IMPROVING COMMUNITIES TOGETHER

October 15, 2026

Harmony Wilson, Chair
Haverhill Conservation Commission
4 Summer St #300
Haverhill, MA 01830

Re: Notice of Intent
Temporary Yard Crane Pad and Floating Wharf
100 South Kimball Street
Haverhill, Massachusetts

Dear Ms. Wilson and Commissioners:

On behalf of The Middlesex Corporation (TMC), BETA Group, Inc. (BETA) is submitting a Notice of Intent for the proposed construction of a temporary crane pad that will support a temporary yard crane, and construction of a temporary floating wharf (the Project), associated with the Basiliere Bridge Project (MassDOT Project No. 605304) at 100 South Kimball Street in Haverhill, Massachusetts (the Site). Construction of the yard crane pad will establish a safe and sufficient working access point for the yard crane to facilitate the loading of construction materials onto barges that will deliver materials to the bridge construction area while alternative methods of accessing in-water work areas are being evaluated and permitted (i.e., designing a temporary pile-supported wharf). The temporary floating wharf is proposed to facilitate equipment access to barges for the Basiliere Bridge Project. Once established, the wharf will provide an area to access the water and build barges from the laydown yard. While the Basiliere Bridge Project is being delivered by MassDOT, TMC is responsible for permitting the in-water work access due to their decision to secure use of a separate private property access point beyond that which was previously acquired by MassDOT.

The proposed crane pad and underlying dense grade is proposed to occupy approximately 3,000 square feet (sf) of the Site located adjacent to an existing boat ramp along the Merrimack River. The temporary floating wharf will consist of a four-section, 1,600-sf Flexifloat wharf and a 160-sf boat dock, supported by four 24-inch-diameter spud piles, connected to the existing boat ramp by a 40-foot gangway. Clearing of vegetation will be required to accommodate the swing radius of the crane placing equipment on barges. Generally, the following work is proposed to complete the Project:

- Installation of erosion and sedimentation controls;
- Burying of a portion of the above-ground sewer bypass pipe to allow for equipment access;
- Repairs to the existing boat ramp above mean high water (MHW) using existing materials;
- Removal of select trees and brush;
- Construction of the temporary yard crane pad;
- Staging of the crane on the completed crane pad;
- Installation of turbidity controls;
- Installation of the temporary spud piles, wharf, and gangway;
- Use of the crane to load construction materials from the stockpile area onto barges;
- Removal of the crane, crane pad, gangway, wharf, spud piles, and associated temporary infrastructure upon completion of construction activities;
- Removal of all construction material and establishment of pre-construction grades;
- Restoration of all impacted Resource Areas; and
- Stabilization of the Site.

BETA GROUP, INC.
89 Shrewsbury Street, Suite 300, Worcester, MA 01604
P: 508.756.1600 | W: www.BETA-Inc.com

Work associated with the Project will result in temporary impacts to Areas Subject to Protection and Jurisdiction under the Massachusetts Wetlands Protection Act (M.G.L. ch.131 s.40) and its Regulations at 310 CMR 10.00 (the Act), as well as the City of Haverhill Wetland Protection Ordinance (Chapter 253 – the "Ordinance"), including Bank, Land Under Water (LUW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RA), and the 100-foot Buffer Zone to Bank and the locally-protected 0-25-foot No-Build No-Disturbance Zone and the 25-50-foot No-Build Zone. The Project is being filed as a Limited Project (water dependent project) under the provision at 310 CMR 10.53(3)l[1]. The Project is also located within Natural Heritage and Endangered Species Program (NHESP)-mapped Priority Habitat of Rare Species (PH 2154) and Estimated Habitat for Rare Wildlife (EH 1362) and will require a streamlined review under the Massachusetts Endangered Species Act (MESA) pursuant to 301 CMR 11.00.

This NOI has been concurrently submitted to the Massachusetts Department of Environmental Protection (MassDEP) Northeast Regional Office. Checks for the state portion of the Act fee ($362.50),the local portion of the Act fee ($387.50), and the local filing fee ($3,383) are included with this filing. Local filing fees were calculated based on the area of proposed clearing and exclude previously disturbed areas within the limit of work. Abutters to the project have been notified in accordance with State and Local requirements.

We trust that the following application provides adequate information to facilitate the issuance of an Order of Conditions. Should you have any additional questions, please do not hesitate to contact us.

Very truly yours,
BETA Group, Inc.

Jonathan Niro, PWS
Project Manager

Laura Krause
Associate

cc: MassDEP Northeast Region, Division of Wetlands
MA Division of Fisheries and Wildlife / Natural Heritage and Endangered Species Program
John Waugh, PE (TMC)
Brent Mawdsley (TMC)
Theodore Boyle, PMP (MassDOT)
Sandy Sprague (MassDOT)
Joseph Stasio (MassDOT)

Job No: 25.11761.00

[1] The construction, reconstruction, operation or maintenance of water dependent uses; provided, however that:
1. any portion of such work which alters a bordering vegetated wetland shall remain subject to the provisions of 310 CMR 10.55,
2. such work in any other resource area(s) found to be significant to flood control or prevention of storm damage shall meet the performance standards for that interest(s), and
3. adverse impacts from such work in any other resource area(s) shall be minimized regarding the other statutory interests for which that resource area(s) is found to be significant.

Haverhill, Massachusetts

Temporary Yard Crane Pad and Floating Wharf

100 South Kimball Street

October 2026

NOTICE OF INTENT

89 Shrewsbury Street
Suite 300
Worcester, MA 01604
508.756.1600
www.BETA-Inc.com

Temporary Yard Crane Pad and Floating Wharf

Haverhill, Massachusetts

100 South Kimball Street

NOTICE OF INTENT

Prepared by: BETA GROUP, INC.
Prepared for: The Middlesex Corporation

October 2026

TABLE OF CONTENTS

WPA FORM 3 – NOTICE OF INTENT
LOCAL FORMS
ABUTTER INFORMATION
PROJECT NARRATIVE
1.0 Introduction 1
2.0 Site Description 2
2.1 Project Locus 2
2.2 Wetland Resource Areas 2
2.2.1 Bank (Inland) 2
2.2.2 Land Under Water (LUW) 3
2.2.3 Bordering Land Subject to Flooding (BLSF) 3
2.2.4 Riverfront Area (RA) 3
2.3 Buffer Zone 3
2.4 NHESP-Mapped Habitat and Other Sensitive Areas 3
3.0 Work Description 3
3.1 Work within Protected Resource Areas 5
3.1.1 Limited Project (310 CMR 10.53(3)(l)) 5
3.1.2 Bank (310 CMR 10.54) 5
3.1.3 Land Under Water (310 CMR 10.56) 5
3.1.4 Bordering Land Subject to Flooding (310 CMR 10.57) 6
3.1.5 Riverfront Area (310 CMR 10.58) 6
4.0 Mitigation Measures 6
4.1 Erosion and Sedimentation Controls 6
4.2 Resource Area Restoration 7
4.3 Wildlife Habitat Mitigation/Protection 7
4.4 Stormwater Management 8
5.0 Alternatives Analysis 8
5.1.1 No-Build Alternative 8
5.1.2 Alternative Location for Crane 8
5.1.3 Currently Proposed Crane Pad – Preferred Alternative 9
6.0 Regulatory Compliance 9
6.1 Massachusetts Wetlands Protection Act Regulations– 310 CMR 10.00 9
6.1.1 Bank – Performance Standards – 310 CMR 10.54(4) 9
6.1.2 Land Under Water – 310 CMR 10.56(4) 10

6.1.3 Bordering Land Subject to Flooding – FEMA AE Zone – 310 CMR 10.57(4) 10
6.1.4 Riverfront Area – Performance Standards – 310 CMR 10.58(5) 10
6.2 City of Haverhill Wetland Protection Ordinance – Chapter 253 11
6.2.1 No Build Zone/No Disturbance Zone 11
7.0 Summary 11

LIST OF FIGURES

Figure 1 Site Locus
Figure 2 Aerial Site Locus
Figure 3 Environmental Resources
Figure 4 Wildlife Habitat
Figure 5 FEMA FIRMette
Figure 6 NRCS Soils Map

PHOTOGRAPHIC DOCUMENTATION

LIST OF APPENDICES

Appendix A Stormwater Management Checklist and Narrative
Appendix B Project Plans
Appendix C Construction Work Plans
Appendix D Detailed Wildlife Habitat Evaluation
Appendix E Sturgeon Protection Plan

WPA FORM 3 – NOTICE OF INTENT

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Haverhill
City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

a. Street Address	b. City/Town	c. Zip Code
100 South Kimball Street	Haverhill	01830

