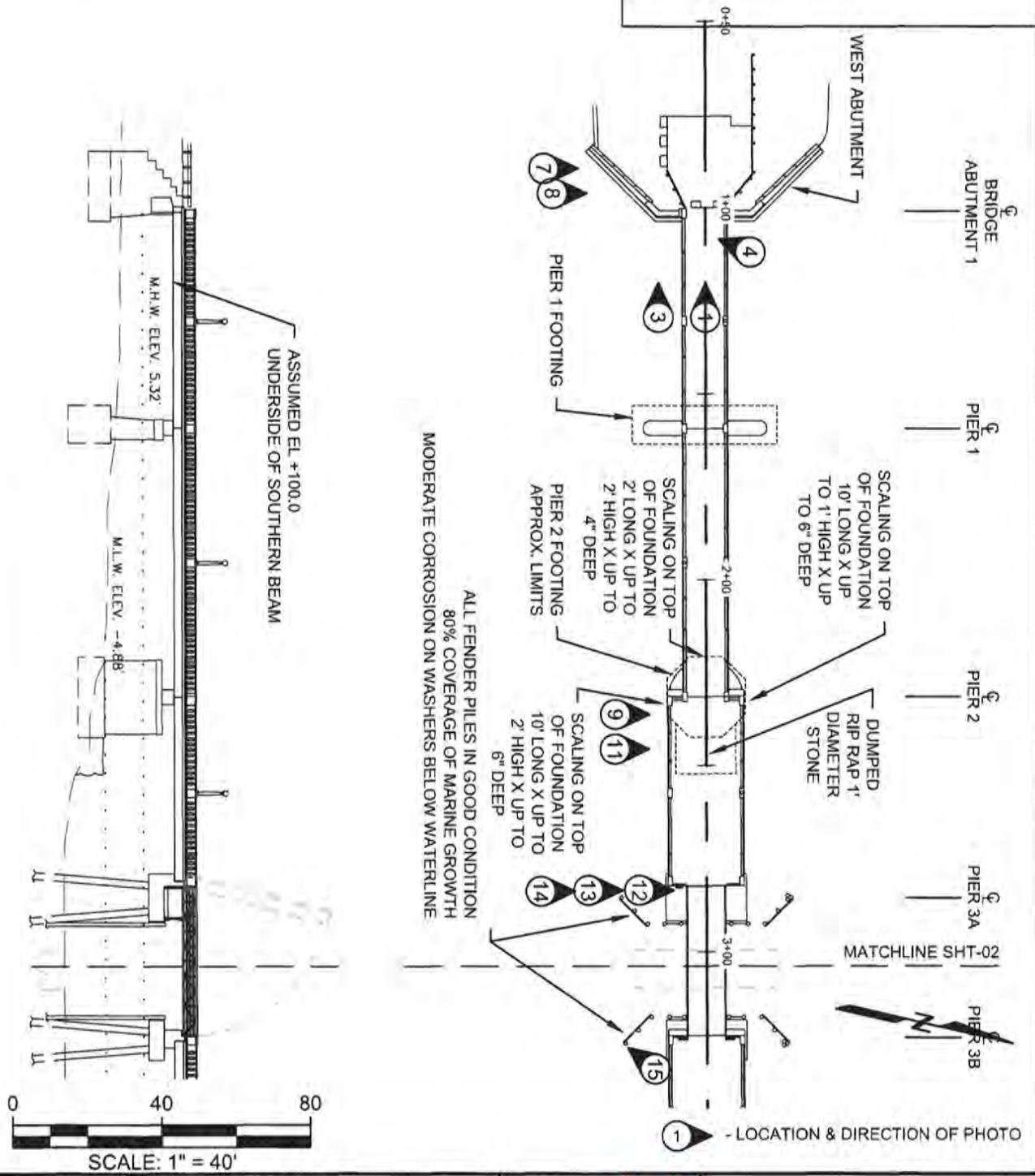
CITY/TOWN Belfast	BR#/M.M. N/A	B.I.N. N/A	BR. DEPT. NO. 2477	STRUCTURE NO. N/A	INSPECTION DATE October 15, 2025
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DEFECT TABLE

Pier #	Location	DEFECT	Defect Type
Pier 11	north face west face 2nd to 4th course 6' from south end south face 1st, 3rd, and 5th course east face, 3rd course at CL of pier face east face, 2nd course 5' from north end	1.5" to 4" gaps between blocks at CL of pier	1/2" wide
		1/4" wide vertical crack full course height	crs 2, 1/4" wide, full crs ht
		gaps between blocks at CL of pier up to 2"	crs 4, 1/4" wide, full crs ht
		vertical crack 1/4" wide full course height	crs 1, 3" wide, 2" pen, full crs ht
		vertical crack 1/4" wide full course height	
Pier 12	W Face, Extends thru crs 1-5 Thru EW Faces	Crack thru multiple courses	
		Daylighting	
Pier 13	North face: 1st, 3rd, and 5th course at CL of pier 2nd course 2' north of west face CL. 4th course 1' north of west face CL. 5th course 3' north of west face CL. 3rd course 3' south of west face CL. 5th course 6' south of west face CL. south face at CL of pier east face, 2nd course	3/4" wide crack	
		1.5" to 3" L gaps with fill loss	
		vertical crack 1/2" wide full course height	
		vertical crack 1/4" wide full course height	
		vertical crack 1/4" wide full course height	
		vertical crack 1/2" wide full course height	
		vertical crack 1 1/4" wide full course height	
		0" to 3" L gaps between stones with fill loss	
		Missing stone	
		vertical split 1/4"x24H that broke block into two parts. North part shifted 2" outshore. South end of block has 2" gap to next southern block	
Pier 14	NW Corner of Footing South footing South face.	vertical split 1/4"x24H	
		6" 9" wide area of footing exposed from northwest corner to south face with timber bulkhead remains lining the footing	
		9"H exposed	
		Bottom of 6th course stone with section loss. 3"-5" H gap between blocks and footings along entire south face. 16" deep	
Pier 15	Thru EW Faces Thru NS Faces E Face	Daylighting	1/2" wide
		Crack	crs 2, 1/4" wide, full crs height
		Crack	crs 1, 2, 3, 4
Pier 16	W Face Thru EW Faces E Face E Face N Face Thru NS Faces	Crack	crs 4, 1/4" in wide
		Daylighting	crs 4, 1/4" in wide
Pier 16	W Face Thru EW Faces E Face E Face N Face Thru NS Faces	crack	crs 1, 2, 4 up to 1/2"
		Daylighting	
		Crack	crs 2, 1/4" wide, full crs ht
		Crack	crs 4, 1/4" wide, full crs ht
		Broken Stone	crs 1, 3" wide, 2" pen, full crs ht
	Daylighting		

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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STRUCTURE PAGE 18 OF 27
PLAN AND SECTION VIEW



VHB Bridge Inspection
Armistice Bridge #2477
Belfast, ME

City of Belfast
Belfast, ME

GEI Consultants

Project 2506031

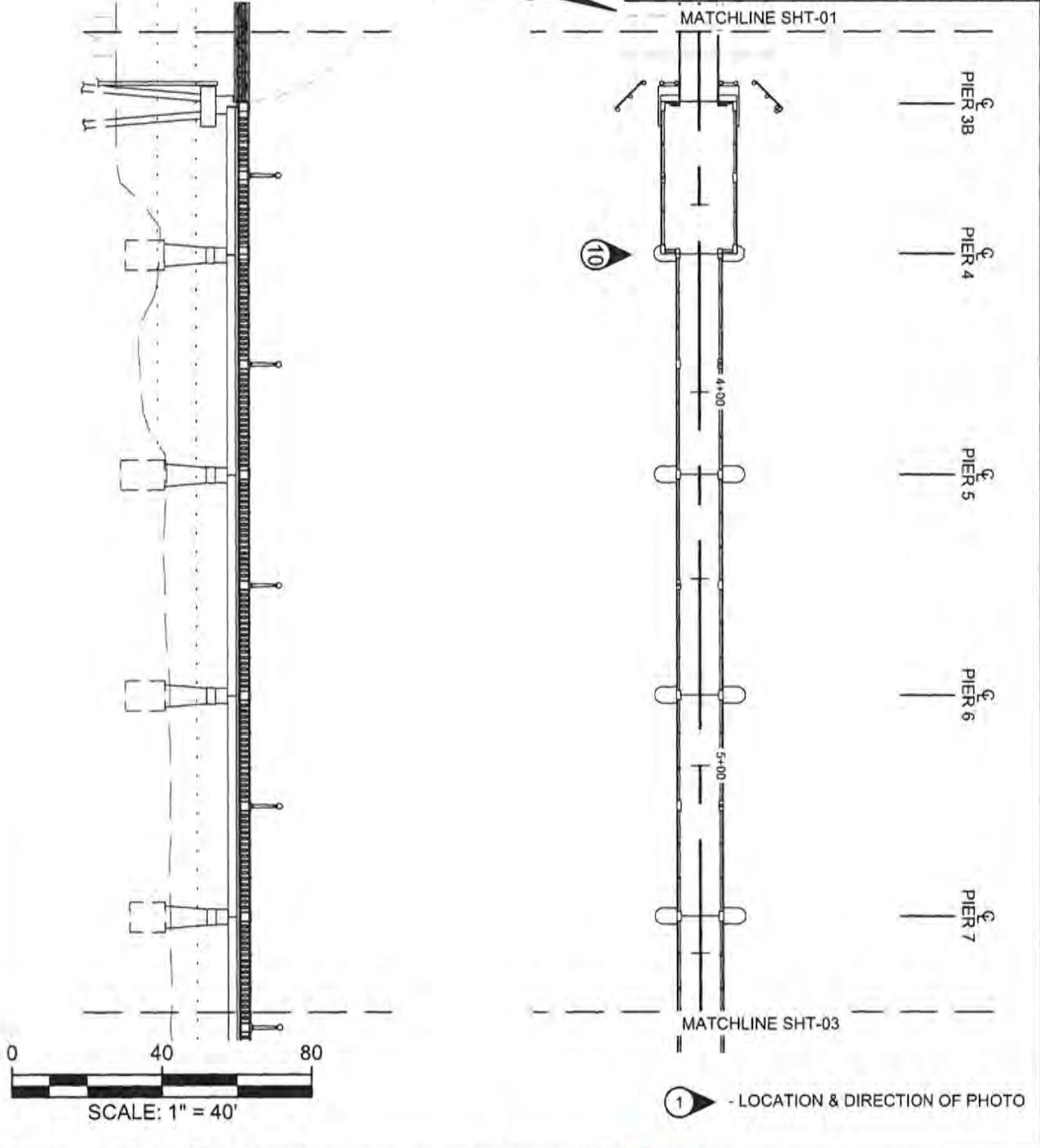
STRUCTURE PLAN VIEW

October 2025

Fig. 1

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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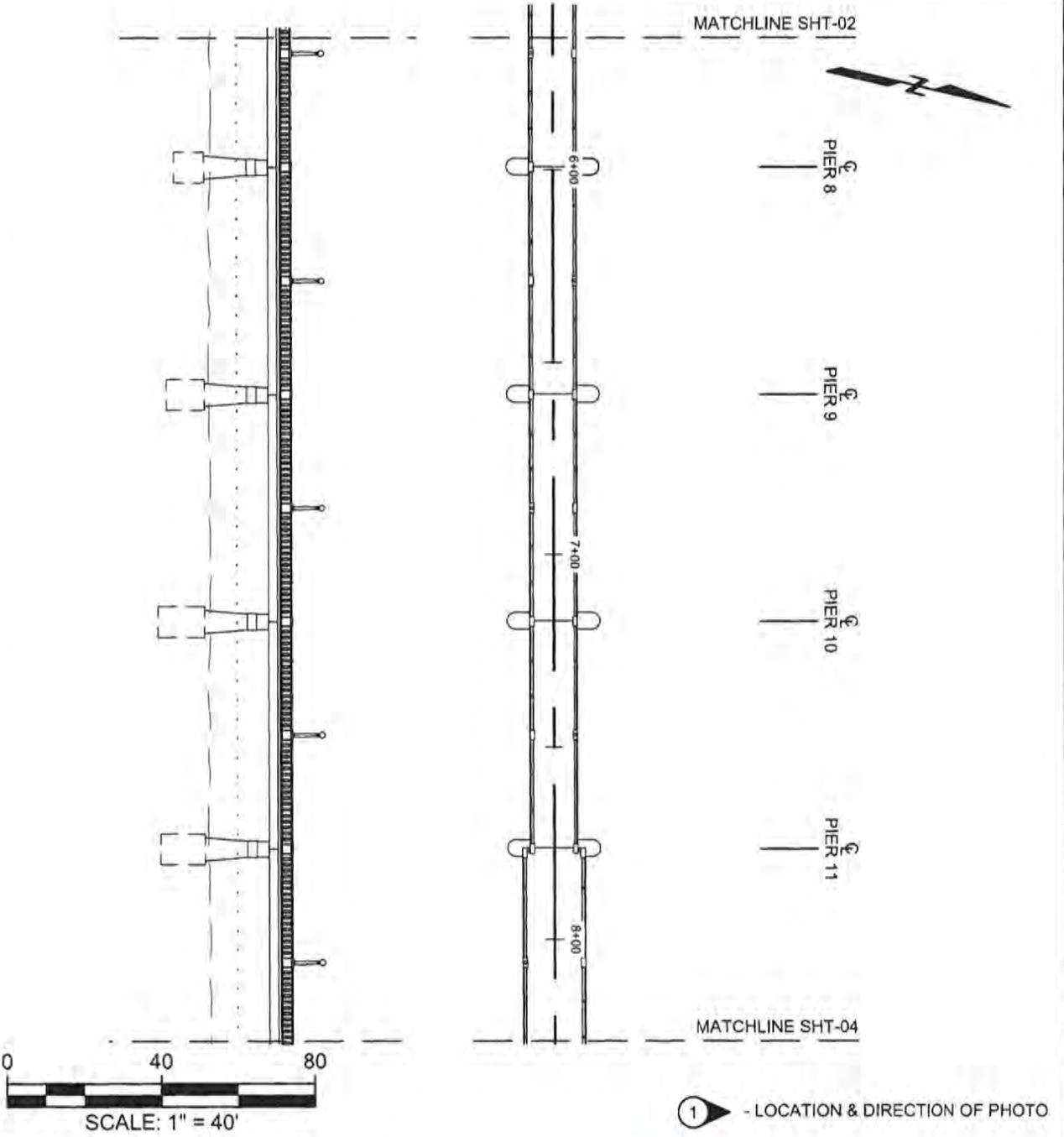
STRUCTURE PAGE 19 OF 27
PLAN AND SECTION VIEW



VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	STRUCTURE PLAN VIEW
City of Belfast Belfast, ME		Project 2506031 October 2025 Fig. 2

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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STRUCTURE PAGE 20 OF 27
PLAN AND SECTION VIEW

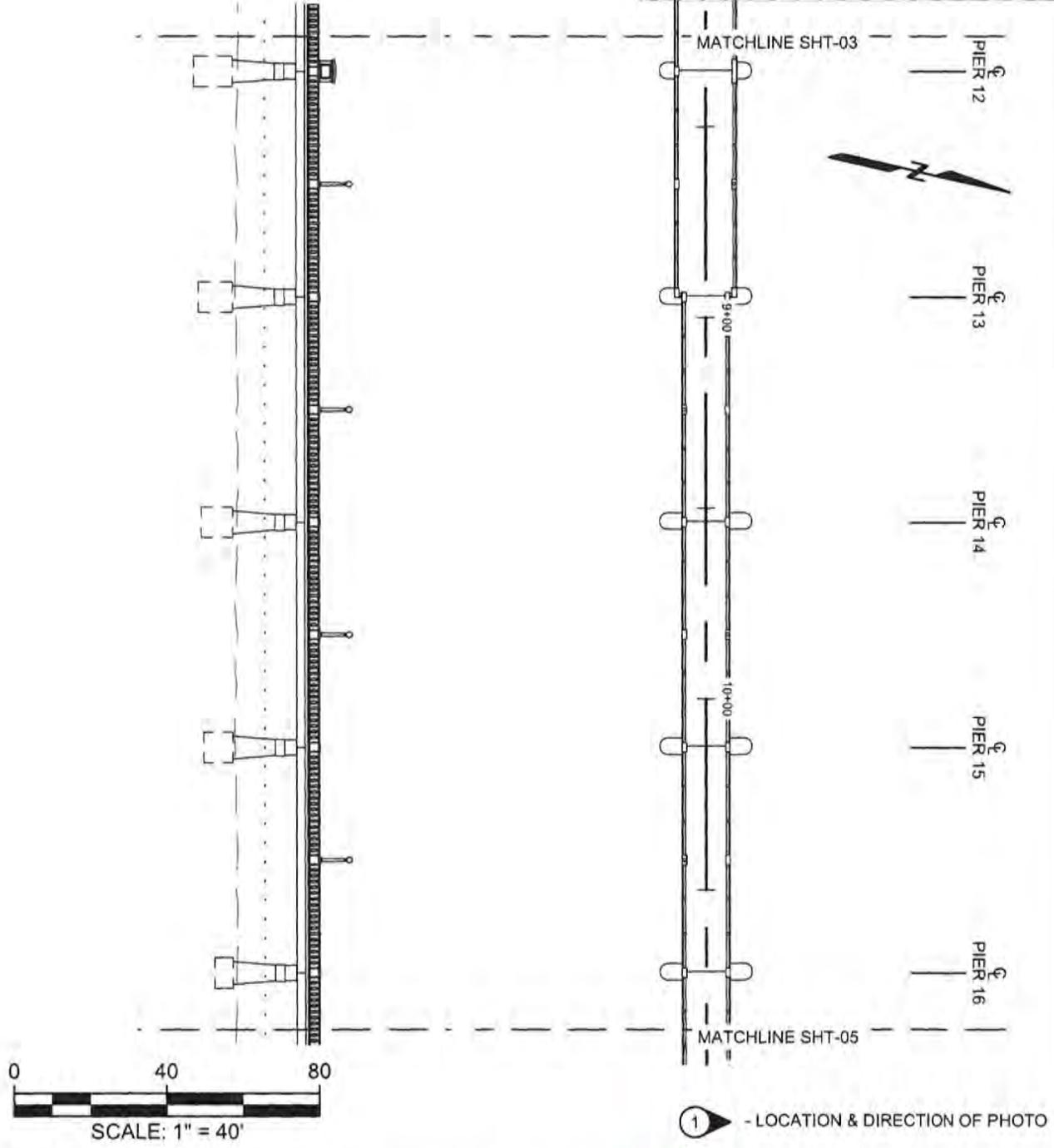


VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	STRUCTURE PLAN VIEW	
City of Belfast Belfast, ME		Project 2506031	October 2025

Fig. 3

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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PLAN AND SECTION VIEW

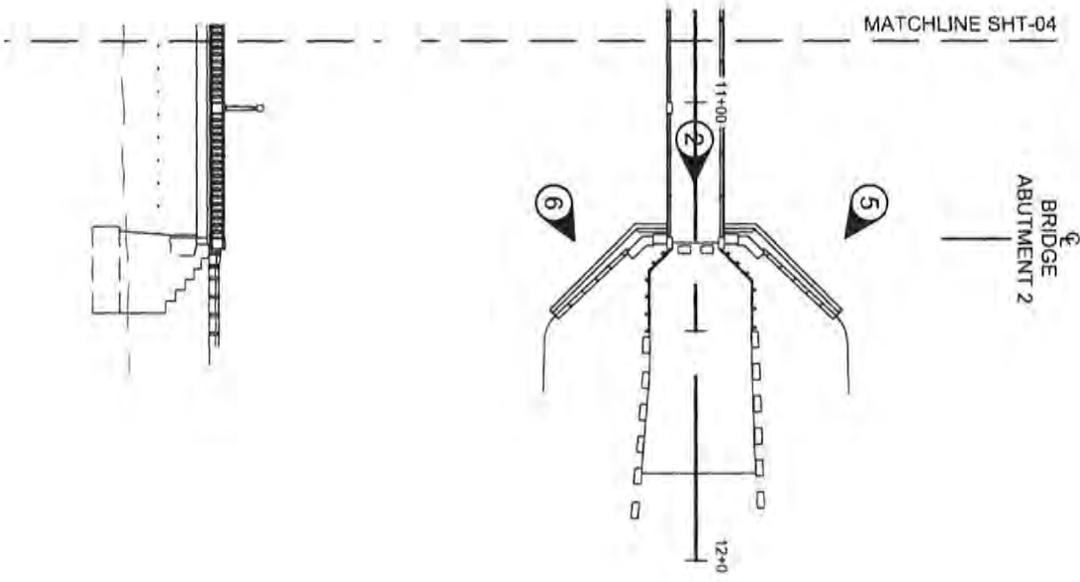


VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	STRUCTURE PLAN VIEW	
City of Belfast Belfast, ME		Project 2506031	October 2025

Fig. 4

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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STRUCTURE PAGE 22 OF 27
PLAN AND SECTION VIEW



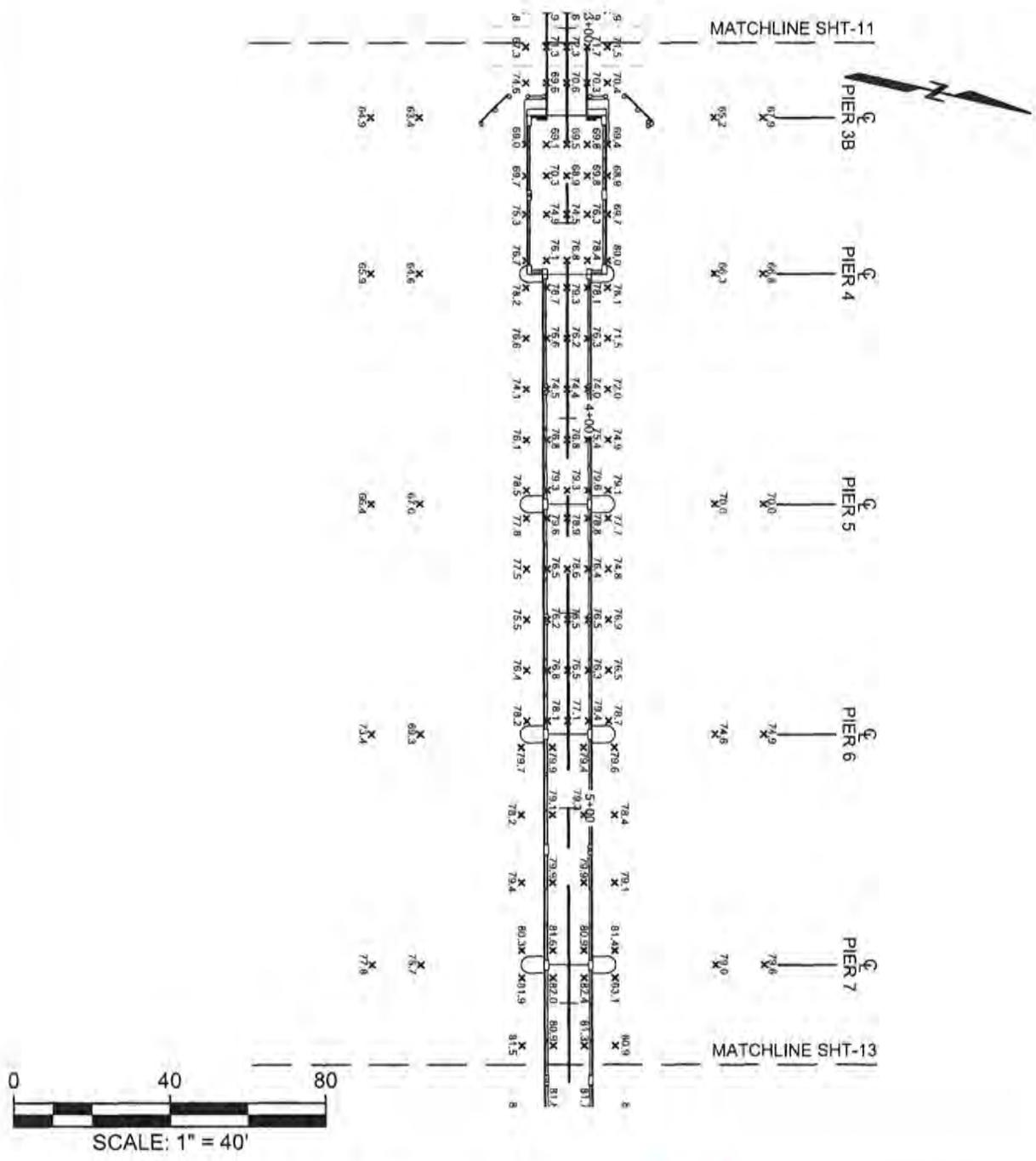
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VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	STRUCTURE PLAN VIEW	
City of Belfast Belfast, ME		Project 2506031	October 2025

Fig. 5

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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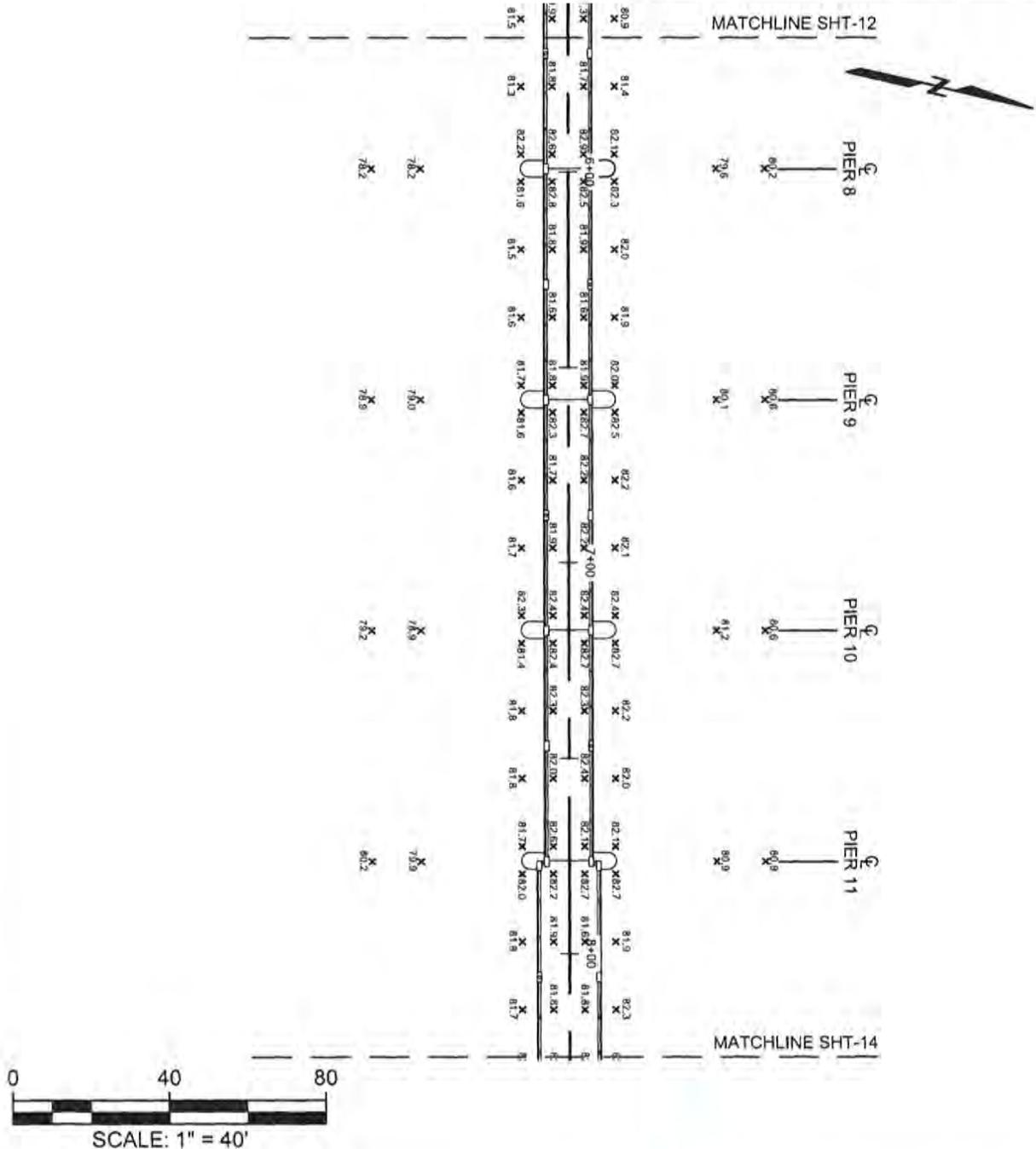
STRUCTURE SOUNDINGS PLAN PAGE 24 OF 27



VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	SOUNDINGS PLAN	
City of Belfast Belfast, ME		Project 2506031	October 2025

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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STRUCTURE SOUNDINGS PLAN PAGE 25 OF 27



VHB Bridge Inspection
Armistice Bridge #2477
Belfast, ME

City of Belfast
Belfast, ME



Project 2506031

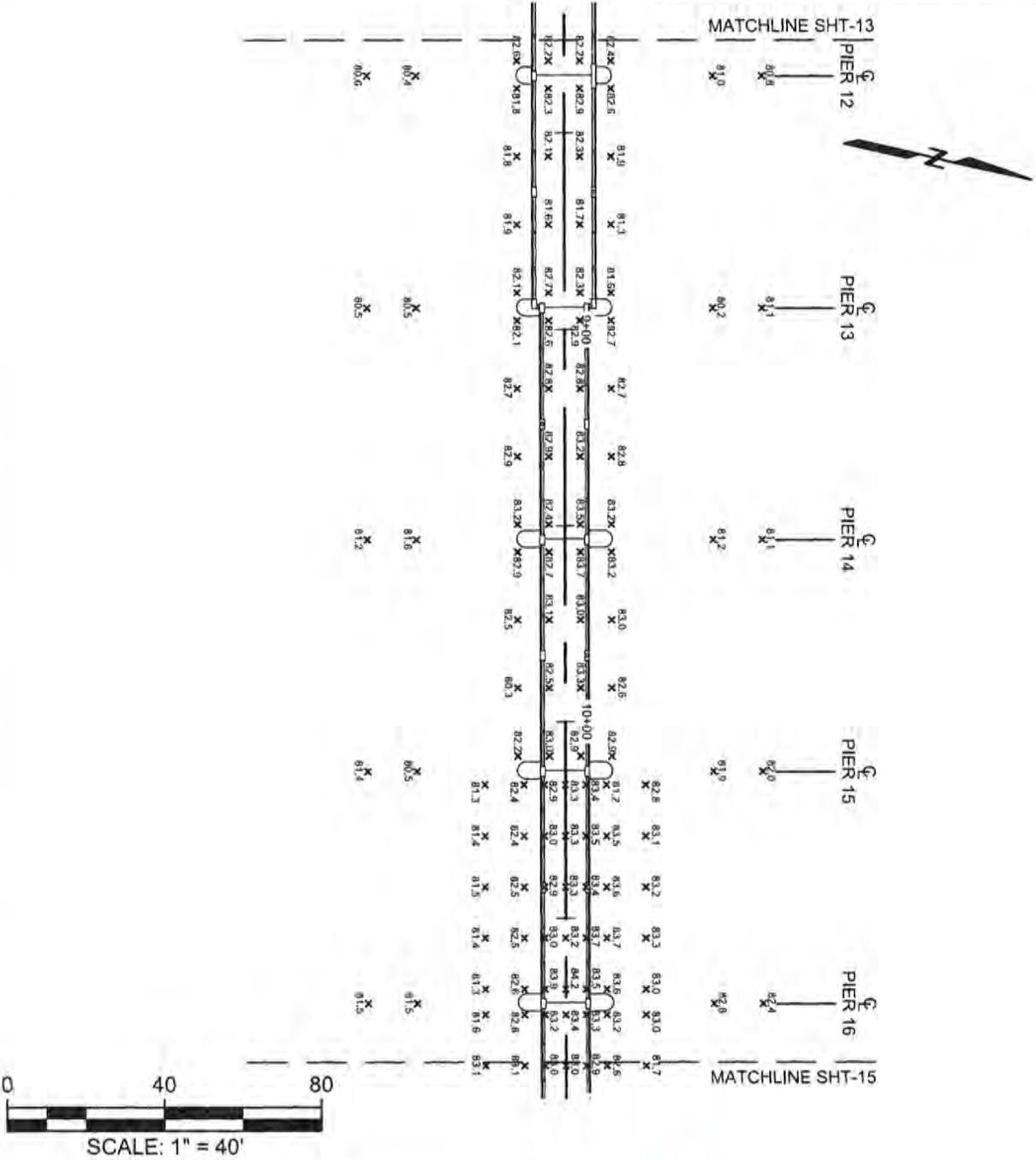
SOUNDINGS PLAN

October 2025

Fig. 8

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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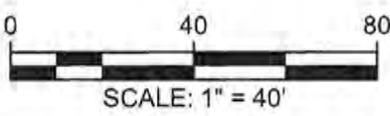
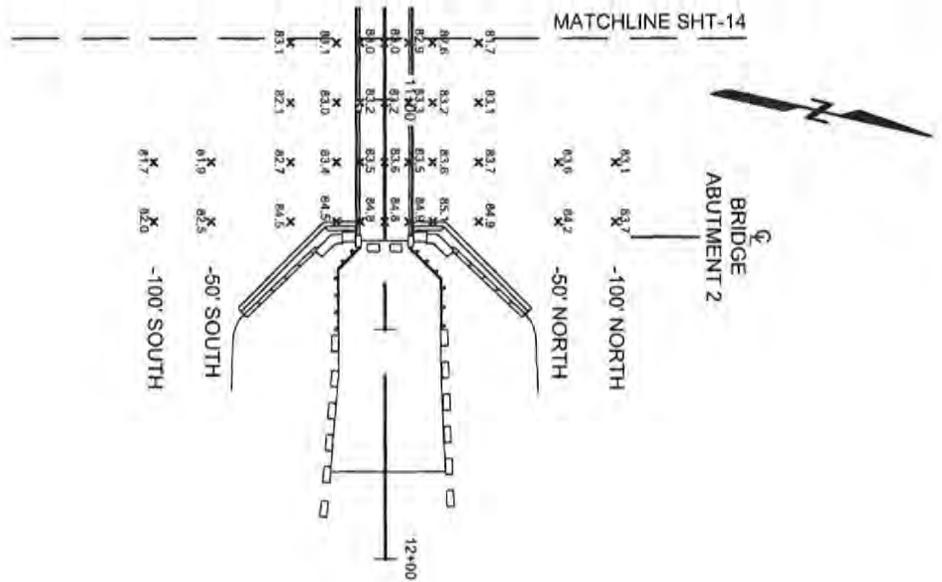


VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	SOUNDINGS PLAN	
City of Belfast Belfast, ME		Project 2506031	October 2025

Fig. 9

CITY/TOWN BELFAST, ME	B.I.N.	BR. DEPT. NO. 2477	8.-STRUCTURE NO.	INSPECTION DATE OCTOBER 15, 2025
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STRUCTURE SOUNDINGS PLAN PAGE 27 OF 27



VHB Bridge Inspection Armistice Bridge #2477 Belfast, ME	 GEI Consultants	SOUNDINGS PLAN	
City of Belfast Belfast, ME		Project 2506031	October 2025 Fig. 10

December 9, 2025

10.F

Memo to Erin Herbig, Belfast City Manager
City of Belfast Mayor
Belfast City Council

From Katherine Given, Belfast Harbor Master

Re: Council agenda December 9, 2025
Charter Vessel, Commercial, & Small Vessel Storage Contracts 2026

Following are the charter vessel, commercial, and small vessel storage contract requests for the 2026 summer season. As per our Chapter 30, Marine Ordinance, any commercial use of City of Belfast owned facilities shall be regulated to help protect our valuable and finite public resources. These contracts help us achieve this goal in a fair and equitable manner.

Two of these contract requests are from charter vessel operators who have had approved Concessions Contracts (overnight berthing) for the past several years: Alex Pelling with the m/v *Back and Forth*, And Jack Ives with the schooner *Charm*. Alex Pelling currently has his charter business for sale and has a potential buyer at this time. He has two charter vessels, one with an overnight Concessions contract, and one with an 'touch & go' Occasional Use Contract. Currently we have no other interest in running a similar business, and I would recommend the Council approve both contracts with the condition that any changes the new owner may request that may change the intent of the current operation will have to be approved by the Council. No changes are requested from Jack Ives with Schooner Charm.

Leigh Dorsey, whose business is providing private and group rowing lessons in a 32' gig with an overnight Concessions Contract, has asked to renew her contract with no changes. She keeps her vessel at Thompson's Wharf and is a registered Maine Guide and Sea Kayak instructor. The operation ran well for her first year without any problems.

One contract which is commercial in nature is requested by Elias Heyns, owner of the business Belfast Barge. Elias provides mast stepping and unstepping and rigging services for many of the mooring owners in Belfast Harbor as well as area vessel owners. This business has been in operation for almost 11 years and provides an invaluable service especially for smaller vessel owners on the harbor.

The commercial kayak business run by Ray Wirth and Leslie Gregory will not be running this coming season

The other two contracts we issue from the Harbor Office are for small vessel storage during the summer on land. We provide racks at the Boathouse and in the City Landing area for vessel owners who may have trouble transporting kayaks or canoes to the harbor. Typically we issue around 45 stickers for Belfast residents and non-residents for a fee. We've had this program available for over 11 years and always have more interest than space, so stickers are issued on a rotating basis. The approved 48' x 80' space in the Puddledock parking area to store rowboats, also for owners that have difficulty trying to transport their vessels frequently to the harbor, was fairly active this past summer with 5 vessel owners signed up. This is the same number as the summer before. The space in the designated area not being used for storing vessels is used for regular parking.

All of these contracts have provisions to regulate use, liability, or insurance requirements.

Following is a summary for the contract requests for 2026:

- Alex Pelling	28' m/v 'Back and Forth'	custom service	6 pax	Concessions Contract	City Landing
- Alex Pelling	32' m/v 'Out and About'	lobster tours	6 pax	Occasional Use Contract	City Landing
- John Ives	85' schooner 'Charm'	2 – 3 hour day sails	34 pax	Concessions Contract	Thompson's
- Leigh Dorsey	32' rowing gig	guided rowing lessons		Concessions Contract	Available space
- Elias Heyns		mast & rigging services		Commercial Contract	City Landing
- Kayak/Canoe Rack Storage		up to 45 spaces		Boathouse/Heritage Park/City Landing	
- Rowing Vessel Storage		number depends on size of vessel			Puddledock Parking Lot

Terms and conditions for all contracts were discussed by the Harbor Advisory Committee at their last meeting with no suggested changes. Contract fees will be discussed at our next meeting with the other Harbor Usage Fee recommendations to the Council.

Requested action from Belfast City Council:

Approve all of the above contract requests for the season of 2026 with the condition that any changes will come back to the Council for approval.

10.G



CITY OF BELFAST

City Hall
131 Church Street
Belfast, Maine 04915

Joellyn Warren
Deputy Economic Development Director

E-mail: deputyecondev@cityofbelfast.org
Phone: (207) 338-3370, extension 124

TO: Honorable Mayor Eric Sanders, Belfast City Councilors, and City Manager Erin Herbig

FROM: Joellyn Warren, Deputy Economic Development Director

DATE: December 9, 2025

RE: Belfast Harbor Flood Vulnerability Assessment Plan Presentation by GEI Consultants, Inc.

In October 2024, the City engaged the services of GEI Consultants, Inc. to conduct a flood vulnerability assessment and develop climate adaptation strategies for the City's publicly owned harbor properties. The plan was created with a \$50,000 community action grant from the Community Resilience Partnership of the Governor's Office of Policy Innovation and the Future (GOPIF), with assistance from members of the Belfast Climate Energy and Utilities Committee.

The purpose of the study was to determine the flood risk impacts on public infrastructure in the areas from the Belfast Boathouse and Steamboat Landing, extending north to the Belfast Harbor Walk and Armistice Bridge. The assessment integrates site visits, community input, GIS-based flood modeling, and a review of existing data to identify vulnerabilities under eight flood scenarios that combine present and projected sea level rise (SLR) with tidal and storm surge conditions through the year 2100. This Plan will provide the City with options to develop resilient projects to mitigate anticipated impacts to our shoreline.

As part of the scope of work, GEI is required to present the final draft to the City Council for comments. The City Council has been provided with copies of the draft plan for consideration.

At this time, the Deputy Economic Development Director requests that the City Council take the following actions:

- 1) Approve the Flood Vulnerability Assessment Plan; however, if additional time is needed to review the plan, the City Council could consider approval of the Plan at a future meeting.



Project Report

Flood Vulnerability Assessment Belfast Waterfront

Belfast, Maine

Submitted to:
City of Belfast
131 Church Street
Belfast, ME 04915

Submitted by:
GEI Consultants, Inc
5 Milk Street
Portland, ME 04101
207.797.8901

August 5, 2025
Project No. 2407807



Lisa Vickers
Senior Coastal Professional

Daniel Bannon, PE, CFM, BC.PE
Coastal Practice Leader

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Appendices

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Acronyms and Abbreviations

1% annual chance storm	An event that has a 1% chance of being equaled or exceeded each year. It is the storm condition that FEMA uses to determine their flood insurance rate maps. Also known as the "100-year storm."
BFE	Base Flood Elevation. This is the water elevation that is expected to occur during a 1% annual chance storm. This elevation accounts for wave action (wave crests, wave setup, and wave runup) on top of the Still Water Elevation (SWEL).
CEUC	Climate, Energy, Utility Committee
City	City of Belfast, Maine
"Commit to Manage"	The Maine Climate Council's (MCC) sea level rise recommendation, based on an intermediate rate of sea level rise.
DEM	Digital Elevation Model
EPA	Environmental Protection Agency
FEMA	The Federal Emergency Management Agency, responsible for distributing Flood Insurance Rate Maps (FIRMs) and determining present-day BFEs
FIRMs	Flood Insurance Rate Maps, or maps showing the flood extents and BFEs, distributed by FEMA
FIS	Flood Insurance Study, issued by FEMA to accompany the FIRMs and provide details regarding the basis of the BFEs and extents.
GEI	GEI Consultants, Inc.
GIS	Geographic Information System
GMRI	Gulf of Maine Research Institute
GOPIF	Governor's Office of Policy Innovation and the Future, a source of funding for this project through a Community Action Grant
HAT	Highest Astronomical Tide
LiDAR	Light Detection and Ranging
Maine DACF	Maine Department of Agriculture, Conservation, and Forestry
MEDEP	Maine Department of Environmental Protection
Maine DOT	Maine Department of Transportation
Maine ECSB	Maine Emergency Services Communication Bureau
MCC	Maine Climate Council
MEGIS	Maine Office of Geographic Information System
MGS	Maine Geological Survey
MHHW	Mean Higher High Water, the average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch.
MHPC	Maine Historic Preservation Commission
NAVD88	The North American Vertical Datum of 1988
NEIWPCC	New England Interstate Water Pollution Control Commission
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOAA	The National Oceanic and Atmospheric Administration

Project Report
Flood Vulnerability Assessment
Belfast Waterfront
Belfast, Maine
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NRPA	Natural Resources Protection Act
PBR	Permit-by-Rule
PCN	Pre-Construction Notification
“Prepare to Manage”	The Maine Climate Council’s (MCC) sea level rise recommendation, based on a high rate of sea level rise.
SLR	Sea Level Rise
SVNF	Self-Verification Notification Form
SWEL	Still Water Elevation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish & Wildlife Service
VDATUM	Vertical Datum Transformation, a NOAA tool for converting between vertical datums
Wood	Wood Environment & Infrastructure Solutions, Inc.
WSP	WSP US Environmental & Infrastructure, Inc. (Formerly Wood)

Executive Summary

This Flood Vulnerability Assessment evaluates the current and future flood risks facing the City of Belfast’s waterfront area, a vital economic, recreational, and cultural area of the City. The assessment was conducted by GEI Consultants, Inc. in collaboration with City staff and the Climate, Energy, and Utilities Committee (CEUC), and was funded through a Community Action Grant from the Governor’s Office of Policy Innovation and the Future (GOPIF).

The study area spans from the Belfast Boathouse and Steamboat Landing to the Armistice Bridge, encompassing key public infrastructure and open spaces. The assessment integrates site visits, community input, GIS-based flood modeling, and review of existing data to identify vulnerabilities under eight flood scenarios, which combine present and projected sea level rise (SLR) with tidal and storm surge conditions through the year 2100.

Many priority assets — including City Landing, the Harborwalk, Steamboat Landing, Heritage Park, and the Armistice Bridge abutments — face flood risks even under current high-tide and storm conditions, with risks increasing in the near term (2050) and beyond. The wastewater treatment outfalls and fuel storage facilities, while less exposed today, are projected to face risks by 2100.

The report identifies a range of strategies tailored to asset type, exposure, and community priorities, including:

- **Elevating infrastructure** (e.g., raising the Harbormaster’s Office, increasing elevation of gangways, mooring piles, and access ramps)
- **Hybrid shoreline stabilization** (combining riprap, toe stone, and native plantings along eroding areas like the Armistice Bridge abutments and Heritage Park)
- **Installing backflow preventers** (at all outfalls to prevent intrusion during storm events)
- **Enhancing flood-resilient design** (using materials like Thruflow decking on Harborwalk sections to reduce hydrostatic uplift, elevating critical mechanical/electrical systems above design flood elevations)
- **Temporary interventions** (such as flood warning signs, barricades on inundated roads, and public alert systems)
- **Zoning ordinance updates** (to guide future development away from high-risk areas, require elevated construction, and encourage nature-based solutions)
- **Retreat or relocation** (for non-critical infrastructure or sensitive utilities where relocation reduces long-term risk)

This assessment serves as a foundational step in enhancing Belfast’s coastal resilience and guiding future planning, design, and investment in flood adaptation infrastructure. To advance adaptation efforts, the City should prioritize projects based on flood risk and community values, seek state and federal funding, engage design and permitting professionals, and implement actions in phases, aligning with evolving climate projections and funding cycles.

1. Introduction

The City of Belfast (the “City”) is located at the mouth of the Passagassawakeag River (the “Passy”) on Penobscot Bay in Waldo County, Maine. The waterfront area has a long history of maritime activities, with existing developments along the harbor reflecting this legacy through remnants of shipbuilding, active commercial fishing, and the preservation of public spaces such as Steamboat Landing Park, the Belfast City Landing, and Heritage Park. A historical image of the Belfast waterfront is shown below in Figure 1-1. The waterfront remains a central component of the City not only for its historical importance, but for its economic, environmental, and cultural significance as well.

Figure 1-1. 1966 Aerial Image of the City of Belfast waterfront and surrounding area.



Source: MGS Maine Aerial Photographs. Date: May 14, 1966.