Latitude and Longitude:

d. Latitude	e. Longitude
42.767159	-71.064004

f. Assessors Map/Plat Number	g. Parcel /Lot Number
728	708

2. Applicant:

a. First Name	b. Last Name
Brent	Mawdsley

c. Organization: the Middlesex Corporation

d. Street Address: 1 Spectacle Pond Road

e. City/Town	f. State	g. Zip Code
Littleton	MA	01460

h. Phone Number	i. Fax Number	j. Email Address
617-304-5303		bmawdsley@middlesexco.com

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name	b. Last Name

c. Organization: 100 South Kimball, LLC.

d. Street Address: P.O. Box 40

e. City/Town	f. State	g. Zip Code
Marbelhead	MA	01945

h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

a. First Name	b. Last Name
Jonathan	Niro

c. Company: BETA Group, Inc.

d. Street Address: 89 Shrewsbury Street

e. City/Town	f. State	g. Zip Code
Worcester	MA	01604

h. Phone Number	i. Fax Number	j. Email address
774 573 9694		jniro@beta-inc.com

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid
$750	$362.50	$387.50

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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A. General Information (continued)

6. General Project Description:

The Project proposes construction of a temporary 3,000-sf crane pad that will support a temporary yard crane and construction of a 1,600-sf temporary floating wharf with a 160-sf boat dock supported by 4-24" spud piles within and adjacent to the Merrimack River to assist with loading construction materials onto barges associated with the Basiliere Bridge Project.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☒ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☒ Yes ☐ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

310 CMR 10.53(3)(l)
2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Essex County	
a. County	b. Certificate # (if registered land)
35530	91
c. Book	d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Haverhill
City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ■ Bank	184 (temp) 1. linear feet	184 2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ■ Land Under Waterbodies and Waterways	13 (temp) 1. square feet 0 3. cubic yards dredged	13 2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ■ Bordering Land Subject to Flooding	6,717 (temp) 1. square feet 194 (temp) 3. cubic feet of flood storage lost	6,717 2. square feet 194 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ■ Riverfront Area	Merrimack River - Inland 1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

■ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 204,835 square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
6,717	5,687	1,030

5. Has an alternatives analysis been done and is it attached to this NOI? ■ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ■ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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MassDEP File Number

Document Transaction Number

Haverhill
City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Haverhill
City/Town

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ■ Yes ☐ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   August 2021
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ■ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area: 6,717 (percentage/acreage)

         (b) outside Resource Area: N/A (percentage/acreage)

      2. ■ Assessor's Map or right-of-way plan of site

2. ■ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ■ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ■ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-endangered-species-act-mesa-regulatory-review).
Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.
** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 3 – Notice of Intent
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Haverhill
City/Town

C. Other Applicable Standards and Requirements (cont'd)

(c) ☒ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☐ Not applicable – project is in inland resource area only b. ☐ Yes ☒ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Bourne to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Plymouth to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. ☒ Is this an aquaculture project? d. ☐ Yes ☒ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Haverhill
City/Town

C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ■ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ■ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ■ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ■ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ■ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ■ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ■ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Haverhill
City/Town

D. Additional Information (cont'd)

3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Temporary Yard Crane Impact Plan
a. Plan Title

BETA Group, Inc
b. Prepared By

c. Signed and Stamped by

10/01/2026
d. Final Revision Date

1"=50'
e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☒ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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City/Town

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the “yes” box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A. Applicant Information

1. Location of Project:

100 South Kimball Street	Haverhill
a. Street Address	b. City/Town
	$362.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Brent		Mawdley	
a. First Name		b. Last Name	
the Middlesex Corporation			
c. Organization			
1 Spectacle Pond Road			
d. Mailing Address			
Littleton		MA	01460
e. City/Town		f. State	g. Zip Code
617-304-5303		bmawdsley@middlesexco.com	
h. Phone Number	i. Fax Number	j. Email Address	

3. Property Owner (if different):

a. First Name		b. Last Name	
100 South Kimball, LLC.			
c. Organization			
P.O. Box 40			
d. Mailing Address			
Marblehead		MA	01945
e. City/Town		f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address	

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2j	1	$500*1.5	$750

Step 5/Total Project Fee: $750

Step 6/Fee Payments:

Total Project Fee:	$750 a. Total Fee from Step 5
State share of filing Fee:	$362.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$387.50 c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

LOCAL FORMS

City of Haverhill Conservation Commission

HCC Local Application Form 3
Notice of Intent

A. STATUTE APPLICABILITY

This application is being filed with the Commission in accordance with the following (check all that apply):

☒ Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40

☒ Haverhill Municipal Ordinance Chapter 253

B. GENERAL INFORMATION

Applicant Brent Mawdley – the Middlesex Corporation
Property Owner 100 South Kimball, LLC.
Representative Jonathan Niro – BETA Group, Inc.
Location (Street Address) 100 South Kimball Street, Haverhill, MA
Assessor's Parcel Identification Map 728 Block 706 Lot 2

C. APPLICATION CHECKLIST

The Commission requires the submittal of this original, completed Form; one (1) paper copy of site plans; and one (1) paper copy of all other materials. Additionally, the Commission requires the submittal of individual PDFs of this Form and all listed application materials. If practical, related items may be combined into a single PDF. PDFs should not mix larger format sheets (e.g. site plans) with smaller sheets (e.g. letters). These submittal requirements also apply to supplemental information provided during the public hearing. The following materials shall be submitted with this form:

☒ Completed, current WPA Form 3, 3A, or 4 and NOI Wetland Fee Transmittal Form

☒ Project Narrative with description of resource areas & delineation methodology and demonstration of compliance with pertinent Performance Standards

☒ Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

☒ Site Plans clearly describing the location and nature of the work, including such information as site boundaries, wetlands, topography, existing and proposed conditions, vegetation cover, soils, erosion & sedimentation controls, Title 5 compliance, flood storage calculations…(24" x 36" max. sheet size)

☐ MassDEP Bordering Vegetated Wetland Delineation Field Data Forms, as appropriate

☐ Wetland Resource Area Impact Mitigation Plan prepared in accordance with MA Inland Wetland Replication Guidelines, if applicable

☐ Demonstration of compliance with MA River & Stream Crossing Standards, if applicable (The HCC applies the General Standards to all resource area crossings for wildlife passage.)

☒ Simplified or Detailed Wildlife Habitat Evaluation (Appendix A or B), if applicable (See "MA Wildlife Habitat Protection Guidance for Inland Wetlands")

☒ Demonstration of compliance with MA Stormwater Management Standards, including but not limited to

- ☒ Stormwater Report with pertinent calculations based on NOAA Atlas 14 rainfall data
- ☒ Checklist for Stormwater Report
- ☐ Long-Term Pollution Prevention Plan
- ☐ Operation and Maintenance Plan
- ☐ Illicit Discharge Compliance Statement

- ☒ 8½" x 11" sections of the following maps with project location clearly identified
  - ☒ USGS Quadrangle
  - ☒ MassGIS Orthophoto
  - ☒ City of Haverhill Parcel ID Map, also identifying properties within 300' of subject property
  - ☒ NRCS Soils Map and Resource Report
  - ☒ FEMA Flood Insurance Rate Map, if applicable
  - ☒ MA NHESP Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species, if applicable
  - ☐ MassDEP/UMass-Amherst Habitat of Potential Regional or Statewide Importance, if applicable
- ☒ Proof of NOI filing with the MA Natural Heritage & Endangered Species Program, if applicable
- ☒ Appropriate Filing Fees, payable to the City of Haverhill, under the Act and Ordinance
- ☐ Other: _____

D. LOCAL PERMIT DOCUMENTATION

In accordance with 310 CMR 10.05(4)(e), list all obtainable permits, variances, and approvals required by local ordinance with respect to the proposed activity and status of same: Local Wetland Bylaw Review only – Haverhill Conservation Commission

E. APPLICATION CERTIFICATION

I have read the Department of Environmental Protection's "Instructions for Completing Application" and the City's Municipal Ordinance under Chapter 253, with all applicable regulations and policies, for the filing of this application with the Haverhill Conservation Commission and agree to its terms and conditions, as amended. I understand the submitted NOI, its plans, and all its supporting materials are public records and may be uploaded to the City's website for public review. As required by the Commission, the wetland resource area(s) are flagged, the corners of proposed structures are staked, and the centerline of proposed roadway(s) and/or driveway(s) are marked, as appropriate, to facilitate site inspections by Commissioners and Conservation Staff.

Signed: _____ _____
(APPLICANT) (DATE)

F. SITE ACCESS ACKNOWLEDGEMENT

I hereby grant the Haverhill Conservation Commission and its officials permission to enter upon my property at 100 South Kimball Street, Map 728 Block 706 Lot 2 to review the filed Notice of Intent and
(STREET ADDRESS AND ASSESSOR'S PARCEL ID)
future site conditions for compliance with the issued Order of Conditions. The sole purpose of this acknowledgement is to allow the Commission and its officials to perform their duties under the Massachusetts Wetlands Protection Act and the City's wetlands protection ordinance.

Signed: _____ _____
(PROPERTY OWNER) (DATE)

Haverhill

Conservation Department
Phone: 978-374-2334 Fax: 978-374-2366
rmoore@cityofhaverhill.com
conservation@cityofhaverhill.com

LOCAL ORDINANCE FEE CALCULATION FORM

Category 6 Activity - If no ANRAD was filed for the project site, then a local Cat. 6 fee must be paid in accordance with the ANRAD fee schedule	See ANRAD fee schedule		
%*Request for a Modification to an OOC (RMOC)	$100		
Resource Area Alterations (for NOI & RMOC)			
Buffer Zone, 75'-100' from resource area boundary	$0.05 / square foot	0	0
Buffer Zone, 35'-75' from resource area boundary	$0.10 / square foot	0	0
Buffer Zone, 0'-35' from resource area boundary	$0.25 / square foot	3717	929.25
Bordering Vegetated Wetland	$0.50 / square foot	0	0
Bank	$5 / linear foot	184	920
Land Under Water	$0.50 / square foot	13	6.5
Land Subject to Flooding	$0.05 / square foot	3717	185.85
Riverfront Area	$0.05 / square foot	3717	185.85
Riverfront Area with the watershed of a potable water supply	$0.50 / square foot	0	0
Land within 100' of a Certified Vernal Pool	$0.25 / square foot	0	0
Local-only Jurisdictional Resource Area	$0.25 / square foot	0	0
Land within 200' of a potable water supply	$0.50 / square foot	0	0
Extension Permit	$250		
Certificate of Compliance	Partial: $100 / Complete: $100 - individual house lot project; $250 - all other projects / Invalid: $100		
		ADVERTISING FEE (if applicable*)	$45
		LOCAL ORDINANCE FEE TOTAL	$3,383
		For filings resulting from enforcement action, double the Local Ordinance Fee Total	

NOTES:

*Application is subject to an additional $45 Local Advertising Fee payable to the City of Haverhill prior to each advertising

***Local Ordinance Fee maximum of $100 for applications exceeding 1000'. Commission requires review by outside consultant under M.G.L. Ch. 44, sec. 53G for projects exceeding 1000'. Applicant shall post escrow in accordance with HCC Rules for Hiring Outside Consultants. Cap passed by a 5-0 vote of the Commission on March 7, 2019.

%Local Ordinance Fees for RDA, NOI, & RMOC increase 50% when project is also proposed within a Riverfront Area

Local Ordinance Fees passed by a 7 – 0 vote of the Commission on October 28, 2010, effective January 1, 2011

Effective 03.08.2019

ABUTTERS INFORMATION

G. AFFIDAVIT OF SERVICE FOR ABUTTER NOTIFICATION

I, Anna Haznar, hereby certify under the pains and penalties of perjury that on
(NAME OF PERSON MAKING AFFIDAVIT)

_____ I gave notification to all abutters pursuant to the requirements of the second
(DATE)

paragraph of Massachusetts General Laws Chapter 131, Section 40, the DEP Guide to Abutter Notification dated April 8, 1994, and Haverhill Municipal Ordinance Chapter 253, Section 5 in connection with the following matter:

A Notice of Intent filed under the Massachusetts Wetlands Protection Act and said ordinance by the Middlesex Corporation with the Haverhill Conservation Commission on
(NAME OF APPLICANT)

October 15, 2026 for property located at 100 South Kimball Street, Map 728 Block 706 Lot 2
(DATE) (STREET ADDRESS AND ASSESSOR'S PARCEL ID)

The list of the abutters to whom the Abutter Notification Form sent, with their addresses and Assessor's parcel identification information that corresponds with the submitted map section, are attached to this application.

Signed: _____ _____
(NAME OF PERSON MAKING AFFIDAVIT) (DATE)

H. ABUTTER NOTIFICATION FORM

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 (the Wetlands Protection Act) and Haverhill Municipal Ordinance Chapter 253, Section 5, you are hereby notified of the following:

1. The name of the applicant is The Middlesex Corporation
2. Brief Project Description: The Project proposes the construction of an approximately 3,000-square foot temporary crane pad that will support a temporary yard crane, and construction of an approximately 1,600-sf temporary Flexifloat wharf with an attached 160-sf boat dock along an within and adjacent to the Merrimack River to support the Basiliere Bridge Project.
3. The applicant has filed a Notice of Intent ("NOI") with the Haverhill Conservation Commission seeking permission to remove, fill, dredge or alter an Area Subject to Protection Under the Wetlands Protection Act and/or Haverhill Municipal Ordinance Chapter 253 and/or to perform work within the buffer zone of such an Area.
4. The address of the lot where the activity is proposed is 100 South Kimball Street, Map 728 Block 706 Lot 2
   (INCLUDE ASSESSOR'S MAP/BLOCK/LOT)
5. Copies of the NOI may be examined at *the Haverhill Conservation Department Office* between the hours of *8am and 4pm* from *Monday through Friday*. Contact information is below. You may also find helpful application materials on the "Projects Under Review" section of the Commission's website.
6. Copies of the NOI may be obtained from either (check one) the applicant _____, or the applicant's representative Jonathan Niro , by calling this telephone number 774 573 9694 between the hours of 8 AM and 5 PM on the following days of the week Monday to Friday
7. Information regarding the *date, time, and place* of the public hearing may be obtained from the *Haverhill Conservation Department Office* between the hours of *8am and 4pm* from *Monday through Friday*. Contact information is below. You may also consult the "Agenda" section of the Commission's website.

NOTE: Notice of the public hearing, including its date, time and place, will be published at least five (5) days in advance in the *Haverhill Gazette newspaper*.

NOTE: Notice of the public hearing, including its date, time, and place, will be posted in Haverhill City Hall not less than forty-eight (48) hours in advance.

NOTE: You may contact the Haverhill Conservation Department for more information about this application, the Wetlands Protection Act, and Haverhill Municipal Ordinance Chapter 253. Please note the Department has only one staff person; every effort will be made to assist you in a timely manner.

Website: http://www.cityofhaverhill.org/departments/conservation_commission/index.php.
Email: conservation@cityofhaverhill.com
Phone: 978.374.2334

NOTE: For additional information about this application and the Act, you may contact the MA Department of Environmental Protection Northeast Regional Office Service Center.

Website: http://www.mass.gov/eea/agencies/massdep/about/contacts/northeast-region.html
Phone: 978.694.3200