However, the location of the waterfront makes the area and associated development vulnerable to coastal flooding due to the position of the city along Belfast Bay at the mouth of the tidally influenced Passy River. The City’s location on the western shore of upper Penobscot Bay makes it particularly exposed to storms approaching from the northeast through southeast. Nor’easters pose the greatest coastal flood risk due to their alignment with the fetch of Penobscot Bay, potentially increasing storm surge and wave energy within the harbor. Additionally, southeasterly winds combined with intense rainfall and high tides, can contribute to coastal flooding which was highlighted in back -to-back coastal storms in January 2024 that caused record-breaking tides, erosion, and infrastructure damage not only locally but across the entire state of Maine. Figures 1-2 through 1-5 document conditions along the waterfront that occurred during these storms (all images courtesy of Patrick Walsh from the Climate Energy and Utilities Commission [CEUC]).

The risk of coastal flooding is anticipated to worsen in the future due to a projected increase in frequency and intensity of coastal storms.

In 2024 the City retained GEI Consultants, Inc. (GEI) through a Request for Proposal (RFP) process to assess the waterfront area and identify key infrastructure within this area that would likely be at risk of coastal flooding due to sea level rise (SLR) and coastal storm events. The purpose of this project was to conduct a flood risk assessment to evaluate the vulnerabilities of infrastructure and open space to flooding due to storm surge and sea-level rise and to provide adaptation strategies, high level cost estimates, and timeframe recommendations for adaptation projects to increase the City's resiliency to current and future coastal flood inundation. Additionally, the project scope included community outreach to inform the public about this study and collect feedback on understanding what infrastructure assets and uses of the waterfront area are important to the community in an effort to help the City to prioritize future flood adaptation strategies. The project team consisted of GEI staff members and representatives from City staff and the CEUC and was funded with a Community Action Grant through the Governor's Office of Policy Innovation and the Future (GOPIF) Community Resilience Partnership.

Figure 1-2. Belfast Boathouse flooding during January 2024 storm.



Source: Patrick Walsh. Date: January 10, 2024

Figure 1-3. Flood conditions near Heritage Park during January 2024 storm.



Source: Patrick Walsh. Date: January 10, 2024

Figure 1-4. Flood conditions at City Landing during January 2024 storm.



Source: Patrick Walsh. Date: January 10, 2024

Figure 1-5. Flood conditions along Harborwalk during January 2024 storm.



Source: Patrick Walsh. Date: January 10, 2024

2. Background Information

The focus area of the flood risk assessment extends from the downtown harbor area beginning at the Belfast Boathouse and Steamboat Landing and extending north to the Belfast Harbor Walk and Armistice Bridge. An aerial image of the project area can be seen in Figure 2-1.

The area consists of public and private parcels and combines recreation, public access, marine industry, and commercial uses. While the focus of this overall project is on publicly owned infrastructure and areas, the flood risk assessment also includes an overview of the broader waterfront area.

2.1. Existing Facilities

To support the flood risk assessment, GEI conducted an existing conditions assessment, which included on-site observations; topographic and boundary survey investigations; public input; and a review of relevant reference resources, such as past project reports, which are summarized in Section 2.2.

To aid in the existing conditions assessment, GEI, City staff, and members of the CEUC conducted a site walk on December 19, 2024, in order to document the general conditions and features of the waterfront area. The site walk started at the Boathouse and ended on the eastern side of the Armistice Bridge. Impacts from the January 2024 storms were discussed as well as the repairs that were made in response. Several assets of the waterfront area were identified as priority assets given their higher likelihood to experience impacts from sea level rise and storm surge as well as their value and function to the City. A summary of the identified priority assets facilities is provided below. Figure 2-1 highlights the priority assets.

Figure 2-1. Aerial Image of Project Area with Priority Assets Identified.



- **Armistice Bridge:** The bridge is a historic pedestrian walkway that provides pedestrian access across the Passy and connects with the Harborwalk. The bridge includes a hydraulically actuated bascule lift span to allow passage of vessel traffic.
- **Harborwalk:** The Harborwalk is an access path that extends from Armistice Bridge south to the Belfast Boathouse. The access path provides pedestrian and recreation access for walking, jogging, and biking along the waterfront area. The walk traverses public and privately-owned parcels. For the purposes of this study, the Harborwalk has been divided between Harborwalk (North) that extends from the Armistice Bridge south to City Landing and Harborwalk (South) that extends from City Landing to the Belfast Boathouse.
- **City Landing:** This facility is a vital asset to the community, supporting economic and recreational activities and providing access to the river for both commercial and recreational boaters. The development at City Landing includes transient slips and moorings, a boat ramp, fuel and fishing docks, utilities, restrooms and showers, parking, and the Harbormaster's Office.
- **Breakwater:** The breakwater consists of granite block with loose fill interior and is approximately 235 feet long with a width that ranges between 9 and 22 feet. The structure is intended to provide protection from wave action to City Landing and associated facilities.
- **Heritage Park/Inlet Area:** Heritage Park is located to the south of City Landing. It is a grassy park that offers recreational access for both walking and picnicking, and it also provides water access for a local rowing group. The "Inlet Area" refers to a small inlet adjacent to Heritage Park and the

Harborwalk. The shoreline has been previously stabilized with riprap (Figure 2-2). This area includes a dinghy dock that provides access for the community rowing program.

- **Wastewater Treatment Plant:** The wastewater treatment plant is a critical public asset to the City as it treats up to 1.49 million gallons of wastewater per day.
- **Steamboat Landing:** Steamboat Landing is a waterfront park that includes a portion of the Harborwalk, a gazebo, benches, picnic tables, and lawn area. It provides recreational access and serves as a central venue for community events throughout the year.
- **Belfast Boathouse:** The Boathouse is a waterfront facility that serves as a meeting space for community events and private gatherings. The site is developed with the boathouse and includes lawn, parking areas, and water access to the river. There is an adjacent beach area that offers paddlecraft storage.

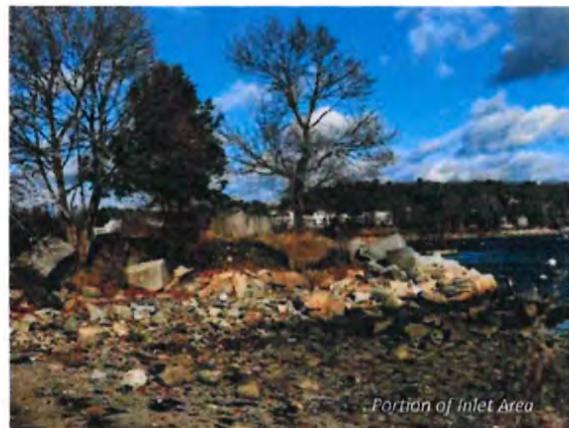
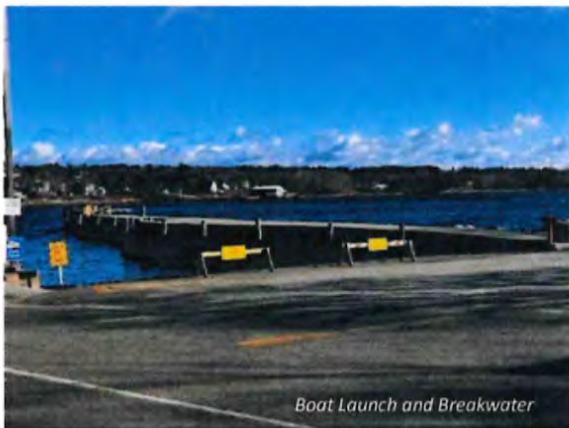
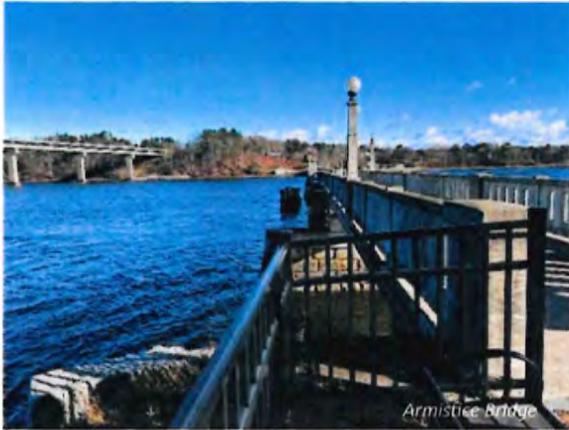
Photographs from the December 19, 2024, site walk are provided in Figure 2-3.

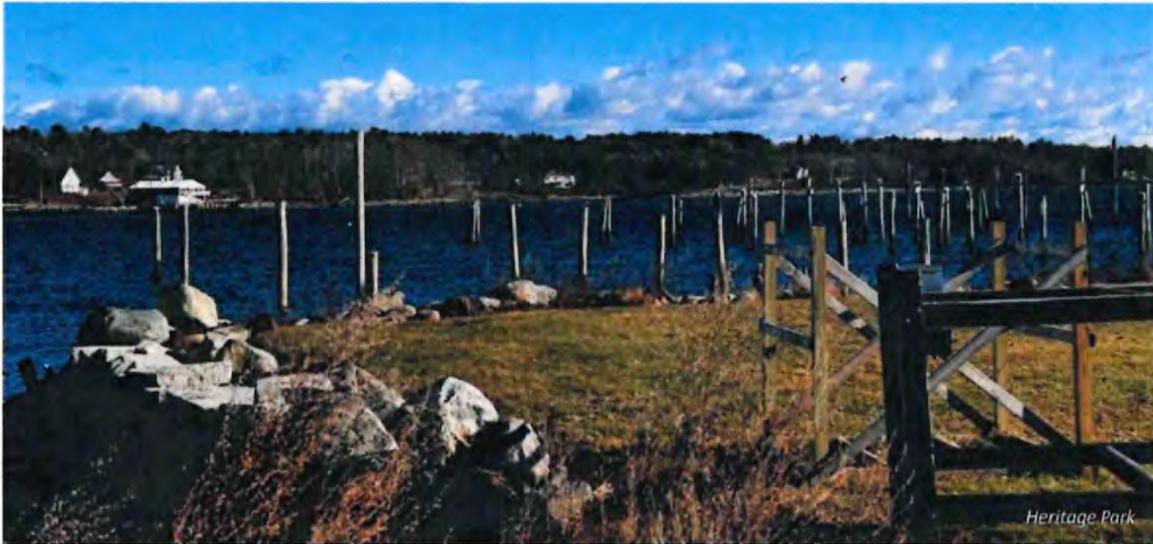
Figure 2-2. Aerial View of Heritage Park and Inlet Area.



Source: MEGIS (2022).

Figure 2-3. Representative Photos of the City of Belfast Waterfront Site Walk conducted on December 19, 2024.





Source: GEI.

2.2. Data Review

GEI conducted background data review to evaluate prior studies and available information to use for the flood vulnerability assessment and adaptation planning process of this project. The following documents and reports were included in our review:

- Vulnerability Assessment and Resilience Planning, Public Landing, Belfast, Maine (Wood, 2019)
- Report on Breakwater Improvement Options (WSP, 2022)
- Sediment Study for Breakwater Improvements (WSP, 2024)
- Summary: Past Belfast Harbor Protection Plans (Gerald Brand, 2024)
- Plan set of development along the waterfront, including the Armistice Bridge (VHB, 2005)
- Plan set of the Harborwalk (TY Lin, 2011)

- Plan set of the Belfast Fisherman Landing and Belfast Landing Fuel System (Baker Design Consultants, 2012 & 2013)
- Plan set of the Sewer Treatment Plant (Olver Associates, 2007)

This list is not all encompassing but provides key reports and plans that were reviewed as part of this assessment.

2.3. Tidal and Flood Elevations

In this section, we review and define the various tidal elevations used in this study. We have provided background on what the tidal elevations represent, as well as where we retrieved the data from. We have summarized these elevations for the project area in Table 2-2. The table references the tidal elevations to the following datums: Mean Lower Low Water (MLLW) and North American Vertical Datum of 1988 (NAVD88). MLLW datum is provided for convenience as it corresponds to the datum generally used on navigation charts and tide tables. NOAA's Vertical Datum Transformation (VDATUM) Tool was used to convert tidal elevations between NAVD88 and MLLW (NOAA, 2025). VDATUM provided the following site-specific datum conversions: NAVD88 = MLLW – 5.7 feet.

Site specific tidal elevations for a typical tidal cycle ranging from Mean Lower-Low Water (MLLW) (i.e., "low tide") to Mean Higher-High Water (MHHW) (i.e., "high tide") were obtained from the National Oceanic and Atmospheric Administration (NOAA) Belfast Tide Station (8415191) (NOAA, n.d.a). These values are referenced to the present National Tidal Datum Epoch (NTDE) of 1983-2001 (NOAA, n.d.b). The NTDE is a specific 19-year period over which tide observations are made to establish mean values for tidal elevations (e.g., MLLW). The current published values do not account for sea level rise since 2001 and may vary from present-day tide observations.

The Highest Astronomical Tide (HAT) elevation represents the highest predicted tide expected to occur at a specific tide station over the time period of 40 years, absent coastal storm surge. This value was obtained from the Maine Geological Survey (MGS) HAT data based on the Belfast Tide Station (MGS, 2025). Additionally, the HAT elevation can be used to interpret the boundary between the coastal wetland and the upland for coastal environmental regulations.

The effective FEMA FIRM and Flood Insurance Study (FIS) published by FEMA were referenced for the 1% annual chance stillwater elevation and the BFE (FEMA, 2015). Stillwater elevations refer to the standing water elevation (i.e., without wave action) of coastal storm surge events. During coastal storm events, wave action, such as wave crests, wave setup, and wave runup, occur on top of the stillwater level to further increase flood elevations. BFEs are representative of flood elevation due to the stillwater level plus wave action. The 1% annual chance stillwater level refers to the water level that has a 1% chance of occurring in any given year. The 1% annual chance BFE refers to the corresponding flood elevation due to the addition of wave action, which is sometimes referred to as the "100-year flood." The 1% annual chance stillwater elevations that FEMA uses were derived from an analysis of historical water levels and do not account for an increase in water levels in the future due to sea level rise. Thus, BFEs may underpredict flood elevations that may occur in the future during 1% annual chance coastal events. The BFE provides a regulatory elevation that helps to guide adaptation designs as further discussed in Section 4.

The Belfast waterfront is mapped in a FEMA AE zone and a VE zone, with BFEs of 11 and 13 feet NAVD88, respectively. The designation within an AE Zone indicates that significant wave heights of less than three feet are predicted. The designation within a VE zone indicates that significant wave heights of greater than three feet are predicted. A section of the effective FEMA FIRM is provided in Figure 2-4.

Table 2-1. Tidal and Flood Elevations

Elevation Reference (all elevations in feet)	Vertical Datum		Reference
	MLLW	NAVD88	
Base Flood Elevation (BFE) Zone VE	+18.7	+13.0	FEMA Flood Insurance Rate Map 23027C0442E (Effective 7/6/2015)
Base Flood Elevation (BFE) Zone AE	+16.7	+11.0	
Highest Observed Tide	+15.6	+9.9	NOAA Tidal Station 8413320, Bar Harbor, ME Date of Observation: January 13, 2024
1% Annual Chance Stillwater Elevation	+15.4	+9.7	FEMA FIS Knox County – Transect 21
Highest Astronomical Tide (HAT)	+13.2	+7.5	Maine Geological Survey, 2022, Maine Highest Astronomical Tide Line. Department of Agriculture, Conservation, and Forestry, Augusta, ME.
Mean Higher High Water (MHHW)	+11.0	+5.3	
Mean High Water (MHW)	+10.6	+4.9	
NAVD88	+5.7	0.0	
Mean Low Water (MLW)	+0.4	-5.3	
Mean Lower Low Water (MLLW)	0.0	-5.7	NOAA Tidal Station 8415191, Belfast, ME

Figure 2-4. Section of FEMA FIRM 23027C0442E (Effective 7/6/2015)



Source: FEMA

3. Flood Risk Assessment

The purpose of the flood risk assessment was to identify areas and assets within the project study area that would likely be at risk of flood inundation due to coastal storm surge or sea level rise for present-day or future conditions of sea level. A flood risk assessment helps to understand current vulnerabilities, anticipate future conditions, and inform planning decisions.

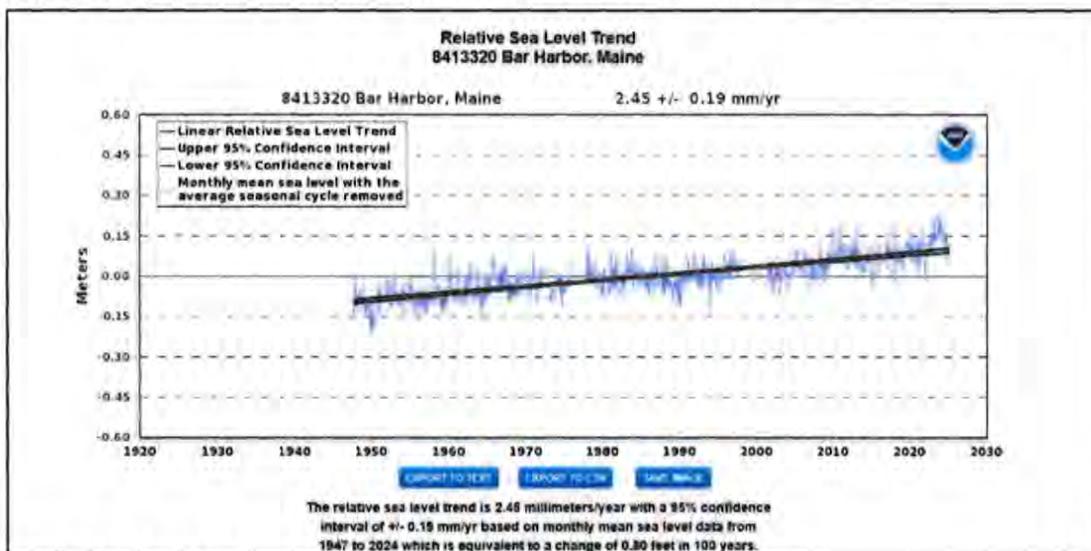
In this section we review regional sea level rise trends specific to Maine, recommendations from the Maine Climate Council on sea level rise values to use for future time horizons, and the water elevations used for the flood scenarios we have included in this study. The flood scenarios are water levels that represent storm surge and/or sea level rise values for present-day and future conditions.

3.1. Regional Sea Level Rise

Advances in predictive scientific modeling of climate change in combination with over a century of historic data indicate that sea level rise is occurring and is likely to continue to occur and accelerate over the next century (NOAA, 2017). Global changes in sea level rise are associated with melting ice and warming seas. The City's waterfront area, a vital economic and recreational hub for the community, faces increasing risk due to sea level rise driven by these climate change factors.

The trend of increasing sea level along the coast of Maine is well documented. At NOAA Station 84133320 in Bar Harbor, ME, which has been recording water levels since 1947, the documented sea level trend is an increase of 2.4 mm/year with a 95% confidence (Figure 3-1). This is equivalent to a change of 0.80 feet over a 100-year period. The degree to which SLR will continue and/or accelerate in the future carries a level of uncertainty, and this uncertainty is typically addressed by considering scenario-based projections for future SLR that reflect a range of possible future trends.

Figure 3-1. Sea Level Rise Trend at NOAA Bar Harbor Tidal Station

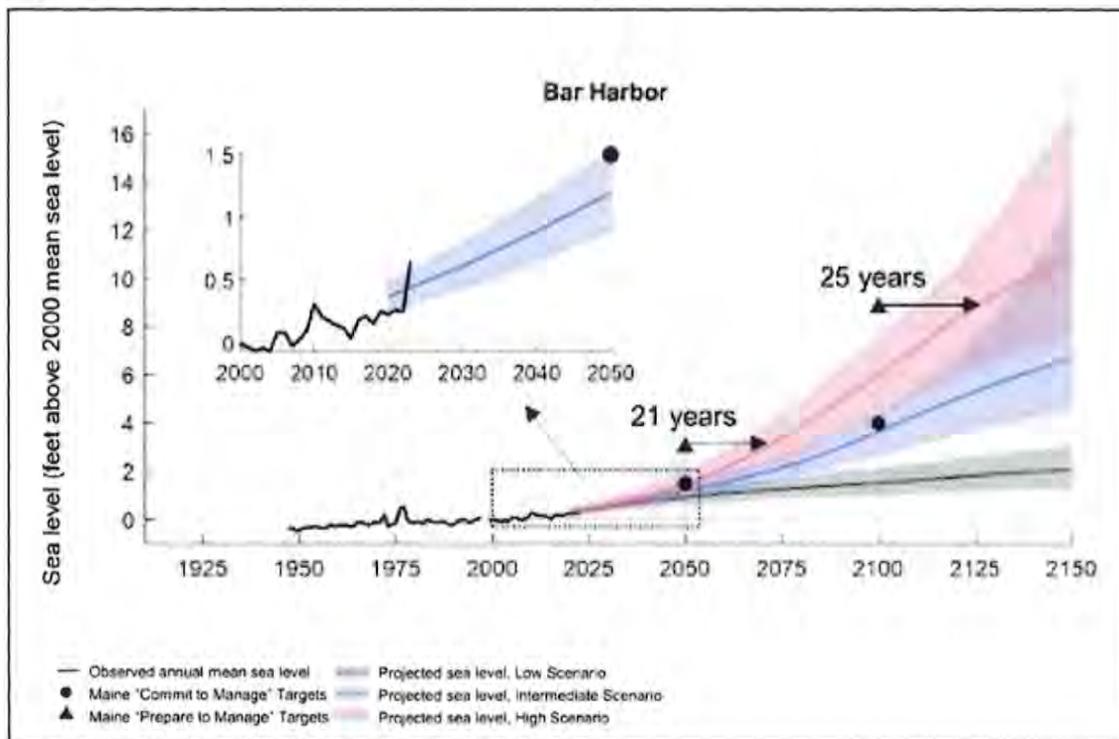


Source: NOAA Tides and Currents, Accessed 2025.

3.1.1. Maine Climate Council Sea Level Rise Recommendations

The Maine Climate Council (MCC) has recommended SLR values for municipalities in Maine to reference for planning and infrastructure projects and these recommendations are based on NOAA published sea level rise values (MCC, 2024). The Scientific and Technical Subcommittee of the MCC recommended that municipalities “Commit to Manage” a SLR amount that corresponds approximately with the intermediate rate from NOAA’s study and “Prepare to Manage” a SLR amount that corresponds approximately with the high rate of sea level rise from NOAA’s study (Figure 3-2). We are using MCC’s “Commit to Manage” values in this study, which are 1.5 feet of SLR by 2050 and 4.0 feet by 2100. We are using the intermediate rate of SLR for the 2070 timeframe as “Commit to Manage” values within this study, although the MCC currently does not have an official Commit to Manage value for 2070. The three sea level rise values used in the flood risk assessment, corresponding to the 2050, 2070, and 2100 timeframes, are summarized in Table 3-1 below.

Figure 3-2. Sea Level Projection Curves adopted by MCC.



Source: MCC (2024).

Table 3-1. MCC Sea Level Rise Estimates

Timeframe	“Commit to Manage” SLR Amount (ft)
2050	1.5
2070	2.4
2100	4.0

Source: Sea level rise estimates obtained from the 2024 Update of the Scientific Assessment of Climate Change and its Effects in Maine (MCC, 2024).

3.2. Flood Risk Methodology

3.2.1. Flood Scenarios

Flood scenarios to include in the flood risk assessment were created by adding sea level rise values to present-day HAT and 1%-annual chance (i.e., “100-yr storm”) coastal storm stillwater elevations to estimate future HAT and 100-year storm stillwater elevations for the near-term (2050), mid-term (2070), and long-term (2100) time horizons. Stillwater elevations represent static water levels (i.e., no wave action) but consider storm surge as shown in Figure 3-3. During coastal storm events, waves would likely be present, potentially increasing the flood depths and extents. Additional information related to wave heights is detailed in Section 3.4. The HAT and 100-year storm stillwater elevations were selected for this study because they provide a representation of flood risk from routine high tide events (HAT) to typically less frequent but more extreme storm events (100-year storm).