	A	B	C	D	E	F	G	H	I
1	ParcelID	StreetNum	StreetName	LocCity	Owner1	BillingAddress	City	State	Zip
2	702-635-2	60	RAILROAD ST	HAVERHILL	58 60 RAILROAD LLC	42 BRENTWOOD RD	CHELMSFORD	MA	01824
3	702-635-4		SOUTH MILL ST	HAVERHILL	T AND A REALTY TRUST	20 SOUTH MILL ST	BRADFORD	MA	01835
4	702-636-1	2	SOUTH GROVE ST	HAVERHILL	SOUTH GROVE STREET OWNER LLC	290 MERRIMACK ST, Unit 210	LAWRENCE	MA	01843
5	702-636-1C		SOUTH GROVE ST	HAVERHILL	SOUTH GROVE STREET OWNER LLC	290 MERRIMACK ST, Unit 210	LAWRENCE	MA	01843
6	702-636-2	58	SOUTH KIMBALL ST	HAVERHILL	THE ANGELA MARIA REALTY TRUST	58 SO KIMBALL ST	BRADFORD	MA	01835
7	702-638-8	65	SOUTH KIMBALL ST	HAVERHILL	SHEPHARD JEFFREY M.	65 SOUTH KIMBALL STREET	HAVERHILL	MA	01835
8	728-706-1	69	SOUTH KIMBALL ST	HAVERHILL	RAMOS ZUNILDA M MOYA	69 SOUTH KIMBALL ST	BRADFORD	MA	01835
9	728-706-10	87	SOUTH KIMBALL ST	HAVERHILL	SURETTE PETER M ETUX	87 SO KIMBALL STREET	BRADFORD	MA	01835
10	728-706-11	89	SOUTH KIMBALL ST	HAVERHILL	TWOMBLY JEREMY LEE-ETUX	89 SOUTH KIMBALL ST	BRADFORD	MA	01835
11	728-706-12	91	SOUTH KIMBALL ST	HAVERHILL	FAMILIA JACINTO ALFREDO LEBRON	91 SOUTH KIMBALL ST	HAVERHILL	MA	01835
12	728-706-13	93	SOUTH KIMBALL ST	HAVERHILL	93 SOUTH KIMBALL STREET CBC, LLC	76 STATE ST	NEWBURYPORT	MA	01950
13	728-706-14	95	SOUTH KIMBALL ST	HAVERHILL	SMITH SHERRY A	95 SO KIMBALL ST	BRADFORD	MA	01835
14	728-706-2	71	SOUTH KIMBALL ST	HAVERHILL	KIMBALL JASON DANIEL	3 ALLEN ST, #2	BRADFORD	MA	01835
15	728-706-3	73	SOUTH KIMBALL ST	HAVERHILL	REBECCA N HILL 2019 REVOCABLE	73 SOUTH KIMBALL ST	BRADFORD	MA	01835
16	728-706-4	75	SOUTH KIMBALL ST	HAVERHILL	DIPIETRO KYLE A-ETAL	75 SOUTH KIMBALL ST	BRADFORD	MA	01835
17	728-706-5	77	SOUTH KIMBALL ST	HAVERHILL	CORLISS BRIAN J	77 SOUTH KIMBALL ST	BRADFORD	MA	01835
18	728-706-6	79	SOUTH KIMBALL ST	HAVERHILL	SOUTH KIMBALL STREET RLTY TR	P.O. BOX 5415	BRADFORD	MA	01835
19	728-706-7	81	SOUTH KIMBALL ST	HAVERHILL	HERNANDEZ BELKIS AMPARO	81 SOUTH KIMBALL ST	BRADFORD	MA	01835
20	728-706-8	83	SOUTH KIMBALL ST	HAVERHILL	KELLY FRANCIS C	83 SO KIMBALL ST	BRADFORD	MA	01835
21	728-706-9	85	SOUTH KIMBALL ST	HAVERHILL	NOONE MAUREEN C	85 SO KIMBALL ST	BRADFORD	MA	01835
22	728-707-1	72	SOUTH KIMBALL ST	HAVERHILL	PRIMROSE PLACE, LLC	145 LAKE SHORE ROAD	BOXFORD	MA	01921
23	728-707-10	92	SOUTH KIMBALL ST	HAVERHILL	100 SOUTH KIMBALL, LLC	P.O. BOX 40	MARBLEHEAD	MA	01945
24	728-707-1A	66	SOUTH KIMBALL ST	HAVERHILL	INNOVATION CLEANING CO., LLC	66 SOUTH KIMBALL ST	BRADFORD	MA	01835
25	728-707-25	99	SOUTH KIMBALL ST	HAVERHILL	100 SOUTH KIMBALL, LLC	P.O. BOX 40	MARBLEHEAD	MA	01945
26	728-707-3	78	SOUTH KIMBALL ST	HAVERHILL	KNIGHT TANYA RENEE	78 SO KIMBALL ST	BRADFORD	MA	01835
27	728-707-4	80	SOUTH KIMBALL ST	HAVERHILL	KOCZOROWSKI RICHARD	80 SOUTH KIMBALL ST	BRADFORD	MA	01835
28	728-707-5	82	SOUTH KIMBALL ST	HAVERHILL	BEKKER HERMANUS-ETUX	82 SOUTH KIMBALL ST	BRADFORD	MA	01835
29	728-707-6	84	SOUTH KIMBALL ST	HAVERHILL	WATTS STANLEY-ETUX	84 SOUTH KIMBALL ST	BRADFORD	MA	01835
30	728-707-7	86	SOUTH KIMBALL ST	HAVERHILL	NOONAN MARK L-ETUX-LF EST	86 SO KIMBALL ST	BRADFORD	MA	01835
31	728-707-8	90	SOUTH KIMBALL ST	HAVERHILL	100 SOUTH KIMBALL, LLC	P.O. BOX 40	MARBLEHEAD	MA	01945
32	728-708-1B		SOUTH KIMBALL ST	HAVERHILL	CITY OF HAVERHILL	40 SOUTH PORTER ST	BRADFORD	MA	01835
33	728-708-2	100	SOUTH KIMBALL ST	HAVERHILL	100 SOUTH KIMBALL, LLC	P.O. BOX 40	MARBLEHEAD	MA	01945
34	728-708-B		RAILROAD ST	HAVERHILL	CITY OF HAVERHILL	4 SUMMER ST	HAVERHILL	MA	01830
35	735-787-21		CURTIS AVE	HAVERHILL	M BAY TRANS AUTHORITY	45 HIGH ST	BOSTON	MA	02110
36	776-788-1AA	124	GROVELAND RD	HAVERHILL	MASSACHUSETTS ELECTRIC CO	40 SYLVAN RD	WALTHAM	MA	02451
37	777-788-11		SALEM ST	HAVERHILL	SILSBY FARM, LLC	P.O. BOX 5421	SALISBURY	MA	01952

2025 SEP 22 AM 9:25

BOARD OF ASSESSORS
CITY OF HAVERHILL
4 SUMMER STREET • RM 115
HAVERHILL, MA 01830-5843

NARRATIVE

1.0 INTRODUCTION

On behalf of The Middlesex Corporation (TMC), BETA Group, Inc. (BETA) is submitting a Notice of Intent for the proposed construction of a temporary crane pad that will support a temporary yard crane, and construction of a temporary floating wharf (the Project), associated with the Basiliere Bridge Project (MassDOT Project No. 605304) at 100 South Kimball Street in Haverhill, Massachusetts (the Site). Construction of the yard crane pad will establish a safe and sufficient working access point for the yard crane to facilitate the loading of construction materials onto barges that will deliver materials to the bridge construction area while alternative methods of accessing in-water work areas are being evaluated and permitted (i.e., designing a temporary pile-supported wharf). The temporary floating wharf is proposed to facilitate equipment access to barges for the Basiliere Bridge Project. Once established, the wharf will provide an area to access the water and build barges from the laydown yard. While the Basiliere Bridge Project is being delivered by MassDOT, TMC is responsible for permitting the in-water work access due to their decision to secure use of a separate private property access point beyond that which was previously acquired by MassDOT.

The proposed crane pad and underlying dense grade is proposed to occupy approximately 3,000 square feet (sf) of the Site located adjacent to an existing boat ramp along the Merrimack River. The temporary floating wharf will consist of a four-section, 1,600-sf Flexifloat wharf and a 160-sf boat dock, supported by four 24-inch-diameter spud piles, connected to the existing boat ramp by a 40-foot gangway. Clearing of vegetation will be required to accommodate the swing radius of the crane placing equipment on barges. Generally, the following work is proposed to complete the Project:

- Installation of erosion and sedimentation controls;
- Burying of a portion of the above-ground sewer bypass pipe to allow for equipment access;
- Repairs to the existing boat ramp above mean high water (MHW) using existing materials;
- Removal of select trees and brush;
- Construction of the temporary yard crane pad;
- Staging of the crane on the completed crane pad;
- Installation of turbidity controls;
- Installation of the temporary spud piles, wharf, and gangway;
- Use of the crane to load construction materials from the stockpile area onto barges;
- Removal of the crane, crane pad, gangway, wharf, spud piles, and associated temporary infrastructure upon completion of construction activities;
- Removal of all construction material and establishment of pre-construction grades;
- Restoration of all impacted Resource Areas; and
- Stabilization of the Site.

Work associated with the Project will result in temporary impacts to Areas Subject to Protection and Jurisdiction under the Massachusetts Wetlands Protection Act (M.G.L. ch.131 s.40) and its Regulations at 310 CMR 10.00 (the Act), as well as the City of Haverhill Wetland Protection Ordinance (Chapter 253 – the "Ordinance"), including Bank, Land Under Water (LUW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RA), and the 100-foot Buffer Zone to Bank and the locally-protected 0-25-foot No-Build No-Disturbance Zone and the 25-50-foot No-Build Zone. The Project is being filed as a Limited Project (water dependent project) under the provision at 310 CMR 10.53(3)l[1]. The Project is also located within

[1] The construction, reconstruction, operation or maintenance of water dependent uses; provided, however that:

Natural Heritage and Endangered Species Program (NHESP)-mapped Priority Habitat of Rare Species (PH 2154) and Estimated Habitat for Rare Wildlife (EH 1362) and will require a streamlined review under the Massachusetts Endangered Species Act (MESA) pursuant to 301 CMR 11.00.