Figure 3-3. Illustrative Figure showing Stillwater Elevation (SWEL) and Normal High Tide.



Source: FEMA (n.d).

This resulted in eight flood scenarios that represent a range of potential stillwater elevations (i.e., without wave action included) that the waterfront would likely experience during HAT and 100-year coastal storm surge conditions for the time horizons included in this study. For reporting purposes, the flood scenarios are numbered 1-8 and are arranged from lowest water elevation (i.e., least severe flooding) to highest water elevation (i.e., most severe flooding). The flood scenarios and water surface elevations included in this study are summarized in Table 3-2.

Please note that these water surface elevations do not include the effects of wave action on water heights. Wave heights vary depending on the intensity of the storm, direction of the wind, depth of the water, and topography along the shoreline. Wave heights would be expected to change non-linearly with sea level rise as the tidal range begins acting on more upland areas of the shoreline. A discussion of a range of wave heights that the Belfast waterfront would likely experience is provided in Section 3.4.

Table 3-2. Flood Scenario Water Surface Elevations

Flood Scenario Number	Flood Scenario Description	SLR Amount (ft)	Water Surface Elevation (NAVD88, ft)	Time Frame
1	HAT, Present-Day	0.0	7.5	Present
2	HAT, 2050	1.5	9.0	Near-term
3	100-yr SWEL, Present-Day	0.0	9.7	Present
4	HAT, 2070	2.4	9.9	Mid-term
5	100-yr SWEL, 2050	1.5	11.2	Near-term
6	HAT, 2100	4.0	11.5	Long-term
7	100-yr SWEL, 2070	2.4	12.1	Mid-term
8	100-yr SWEL, 2100	4.0	13.7	Long-term

Note: SWEL refers to the stillwater elevation (i.e., no wave action) and storm surge. During a 100-year coastal storm event, wave action would be expected to occur which would raise the water surface elevation above the SWEL.

The water elevations for the eight flood scenarios were used to create eight flood inundation extents using a “bathtub” approach using a topographic surface of the study area. A “bathtub” refers to a simplified approach where the water surface is treated as if it were filling up a bathtub. With this approach, which is standard practice for conceptual flood vulnerability assessments, areas below a certain elevation are considered inundated providing a computationally efficient way to evaluate flood scenarios. The eight inundation extents were used to identify which GIS-based “assets” would be exposed to flooding for each scenario included in this study.

The GIS database of assets included transportation infrastructure, building infrastructure, property parcels, and recreational infrastructure.

Additional details on creation of the topographic surface and collection of GIS data are described in the following sections.

3.2.2. Topography Data

To create the terrain surface used in the creation of the inundation boundaries, the latest readily available LiDAR data for the City of Belfast was used, which is the USGS Mid Coast Maine dataset (USGS, 2021). The data for this study was collected between May 9, 2021, and May 11, 2022. Changes to the topography in Belfast that occurred after these dates would likely not be represented in this terrain. The LiDAR survey was downloaded as a Digital Elevation Model (DEM) with a horizontal resolution of 1-meter, meaning the terrain is divided into 1-meter grids with each grid cell being represented by a single elevation value.

3.2.3. GIS Asset Data

The location and elevation of assets included in this study was obtained through state-maintained GIS databases and past survey data from prior work along the Belfast waterfront.

The State-maintained GIS data that we included in this study are parcels (MEGIS, 2019), roads (Maine ESCB, 2024) and Maine Department of Environmental Protection (MEDEP) Registered Tanks (MEDEP, 2019). The MEDEP Remediation Sites (MEDEP, 2023) were reviewed; however, there were no publicly owned sites at risk of flood inundation for the flood scenarios included in this study and so these were not included within our results. It is important to note that public GIS data accessed online can be updated over time and the presented information represents the most recent information at the time of this assessment.

We used existing survey data from prior work along the waterfront to refine locations and elevations of assets along the waterfront. This includes survey data related to the Armistice Bridge Bascule Span design (2005), Fishermen Basin Upgrade (2012), and the City Landing Fuel System (2013). In addition, GEI utilized survey data collected by Wood Environment & Infrastructure Solutions, Inc. (Wood) as part of a 2019 Vulnerability Assessment and Resilience Planning project for the City Landing for use in this assessment (Wood, 2019). The assets as identified in the Wood report are included in Figure 3-4 for ease of reference and the same name will be utilized in this report for consistency purposes.

Figure 3-4. Assets located within City Landing as identified in Wood Report.



Aerial Source: City of Belfast MapGEO Viewer (2025).

3.3. Flood Risk Results

The eight flood scenarios and topographic terrain data were used to create flood inundation extents, which were then used to identify areas and assets that would likely be exposed to flooding for each scenario included in this study. Maps showing these inundation extents are provided in Appendix A.

We used the flood exposure analysis combined with qualitative data around the criticality and sensitivity of flooding of each asset included in the study to indicate whether it is “high priority,” “medium priority,” or “low priority” in terms of adaptation.

To understand the criticality of the assets, we reviewed how the asset itself, users of the asset, and surrounding waterfront infrastructure would be impacted if a particular asset were to be inundated. We considered impacts such as structural damage, loss of function, reduction in economic activity, loss of recreational opportunities, and other impacts as further described in this report. For example, a low-lying roadway may have high flood exposure based on how likely it is to experience flood inundation, but if that roadway is the end of a dead-end street, it would not be considered a critical asset and thus would be given a lower priority for adaptation.

An example of how sensitivity to flooding could come into play when determining asset priority for adaptation, consider low-lying access routes (i.e., pathways, roads, stairways, ramps). These assets would likely remain undamaged during low levels of flood inundation. In contrast, some assets such as utilities and electrical systems may be more sensitive to flood exposure and limited contact with floodwaters could lead to asset failure or hazardous environmental conditions. Assets with a higher sensitivity to flooding would be given a higher priority for adaptation.

In addition to reviewing the flood exposure results and each asset’s criticality and sensitivity to flooding, we also considered what the community prioritizes when it comes to the use and development of the waterfront. Community feedback plays an important role in helping to prioritize assets at risk from flooding and local residents, business owners, and stakeholders can provide input on how past storm events have impacted infrastructure and use of the area. This input can capture information that may not be reflected in technical analyses alone.

To understand the priorities of the community, a community forum was held on January 13, 2025, at the Belfast Free Library. Approximately 60 members of the public attended the event. Members of the GEI project team provided an overview of the assessment and flood inundation maps and discussed areas along the waterfront and what is important to the public. Maps were available for attendees to identify specific assets and the importance of that asset and/or ideas on adaptation strategies. The public responded that the waterfront provides a strong sense of community, valuable shoreland access, and important green space that contributes to what makes Belfast a special place. The ability for the public to access the waterfront with areas of open space and views of the water is considered one of the City’s most important assets. The interests expressed in making flood adaptation improvements centered around City Landing, Steamboat Landing, and the Harborwalk. Other comments noted making parking spaces and walkways permeable, fixing erosion at the Footbridge as this is essential for locals and visitors, adding vegetation where possible for soil retention, stormwater water management, wildlife habitat, and carbon sequestration. Other notable comments stated the importance of Front Street Shipyard and its economic importance to the City.

The following sections of this report summarize the results of the flood risk assessment for the assets included in the study. Depending on the type of asset, the information is presented as either the depth of inundation or, in the case of access paths and roads, the length of inundation. For assets such as the Armistice Bridge abutment or Heritage Park, the information is presented as area (sf) of inundation.

3.3.1. City Landing

The flood exposure assessment results suggest that City Landing would likely experience flood inundation due to flood scenarios included as part of this study. We have designated City Landing as “high priority” for adaptation based on its flood exposure as well as the existing development on the site and the critical functions they provide.

The assets on City Landing, their associated elevations used for the flood exposure assessment, and the scenario under which flood inundation would likely be experienced, are summarized in Table 3-3. The elevation data for each asset was taken from the Wood Report (2019) and a description of what each elevation represents is provided in the table notes. Based on these results, the boat ramp, shoreline protection south of the breakwater, wharf and parking area, and the breakwater would likely experience more consistent inundation occurring by the 2050 HAT.

Results for the fuel storage building, located near City Landing, are included in Section 3.5.4 under Environmental Assets.

Table 3-3. City Landing Assets Flood Exposure Summary (Depth Inundated, ft)

Asset Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario #	1	2	3	4	5	6	7	8
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
Boat Ramp (El. 7.0) ¹		0.5	2.0	2.7	3.5	4.2	4.5	5.7	6.7
Shoreline Protection (portion of Heritage Park riprap) (7.0) ²		0.5	2.0	2.7	3.5	4.2	4.5	5.7	6.7
Floating Dock 1 (El. 8.0) ³		-	1.0	1.7	2.5	3.2	3.5	4.7	5.7
Wharf/Parking (El. 8.2) ⁴		-	0.8	1.5	2.3	3.0	3.3	4.5	5.5
Floating Dock 3 (El. 8.4) ⁵		-	0.7	1.4	2.2	2.9	3.2	4.4	5.4
Breakwater (El. 8.7) ⁶		-	0.4	1.1	1.9	2.6	2.9	4.1	5.1
Floating Dock 2 (El. 8.7) ⁷		-	0.4	1.1	1.9	2.6	2.9	4.1	5.1
Harbor Master's Office (El. 9.0) ⁸		-	-	0.7	1.5	2.2	2.5	3.7	4.7
Floating Dock 4 (El. 10.0) ⁹		-	-	-	0.5	1.2	1.5	2.7	3.7

Notes:

1. Elevation represents top of boat ramp as taken from Wood report (Wood, 2019)
2. Elevation represents adjacent grade as taken from Wood Report (Wood, 2019)

3. Elevation represents gangway support as taken from Wood report (Wood, 2019)
4. Elevation represents lowest deck or adjacent grade from Wood report (Wood, 2019)
5. Elevation represents buoy chain max elevation as taken from Wood report (Wood, 2019)
6. Elevation represents top of breakwater elevation as taken from Wood report (Wood, 2019)
7. Elevation represents gangway support as taken from Wood report (Wood, 2019)
8. Elevation represents adjacent grade as taken from Wood Report (Wood, 2019)
9. Elevation represents buoy chain max elevation as taken from Wood report (Wood, 2019)

3.3.2. Recreational Assets

This category includes the Harborwalk, Steamboat Landing, Heritage Park, Armistice Bridge, and the Belfast Boathouse. The flood exposure results for these assets are summarized in Tables 3-4, 3-5, and 3-6.

We designated Harborwalk and Steamboat Landing as being high priority based on the likelihood of flood exposure, area of inundation, and the feedback received from City staff, CEUC committee, and the community. The flood exposure results suggest these assets would likely experience flood inundation during Present Day HAT. Additionally, the Armistice Bridge northeast abutment was identified during the site assessment as an area of concern given the existing erosion. Erosion is not impacting the function of the bridge; however, it is an area that can be addressed and, based on the flood exposure results, is classified as medium priority.

The flood exposure results suggest the Belfast Boathouse would not likely experience flood inundation until 2050 during a 100-year coastal storm surge event. However, the infrastructure surrounding this building would likely experience flood inundation for one or more of the flood scenarios included in this study as shown in the flood inundation maps in Appendix A. Based on the flood risk results and feedback from City staff, the Boathouse is low priority.

Table 3-4. Walking Paths Flood Risk Exposure Summary, Length of Inundation (ft)

Path Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario #	1	2	3	4	5	6	7	8
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
Belfast Harbor Walk		400	756	1,511	1,755	2,441	2,934	3,445	3,495

Notes:

1. Asset information from satellite imagery

Table 3-5. Park and Open Space Flood Risk Exposure Summary, Area Inundated (acres)

Park and Open Space Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario #	1	2	3	4	5	6	7	8
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
Heritage Park		0.17	0.36	0.37	0.38	0.40	0.41	0.45	0.56
Steamboat Landing		0.04	0.07	0.08	0.09	0.21	0.28	0.44	1.01
Armistice Bridge Northeast Abutment		0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02

Notes:

1. Asset information from satellite imagery

Table 3-6. Belfast Boathouse Flood Risk Exposure Summary, (X Inundated, - Dry)

Path Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario #	1	2	3	4	5	6	7	8
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
Belfast Boathouse		-	-	-	-	X	X	X	X

Notes:

1. Asset information from satellite imagery

3.3.3. Roads

We have identified five roads within the project area that would likely be at risk of flood inundation for one or more of the eight flood scenarios included in this study. We based this analysis on the Maine ESCB roads GIS layer for roads, satellite imagery for walking paths, and terrain elevation data compiled for this study. The length of inundation for each of these roads is summarized in Table 3-7.

Marshall Wharf, Main Street, and Carter Wharf will experience inundation beginning as early as present time frames and near-term (2050 HAT) based on the flood exposure results; however, Front Street is likely to be the most impact based on the length of road inundated. The five roads identified at risk of flooding in the project area would not likely serve as evacuation routes. Additionally, there are no large residential areas or critical services within the project area. These areas are classified as low priority for major permanent adaptation/intervention such as elevating the road; however, they should be considered high priority for temporary adaptation strategies as discussed in Section 4.

Table 3-7. Roads Flood Risk Exposure Summary, Length of Inundation (ft)

Road Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
Marshall Wharf		7	93	106	107	121	124	141	164
Main St		-	59	105	112	158	167	182	201
Carter Wharf		-	31	41	47	66	69	86	113
Front St		-	-	356	388	1,245	1,295	1,397	1,633
Commercial St		-	-	-	-	-	-	-	33

Notes:

1. Asset information from the E911 Roads GIS layer (Maine ESCB, 2024)

3.3.4. Environmental Assets

We identified two MEDEP registered tanks that would likely be at risk of inundation during Flood Scenario 8, which represents a 100-year coastal storm surge event by 2100 (Table 3-8). This includes the registered tanks at the fuel storage building near City Landing and the wastewater treatment plant tanks. We based this analysis on MEDEP and Maine Office of GIS data for the tank locations as well as the terrain elevation data compiled for this study. These assets would not likely experience flood inundation until 2100 according to the flood scenarios included in this study, and thus, and are classified as low priority.

Table 3-8. DEP Registered Tanks Flood Exposure Summary (X inundated, - dry)

Facility Name	Scenario Name	Present Day HAT	2050 HAT	Present Day 100 Yr SWEL	2070 HAT	2050 100 Yr SWEL	2100 HAT	2070 100 Yr SWEL	2100 100 Yr SWEL
	Scenario Elev. (NAVD88 ft)	7.5	9.0	9.7	10.5	11.2	11.5	12.7	13.7
City Landing Fuel Storage		-	-	-	-	-	-	-	X
Treatment Plant		-	-	-	-	-	-	-	X

Notes:

1. Asset information from the DEP-Registered Tanks GIS layer (MEDEP, 2019)

3.4. Wave Heights along the Belfast Waterfront

We have provided an overview of nearshore wave heights that may be experienced along the Belfast waterfront. Nearshore wave heights are a product of wind speed, wind direction, water depths, and the local topography along the shoreline. Wave heights may increase or decrease over the course of a storm event. A detailed wave model was not completed as part of this study, however, we have reviewed FEMA

FIS data of nearby transects, the DELFT-3D model results of the Sediment Study for Breakwater Improvements (WSP, 2024), and we have calculated depth-limited wave heights for periods of inundation at the wharf on City Landing.

In this section we refer to both nearshore significant wave heights and wave runup values. Nearshore significant wave height refers to the height of a wave (from trough to crest) that would likely be present near the shore. Wave runup refers to the maximum elevation that water would “run up” along a coastal structure, which is particularly relevant for steep coastal structures such as revetments or sea walls. If no steep structure is present, or the stillwater level inundates the structure (i.e., a steep wall or bulkhead along a waterfront parking lot), then wave runup likely becomes negligible and significant wave heights are more relevant.

FEMA determines BFEs by calculating the elevation of the crests of nearshore significant waves along a coastal transect as well as the wave runup elevation along the same transect and taking the higher of the two values. FEMA Transect 21, located on the Belfast Bay side of the breakwater, has a reported maximum wave crest of 13 feet NAVD88, which is reflected in the VE 13 flood zone. As the waves break and transition to shore, the BFE settles back to the “Total Water Level” (stillwater elevation plus wave setup) of 11 feet NAVD88. Based on FEMA data for the 100-year coastal storm event, wave heights near Transect 21 would be approximately 2 to 3 feet in height.

Similarly, the Sediment Study for Breakwater Improvements Report (WSP, 2024) shows significant wave heights of less than 1.0 meter (3.3 feet) for 100-year coastal storm conditions along the Belfast waterfront.

To investigate wave action that would likely occur on City Landing for flood scenarios beyond present-day 100-year storm conditions, we have calculated depth-limited wave height. These values represent the maximum wave height that a particular depth of water could support. In most instances, wave heights will be lower than the depth-limited wave height. The maximum depth limited wave heights occurring in the City Landing Parking Lot for the flood scenarios included in this study are summarized in Table 3-9.

Based on this review and analysis of wave heights along the Belfast waterfront, wave heights of approximately 3.0 feet during 100-year coastal events for present-day conditions would be likely to occur near the shore. Neither FEMA, in the FIS for Waldo County, nor WSP, in the Sediment Study for Breakwater Improvements, included an analysis of how nearshore wave heights would change for future time frames given anticipated rates of sea level rise. It is understood that wave heights would likely increase with increasing sea levels.

As the waves break and transition to shore, wave heights would likely decrease due to shallower water conditions. Within the City Landing parking lot, wave heights during 100-year coastal storm events would range from 1.2 feet for present-day conditions to 4.3 feet for anticipated water levels by 2100.

Table 3-9. Depth-Limited Wave Heights in City Landing Parking Lot

Flood Scenario Number	Flood Scenario Description	Water Surface Elevation (ft, NAVD88)	Maximum Water Depth in City Landing (ft)	Maximum Depth Limited Wave Height in City Landing (ft)
1	HAT, Present-Day ¹	7.5	-	-
2	HAT, 2050	9.0	0.8	0.6
3	100-yr Storm, Present-Day	9.7	1.5	1.2
4	HAT, 2070	9.9	1.7	1.3
5	100-yr Storm, 2050	11.2	3.0	2.3
6	HAT, 2100	11.5	3.3	2.6
7	100-yr Storm, 2070	12.1	3.9	3.0
8	100-yr Storm, 2100	13.7	5.5	4.3

Notes:

1. The present-day HAT would not be expected to inundate the City Landing parking lot and thus wave heights within the parking lot were not calculated.

3.5. Flood Risk Results Summary

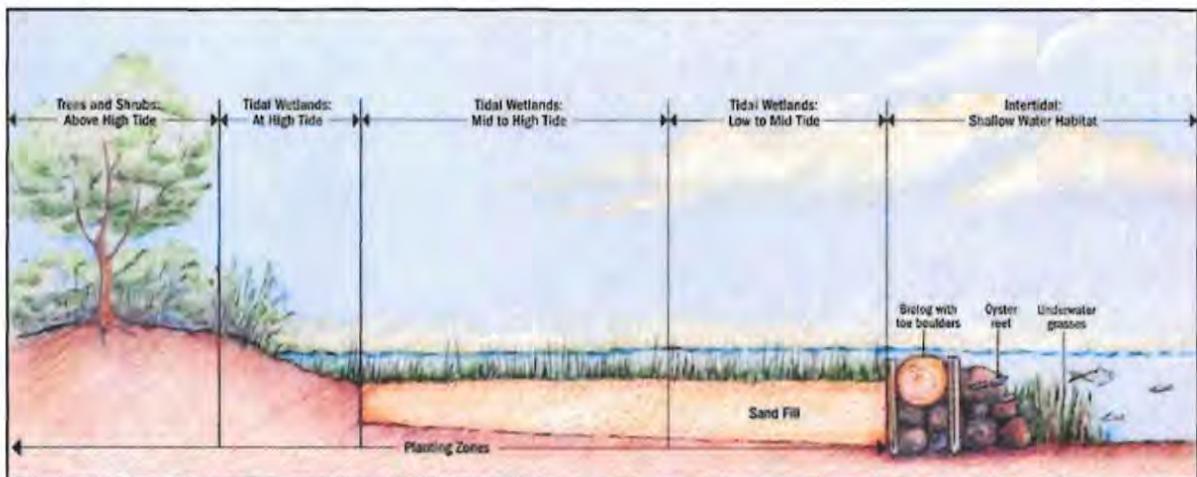
We have summarized the results of the flood risk assessment for the assets included in this study, including our recommended adaptation priority based on flood exposure, criticality, sensitivity to flooding, and feedback from the community. These results are summarized in Table 3-10 below along with notes for each asset.

Table 3-10. Summary of Flood Risk Assessment and Adaptation Priority

Asset	Adaptation Priority	Notes
Wharf/Parking	High	Inundated by 2050 HAT and present day 100-year storm events.
Harbormaster's Office	High	Inundated at present-day 100-year and by 2070 HAT. An important community asset to maintain City Landing operations
Harborwalk (North/South)	High	Recent inundation from January 2024 storms flood exposure, sections damaged in past storms. Identified as an important community asset.
Steamboat Landing	High	Existing erosion along the shoreline. Inundation with park increasingly grows by 2070 by extending further into upland. Identified as a community priority
Heritage Park/Inlet Area	High	Inundated at present day HAT and evidence of existing erosion within inlet area. Identified as a priority area.

Asset	Adaptation Priority	Notes
Armistice Bridge Abutments	High	Northwestern and eastern side of the bridge abutments likely inundated for all flood scenarios in this study; highlighted by community, CEUC, and City Staff as a priority. Existing erosion present. The bridge is not at risk of inundation.
Boat Ramp	Medium	Likely inundated for all flood scenarios included in this study, but low sensitivity to flooding. Function is an important asset to City
Floating Docks 1 – 3	Medium	Risk of damage to floats increases.
Floating Dock 4	Medium	Risk of damage to floats increases.
Breakwater	Low	Risk of flood overtopping by 2050 HAT
Roads (e.g., Marshall Wharf, Main St., Front St., Carter Wharf)	High - Low	Sections inundated during present-day HAT and becoming more inundated in 2050 and beyond. Depending on adaptation strategy, roads are a higher priority for temporary measures and low priority for larger infrastructure adaptation.
DEP-registered tanks (Treatment Plant/Fuel Storage)	Low	Potentially inundated by 2100 for 100-year coastal storm surge events
Boathouse	Low	Likely inundated by 2050 100-year coastal storm surge events event.

Figure 4-2. Living Shoreline with Tidal Marsh Restoration.



Source: Chesapeake Bay Foundation (n.d).

4.1.2. Accommodation

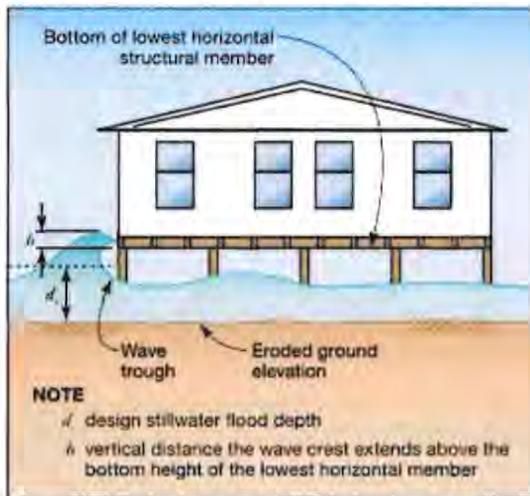
This approach focuses on keeping the existing development in place and reducing the impact of water through a variety of strategies. Examples of strategies include elevating structures, wet or dry floodproofing a structure to reduce damage, early warning systems, or zoning changes to require flood-resilient design.