2.0 SITE DESCRIPTION

2.1 PROJECT LOCUS

The Site consists of a 23.4-acre parcel located at 100 South Kimball Street in Haverhill, MA, further identified by the Haverhill Assessors Office as Map 728 Block 706 Lot 2 owned by 100 South Kimball, LLC and a portion of the Merrimack River. Existing conditions within the southeastern portion of the Site are generally degraded and include impervious and pervious surfaces, a boat ramp, herbaceous overgrowth, commercial buildings, utility infrastructure, and active construction operations. A sewer plant owned by the City of Haverhill is present internal of the Site on a separate parcel at 0 South Kimball Street and a temporary sewer main bypass associated a recent pipe break is present above ground within the southern portion of the Site. Construction access to the Site will occur through 99 South Kimball Street, also owned by 100 South Kimball, LLC, and through 0 Railroad Street, owned by the City of Haverhill. The Site is generally bound to the north by commercial properties, to the south by undeveloped forested areas, to the west by residential homes and undeveloped forest, and to the east by the Merrimack River.

TMC has been granted a temporary easement on 100 South Kimball Street by the property owner, and the property owner has signed the WPA Form 3 included in this submittal.

2.2 WETLAND RESOURCE AREAS

Resource Areas Subject to Protection under the Act and the Ordinance are present at the Site as described below.

2.2.1 BANK (INLAND)

The southwestern bank of the Merrimack River is present along the Site and is coincident with the Mean High Water (MHW) elevation of 5.6 feet (NAVD88), consistent with the datum used for the Basiliere Bridge Project[2]. The location of MHW was assessed in the field and it was confirmed that the MHW is also representative of Bank and Mean Annual High Water (MAHW). Indicators present to corroborate the location of MAHW/Bank with MHW include a break in slope, steep/eroded/undercut soils, and a clear shift in vegetation to a community dominated by species including river birch (*Betula nigra*), bittersweet (*Celastrus orbiculatus*), poison ivy (*Toxicodendron radicans*), silver maple (*Acer saccharinum*), and Japanese knotweed (*Reynoutria japonica*). The Merrimack River is depicted as perennial on the United States Geologic Survey (USGS) topographic maps and is therefore considered perennial (a River) under the Act.

---

1. any portion of such work which alters a bordering vegetated wetland shall remain subject to the provisions of 310 CMR 10.55,
2. such work in any other resource area(s) found to be significant to flood control or prevention of storm damage shall meet the performance standards for that interest(s), and
3. adverse impacts from such work in any other resource area(s) shall be minimized regarding the other statutory interests for which that resource area(s) is found to be significant.

[2] Project plans and Resource Area boundaries were approved by MassDEP under 401 Water Quality Certification No. 24-WW26-00444-APP

2.2.2 Land Under Water (LUW)

The boundary of LUW is the mean annual low water level that is present at elevation 1.3 feet (NAVD88) as determined for the Basiliere Bridge Project. LUW is present within the Merrimack River channel below the mean annual low water elevation and between the Bank boundaries.

2.2.3 Bordering Land Subject to Flooding (BLSF)

The Site is partially located within the 100-year floodplain associated with the Merrimack River designated as a Zone AE with a Base Flood Elevation 21.4 feet (NAVD88) as determined by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel 25009C0089H, dated July 8, 2025. The Merrimack River is also mapped as a Regulatory Floodway. Any work below the BFE is Subject to Jurisdiction under the Act and Ordinance.

2.2.4 Riverfront Area (RA)

The Merrimack River qualifies as a perennial stream (River) with an associated 200-foot RA measured from the MHW boundary due to the Merrimack River having a tidal influence at this location. The MHW boundary at the Site corresponds with elevation 5.6 feet and is characterized in the field by a clear break in slope and change in the vegetative community.

2.3 Buffer Zone

Buffer Zones present at the Site include the 100-foot Buffer Zone under the Act, and the 0-25-No-Build No-Disturbance Zone and the 25-50-foot No-Build Zone established by the Ordinance. Existing conditions within the Buffer Zones consist generally of disturbed vegetation, permanent building structures, and degraded impervious and pervious surfaces.

2.4 NHESP-Mapped Habitat and Other Sensitive Areas

According to the latest MassGIS data, the northwestern portion of the Project is located within NHESP mapped Priority Habitats of Rare Species (PH 2154) and Estimated Habitats of Rare Wildlife (EH 1362). There are no NHESP Certified Vernal Pools, Potential Vernal Pools (PVP), Areas of Critical Environmental Concern (ACEC), or Outstanding Resource Water located in the vicinity of the Site. The Site is not located within Groundwater Wellhead Protection Areas (Zones I, Zone II, or Interim Wellhead Protection Areas), or within Surface Water Protection Areas (Zones A, Zone B, or Zone C).

According to the National Oceanic and Atmospheric Administration (NOAA) Essential Fish Habitat Mapper, 13 species are designated/mapped within the Merrimack River. The Merrimack River is also mapped as a diadromous fish run and is mapped by the NOAA Greater Atlantic Region Fisheries Office's ESA Section 7 Mapper as providing migratory and foraging habitat for shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). According to the Section 7 Mapper, the Merrimack River is mapped as being "In or Near Critical Habitat for Atlantic Sturgeon".

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel 25009C0089H, dated July 8, 2025, the Project is within a Zone AE with a Base Flood Elevations 21.4 feet (NAVD88). The Merrimack River is also mapped as a Regulatory Floodway (Figure 4– FEMA FIRMettes).

3.0 Work Description

The Project includes construction of a temporary crane pad and temporary floating wharf at the existing boat ramp along the Merrimack River to support the Basiliere Bridge Project. The crane pad will be approximately 100-foot-long by 30-foot-wide and will consist of geotextile filter fabric, compacted 1.5-

inch-minus dense-graded aggregate, 12-inch timber crane mats, and crushed stone to provide a stable working surface and facilitate drainage.

The temporary floating wharf will consist of four 400-sf Flexifloat sections arranged in a T configuration totaling 1,600-sf, with a 160-sf boat dock secured to its southern side. A crane will place the sections in the water and install four 24-inch-diameter, 40-foot-long spud piles. The piles will sink into the streambed under their own weight and then be advanced to 5 feet below the mudline using bin blocks attached to the crane. Once installed, the spud piles will be weighed down with river water and set in their final positions using the bin blocks. A 40-foot brow gangway will connect the floating wharf to the existing boat ramp.

The crane will be used to load construction materials onto barges to support construction of the Basiliere Bridge Project. During use of the crane, barges will be temporarily docked at the wharf and will not be permanently moored. No permanent structures or permanent impacts to Resource Areas are proposed as part of this Project.

Proposed construction access is anticipated to enter the Site from South Kimball Street. Construction vehicles including a tracked excavator, dozer, triaxle dump truck, vibratory roller, skid steer, brush hog, and a walk behind compactor will be used at the Site to prepare the Site, as well as construct and maintain the crane pad. Prior to construction, a portion of an existing above-ground sewer main bypass pipe located within the southwestern section of the Site will be buried to allow construction vehicles to access the Site; however, this work is located outside of jurisdictional areas.

Additionally, an approximately 3,717-sqaure foot area adjacent to the Merrimack River has been identified for vegetation removal. Vegetation is required to be removed to account for the boom radius associated with the crane. Vegetation to be removed will be pre-determined and marked prior to removal. Stumps of trees that are removed will remain in place to minimize earth disturbing work. A brush hog will be used to remove smaller herbaceous and woody vegetation.

The following work is required to complete the proposed Project:

- Installation of erosion and sedimentation controls;
- Burying of a portion of the aboveground sewer bypass pipe;
- Removal of select trees and brush;
- Repair of any washout on the boat ramp using existing material;
- Placement and compaction of dense graded aggregate to establish the crane pad;
- Installation and compaction of geotextile filter fabric and additional dense graded aggregate;
- Installation of 12-inch timber crane mats;
- Placement of crushed stone around and between crane mats to create a stable working surface;
- Installation of the temporary crane;
- Installation of turbidity controls;
- Installation of the floating Flexifloat wharf sections and boat dock;
- Installation of the four 24-inch spud piles into the streambed;
- Installation of the 40-foot brow gangway;
- Use of the temporary crane and wharf until bridge construction is complete;
- Removal of the crane, crane pad, wharf, spud piles, gangway, and associated temporary infrastructure upon completion of construction activities;
- Removal of all temporary construction materials and restoration of pre-construction grades; and
- Restoration and stabilization of all disturbed areas.

It is anticipated that the crane pad will only be in place for the winter of 2026/2027. In-water work on the Basiliere Bridge Project is permitted during the Time-of-Year Restriction (TOY) work window of November 15th to February 28th. To support construction activities during subsequent in-water winter work windows, it is anticipated that a temporary pile-supported wharf will be designed and permitted for installation.