4.1.2.1. Elevation Increase

One of the most effective ways to reduce risk of flooding is to elevate structures sufficiently above predicted flood elevations such that they are not impacted by water levels resulting from storm surge or wave action. This is demonstrated in Figure 4-3. The degree to which a building or asset is elevated will depend on the minimum code and regulatory requirements, as well as the owner's tolerance to risk which may warrant the inclusion of additional freeboard above the minimum required values.

Elevation increase applies not only to buildings and utilities, but also to roads, marina components, and access ways. For example, roads and pedestrian access ways may be increased in elevation to reduce the frequency and severity of flooding experienced during storm events. Marina mooring piles may require an increase in elevation to prevent the loss of restraint of floating docks during extreme high-water events, and marina gangways and access ramps may require an increase in elevation to remain serviceable during high water events.

Figure 4-3. Elevated Building on Pile Foundation



Source: FEMA (2019)

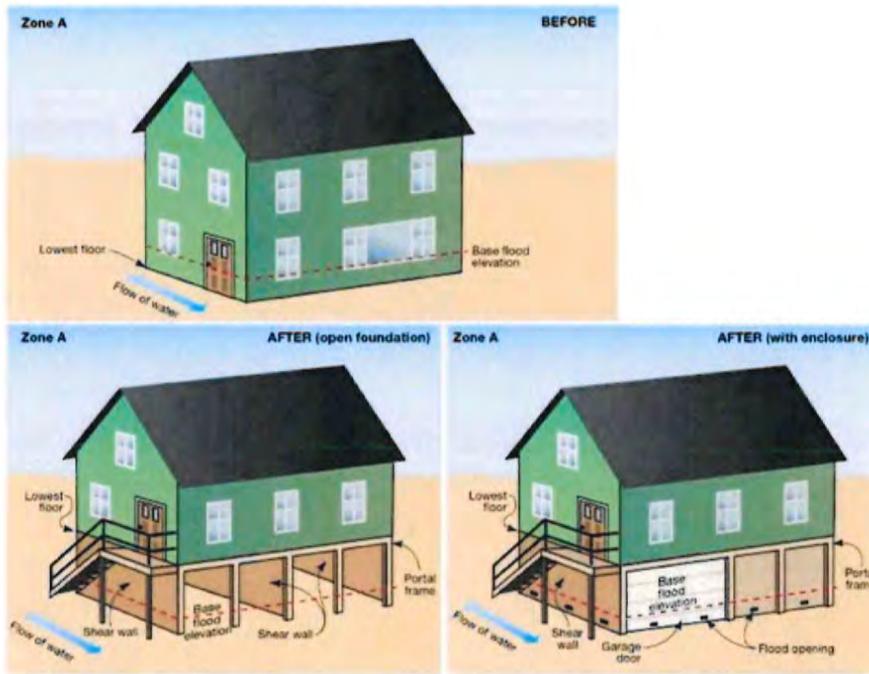
4.1.2.2. Conversion of Lowest Floor

Conversion of the lowest floor of a building from enclosed occupied space to open unoccupied space is an effective way to reduce risk of flood exposure and damage to the structure. This method is demonstrated in Figure 4-4 Using this method, the lowest floor is modified to include open, flow-through construction and the space formerly used by the first floor is converted for uses such as storage and parking. The second floor of the building becomes the lowest occupied space. The structure beneath the converted lowest floor may require reinforcement and addition/replacement of components with flood resistant materials to withstand anticipated exposure to floodwaters. While this method can have a lower impact than an entire building elevation project, it has the disadvantage of a reduction in the occupied space within the building.

4.1.2.3. Wet Floodproofing

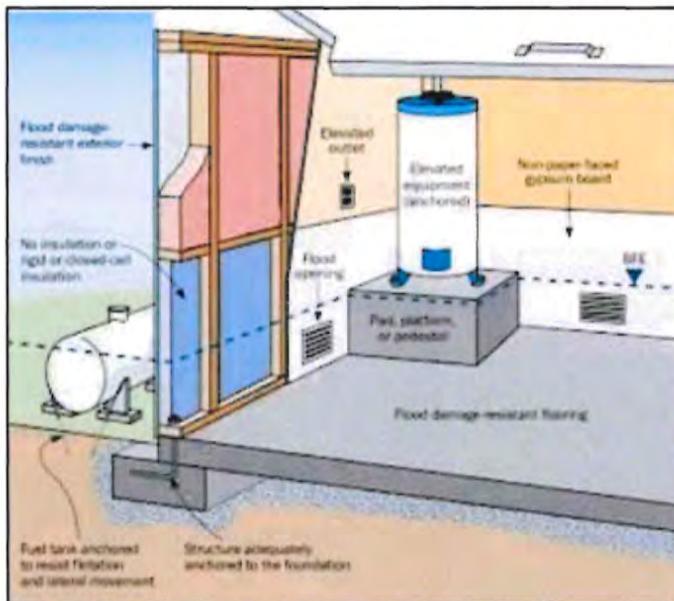
Wet floodproofing involves the adaptation of a building in order to accommodate exposure to floodwater while minimizing risk of damage to the structure and its contents. Refer to Figure 4-2 and Figure 4-4 for examples of wet floodproofing. Wet floodproofing measures can include: providing flood openings in walls to allow water to pass into and out of the structure, elevating utilities and mechanical systems above the design flood elevation, use of flood-resistant materials for flooring and building envelope construction that minimize risk of damage if exposed to floodwaters, and elevating of internal building contents to minimize risk of exposure. Wet floodproofing can reduce the risk of damage to buildings and contents from exposure to flooding but carries a greater risk of building serviceability and operability issues because water is able to enter structure during a flood event.

Figure 4-4. Example of Lowest Floor Conversion



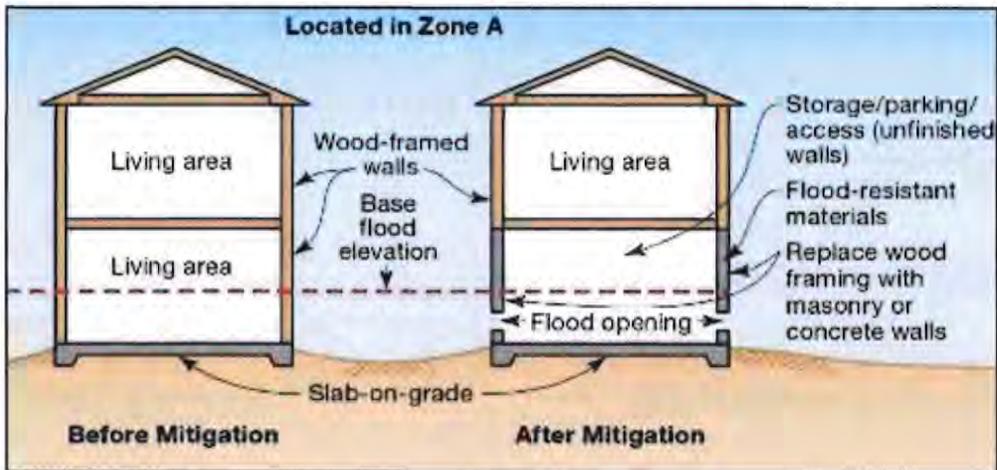
Source: FEMA (2019)

Figure 4-5. Example of Wet Floodproofing Measures



Source: FEMA (2019)

Figure 4-6. Example of Retrofitting Lowest Flood with Flood Resistant Materials and Flood Openings



Source: FEMA (2019)

4.1.2.4. Temporary Interventions

Temporary adaptation measures can be a cost-effective way to increase resilience in the near-term prior to the implementation of more robust adaptation. Some examples of temporary flood risk reduction actions are listed below.

- Warning road signs indicating flooding, such as permanent road signs that flash when the street is flooded.
- Temporary road barriers blocking flooded roadways from travelers.
- An alert system to warn residents of high waters and areas prone to flooding via email, text, or other methods.
- Temporary flood barriers to prevent flood water from entering a structure or room.
- Temporary suspension of service to piers, boat ramps, or other marine facilities during flood events.

4.1.2.5. Land Use Zoning Ordinance Updates

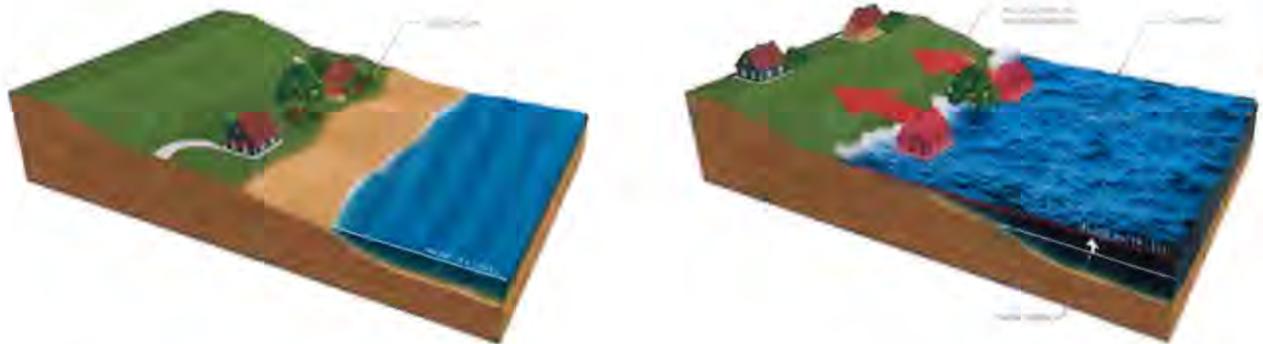
Zoning ordinance changes can enhance community resilience by guiding land use and development to reduce flood risk. This can include:

- Restricting development in high flood risk areas
- Establish elevation and design standards so that buildings in flood-prone areas meet minimum elevation standards, use flood-resistant materials, and incorporate floodproofing designs.
- Encourage nature-based solutions to preserve open space, natural floodplains, and wetlands.
- Incentivize relocation or retrofitting to encourage property owners to relocate out of high flood risk areas or retrofit existing structures to improve flood resilience.

4.1.3. Retreat

Retreat is an adaptation approach that includes the strategic relocation of buildings or assets from areas of high flood risk to areas of lower flood risk. In some instances, entire buildings have been relocated outside of flood prone areas, moving to higher elevation and/or further distance from flood zones. Retreat may also be considered for individual assets and uses. For example, critical equipment such as backup generators and HVAC units can be relocated to areas of lower flood risk and uses such as parking that are not dependent on a waterfront location may be able to be relocated to areas of lower flood risk.

Figure 4-7. Example of Relocation of Buildings.



Source: USACE (2015)

4.1.4. Do Nothing

This approach involves accepting the risk and the impacts of flooding within intervention strategies. The option can be selected where the cost of action outweighs the value of the assets at risk or where flooding is infrequent or of limited consequence.

4.1.5. Summary

The decision around which measure to take can depend on several factors, including the overall risk of flood exposure, the sensitivity to flooding for a particular asset, and the adaptive capacity. As previously stated, assets such as electrical equipment constitute an asset that is highly sensitive to flooding and would likely be damaged or inoperable if exposed to flood inundation. Assets like access paths and roads can usually withstand some level of flooding without damage and so are often considered not very sensitive to flooding in a structural sense. Infrastructure that could be easily relocated, elevated, or flood-proofed would be considered to have a high adaptive capacity. Infrastructure or assets that are not easy to relocate or flood-proof are often considered to have a low adaptive capacity. Consideration should also be given to the financial costs and the regulatory constraints to development.

Advancing infrastructure-based adaptation strategies will require additional phases of work before the recommendations can be implemented, such as site survey, preliminary design, permitting, and final design.

4.2. Asset Level Flood Adaptation Recommendations

This section provides high level asset-specific recommendations of adaptations for the City to consider. The adaptation recommendations provided in this report constitute a high-level assessment of risk and an introduction to adaptation options. The recommended adaptation elevations do not include information on “freeboard,” or the distance between top of flood waters and the sensitive infrastructure. This report should be used as guidance, but further investigation will be needed to advance engineering designs.

In most cases, we recommend adapting to address present day and near-term flood risk, i.e., flooding likely to occur during 1% annual chance coastal events for the present-day timeframe or by 2050. There is more uncertainty around sea level rise projections for future time horizons, such as 2070 and beyond. We will have a better understanding of adaptation design elevations as we approach that timeframe.

In some cases, adaptation recommendations are targeted to an elevation based on the flood risk results (i.e., 2050) or based on the base flood elevation. Following the recommendations is a summary table with relative costs of implementation for each recommendation. These relative costs are presented as: \$ – Opinion of probable implementation cost of <\$50,000; \$\$ – Opinion of probable implementation cost of \$50,000-\$500,000; \$\$\$ – Opinion of probable implementation cost of \$500,000-\$1,000,000 or more. More detailed estimates will be able to be prepared upon completion of detailed planning, design, and specifications, for each recommendation. Concept designs for three areas of the waterfront are included in Appendix B. This includes City Landing, Heritage Park/Inlet Area, and Harborwalk (South).

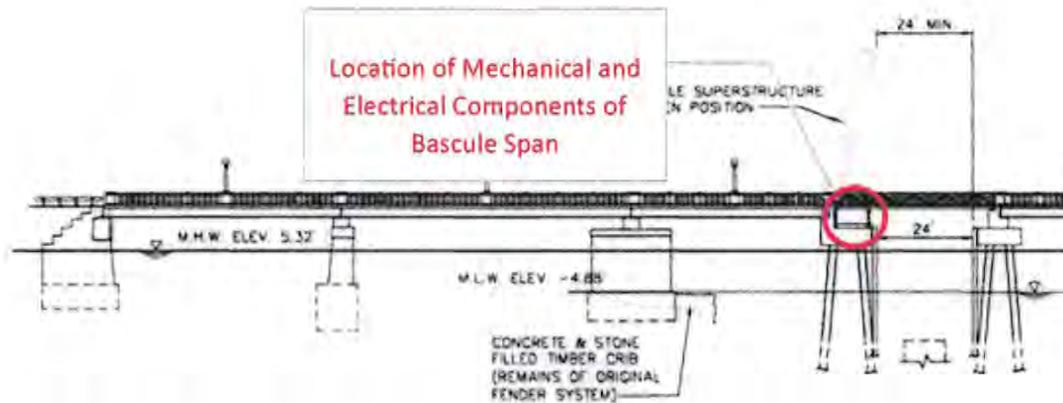
4.2.1. Armistice Bridge

Based on the results from the flood risk analysis, flooding is not expected to cause significant disruption related to pedestrian access at the bridge in the next several decades. In the short-term however, GEI recommends the abutment ends are further assessed to review the existing extent and cause of erosion. Based on the site assessment, there are areas of erosion on the north and south abutments that can be addressed with the placement of riprap and native plantings. The flood risk inundation map (Map 1 of 3) shows the existing HAT elevation may impact the abutment on the north side of the bridge on the east side and potentially both north and south sides on the west side, further exacerbating the existing erosion.

Longer term considerations for the bridge should focus on the span of the bascule. Based on a review of the design plans prepared by VHB and dated June 2005, the bascule span mechanical and electrical components are located approximately 5' above the MHW. The predicted flood scenarios listed in Table 3.2 demonstrate that in the near-term flood scenario, there is potential exposure to these components from flooding. The City has recently committed to an inspection of both the underwater and elevated components of the bridge utilize the City's footbridge capital reserve account. Future recommendations

include repairing any damage and working with an appropriate professional to identify if there is risk to electrical systems and consider improvements to increase the resilience from future flood events.

Figure 4-8. Armistice Bridge Bascule Span Electrical and Mechanical Components (Note – not to scale).



Source: Excerpt from Vanasse Hangen Brustlin, Inc (VHB) Footbridge plan (2005).

4.2.2. Harborwalk (North)

Harborwalk (North) traverses both public and privately owned parcels. Previously, the City collaborated with the Front Street Shipyard through a contract rezoning agreement to include provisions for public access along the waterfront and, as a result, the Harborwalk in this area is accessible to the public. The portion of the Harborwalk that was located over the river was damaged in the January 2024 storms and the Front Street Shipyard rebuilt portions of the Harborwalk to keep the area open for access (Figure 4-9). Based on review of the flood risk results, this area continues to be at an elevated risk of inundation due to sea level rise and storm events.

Figure 4-9. Portion of Harborwalk located over river and rebuilt after January 2024 storms.



Source: MEGIS (2022).

To address this risk, elevated walkway connections can be upgraded to accommodate flood uplift forces and reduce risk of damage during high water events. Additionally, consideration can be given the decking material that either increases the space between traditional timber decking or alternative materials such as Thruflow decking (Figure 4 10). This type of decking can reduce hydrostatic uplift and reduce vertical forces on the structure.

To maintain access along the water, a secondary path should be considered in the event that the wood walkway located over the river is inaccessible. This could be located further inland and extend along Front Street and connect to the Armistice Bridge.

Figure 4-10. Example of Thruflow decking.



Source: GEI – Castine Town Dock.

4.2.3. Treatment Plant

Based on the results from the flood risk analysis and as shown on the flood inundation maps in Appendix A, the treatment plant tanks are not at risk of flooding within any of the flood scenarios; however, any associated outfalls remain vulnerable. As an immediate, short-term recommendation, GEI recommends installing backflow preventers on outfall pipes. Based on the plan titled, "South Sewer System Configuration," prepared by Olver Associates, Inc, there is an outfall located to the west of 39 Front Street (Figure 4-10). Backflow preventers allow water to drain from the site as designed while preventing backflow from high tides and storm surge. These are relatively low cost and an easy to install item that can be sized and bought off the shelf with minimal additional planning or engineering. Examples of typical backflow preventers are shown in Figure 4-11.

Figure 4-11. Sewer Treatment Plant Outfall Pipe (Note – not to scale).



Source: Olver Associates, Inc. (2007).

Figure 4-12. Examples of a Backflow Preventer.



Sources: Tideflex (left image) and Proco Products (right image).

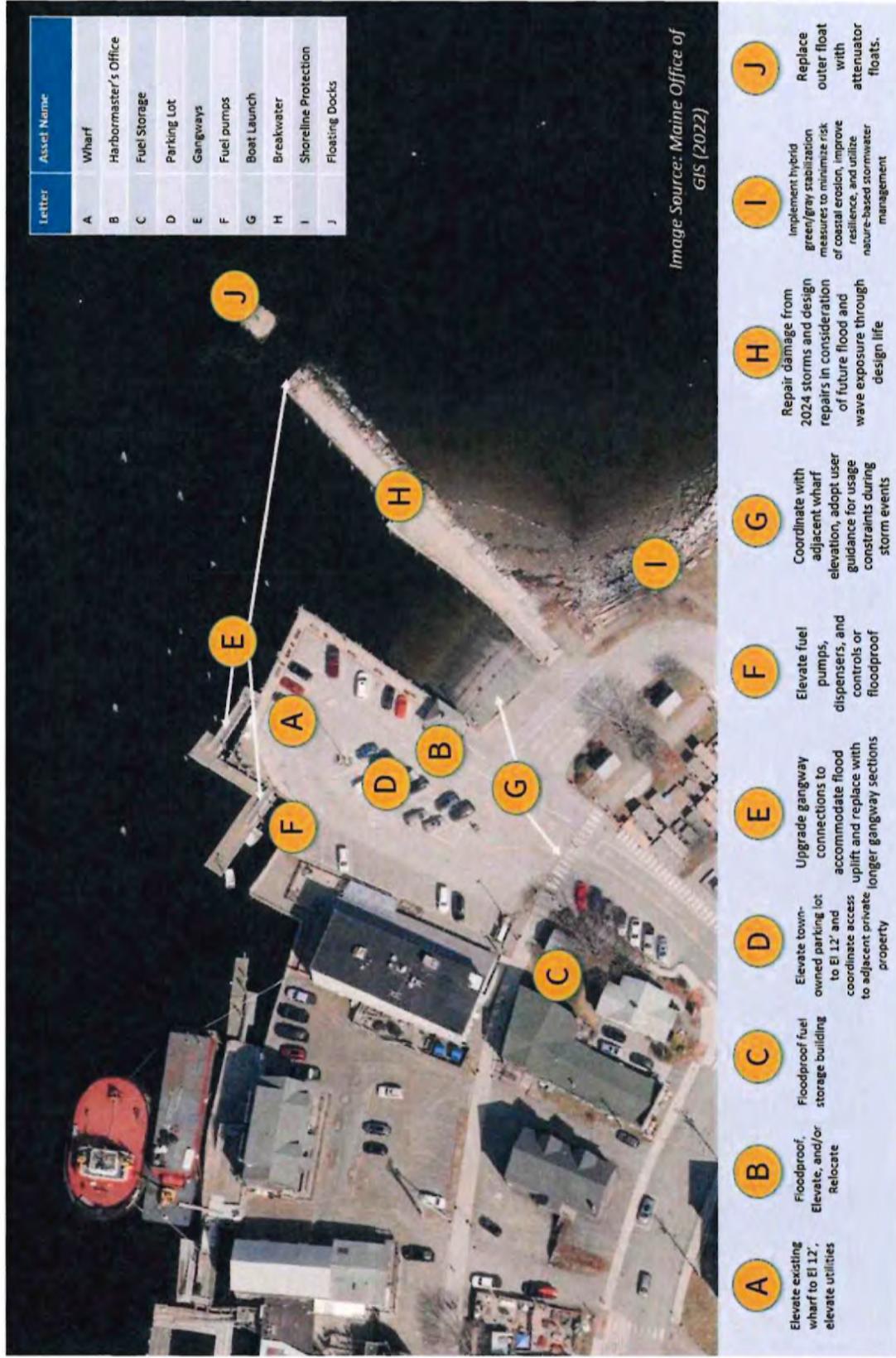
For longer-term adaptation consideration, the New England Interstate Water Pollution Control Commission (NEIWPCC) TR-16 guide sets design recommendations to protect wastewater treatment facilities from flooding with a focus on both critical and non-critical components (NEIWPCC, 2016). The

guide states that critical components such as electrical equipment and control systems should be elevated approximately 3 feet above the BFE. The BFE in this location is El. 11 feet and it is recommended the City verify these components meet the recommended guidelines and make upgrades, as necessary.

4.2.4. City Landing

The flood risk results demonstrate that assets within City Landing are at risk of flooding in the near-term flood scenarios and based on the ranking criteria are high priority. Figure 4-13 identifies adaptation recommendations that can be implemented in the short term but also identifies strategies that may require longer term planning. The following sections provide an overview of each asset and the recommended adaptation strategies

Figure 4-13. Overview of City Landing Recommendations



4.2.4.1. Wharf, Parking, Gangways, and Floats

Given the connectivity between the wharf, parking, gangways, and floats, these assets are being considered together for proposed adaptation strategies. The wharf and parking area is comprised of stacked timbers with concrete along the outer limits and asphalt paving topping the remainder of the site. The floats consist of various sized timber floats secured with mooring piles. This type of float system is resilient as it is able to readily accommodate a wide range of variations in water elevation. The primary risks to the float systems are to the components that anchor the floating docks (in this case timber mooring piles), and the robustness of the marina floats themselves to resist impacts from wave action.

The wharf and parking present a different set of issues and constraints than buildings in flood-prone areas. The elevation of piers and wharves must consider management of flood risk impacts on the structure itself and the functions it serves. While it is important to elevate these structures sufficiently to reduce flood risk to a tolerable level, excessive elevation can also result in functional challenges. For example, loading gear and bait from a commercial pier is more difficult from a structure that is elevated significantly above the water. Increased elevation for piers can also require longer gangways as an increased elevation to the wharf can result in a gangway that is too steep for safe and accessible use, particularly at low tide. Consideration needs to be given to adjacent properties as elevating the parking and wharf can impede access to these properties. It is recommended that coordination is conducted between parcels to address flooding cohesively.