Best management practices (BMPs) will be implemented throughout construction to minimize impacts to adjacent Resource Areas. Prior to the commencement of work, erosion and sedimentation controls will be installed and maintained in accordance with the approved plans. Work will be limited to the designated work area. Upon completion of the work, all elements of the Project and construction materials will be removed and disturbed areas will be restored and stabilized.

3.1 Work within Protected Resource Areas

Work activities described above are proposed within Resource Area Subject to Protection under the Act including Bank, LUW, BLSF, and RA. Impacts to Resource Areas are unavoidable due to the nature of the Project. However, all proposed impacts are temporary, and Resource Areas will be restored to pre-construction grades and stabilized using a native seed mix following construction. As the Project is being filed under the Limited Project provision at 310 CMR 10.53(3)(l) as it is a water-dependent project.

Removal of trees is required within Resource Areas to allow crane operations; the following table provides the number of trees required to be removed within each Resource Area.

Table 1: Proposed Tree Removal

Resource Area	# of Trees for removal
Bank	11
BLSF/RA	24

3.1.1 Limited Project (310 CMR 10.53(3)(l))

The proposed Project is water-dependent as it must be located within and adjacent to the Merrimack River to provide access between the Site and barges used to transport construction materials and equipment associated with the Basiliere Bridge Project. The purpose of the Project cannot be achieved from an upland location away from the River. Due to the temporary nature of the Project and the minimal impact to BLSF associated with the temporary work, compensatory flood storage is not proposed for the temporary impacts to BLSF. The size and configuration of the crane pad and wharf have been minimized to the extent feasible to provide the necessary access while reducing impacts to Resource Areas.

3.1.2 Bank (310 CMR 10.54)

The Project proposes 184 linear feet (lf) of temporary impacts to Bank of the Merrimack River. Proposed work along Bank consists of the installation of erosion and sedimentation controls and clearing of vegetation. Vegetation clearing along Bank is necessary to facilitate the required boom radius of the crane during its use. Upon completion of construction, disturbed Bank areas will be restored to pre-construction grades and stabilized with an appropriate native seed mix.

3.1.3 Land Under Water (310 CMR 10.56)

The Project proposes 13 sf of temporary impacts to LUW of the Merrimack River. Temporary impacts include the installation of the four 24”-spud piles to support the temporary wharf. The piles will be installed using a crane which will allow the weight of the piles to set themselves into the streambed. Bin

blocks attached to the crane will be used to set the pile into their final position 5-feet below the mudline. Turbidity curtains will be installed around the footprint of the in-water work area. All temporarily impacted LUW will be fully restored to pre-construction conditions in accordance with approvals for the Basiliere Bridge Project by replicating the existing natural channel bed.

3.1.4 Bordering Land Subject to Flooding (310 CMR 10.57)

Work associated with the Project will occur within BLSF and include 6,717 sf of temporary impacts and 194 cubic yards (CY) of temporary fill with no permanent fill or alterations. Impacts are associated with installation of erosion and sedimentation controls, clearing of vegetation, and installation of the crane pad. All temporary fill associated with the construction of the crane pad will be removed once work is complete and pre-construction grades will be reestablished. Accordingly, no flood storage volume will be permanently lost as a result of the Project.

3.1.5 Riverfront Area (310 CMR 10.58)

Impacts to RA will consist of 6,717 sf of temporary impacts. Temporary impacts to RA will consist of the installation of the crane pad and clearing of vegetation. RA at the Site is considered degraded up to the Bank of the Merrimack River due to past use at the Site and currently consists of gravel, stone, pavement, and areas absent of topsoil. Once construction is complete, impacted areas of RA will be fully restored to pre-construction grades and a native seed mix will be installed to stabilize RA.

4.0 Mitigation Measures

The Project has been designed to avoid, minimize, and mitigate impacts to wetland Resource Areas and wildlife habitat. Due to the nature of the Project, avoidance of impacts is infeasible; however, they have been minimized to the extent practicable. All required conditions will be followed in accordance with approvals set forth in permits granted for the Basiliere Bridge Project, including the provisions related to barge use as outlined in the Sturgeon Protection Plan (Appendix E). Erosion and sedimentation controls as well as turbidity controls will be installed and maintained throughout the duration of the Project to ensure that good water quality is maintained within the Merrimack River. Resource Area impacts will be mitigated through restoration of all impacted areas and Bank, RA, and BLSF will be restored using a native seed mix.

4.1 Erosion and Sedimentation Controls

Best Management Practices for erosion and sedimentation control will be adhered to for all phases of construction to minimize erosion, sedimentation, and impacts to Resource Areas. Erosion and sedimentation control measures consisting of 12-inch compost filter tube staked in place will be implemented along the limit of work, downgradient of the disturbed areas during construction to minimize water quality impacts to Resource Areas. Temporary turbidity curtains will also be utilized surrounding the footprint of the in-water work. Use of turbidity curtains is necessary so activities can be completed while minimizing sedimentation to the Merrimack River. Specific locations of erosion control measures are shown on the plan enclosed in Appendix B.

Erosion and sedimentation controls will remain in place and in proper working order until the Site is fully stabilized. A stockpile of erosion control materials will be kept onsite for emergency and routine replacement. Areas temporarily impacted as a result of erosion and sedimentation control installation will be stabilized upon completion of the Project with loam and a native seed mix and erosion control blankets, if deemed necessary.

4.2 RESOURCE AREA RESTORATION

Temporarily impacted Resource Areas including Bank, LUW, BLSF, and RA will be restored once construction has been completed. Restoration will include removal of all structural elements of the crane pad, re-grading disturbed areas to pre-construction contours, scarifying and tilling compacted soils to a depth sufficient to alleviate construction-related compaction and promote successful vegetation establishment, and stabilization with a native Riparian Mix[3]. If deemed necessary, at least 6-inches of quality clean loam and an erosion control blanket will be installed in the disturbed areas to establish and protect vegetation.

Impacts to LUW are limited to the temporary installation of four spud piles. Upon completion of construction, the spud piles will be removed, and the resulting voids will be allowed to naturally infill with surrounding native streambed material.

4.3 WILDLIFE HABITAT MITIGATION/PROTECTION

Work is proposed within designated NHESP Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife associated with the Merrimack River. During permitting of the Basiliere Bridge Project, approvals for work within mapped habitat areas were obtained from NHESP and other applicable regulatory agencies. Accordingly, the Project will comply with all approvals for the Basiliere Bridge project. The proposed work will be conducted in accordance with the conditions of those approvals. All conditions established by the Massachusetts Division of Marine Fisheries and the Massachusetts Division of Fisheries and Wildlife under the approved Conservation and Management Plan (CMP) will be implemented throughout construction. Requirements of the Sturgeon Management Plan (Appendix E) included in the CMP will be followed, including the use of erosion and sedimentation controls throughout the duration of work.

Additionally, the Project proposes impacts to Bank and BLSF that exceed performance standards at 310 CMR 10.54 and 10.57 that require a Wildlife Habitat Evaluation. Accordingly, a Detailed Wildlife Habitat Evaluation (WHE) has been conducted, and the findings are presented in Appendix D.

The following provides a summary of the findings of the WHE. Wildlife habitat within the impact area consists of a disturbed riparian corridor containing trees, understory vegetation, trees, branches overhanging the Merrimack River, woody debris, standing dead trees, and areas of undercut Bank. These features provide food, cover, perching, and shelter opportunities for a variety of wildlife species. Evidence of wildlife use observed during the Site investigation included white-tailed deer (*Odocoileus virginianus*) and gray squirrel (*Sciurus carolinensis*). Habitat quality within the Project area has been diminished by historical industrial development, the installation of pavement, gravel, and stone surfaces, populations of invasive species, utility infrastructure, and ongoing anthropogenic disturbances. Although habitat at the Site has been degraded, the vegetated Bank, RA, and BLSF provide some habitat value and a habitat connection to the Merrimack River.