For robustly constructed piers and wharves, some amount of flood inundation can typically be tolerated provided that the risk of structural damage and the impact on facility function remain limited. In general terms and in review of the existing elevation data, the wharf and parking area have a ground elevation near 8.0 feet NAVD88. As a general minimum guideline, these structures are typically designed to be at a minimum of 4.0 feet above the HAT, which would be El. 11.5 feet. It is our recommendation that the adaptation strategies are targeted to an elevation of 12 feet as shown in Appendix B. This would reduce the risk of flood inundation due to high tides by 2070 for the MCC commit to manage levels. This elevation also provides 1 foot of freeboard above the current mapped BFE of 11 feet that covers the majority of the property but is 1 foot below the mapped BFE of 13 feet that follows the outer edge of the property. While this elevation may still be at risk of inundation during storm events with wave action, the resilience would be substantially improved from the existing conditions. The elevation of the wharf and parking area would require the replacement of the three gangways with longer sections to maintain functional conditions at low water. Depending on the selected design elevations and gangway configuration, modifications to the floating dock layout may be necessary to accommodate.

Based on the Fisherman Basin upgrade plans from 2012, the elevation of the top of the piles are El. 17 feet. This elevation is considered sufficient to restrain the floating docks through all of the flood scenarios considered in this assessment. It is noted however that the lifespan of a timber mooring pile is typically in the range of 25-30 years, while a steel mooring pile may be up to 50 years. Additional upgrades may be needed to increase pile capacity based on design conditions anticipated at the time of replacement. This may involve increasing the size and/or quantity of mooring piles.

As a longer-term recommendation, the City could consider the replacement of offshore floating docks with a wave-attenuator float system at Floating Dock 2. Wave attenuator floats typically consist of large

Figure 4-16. Concrete Wave Attenuator Floats



Source: SF Marina Systems.

4.2.4.2. Boat Ramp

The top of the boat ramp is at El. 7 feet and, based on the flood risk, is inundated during present day HAT elevations. The ramp is a type of asset that can handle some level of flooding and still maintain usability. However, to address flood risks in the near-term scenarios, the City should develop public awareness and emergency preparedness initiatives to alert residents when the boat ramp is not accessible. This can include text alerts, email notifications, City website notifications, and signage to alert that the ramp is closed.

If the City moves forward with elevating the adjacent parking lot and wharf area, coordination with this project should be conducted to provide for efficient use and flow of the area. The recommended elevation increase is also targeted to El. 12 feet for future adaptation.

4.2.4.3. Harbormaster's Office

The location of the Harbormaster's office provides on-site oversight for City Landing operations. However, the location is subject to near-term and long-term flooding concerns. Based on Table 3-3, the site will be inundated based on present day 100-year storm elevations. The City of Belfast was recently awarded a Community Action Grant from GOPIF to upgrade a City-owned building located on the same parcel but further inland to relocate some of the Harbormaster functions. The existing Harbormaster building will continue to remain in place for essential Harbormaster functions related to City Landing operations.

Given that the existing building will remain in place, the primary adaptation goals are to protect the critical infrastructure, maintain emergency response capability and continuity of operations. To meet these goals, the recommended short-term strategies are to elevate critical functions such as communication equipment, fuel controls, electrical panels, and computer systems. Additionally, we recommend that the building be elevated to comply with the Floodplain Management Ordinance, or as a

short-term measure, floodproofed to a minimum elevation of 12.0 feet by installing watertight doors and seals and anchored to resist buoyant forces and lateral forces associated with wave exposure.

4.2.4.4. Breakwater

Based on the Wood Report, the elevation of the existing breakwater varies between 8.65 feet (top elevation) to 13.65 (critical elevation). In 2021, the City hired WSP US Environmental & Infrastructure, Inc. (WSP, formerly Wood) to evaluate three options to upgrade the harbor breakwater for sea level rise, storm resilience, and improved docking, specifically for 200-foot cruise ships:

- **Option 1:** Rebuild in current footprint using traditional materials and raise height 3.9 feet – lowest cost (~\$8.6M as estimated in 2022) and environmental impact, but less storm protection and lifespan than fiberglass-reinforced polymer (FRP) materials.
- **Option 2:** Rebuild, extend 60 feet, and raise 3.9 feet using traditional materials – more storm protection and docking space, higher cost (~\$11M as estimated in 2022).
- **Option 3:** Same as Option 2 but uses fiberglass-reinforced polymer (FRP) – most durable and lowest maintenance, highest cost (~\$11.2M as estimated in 2022).

Wood and the planning team used a ranking exercise to evaluate the most favorable option of the three. The ranking exercised ranked functionality, sustainability/service life, and cost, among other factors. The process was based on experience-based judgement and team discussion. The process also included weighted rankings, where two times the weight was given towards harbor protection, functionality, and design life. The unweighted results indicated that Option 1 would be the most favorable. When the rankings were weighted, Option 3 became the most favorable.

However, the above ranking process was based on the professional judgement of the team that Options 2 and 3 would provide additional harbor protection. Since this process was completed, a coastal wave model was created to evaluate, among other things, the level of harbor protection for the existing breakwater (not raised) compared to the level of harbor protection for a raised and extended breakwater (Option 2 or 3). The model was created by WSP in 2024 using DELFT 2-D software, detailed in the report titled “Sediment Study for Breakwater Improvements” (WSP, 2024). The model results suggest that the proposed breakwater did not have a strong impact on wave heights in the inner harbor compared to the existing breakwater, meaning that they provided a similar level of harbor protection. Given this, the City should consider the cost to elevate the breakwater versus the cost to focus on alternative adaptation strategies to the infrastructure discussed in this report.

We recommend that the original ranking exercise be updated with the additional knowledge from the 2024 Sediment Study that a raised and extended breakwater would not strongly impact wave heights compared to the existing breakwater. If the “Harbor Protection” ranking from the original exercise is revised to have the same rank for Options 1, 2, and 3, Option 1 would become the most favorable option. Under these criteria, it would not be recommended to pursue extending the breakwater.

However, the WSP studies did not compare maintaining the existing breakwater with raising the structure within the same footprint (Option 1). Additionally, the WSP coastal modeling study did not evaluate wave heights due to coastal storm events with the addition of sea level rise. As seas rise, the

existing breakwater would still likely attenuate wave heights during coastal storm events, even if it is overtopped, but an evaluation was not completed to quantify the impact.

To understand how the existing breakwater versus Option 1 would impact wave heights near critical infrastructure, the coastal modeling study would need to be updated to include sea level rise and a comparison of the existing breakwater with Option 1. This would allow a cost benefit analysis to be conducted to determine if elevating the breakwater would provide a greater level of harbor protection versus maintaining the existing breakwater. It is understood that the top of the breakwater provides a working surface for storage and other uses; however, the cost to elevate this area versus finding alternative locations along the City's waterfront area for similar purposes, should be reviewed.

In lieu of more information, we recommend that the City of Belfast focus flood risk reduction efforts on adapting critical onshore infrastructure as opposed to pursuing Options 1, 2, or 3 for the breakwater. For present day sea levels, the existing breakwater likely provides a similar amount of wave attenuation as Options 1, 2, and 3. However, as seas rise, it may be worth evaluating whether a raised breakwater (Option 1) would provide increased protection from wave action due to sea level rise and coastal storm events.

4.2.4.5. Fuel Storage

The fuel storage building is located on the west side of Front Street at an approximate elevation of 12 feet. Based on the flood risk analysis, the storage building is not at risk of inundation likely until the 100-year storm event in 2100. To prepare for future flood risk, the building should be floodproofed using a combination of wet and dry floodproofing techniques. This can include raising tanks a specific height above the BFE on platforms or piers and applying waterproof coatings or membranes to walls, seal joints, and installing floodproof doors to prevent water entry as well as anchoring tanks and components to resist flotation. The BFE at this location is El 11.0 feet and based on floodplain design standards for nonresidential structures, the building should be elevated two feet above the BFE to a El 13 feet.

4.2.5. Heritage Park/Inlet Area

Heritage Park was originally an industrial site but was made into a public space in partnership with Maine Coast Heritage Trust. The site serves as a launch site for the community rowing program and a portion of the Harborwalk traverses the area. The existing riprap varies in elevation with an approximate elevation of 14 feet along the northern section and transitioning to El 6 feet along the south property boundary. In general, the riprap appears to be in disrepair, failing in areas, and potentially improperly sized. The bank along the north side of the inlet is showing areas of moderate to more severe erosion. Based on the assessment, the site is at flood risk and is identified as a high priority.

To address increasing flood risk and shoreline erosion, a hybrid living shoreline approach is recommended beginning south of the breakwater and extending to the edge of the City's parcel boundary. This adaptation strategy combines marsh restoration with targeted structural components to stabilize the shoreline and enhance the resilience and ecological benefits and a concept design included in Appendix B. The intent is to protect the existing shoreline and protect from future flood risk. The key components of this design include the following:

- **Marsh Restoration:** Within the inlet area, establish tidal marsh vegetation by filling the area with suitable substrates and plant suitable native vegetation. Based on the tidal elevations within this area, suitable plants would consist of low marsh plant species such as *Spartina alterniflora*.
- **Coir Logs:** The face of the marsh restoration can be protected with coir logs and/or oyster shells to allow the sediment and plants to establish and remain in place.
- **Riprap Toe Protection:** By placing riprap at the base of the slopes, the bank above this area can be protected from wave action.
- **Coir Mat and Native Plants:** Coir mat and native plants can be established above the toe stone and extend to the top of the bank and areas landward for increased protection.

If loss of access to the river at the inlet area is a concern, a scaled back shoreline stabilization approach is an alternative. This would eliminate the marsh restoration approach, and the stabilization would begin at the base of the slope and consist of a toe stone, armor stone, coir mat, and native plantings.

In addition, the City should plan to adapt and raise the elevation of the pier and gangway access to accommodate higher sea levels in the future. It is expected that this will need to be implemented for the time horizon beyond 2050, although the City should monitor the rate of sea level rise and plan the timing of these adaptations accordingly. Additionally, the float layout should be evaluated and if there is loss of access due to marsh restoration efforts, the City should consider installing paddlecraft docks that are low-profile and designed for easier access to paddlecraft.

4.2.6. Steamboat Landing and Harborwalk (South)

Steamboat Landing is a central component of the Belfast waterfront area and was identified as a high priority at the community forum. The site is developed with lawn area with a gazebo and portions of the Harborwalk extend along the park. The elevation of the park ranges from approximately El 10 feet at the top of the riprap along the river to El 14 feet from the middle of the park and inland. This asset has the ability to flood occasionally with the understanding that it will not be usable during those periods. However, to consider the most suitable adaptation strategies to minimize flood risk, there are several categories that fall under accommodate and relocate. To increase the flood resilience in the short term, the City should address the erosion along the top of the bank. As shown in Figure 4-17, there is evidence of erosion along the top of the riprap as it extends from the boathouse and extending north to Heritage Park.

Figure 4-17. Example of erosion along Harborwalk (North). Red area highlights top of bank erosion.

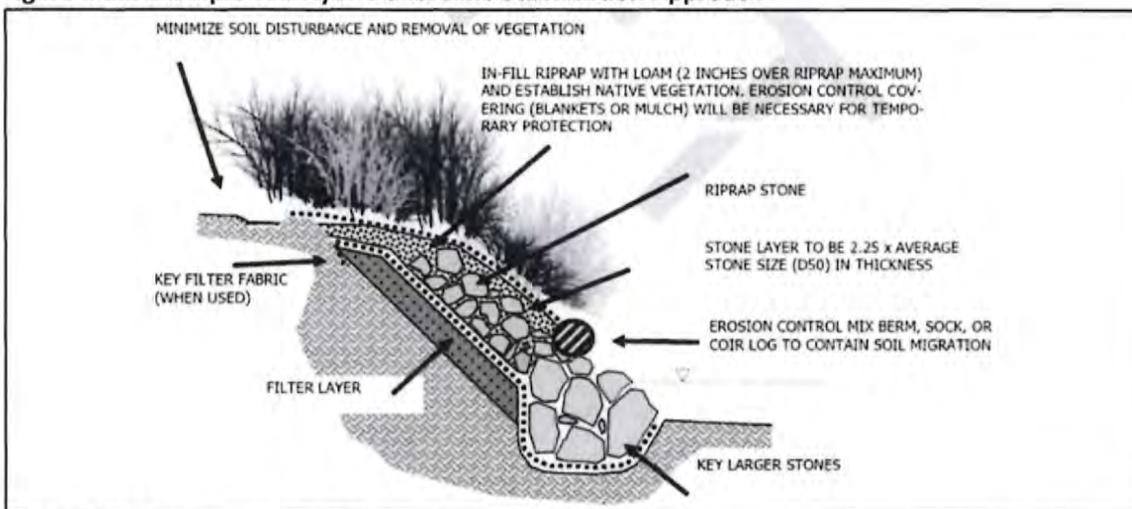


Source: GEI. Date : December 19, 2024.

A near-term recommendation to address this is to repair and elevate the height of the shoreline stabilization. This could be achieved with a hybrid shoreline stabilization system that uses larger toe stones, with coir mat or logs, and native plantings in place of only utilizing riprap. A concept showing this approach is included in Figure 4-18. This would require the path and park area also be elevated and a concept design for this is shown in Appendix B. If the City moves forward with elevating the Harborwalk, consideration should be given to addressing stormwater management. This can include the installation of storm drains and outfall pipes that daylight within the riprap as included in this concept design plan.

Additionally, the City could relocate the Harborwalk in this area, so it is outside of flood risk in all flood scenarios (Figure 4-19).

Figure 4-18. Example of a Hybrid Shoreline Stabilization Approach



Source: MEDEP, Draft OURSHORE Manual.

A longer-term adaptation plan is to design Steamboat Landing as a “floodable greenspace.” A floodable greenspace is an intentionally designed landscape that can temporarily accommodate flooding during storms and periods of high tides and reduces impacts on surrounding areas. In place of hard infrastructure like seawalls, the space is designed to absorb and slow stormwater runoff, reduce flooding, and enhance the natural environment. An example of a floodable greenspace is the waterfront area in Providence, Rhode Island (Figure 4-20) and Hunter’s Point South in New York, New York (Figure 4-21). These approaches work to “live with water” in place of keeping water out.

Figure 4-19. Example of a Potential Landward Location for Harborwalk.



Source: MEGIS (2022).

Figure 4-20 Example of Floodable Greenspace – Providence, Rhode Island



Source: GEI. Date: May 2025.

Figure 4-21. Example of Floodable Greenspace – Hunter’s Point South, New York



Source: SWA (2019).

4.2.7. Belfast Boathouse

Belfast Boathouse serves as a community event space and provides storage and operating space in the off-season. Based on the flood risk results, the building is not at risk in the near-term time frames for flooding. However, to protect critical infrastructure of the building, the City should consider floodproofing the lower levels as described in Section 4.1.2. Long-term adaptation of the building could consider elevating the building above the BFE to meet floodplain management requirements. Since this is a non-residential structure, the current requirements state that the lowest floor is elevated at least 2 feet above the BFE since this is a non-residential structure. The existing BFE in this location is El. 11 feet and the building is approximately at El. 12 feet.

The development around the boathouse consists of lawn area with a retaining wall. There is a public parking area and beach that provides access to the river as well as paddlecraft storage. This development experienced damage from the January 2024 storms. To address future flood risks, the City could consider elevating the wall to between 2 to 3 feet above the BFE (El. 13 to 14 feet) or adding additional vegetation at the top of the wall to help reduce the potential for erosion during storm events. There is a stormwater outfall that daylight to the south of the parking lot. We recommend that installation of a backflow preventer as described in Section 4.2.3.

4.2.8. Roads

Based on the flood risk results, several roads along the waterfront are at risk of inundation in the near-term flood scenarios. This includes sections of Main Street by City Landing and Marshall Wharf. Front Street is at the greatest risk of inundation based on the length of road inundated and this is anticipated beginning in Flood Scenario 3 (present day 100-year). Roads can be adapted to flood risk through elevation, relocation, abandonment, or protection. The road infrastructure is fairly resilient to flood inundation (i.e., small likelihood of infrastructure damage) – once flood waters recede, the roadway can

typically be used. In some cases, floodwater can bring debris over roadways that should be cleared to allow for continued safe use of the roadway.

Based on the length of the road inundated and that the use of the area serves low traffic volume, occasional flooding may have minimal impacts. Given the costs to elevate a road and the potentially significant right of way impacts in this densely developed area, it may be more efficient to tolerate occasional flooding. However, for long-term planning the City may need to consider elevating the road if frequency of flooding exceeds tolerable levels.

In the short-term, to consider the potential for safety issues related to access during flood events, we recommend that the City develop a flood alert notification system to communicate flood hazards to the community. This can include installing programmable information signage along roads. This can be used to provide another means of communication to those accessing the site to warn of pending flood risk and may be particularly useful in reaching users who may not be within the contact database, including visitors or other short-term users of the site. Additionally, temporary flood barriers can be installed to prevent the use of roadways during flood events to keep vehicles and people out of these areas.

4.3. Non-Structural Adaptation Methods

There are several non-structural adaptation measures that the City could take to adapt to flood inundation. These measures would not prevent inundation from occurring but would reduce the potential impact on people during flood events. Many of these adaptation measures could be implemented in the near term and could help reduce the impact of present-day flood events.

4.3.1. Water Level Monitoring and Alert System

Water level monitors and alert systems could be used in critical areas to alert (i.e., through a community emergency alert system) the residents of Belfast when water levels rise above a threshold that would cause flood inundation.

A water level monitoring company that works with municipalities is Hohonu. Hohonu provides water level monitors, installation support, a web browser to view up-to-date water levels and alert services. Hohonu works with municipalities across the country, including with existing clients in Maine. Divirod is another web-based water level monitoring company that works with municipalities and offers an online dashboard to view water levels and alert services. There may also be other reliable systems the City can consider.

Whether or not a water level monitoring system is established, the City could implement an alert system for predicted astronomical high tides. NOAA publishes predicted high tides up to one year in advance on the “Monthly High Tide Flooding Outlook” website, specific to gage stations across the country, including one in Bar Harbor, Maine. Leading up to these dates, the City could remind residents to prepare to shelter in place by making sure they have adequate food and fuel in their homes and remind them not to attempt to drive through flooded water during these times. Publicly available resources such as the City’s website and GIS system could be used to publish data on roads or facilities subject to closure or usage impacts during flood events.

4.3.2. Road Barricades

We suggest that the City position road barricades near areas that experience flood inundation, such as City Landing, areas of the Harborwalk, and Front Street. When periods of high water are anticipated, City staff should deploy road barricades to prevent people from attempting to drive through flooded water. In addition to the risk of the vehicle flooding and people within the vehicle becoming stranded, it can be difficult to see the road condition under the flood inundation and during periods of heavy rain and/or storm surge, culverts along the roadways may become compromised and fail or “wash out.” Driving in flooded water and/or over a section of road with a washed-out culvert is very dangerous and not advised. The City should develop a program to educate citizens about the risks of flooding and to strongly discourage vehicular travel on inundated roads.

4.3.3. Community Science Monitoring

In 2018, the City in partnership with the Gulf of Maine Research Institute launched a community science project known as “Coastal Flooding: Storms and Sea Level Rise Citizen Science Project.” The purpose of the project is for residents to contribute observations and data related to coastal flooding events by detailing first-hand accounts of flooding, erosion, and splash-over which are then correlated with data from local weather stations and water level loggers. This data helps to better understand patterns and weather conditions that lead to high-water events and can be used to prioritize future planning efforts. There are currently six monitoring sites located throughout the City as identified on Figure 4-21. Data for each station can be viewed https://investigate.gmri.org/project/coastal_flooding/results.

Figure 4-21. Belfast Coastal Flood Monitoring Sites.



Source: GMRI, Ecosystem Investigation Network (n.d.)

4.4. Summary

Table 4-1 provides a summary of the priority assets, anticipated flood scenario when they will be impacted, near-term and longer-term recommendations, and relative costs estimates. It is our recommendation that larger infrastructure adaptation planning efforts be focused at City Landing. The City should evaluate the potential to elevate the wharf and parking area and associated infrastructure such as the gangways and floats. Additional adaptation efforts should be focused on shoreline stabilization efforts along the entire project area with a focus on Steamboat Landing, Heritage Park, and the inlet area.

4.4.1. Community Feedback

As part of the project, the findings of the draft study were presented as part of a community forum. The forum took place on July 8, 2025 and GEI presented an overview of the project, findings, and proposed adaptation strategies and held roundtable discussions to solicit feedback on these strategies (Figure 4-22).

Figure 4-22. Roundtable discussion during July 8, 2025 Community Forum.



Source: GEI Date: July 8, 2025.

The discussions focused on community feedback related to the priority areas and assets and suggested adaptation measures as well as if the community would support costs associated with adaptation measures. In general, the key takeaways from the forum included the following.

4.4.1.1. General Adaptation Approach

- Support exists for adaptation, but cost-effectiveness is critical and clear cost estimates need to be included for future projects.
- Adaptation should focus on minimizing rather than eliminating impacts from extreme events.
- There's a strong preference for low-cost, high-impact solutions (e.g., permeable decking, protecting utilities without raising wharves).
- Adaptation should not compromise recreational character or community assets (e.g., Harborwalk, Steamboat Landing). An example was provided of Steamboat Landing and how utilized it is during events. By altering the area, it could be seen as reducing the available space available during events.

4.4.1.2. Specific Site Recommendations

- City Landing: Raising is considered too costly for the benefit; instead, prioritize protecting gas/electrical infrastructure or consider just elevating the existing bulkhead and keep the parking

lot and associated development at the existing elevation. Coordination needs to occur with private property owners

- Heritage Park: Support for piloting a living shoreline project, but concerns about stormwater culvert erosion.
- Community collaboration is key. Adaptation should include private stakeholders, not just City-owned properties. Future planning efforts should consider contextual relationships before prioritizing actions (e.g., City Landing and Harborwalk and neighboring properties).

4.4.1.3. Funding and Community Involvement

For this portion of the forum, the following question was posed, "Do you support the costs associated with the adaptation measures?" with the following general directive answers:

- Prioritize long-term resilience, even if it costs more upfront
- Focus on lower-cost, short-term solutions
- Only invest if there is external funding
- Do not prioritize adaptation

In general, discussion surrounded the current challenges related to external funding; however, it was discussed that the City should not just consider external funding sources but should demonstrate the local involvement or "skin in the game" and volunteer capacity to highlight in future funding submissions.

Table 4-1. Identified Priority Assets and Proposed Short-Term and Long-Term Adaptation Strategies Recommendations

Asset	Flood Scenario Impacted	Flood Scenario Name	Short-Term Recommendations (0-10 years)	Relative Cost	Longer-Term Recommendations (>10 years)	Relative Cost
Wharf/Parking (City Landing)	2	2050 HAT	<ul style="list-style-type: none"> Elevate structures above predicted flood elevations (EL 12.0 NAVD88). This can include the bulkhead only or the entire area. Increase length of gangway to accommodate increased elevation of site. Upgrade gangway top connections to accommodate flood uplift forces and reduce risk of damage during high water events. Elevate utilities 	\$\$\$	<ul style="list-style-type: none"> No action if short-term recommendations are implemented. 	\$\$\$
Harbormaster's Office (City Landing)	3	100 yr SWEL Existing	<ul style="list-style-type: none"> Elevate critical functions. Floodproof to a minimum elevation of EL 12.0 NAVD88. Relocate portion of Harbormaster's operations to adjacent building. 	\$\$	<ul style="list-style-type: none"> Elevate existing building if it remains in existing location. 	\$\$
Boat Ramp (City Landing)	1	Present Day HAT	<ul style="list-style-type: none"> Create an alert system to inform residents when ramp is not usable. New grading and/or extension based on potential future site elevation increase. 	\$\$\$\$	<ul style="list-style-type: none"> Evaluate for risk beyond 2100. 	--
Breakwater (City Landing)	2	2050 HAT	<ul style="list-style-type: none"> Repair areas damaged from January storms. Evaluate cost/benefit for elevating breakwater. 	\$\$	<ul style="list-style-type: none"> Evaluate for risk beyond 2100. 	\$\$
Floating Docks 1-3 (City Landing)	1	Present Day HAT	<ul style="list-style-type: none"> Maintain, as necessary. Assess timber mooring piles and replace, as necessary. If required, increase top elevation of piles to minimize potential for overtopping and capacity to address wave exposure. 	\$\$\$	<ul style="list-style-type: none"> Consider upgrading outshore floating docks (Floating Dock 2) to utilize attenuator floats in order to minimize wave exposure component of flood risk. 	\$\$\$
Floating Dock 4 (City Landing)	1	2070 HAT	<ul style="list-style-type: none"> Maintain as necessary 	\$	<ul style="list-style-type: none"> N/A 	--
Heritage Park/Inlet Area	1	Present Day HAT	<ul style="list-style-type: none"> Install gray/green shoreline revetment to address erosion. 	\$\$	<ul style="list-style-type: none"> Monitor for future erosion. 	\$ - \$\$

Asset	Flood Scenario Impacted	Flood Scenario Name	Short-Term Recommendations (0-10 years)	Relative Cost	Longer-Term Recommendations (>10 years)	Relative Cost
Steamboat Landing	2	2050 HAT	<ul style="list-style-type: none"> Include marsh restoration as potential living shoreline adaptation strategy. Evaluate pier, gangway, and floats. Install low-profile floats for paddlecraft. Install gray/green shoreline revetment to address erosion. Create an alert system to inform residents when parks and walking paths are not usable due to inundation. 	\$\$	<ul style="list-style-type: none"> Develop floodable greenspace. 	\$\$\$
Harborwalk (North)	1	Present Day HAT	<ul style="list-style-type: none"> Install signage to alert of flood conditions. Replace wood planks with Thru-flow decking material. Monitor shoreline for erosion along path. Create an alert system to inform residents when parks and walking paths are not usable due to inundation. 	\$	<ul style="list-style-type: none"> Develop a secondary path to maintain access during periods of flooding. Assess existing elevation of elevated portion of Harborwalk and determine need to elevate structure 	\$\$
Harborwalk (South)	1	Present Day HAT	<ul style="list-style-type: none"> Install signage to alert of flood conditions Create an alert system to inform residents when parks and walking paths are not usable due to inundation. Elevate path and include stormwater drainage and outfalls to manage stormwater. 	\$ - \$\$	<ul style="list-style-type: none"> Relocate path to reduce flood risk 	\$\$
Armistice Bridge Abutment	1	Present Day HAT	<ul style="list-style-type: none"> Riprap side slopes along abutments and include native plantings at top of riprap. 	\$	<ul style="list-style-type: none"> Review bascule span to assess electrical/mechanical systems and potential vulnerability to future flood scenarios 	\$ - \$\$\$
Roads	1	Present Day HAT	<ul style="list-style-type: none"> Install temporary road barriers blocking flooded sections from motorists. Develop a flood warning alert system and install signage to alert of flood conditions. 	\$	<ul style="list-style-type: none"> Elevate to EL 10.5' to reduce flooding from HAT by 2070 (Flood Scenario 4), or EL 11.5' to reduce flooding from HAT by 2100 (Flood Scenario 7). 	\$\$\$
Boat House	5	100-yr SWEL 2100	<ul style="list-style-type: none"> Floodproof building to limit the risk of damage to the structure and its contents. Increase the height of riprap along shoreline. 	\$\$	<ul style="list-style-type: none"> Elevate building to Flood Development Standards for 	\$\$\$

Asset	Flood Scenario Impacted	Flood Scenario Name	Short-Term Recommendations (0-10 years)	Relative Cost	Longer-Term Recommendations (>10 years)	Relative Cost
			<ul style="list-style-type: none"> Plant vegetated buffer along top of bank. Elevate utilities. 		buildings in Special Flood Hazard Areas.	
Treatment Plant	8	100-yr SWEL 2100	<ul style="list-style-type: none"> Assess outfall pipe elevations and install backflow preventers, as necessary. 	\$	<ul style="list-style-type: none"> Evaluate for risk within NEIWPCC guidelines 	---
Fuel Storage	8	100-yr SWEL 2100	<ul style="list-style-type: none"> Dry floodproof to limit intrusion of floodwaters. 	\$	<ul style="list-style-type: none"> Relocate fuel storage outside future flood inundation boundaries. 	\$\$

4.5. Permitting Considerations

Projects located along the waterfront will most likely be subject to a local, state, and/or federal regulatory process. In some cases, multiple permits may be required for a specific project. We have summarized some of the local, state, and federal permits that may be required for coastal adaptation projects in the City of Belfast. More detailed analysis and design would need to be developed to fully identify all permitting requirements.

4.5.1. City of Belfast

The City of Belfast's Shoreland Zoning Ordinance applies to all land areas within 250 feet of the normal high-water line of any great pond or river, upland edge of a coastal wetland, or upland edge of a freshwater wetland and all land areas within 75 feet of the normal high-water line of a stream. Based on the City's effective Shoreland Zoning Map (dated February 7, 2023), the project area is mapped in the Waterfront Subdistrict. Table 1 of the City of Belfast's Shoreland Zoning Ordinance outlines common land uses, and the level of review required based on the zone of the project site (i.e., CEO, Planning Board, or no review).

In addition, the City participates in the National Flood Insurance Program and regulates projects within Special Flood Hazard Areas (SFHAs) under Article II, Chapter 78 of Subpart B of the City's Land Use Regulations.

4.5.2. State of Maine

The Maine Department of Environmental Protection (MEDEP) regulates activities in, on, or over protected natural resources that include coastal sand dune systems, coastal wetlands, significant wildlife habitat, fragile mountain areas, freshwater wetlands, great ponds, and rivers, streams, or brooks. In addition, activities within 75 feet of a coastal wetland, great pond, river, stream or brook, and specific freshwater wetlands are also subject to the NRPA. The goal of the NRPA is to avoid and minimize impacts to protected natural resources by regulating activities in, on, or adjacent to the resources. Under the NRPA, the Passy is defined as a coastal wetland and activities in, on, over, and within 75 feet are regulated by the MDEP.

In general, there are two permitting options for projects subject to the NRPA: a Permit-by-Rule (PBR) or an Individual NRPA permit. A PBR is an expedited permit review that applies to certain small, low-impact projects that present minimal risk of impact to environmental resources and must meet specific design standards. If a project does not qualify for review under a PBR, an Individual NRPA Permit is required. This includes most projects that directly impact a coastal wetland, including upland areas with 25 feet of the highest annual tide line; however, recent changes to the standards of PBR allow for limited shoreline stabilization activities within a coastal wetland.

The NRPA Individual permit application process requires that the natural resources impacted by the project be characterized, that the purpose for the project be demonstrated, and that an alternatives analysis be undertaken to document that the option being proposed is the least impactful practical option that achieves the project objectives. Resource agencies such as the Maine Department of Inland

Fisheries and Wildlife (MDIFW), the Maine Department of Marine Resources (DMR), and Maine Geological Survey (MGS) review these applications and provide feedback to minimize potential impacts to natural resources.

Depending on the amount of impact and type of protected natural resource, the MEDEP may require a functional assessment to determine if the project is anticipated to impact the functions and values of the resource. If so, the MEDEP may require mitigation for lost resource functions and values. For projects that impact less than 500 square feet of a coastal wetland, a functional assessment and/or compensation may not be required. For projects with greater impact, mitigation may be required in the form of in lieu fee (ILF), an on-site compensation project, or an off-site compensation project. The timeframe for approval of applications under the NRPA is twenty days for a PBR, and 6+ months for an Individual NRPA permit. Public notice is required for an Individual NRPA permit projects subject to mitigation require a pre-application meeting with the DEP and a public information meeting prior to the submission of an application.

As a matter of consideration, certain projects may be eligible for a statutory exemption under the NRPA and may not require any permit. This can include maintenance and repair to less than 50% of an existing structure, including piers, wharves, and docks, public works projects, or the repair and maintenance or replacement of an existing crossing.

In addition to the MEDEP, floats located below the mean low water (MLW) that exceed a certain area, require a submerged lands lease from the Submerged Lands Program at the Department of Agriculture, Conservation, and Forestry (DACF).

4.5.3. Federal

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) regulates waters of the U.S., and, under Section 10 of the Rivers and Harbors Act, the USACE regulates navigable waters of the U.S. Projects that are subject to these regulations require a Maine General Permit. Similar to the MEDEP, there are generally two permit options: a Self-Verification Notification Form (SVNF) or a Pre-Construction Notification (PCN), depending on the scope of the project. In some cases, provided all proposed work is landward of the high tide line, these permits can be avoided. If a USACE permit is required, several federal agencies will be involved in the review, including US Fish & Wildlife (USFWS), the Environmental Protection Agency (EPA), and National Marine Fisheries (NMFS). Additionally, for either a SVNF or PCN, notification of the project must be submitted to the Maine Historic Preservation Commission (MHPC) and the five federally recognized tribes in the State of Maine. In cases where both an NRPA individual permit and Army Corps permit are required, an application can be made using the joint application form to both agencies; however, this process may be phased out in 2025 when the new USACE Maine General Permit is released.

4.6. Funding Opportunities

There are several state and federal funding opportunities that coastal adaptation projects would be well suited for. These opportunities evolve over the years and new opportunities may become available in future years. Each funding source has different eligibility requirements, match requirements, and

deadlines for funding. We have provided a list of some of the relevant grant programs, but this list should not be considered comprehensive. A list of some of the grant programs available for coastal infrastructure projects in Maine is provided in Table 4-2.

Table 4-2. Flood Adaptation Grant Programs in Maine

Grantor	Grant Name	Description of Qualifying Grant Uses
Maine Coastal Program	Shore and Harbor Planning Grant	Shoreline access planning, waterfront and harbor planning, identification and resolution of waterfront use conflicts, and planning, feasibility, and design efforts for waterfront infrastructure. (This grant program should be reviewed in future years to determine if it will still be available).
Maine Department of Agriculture, Conservation, and Forestry	Coastal Communities Grant	Improve water quality, increase adaptation to erosion and flooding, restore coastal habitats, promote sustainable development, and enhance the coastal-dependent economy while preserving coastal natural resources within Maine's coastal zone.
Maine Department of Agriculture, Conservation, and Forestry	Maine Trails Program	Development and renovation of recreation trails. Projects can include boat launch/landing infrastructure, renovation of existing trails such as reconstruction of a trails base and surface, and bank stabilization, re-vegetation, and erosion control.
Governor's Office of Policy Innovation and the Future (GOPIF)	Community Action Grants	Work supporting the List of Community Actions, which fall into the categories of: Embracing the Future of Transportation, Modernizing Maine's Buildings, Reducing Emissions through Clean Energy Innovation, Grow Jobs and Protect Natural Resource Industries, Protect the Environment & Promote Natural Climate Solutions, Build Healthy & Resilient Communities, Invest in Climate-Ready Infrastructure, and Engage Maine People.
Maine DOT	Small Harbor Improvement Program (SHIP)	Projects promoting economic development, public access, improved commercial fishing opportunities and works to preserve and create infrastructure at facilities in tidewater and coastal communities.
USFWS administered by Maine DOT	Boating Infrastructure Grant (BIG)	Projects to construct, renovate, and maintain tie-up facilities with features for transient boaters in vessels 26 feet or more in length.
Northern Border Regional Commission	Catalyst Program	Economic development initiatives, such as modernizing and expanding access to public water and wastewater services, revitalizing transportation infrastructure, establishing workforce development programs and facilities, growing outdoor recreation economy, and providing access to new childcare and healthcare facilities.
FEMA	Flood Mitigation Assistance (FMA)	Reduce or eliminate the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program.
FEMA	Hazard Mitigation Grant Program (HMGP)	Post-disaster grants to reduce disaster losses and protect life and property from future disaster damage in communities that have already experienced significant damages from a major natural disaster.
U.S. Department of Transportation	Bipartisan Infrastructure Law Grants	Several funding opportunities related to the transportation sector and improving public safety and climate resilience. The Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) is through DOT is canceled.
National Fish and Wildlife Foundation	Coastal Resilience Fund	Conservation projects that restore or expand natural features such as coastal marshes and wetlands, dune and beach systems, oyster and coral reefs, forests, coastal rivers and floodplains, and barrier islands

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Flood Vulnerability Assessment
Belfast Waterfront
Belfast, Maine
August 5, 2025

Grantor	Grant Name	Description of Qualifying Grant Uses
		that minimize the impacts of storms and other naturally occurring events on nearby communities.
U.S. Department of Agriculture	Community Facilities Direct Loan & Grant Program	Development of essential community facilities in rural areas, such as health care facilities, public facilities, community support services, public safety services, and utility services.
MEDEP	Municipal Wastewater Grants and SRF Loans	Multiple grant programs, such as: Clean Water State Revolving fund to plan, design, and construct wastewater infrastructure projects; and the State Municipal Wastewater Grant Program for design of wastewater infrastructure projects. It is anticipated there will be substantial cuts to funding in FY2026 through US EPA.

5. Next Steps for Adaptation

This report presents the findings and recommendations for coastal flood risk and adaptation in the City of Belfast. The analysis included gathering of background information, assessment of flood risk to assets within the City based on eight flood scenarios, identification of critical assets for adaptation prioritization, an introduction of adaptation options, preliminary concept designs and cost estimates for adaptation options, and an overview of funding options and permitting considerations. This was a high-level, planning-based study.

The vulnerabilities identified in this phase of study vary in severity for adaptation. For some assets, a phased implementation strategy is likely to be the most effective approach to completing priority projects while aligning with available grant funding programs. Adaptation projects could take years to fully implement.

We have provided a summary of recommended next steps in order for the City to advance infrastructure-related adaptation to coastal flood risk:

- **Decide on adaptation projects to pursue.** This decision should be based on the risk of exposure to flooding as well as the impacts (i.e., consequences) that would likely occur if the area or infrastructure becomes inundated and priorities of the community. The City should consider their tolerance to “living with water” when making decisions. Infrastructure-based adaptation methods (i.e., elevating a roadway) could be supplemented with non-infrastructure-based adaptation methods (i.e., alert systems or road barriers) to increase the overall resiliency to flood risk. Furthermore, an understanding of the likelihood of inundation vs consequences (i.e., economic costs of damage such as those based on depth-damage functions) would help build a risk framework and guide prioritization of mitigation projects.
- **Pursue relevant funding options.** This could include a funding package that leverages grant awards as a match requirement for a separate grant award. Funding could be pursued as a public and private partnership or for a particular piece of infrastructure. The City should continue to explore grant opportunities focused on implementation of flood adaptation measures. Adapting a single piece of infrastructure through construction may require support from multiple grants, over multiple funding cycles, to complete.
- **Contract with a consultant to develop preliminary and final designs, procure the necessary permits, and oversee construction.** Once assets have been identified for adaptation and funding has been received, we recommend contracting with one or more consultants to develop adaptation designs for the selected infrastructure and oversee construction. The consultant(s) should be responsible for several tasks. These tasks could be part of separate contracts, funded through various grant programs, and take several years to complete. The tasks that the consultant(s) could be responsible for include:
 - **Conducting field investigations.** This would include scope items such as coordinating surveys of areas, performing wetland delineation, and carrying out a geotechnical investigation, as applicable.

- **Refining flood risk through a coastal and/or hydrologic and hydraulic analysis.** We recommend performing a site-specific coastal flood modeling analysis to understand wave conditions, such as wave runup heights, for assets that would likely be exposed to wave action.
- **Develop preliminary and final designs.** The adaptation measures identified would need to be advanced through preliminary and final phases of design development.
- **Procure permits.** The consultant would help prepare and submit regulatory permits required for the selected design. These are typically prepared and submitted prior to final design.
- **Prepare construction bid documents.** The consultant could help prepare construction plans and bid documents and assist in the selection of a contractor for the construction of the project.
- **Oversee construction.** The consultant could oversee the construction of the project.

Beyond infrastructure projects, it is imperative that the City develop a plan for emergency preparedness around flooding. This might include, for example, developing forecasting methods and an emergency alert system, operating procedures for deploying road barricades in advance of major storm events, a program to educate the public about the dangers of flooding, and procedures for local emergency organizations to respond to emergencies during periods of inundation. A possible model to follow could be a voluntary signup to receive text messages on cell phones or via email for significant events with the potential to cause flooding.

Emergency responders and public works officials should closely follow weather forecasts and extreme tides, separately and combined, and plan for road closures during significant events that pose a risk to roads. Residents who rely on stretches of road to travel to and from their home that are likely to inundate will need to be mindful of high tides and weather forecasts of significant events when planning for travel outside their home. Vulnerable populations who rely on emergency services may want to consider temporarily moving to a more accessible location during anticipated coastal storm events. Addressing inundation will require education by the City, warnings about advancing storm events, and the development of, for example, emergency alert systems such as the Maine Citizen Alert System.

6. Limitations

This report summarizes our work for the City of Belfast. The project did not include survey data collection and relied on readily available online information, published references, data gathered during the site assessment and community forum, and our professional judgement. The purpose of this flood vulnerability and adaptation assessment was to identify areas and infrastructure at risk of flood inundation, prioritize infrastructure, and provide adaptation options.

The GIS data included in this study represents a snapshot in time of locations and configurations for assets, such as roads, parcels, and building footprints. Infrastructure not included in an existing GIS database, such as city-owned culverts, were not included in this study.

The flood extents were based on still water elevations representing 1% annual chance storm surge and HAT elevations for present-day and future conditions for four values of sea level rise. The sea level rise values used were recommended by the Maine Climate Council (2024) and the 1% annual chance storm surge SWEL was based on the FEMA coastal analysis for Waldo County (FEMA, 2015). The numbers and cost estimates included in this study should be considered approximate. Additionally, the flood extents presented in this report do not include the effect of wave action. Wave runup and overtopping on coastal infrastructure would likely increase the flood extents and depths and may contribute to damage of coastal infrastructure. While each scenario corresponds to a specific water elevation based on a flood scenario, there are many combinations of flood events of varying intensity and frequency that could result in a specific water elevation. Actual storms, SLR rates, and flood conditions will vary from conditions presented in this report.

This study does not include an evaluation of the structural integrity of roadways, culverts, bridges, dams, and other appurtenances. We recommend site survey and site-specific design be completed for any infrastructure projects the City pursues. Because the methods, procedures, and assumptions used to develop the analysis are approximate, the results should be used only as guidance.

Reuse of this report for any purposes, in part or in whole, is at the sole risk of the user.

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Appendix A Flood Inundation Maps



<p>Source: Aerial Imagery from ESRI Worldmap Inundation Extents Based on USGS 1M ME MileCoast 2021 D21 LIDAR</p> <p>Notes: 0 FT TIAVD88 = 5.8 FT MLLW</p> <p>Coordinate System: NAD 1983 (2011) StatePlane Maine East FIPS 1801 (US Feet)</p> <p>Created by: WJG - 5/6/25 Checked by: LCY - 5/28/25</p>		<p>Scale: 0 75 150 Feet</p>	
<p>City of Belfast Vulnerability Assessment Belfast, Maine</p>		<p>GEI CONSULTANTS</p> <p>Project 2407807</p>	
<p>City of Belfast Belfast, Maine</p>		<p>July 2025</p>	
<p>Fig. 1</p>		<p>Fig. 1</p>	



Notes:
 0 FT (TAVD88) = 5.6 R MLLW

Source:
 Aerial Imagery from ESRI Worldmap
 Inundation Extents Based on USGS 1M ME
 MidCoast 2021 B21 L0NR

Coordinate System: 114D 1983 (2011) StatePlane Maine East FIPS 1801 (US Feet)

Created by: IVG 5/6/25
 Checked by: LCV 5/28/25

GEI
 CONSULTANTS

City of Belfast Vulnerability Assessment
 Belfast, Maine

City of Belfast
 Belfast, Maine

Project 2407807

July 2025

BELFAST INUNDATION MAP
 2 OF 3

Fig. 2

Legend

—	Contours
□	Private Parcels
□	Public Parcels
Existing HAT (7.5 ft NAVD88)	2100 YR (13.7 ft NAVD88)
Existing 100-YR (9.7 ft NAVD88)	2050 HAT (9.0 ft NAVD88)
2050 100-YR (11.2 ft NAVD88)	



- Legend**
- Existing HAT (7.5 ft NAVD88) ■
 - Existing 100-YR (9.7 ft NAVD88) ■
 - Existing 100-YR (9.7 ft NAVD88) ■
 - 2050 HAT (9.0 ft NAVD88) ■
 - 2050 100-YR (11.2 ft NAVD88) ■
 - 2100 100-YR (13.7 ft NAVD88) ■
 - Contours —
 - Private Parcels
 - Public Parcels

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Flood Vulnerability Assessment
Belfast Waterfront
Belfast, Maine
August 5, 2025

Appendix B Concept Design Plans



CITY OF BELFAST
BELFAST, MAINE

**VULNERABILITY
WATERFRONT
ASSESSMENT**
CITY OF BELFAST
BELFAST, MAINE

DRAFT

P.E. No.	PE NO
Approved By	APR BY
Checked By	CHK BY
Designed By	DES BY
GEI Project	24071807

Attendant:
1" = 100'-0"
If this scale has been modified, please note the scale.
This drawing is not original scale.

1	DESIGN	DATE	10/1/2024
2	CONCEPT DESIGN	DATE	10/1/2024
3	FINAL DESIGN	DATE	10/1/2024
4	CONSTRUCTION	DATE	10/1/2024

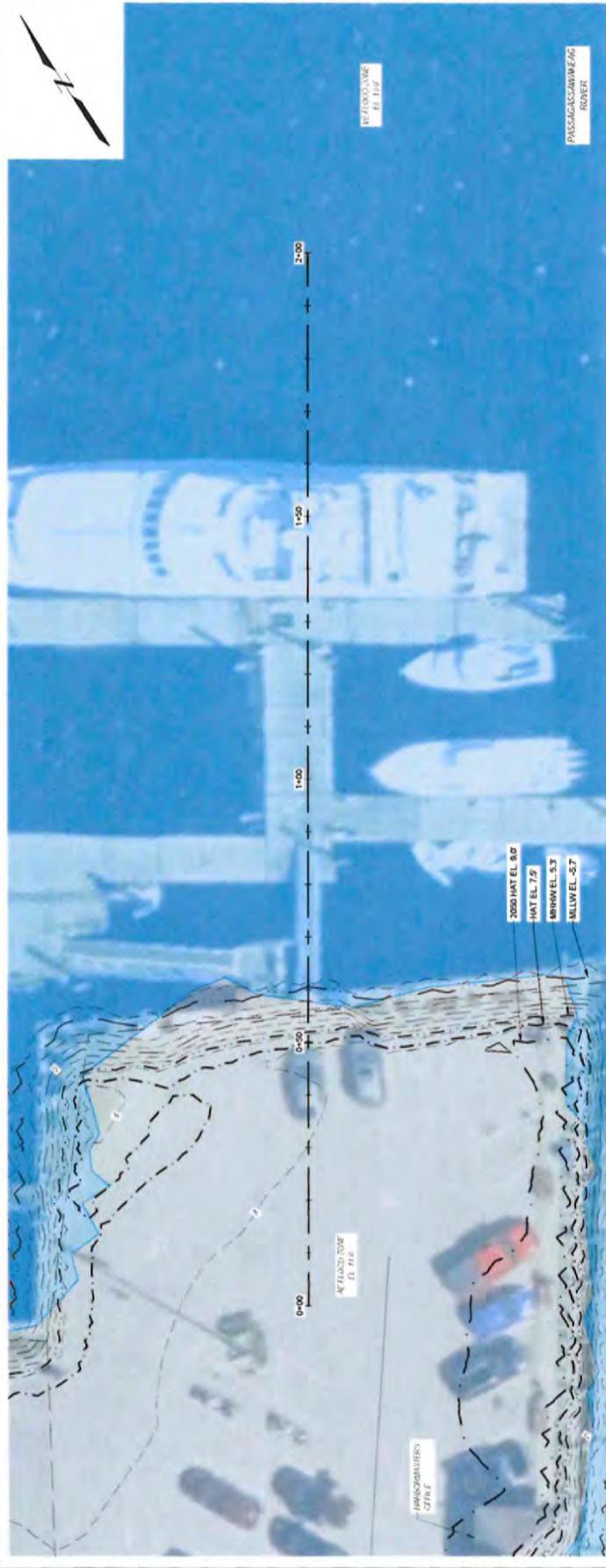
SHEET NAME

AREA 1 CITY
LANDING

SHEET NO.