[3] Seed mix will be comparable to the Wetland – Riparian Mix and include species such as Indiangrass (*Sorghastrum nutans*), Little Bluestem (*Schizachyrium scoparium*), Riverbank Wild Rye (*Elymus riparius*), Virginia Wild Rye (*Elymus virginicus*), Deer Tongue 'Tioga' (*Panicum clandestinum* 'Tioga'), Big Bluestem (*Andropogon gerardii*), Fox Sedge (*Carex vulpinoidea*), Switchgrass (*Panicum virgatum*), Soft Rush (*Juncus effusus*), Upland Bentgrass (*Agrostis perennans*), Green Bulrush (*Scirpus atrovirens*), Partridge Pea (*Chamaecrista fasciculata*), Blue Vervain (*Verbena hastata*), Swamp Milkweed (*Asclepias incarnata*), Ox-Eye Sunflower (*Heliopsis helianthoides*), Boneset (*Eupatorium perfoliatum*), Flat-Topped White Aster (*Aster umbellatus*), Zigzag Aster (*Aster prenanthoides*), Swamp Aster (*Aster puniceus*), New England Aster (*Aster novae-angliae*), Joe-Pye Weed (*Eupatorium maculatum*), Wild Bergamot (*Monarda fistulosa*), and New York Ironweed (*Vernonia noveboracensis*).

4.4 STORMWATER MANAGEMENT

According to the Massachusetts Stormwater Management Standards (310 CMR 10.05(6)(k-q)), the proposed work is considered a Redevelopment Project[4] due to proposed work consisting of only development within a previously developed site with no net increase in impervious area. Redevelopment projects are required to meet Standards 1 and 7 through 10 fully; and Standards 2 through 6 only to the maximum extent practicable (Appendix A – Stormwater Management Checklist and Narrative.) A Stormwater Checklist and Narrative has been completed and submitted with the NOI as required.

The Project is proposed to comply with the Massachusetts Stormwater Standards fully, insofar as the Standards apply.

5.0 ALTERNATIVES ANALYSIS

The Project was designed to facilitate the loading of construction materials onto barges for transport to the Basiliere Bridge construction area. The Design Team evaluated additional alternatives with the goals of minimizing impacts to Resource Areas, rare species habitat, and wildlife habitat, while also considering constructability, maintenance, and cost.

The Alternative Analysis for work within RA assesses the following alternatives:

1. No-Build Alternative,
2. Alternative Location for Crane, and
3. Proposed Temporary Crane – Preferred Alternative.

5.1.1 NO-BUILD ALTERNATIVE

The No-Build Alternative would not provide the construction access required for reconstruction of the Basiliere Bridge. Installation of the proposed bridge's structural components requires in-water access that currently does not exist near the bridge. Reconstruction of the bridge is necessary to ensure public safety. The existing structure, constructed in 1925, has reached the end of its functional lifespan and no longer meets current design, safety, or capacity standards. The proposed reconstruction will improve safety, increase capacity, and enhance accommodations for transportation. Accordingly, construction access is necessary to complete the Project, and the No-Build Alternative was not selected because it does not meet the Project's goal.

5.1.2 ALTERNATIVE LOCATION FOR CRANE

Alternative locations for the temporary crane pad and crane were evaluated based on proximity to the bridge, Site access, and the ability to load construction materials onto barges. Under the original design, in-water access was permitted on an easement located directly southeast of the Basiliere Bridge at 0 South Main Street. While this location is closer to the bridge, the Site currently consists of primarily intact vegetated areas and would require substantially more vegetation clearing and grading within Bank, RA, and BLSF to allow for installation of the crane pad, associated construction access, and crane operations. Maintaining vegetation directly adjacent to the Merrimack River assists with maintaining water quality, aquatic habitat, and the functions and values of the river. To minimize disturbance of these vegetated Resource Areas the currently proposed Site was identified. The proposed Site at 100 South Kimball Street

[4] Per Chapter 1, Volume 1 of the MA Stormwater Standards Handbook, redevelopment projects are defined to include, "Development, rehabilitation, expansion and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area."

is an existing developed property consisting of degraded maintained herbaceous vegetation and existing impervious surfaces. The location where the crane is proposed is partially cleared, reducing the required vegetation removal. Using the proposed Site will allow for construction of the temporary crane within an already disturbed property and reduce vegetation clearing, grading, and impacts to Resource Areas compared to the permitted alternative location. Therefore, the preferred crane location was selected at 100 South Kimball Street.

5.1.3 Currently Proposed Crane Pad – Preferred Alternative

The preferred alternative consists of the construction of a temporary 3,000 sf crane pad at 100 South Kimball Street. This alternative was selected because it minimizes impact to Resource Areas while providing sufficient space to allow for crane operations and barge loading activities. This alternative fully avoids construction within LUW and eliminates the need for fill placement within the Merrimack River. The design also reduces impacts to Bank, RA, BLSF, and aquatic habitat by not requiring substantial less alterations than installation of a wharf. The selected location utilizes an existing developed property that has been previously altered through clearing of vegetation and installation of degraded impervious and pervious surfaces. The preferred alternative avoids impacts to larger areas of intact vegetation, reduces impacts on the functions and values of the river, and proposes work in already degraded RA. Based on consideration of environmental impacts, Site constraints, and cost, the proposed temporary access crane at 100 South Kimball Street represents the most practicable alternative that meets the Project purpose while minimizing impacts to Resource Areas and habitat.

6.0 Regulatory Compliance

6.1 Massachusetts Wetlands Protection Act Regulations– 310 CMR 10.00

The Project has been designed to comply with the General Performance Standards listed in 310 CMR 10.00. The Project, as proposed, results in temporary impacts to Bank, Land Under Water, Bordering Land Subject to Flooding, and Riverfront Area to the Merrimack River.

6.1.1 Bank – Performance Standards – 310 CMR 10.54(4)

Work on Bank will fully comply with the Performance Standards set forth in 310 CMR 10.54(4)(a)1-6. Work will not permanently affect the stability of the Bank as stumps associated with tree removal will be left in place and the Bank will be fully stabilized using a native seed mix, and an erosion control blanket, if necessary, once construction is complete. The water carrying capacity of the existing channel within the Bank will not be permanently impaired as work will not directly impact the Merrimack River and the crane pad will be fully removed once construction is complete. Ground and surface water quality will be protected throughout construction through installation and maintenance of erosion and sedimentation controls and stabilization of the Site after construction is complete. The Project will impact over 50 feet of Bank and exceeds a threshold that requires a Detailed Wildlife Habitat Evaluation, accordingly, a Detailed WHE has been conducted and the findings of the evaluation are presented in Appendix D. Wildlife habitat will be protected throughout the Site by implementing the Sturgeon Protection Plan as it relates to barge traffic, use of erosion and sedimentation controls, and installation of native seed within disturbed areas to enhance wildlife habitat at the Site. Impacts to Bank are temporary and the Bank will be fully restored after work is completed using a native seed mix and installation of an erosion control blanket, if determined to be necessary.

6.1.2 Land Under Water – 310 CMR 10.56(4)

Work within Land Under Water will comply with the Performance Standards set forth in 310 CMR 10.56(4)(a)1-5 fully. All work within LUW is temporary and LUW will be fully restored to pre-construction conditions by removing the spud piles and allowing the holes to fill in with surrounding native streambed material. As the Project is temporary, the water carrying capacity within the defined channel will not be impaired. Ground and surface water quality will be protected throughout the duration of construction by the use of erosion and sedimentation controls and use of turbidity curtains around the footprint of the in-water work area during the installation of piles. Wildlife habitat will be temporarily altered during work; however, the Sturgeon Protection Plan will be implemented throughout the duration of construction, and any temporarily impacted LUW will be fully restored to existing conditions. The Project will alter less than 5,000 sf of LUW and work is not proposed on stream crossings.

6.1.3 Bordering Land Subject to Flooding – FEMA AE Zone – 310 CMR 10.57(4)

Work within BLSF will fully comply with the performance standards at 310 CMR 10.57(4)(a), as no permanent fill is proposed within BLSF and therefore no compensatory flood storage is required. The proposed work will not alter existing flood storage capacity, restrict flood flows, or increase flood elevations or velocities; since the work area only totals 6,717 square feet of BLSF subject to 194 cubic yards of fill, this represents only a portion of the total area of the floodplain at the subject parcel. In addition, as the Project proposes over 5,000 sf of impacts to BLSF, a Wildlife Habitat Evaluation has been conducted, and the findings of this evaluation are presented in Appendix D. The Project will protect wildlife habitat within BLSF by removing all elements of the Project and installing a native seed mix within areas of impacted BLSF that will provide wildlife value. Pre-construction grades will be established within BLSF after work is complete.

6.1.4 Riverfront Area – Performance Standards – 310 CMR 10.58(5)

The Project proposes temporary impacts to degraded RA associated with previous development at the Site. Accordingly, the Project has been designed to meet the Performance Standards for redevelopment within previously developed RA set forth at 310 CMR 10.58(5)(a) to (g). Degraded areas within the RA at the Site total 204,835 sf and consist of paved surfaces, areas of stone and gravel, and areas of compact soil with no topsoil present.