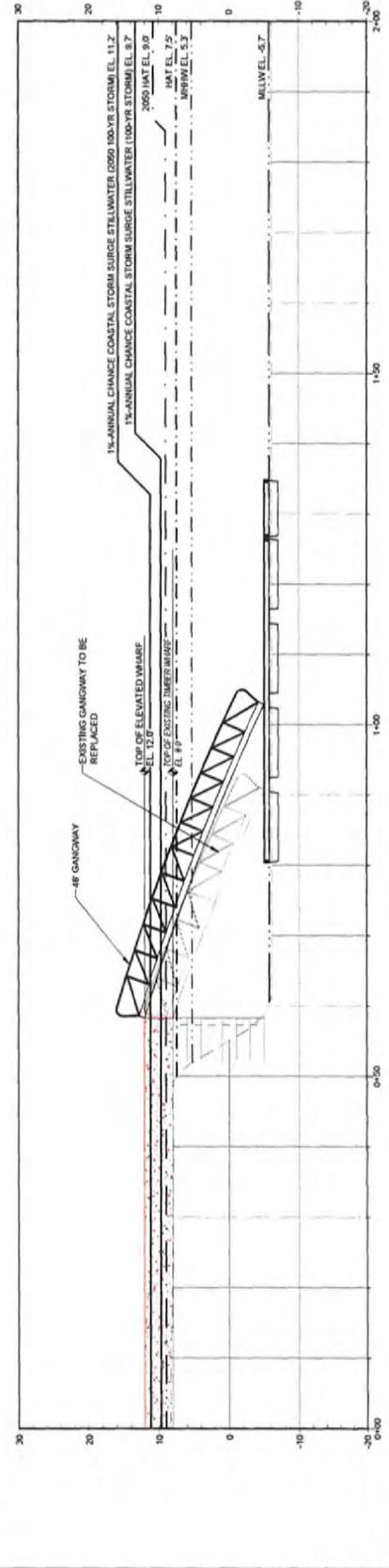
C-02

PRELIMINARY



AREA 1: CITY LANDING SCALE: 1" = 10'

PLAN



1 PROFILE C-01/ AREA 1: CITY LANDING SCALE: 1" = 8'

1 PROFILE

C-01/ AREA 1: CITY LANDING

SCALE: 1" = 8'



PLAN

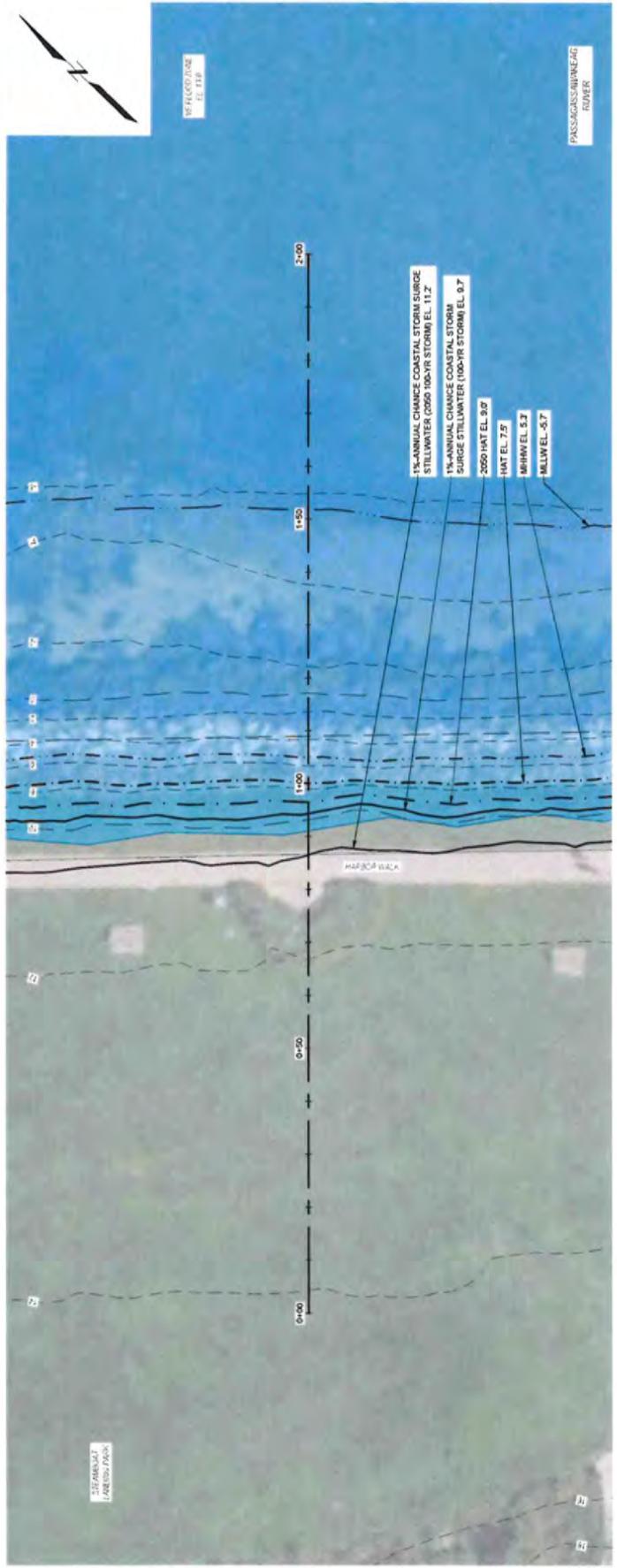
SCALE: 1" = 10'

PROFILE

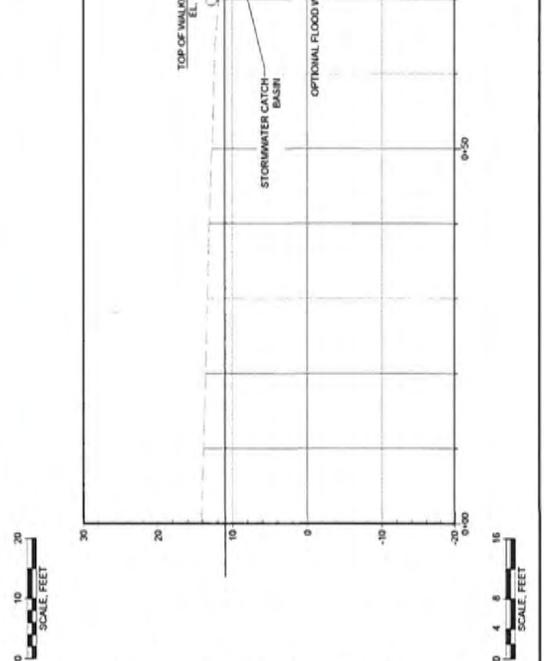
SCALE: 1" = 8'

NO.	DATE	DESCRIPTION	BY
1		CONCEPT DESIGN	BT
2		CONSTRUCTION	BT

PRELIMINARY



PLAN
 AREA 3 STEAMBOAT LANDING AND HARBORWALK (SOUTH) SCALE: 1" = 10'



SECTION 3
 AREA 3 STEAMBOAT LANDING AND HARBORWALK (SOUTH) SCALE: 1" = 8'

10.H



CITY OF BELFAST

City Hall
131 Church Street
Belfast, Maine 04915

Joellyn Warren
Deputy Economic Development Director

E-mail: deputyecondev@cityofbelfast.org
Phone: (207) 338-3370, extension 124

TO: Honorable Mayor Eric Sanders, Belfast City Councilors, and City Manager Erin Herbig

FROM: Joellyn Warren, Deputy Economic Development Director

Date December 9, 2025

RE: **Approval of Hiring of an Administrator for the City's 2025 Community Development Block Grant Community Enterprise Grant for Façade Improvements**

In May 2025, the City of Belfast again successfully secured \$100,000 in Community Development Block Grant Community Enterprise Grant (CDBG CEG) funding, to be used to develop and implement a façade program for Belfast businesses/buildings.

To more effectively and efficiently implement this 2025 CDBG CEG grant, the City included in its application hiring qualified administrative services to assist staff and the CDBG CEG Community Development Advisory Committee in the administration of the program. The Maine Office of Community Development allows a recipient to use up to 10% of this grant, in this case \$10,000, to hire these qualified administrative services.

To procure these qualified administrative services, the City developed a request for qualifications, with a scope of services to be performed that included the following major tasks: 1) CDBG CEG Community Development Advisory Committee assistance activities; 2) project development phase (phase II) activities for all selected projects; 3) project implementation phase (phase III) activities for all selected projects; and 4) post-implementation activities.

The City issued this request for qualifications on September 25, 2025, with a submission deadline of October 27, 2025. One qualification statement was received by this deadline, which was then reviewed by the CDBG CEG Community Development Advisory Committee and was scored according to three evaluation factors: 1) experience and qualifications; 2) local knowledge; and 3) approach.

At this time, the Deputy Economic Development Director requests that the City Council take the following actions:

- 1) Approve the CDBG CEG Community Development Advisory Committee's recommendation to hire MidCoast Council of Governments as an Administrator; and
- 2) Authorize the City Manager to sign any documents related and necessary to the hiring of this Administrator.

10.I



CITY OF BELFAST

City Hall
131 Church Street
Belfast, Maine 04915

Joellyn Warren
Deputy Economic Development Director

E-mail: deputyecondev@cityofbelfast.org
Phone: (207) 338-3370, extension 124

TO: Honorable Mayor Eric Sanders, Belfast City Councilors, and City Manager Erin Herbig

FROM: Joellyn Warren, Deputy Economic Development Director

Date December 9, 2025

RE: Acceptance of Flood Mitigation Assistance (FMA) grant funds and approval to issue Request for Proposals to hire a consultant to support City of Belfast Hazard Mitigation Plan

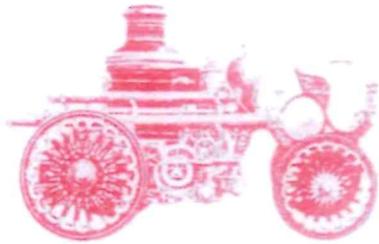
Maine Emergency Management Association (MEMA) officials have notified the City that we have been awarded funds under the Flood Mitigation Assistance (FMA) through the Federal Emergency Management Agency (FEMA). The Grant funding will be used to support the creation of the city-specific Hazard Mitigation Plan. The Hazard Mitigation Plan will identify key infrastructure impacts, the most effective adaptation practices and policies, local capacities to tackle these challenges, and the steps necessary to implement mitigation measures to protect public health and reduce or eliminate risks to buildings and structures.

The City has been approved for \$37,500.00, which is 75% of the total approved project cost of \$50,000.00. As a condition of the federal award, the City is required to contribute a non-Federal cost-share of \$12,500.00. The required match will consist of \$10,000 staff & Committee in-kind and \$2,500 cash match from General Account G1-2026-00 (FEMA storm damage reimbursement). The City intends to hire a consultant through a Request for Proposal process to assist with developing the Hazard Mitigation Plan. The contract amount will be for up to \$40,000 as per the grant application budget.

At this time, the Deputy Economic Development Director requests that the City Council take the following action:

- 1) Accept the Flood Mitigation Assistance (FMA) grant and provide the required match; and,
- 2) Authorize the City Manager to sign all required contract documents; and,
- 3) Authorize City staff to issue a Request for Proposals to hire a consultant to complete a city-specific Hazard Mitigation Plan.

10.5



Belfast Fire & Ambulance Department
131 Church Street • Belfast, Maine 04015
Phone 338-3362

December 1, 2026

Honorable Mayor Sanders
Belfast City Councilors
City Mgr. Herbig

Re; Request to increase emergency medical service (EMS) billing rates

Each year the Ambulance billing rates are assessed by our billing agency, Medical Reimbursement Services, based in Windham. These rates are the fees billed to the patients and their insurance companies. This year they have advised increasing our billing fees by 5%. A few explanations of charges are as follows;

Mileage-Our mileage that we can bill for is the loaded mile; a Patient is on board and being transported to a hospital.

Basic Life Support-Non-invasive emergency medical care. Basic steps to stabilization of medical emergencies.

Advanced Life Support-Higher levels of emergency medical care, typically Advanced EMT's and Paramedics.

Paramedic Interfacility Transfer-Hospital to Hospital transfers that require a Paramedic

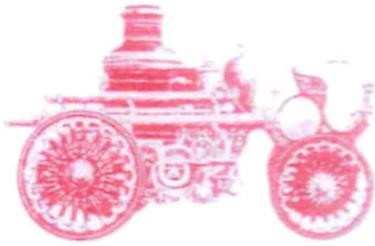
On Scene Charge, No Transport-Cardiac Arrests, Motor vehicle accidents and similar when treatment is applied and the patient is not transported to the hospital.

Paramedic intercept-Paramedic provided to an outside ambulance agency upon request.

Primary response-EMS response provided to another community if they are not staffed to provide service.

With your approval, these rates will be applied on January 1, 2026. I am happy to answer any questions.

Patrick Richards
Fire Chief/Ambulance Director



Belfast Fire & Ambulance Department
131 Church Street • Belfast, Maine 04015
Phone 338-3362

**Belfast Ambulance Service fees
2026**

Service	Current rate	Proposed rate
Mileage	\$21	\$22
Basic Life Support (BLS)	\$882	\$927
Advanced Life Support (ALS)	\$1,100	\$1,155
Advanced Life Support 2	\$1,543	\$1,621
BLS Non Emergency	\$441	\$464
ALS Non Emergency	\$552	\$580
Paramedic Interfacility Transfer (PIFT)	\$2,000	\$2,100
On Scene Charge No Transport	\$425	\$425
Paramedic Intercept	\$350	\$450
Primary Response	\$325	\$450

10.K

City of Belfast
 Wage & Salary Scale
 FY 2025-2026

Range	Hourly Wage									
	Step 1	2	3	4	5	6	7	8	9	10
14	\$45.54	\$47.13	\$48.54	\$50.00	\$51.49	\$53.04	\$54.63	\$56.27	\$57.96	\$59.70
13	\$40.66	\$42.08	\$43.34	\$44.65	\$45.98	\$47.36	\$48.78	\$50.24	\$51.75	\$53.31
12	\$36.30	\$37.57	\$38.70	\$39.86	\$41.05	\$42.28	\$43.56	\$44.86	\$46.21	\$47.59
11	\$32.41	\$33.55	\$34.55	\$35.59	\$36.66	\$37.76	\$38.89	\$40.06	\$41.26	\$42.49
10	\$28.94	\$29.95	\$30.85	\$31.78	\$32.73	\$33.72	\$34.72	\$35.77	\$36.83	\$37.94
9	\$25.84	\$26.74	\$27.54	\$28.37	\$29.22	\$30.10	\$31.00	\$31.93	\$32.89	\$33.88
8	\$23.08	\$23.87	\$24.60	\$25.33	\$26.09	\$26.88	\$27.68	\$28.51	\$29.36	\$30.24
7	\$20.60	\$21.32	\$21.96	\$22.62	\$23.29	\$24.00	\$24.71	\$25.46	\$26.23	\$27.00
6	\$18.39	\$19.04	\$19.61	\$20.20	\$20.80	\$21.43	\$22.07	\$22.73	\$23.41	\$24.11
5	\$16.42	\$16.99	\$17.50	\$18.03	\$18.57	\$19.13	\$19.71	\$20.30	\$20.90	\$21.53
4	\$14.66	\$15.18	\$15.63	\$16.10	\$16.58	\$17.08	\$17.60	\$18.12	\$18.66	\$19.22

Range	Annual Salary									
	Step 1	2	3	4	5	6	7	8	9	10
14	\$94,723.20	\$98,030.40	\$100,963.20	\$104,000.00	\$107,099.20	\$110,323.20	\$113,630.40	\$117,041.60	\$120,556.80	\$124,176.00
13	\$84,572.80	\$87,526.40	\$90,147.20	\$92,872.00	\$95,638.40	\$98,508.80	\$101,462.40	\$104,499.20	\$107,640.00	\$110,884.80
12	\$75,504.00	\$78,145.60	\$80,496.00	\$82,908.80	\$85,384.00	\$87,942.40	\$90,604.80	\$93,308.80	\$96,116.80	\$98,987.20
11	\$67,412.80	\$69,784.00	\$71,864.00	\$74,027.20	\$76,252.80	\$78,540.80	\$80,891.20	\$83,324.80	\$85,820.80	\$88,379.20
10	\$60,195.20	\$62,296.00	\$64,168.00	\$66,102.40	\$68,078.40	\$70,137.60	\$72,217.60	\$74,401.60	\$76,606.40	\$78,915.20
9	\$53,747.20	\$55,619.20	\$57,283.20	\$59,009.60	\$60,777.60	\$62,608.00	\$64,480.00	\$66,414.40	\$68,411.20	\$70,470.40
8	\$48,006.40	\$49,649.60	\$51,168.00	\$52,686.40	\$54,267.20	\$55,910.40	\$57,574.40	\$59,300.80	\$61,068.80	\$62,899.20
7	\$42,848.00	\$44,345.60	\$45,676.80	\$47,049.60	\$48,443.20	\$49,920.00	\$51,396.80	\$52,956.80	\$54,558.40	\$56,160.00
6	\$38,251.20	\$39,603.20	\$40,788.80	\$42,016.00	\$43,264.00	\$44,574.40	\$45,905.60	\$47,278.40	\$48,692.80	\$50,148.80
5	\$34,153.60	\$35,339.20	\$36,400.00	\$37,502.40	\$38,625.60	\$39,790.40	\$40,996.80	\$42,224.00	\$43,472.00	\$44,782.40
4	\$30,492.80	\$31,574.40	\$32,510.40	\$33,488.00	\$34,486.40	\$35,526.40	\$36,608.00	\$37,689.60	\$38,812.80	\$39,977.60

**City of Belfast
Wage & Salary Scale
FY 2026-2027**

Range	Hourly Wage										
	Step 1	2	3	4	5	6	7	8	9	10	11
14	46.95	48.59	50.05	51.55	53.09	54.69	56.32	58.02	59.76	61.55	63.40
13	41.92	43.39	44.68	46.04	47.41	48.83	50.29	51.80	53.36	54.96	56.61
12	37.43	38.74	39.90	41.10	42.32	43.59	44.91	46.25	47.64	49.07	50.54
11	33.42	34.59	35.62	36.69	37.80	38.93	40.10	41.30	42.54	43.81	45.13
10	29.84	30.88	31.81	32.77	33.75	34.77	35.80	36.88	37.92	39.12	40.29
9	26.64	27.57	28.39	29.25	30.13	31.03	31.96	32.92	33.91	34.93	35.98
8	23.80	24.61	25.36	26.12	26.90	27.71	28.54	29.39	30.27	31.18	32.12
7	21.24	21.98	22.64	23.32	24.01	24.74	25.48	26.25	27.04	27.84	28.67
6	18.96	19.63	20.22	20.83	21.45	22.10	22.76	23.44	24.14	24.86	25.60
5	16.93	17.52	18.04	18.59	19.15	19.72	20.32	20.93	21.55	22.20	22.87
4	15.12	15.65	16.12	16.60	17.09	17.61	18.15	18.68	19.24	19.82	20.41

Range	Annual Salary										
	Step 1	2	3	4	5	6	7	8	9	10	11
14	97,656.00	101,073.96	104,104.00	107,227.12	110,427.20	113,755.20	117,145.60	120,681.60	124,302.05	128,031.11	131,872.00
13	87,193.60	90,245.38	92,934.40	95,763.20	98,612.80	101,571.18	104,603.20	107,741.30	110,988.80	114,316.80	117,748.80
12	77,854.40	80,579.30	82,996.68	85,486.58	88,025.60	90,667.20	93,412.80	96,200.00	99,086.00	102,058.58	105,123.20
11	69,513.60	71,947.20	74,089.60	76,312.29	78,624.00	80,974.40	83,403.63	85,905.74	88,482.91	91,124.80	93,870.40
10	62,067.20	64,239.55	66,166.74	68,151.74	70,196.29	72,321.60	74,464.00	76,710.40	78,873.60	81,369.60	83,803.20
9	55,411.20	57,350.59	59,051.20	60,840.00	62,665.20	64,542.40	66,478.67	68,473.03	70,527.22	72,654.40	74,838.40
8	49,504.00	51,188.80	52,748.80	54,329.60	55,959.49	57,636.80	59,363.20	61,131.20	62,961.60	64,850.45	66,809.60
7	44,179.20	45,718.40	47,089.95	48,502.65	49,940.80	51,459.20	52,998.40	54,600.00	56,243.20	57,907.20	59,633.60
6	39,436.80	40,830.40	42,055.31	43,316.97	44,616.00	45,968.00	47,347.04	48,755.20	50,217.86	51,708.80	53,248.00
5	35,214.40	36,446.90	37,523.20	38,667.20	39,827.22	41,022.03	42,265.60	43,533.57	44,824.00	46,168.72	47,569.60
4	31,449.60	32,552.00	33,529.60	34,535.49	35,547.20	36,628.80	37,752.00	38,854.40	40,020.03	41,220.63	42,452.80

Tree Risk Assessment

31 Race Street

On December 4, 2025, I visited 31 Race Street following a pruning and removal request for multiple trees. This was a Level 1 visual inspection.

Observation: The site appears to have undergone recent construction. Multiple clumps of Norway maple, in clusters of 3-5 stems, all in the range of 4-6 inches in diameter at breast height (DBH), suggest the property was allowed to go wild for a time.

Two of clusters of trees with trunks in the 4-6 inch DBH are tagged with green signs for possible pruning. Both are Norway maples (*Acer platanus*) and should be removed, not pruned.

Two trees at the opposite ends of the frontage, are marked for removal.

Tree No. 1, located closest to the water is an aspen (*Populus*), native to northern climates, that is showing serious signs of decay in the trunk and rotting branches (I-Naturalist called it a sweet birch but the bark is gray-white, not brown, and it is not peeling). The DBH is estimated at 10-15 inches. Replacing it with a sweet birch would be lovely.

Tree No. 2 is a black cherry (*Prunus serotina*). I would recommend keeping this tree with a bit of pruning (a few dead branches). It is at least 20 inches DBH, with two trunks. Once considered a weedy tree, it has recently earned a new appreciation because although it can look a little rough, it is an important native tree for birds (food) and insects. Black cherry flowers in spring, and its scaly bark gives it great year-round interest in the landscape.

There is a lot of bramble around this site that should be cleared away.

Submitted
December 4, 2025

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