Impacts will be minimized by providing erosion and sedimentation controls to prevent impacts beyond the limits of work shown on the Project plans. All temporarily disturbed areas within RA will be stabilized following construction by applying a native seed mix.

In accordance with 310 CMR 10.58(5):

(a) The Project consists of construction of a temporary crane pad within previously developed and degraded RA. No permanent structures or alteration are proposed with RA. Upon completion of the Project, the temporary crane pad will be fully removed, the Site will be restored to pre-construction grades and a native seed mix will be installed.
(b) The Massachusetts Stormwater Management Standards will be met fully, as described in Section 4.4 – Stormwater Management.
(c) The Project does not propose work closer to the Merrimack River than existing developed conditions. Existing developed RA associated with the boat launch and previous land use of the Site extends to the MAHW line of the Merrimack River. Accordingly, the Project does not propose work closer to the river.
(d) The proposed work is intended to provide construction access for loading materials onto barges to support the Basiliere Bridge project. Due to the nature of the Project, the proposed crane must

be located adjacent to the Merrimack River and therefore cannot be located outside of the RA. Upon completion of bridge construction, the temporary crane and associated infrastructure will be removed, and temporarily disturbed areas will be stabilized in accordance with the approved restoration plan.

(e) The proposed work is located within existing degraded Riverfront Area. The Site contains 204,835 sf of degraded RA. The Project proposes to temporarily impact 6,717 sf of the RA and will not increase the extent of degraded Riverfront Area at the Site.

(f) Standard not applicable, see above.

(g) Standard not applicable, see above.

6.2 City of Haverhill Wetland Protection Ordinance – Chapter 253

The City of Haverhill has a Wetlands Protection Ordinance with unique definitions that expand the protections provided by the Massachusetts Wetland Protection Act. Specifically, the Project proposes work within the locally protected buffer zones.

6.2.1 No Build Zone/No Disturbance Zone

The ordinance defines a 25-foot No-Build No Disturbance Zone and 50-foot No Build Zone. Due to the nature of the Project, work is required within the 25-foot No-Build No-Disturbance Zone and 50-foot No Build Zone. While there are no performance standards for these areas within the Ordinance, the Applicant is requesting the Commission approve this water-dependent project within these zones. Work proposed to occur within these areas includes clearing of vegetation, grading, installation of erosion and sedimentation controls, construction of the crane pad, establishment and use of the crane, and restoration activities. This area will be restored after construction by stabilizing the Site with loam and a native seed, and erosion control blankets if determined necessary, as described in Section 4.2. Work within this area is unavoidable and necessary to allow the Project to occur.

7.0 Summary

The proposed Project will provide a temporary crane yard pad to support a yard crane and a temporary floating wharf to allow for construction material loading to support bridge construction for the Basiliere Bridge Project. The Project has been designed to protect Resource Areas during construction and has avoided and minimized impacts to the greatest extent practical, while still meeting the goals of the Project. The Project design meets performance standards for all Resource Areas present within the limit of work, as set forth in the Ordinance, the Act, and the Act Regulations at 310 CMR 10.00; accordingly, can be conditioned to comply with the General Performance Standards in the Wetland Regulations and to contribute to the interests found in the Massachusetts Wetland Protection Act.

TMC respectfully requests that the Haverhill Conservation Commission find these measures adequately protective of the interests of the Act and Ordinance in the Order of Conditions approving the work as described in the Notice of Intent and accompanying plans.

FIGURES



BETA
IMPROVING COMMUNITIES TOGETHER

Figure 1
Site Locus
Yard Crane Access Platform
Haverhill, MA

N
W E
S

0 1,000 2,000 Feet

1 inch = 1,000 feet

Data Source: USGS Topographic Map (1982-1990)



BETA
IMPROVING COMMUNITIES TOGETHER

Figure 2
Aerial Site Locus
Yard Crane Access Platform
Haverhill, MA

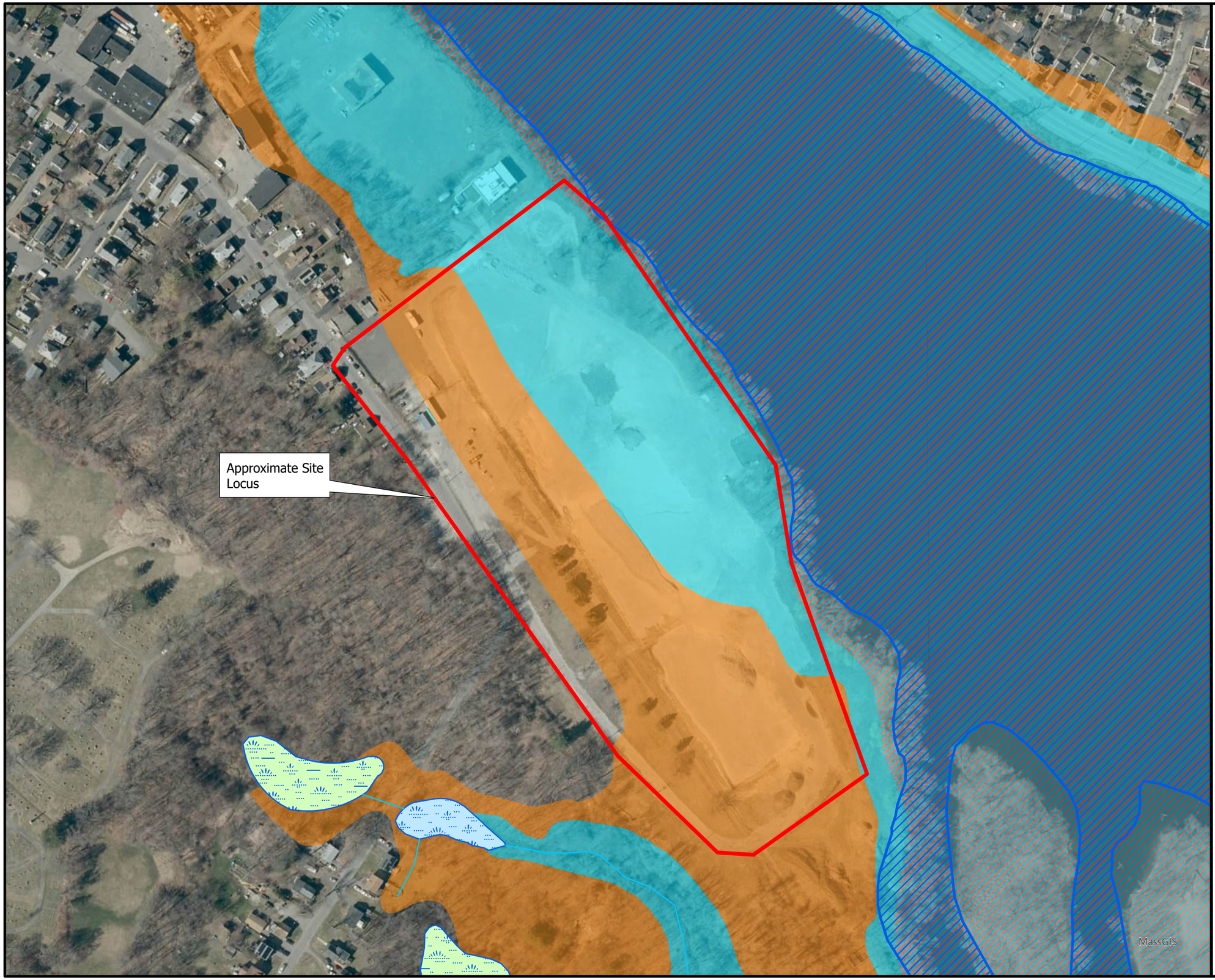
N
W E
S

0 1,000 2,000 Feet

1 inch = 1,000 feet

Data Source: USGS Topographic Map (1982-1990)

Figure 3
Wetland Resources Map
Yard Crane Access Platform
Haverhill, MA



Legend

Water Protection Resources
- Zone A
- Zone B
- Zone C

Groundwater Protection Zones
- Zone I
- Zone II
- IWPA

Wetland Resources
- Hydrologic Connections
- Marsh/ Bog
- Wooded Marsh
- Open Water
- Outstanding Resource Waters
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard

N
W E
S

0 200 400 Feet

1 inch = 200 feet

Data Source: MassGIS USGS Color Ortho Imagery (2023), MassDEP Wetlands (2017), Surface Water Supply Protection Areas (2023), MassDEP Wellhead Protection Areas (2025), Outstanding Resource Waters (2010), FEMA National Flood Hazard Layer (2014)

BETA
IMPROVING COMMUNITIES TOGETHER

Figure 4
Wildlife Resources Map
Yard Crane Access Platform
Haverhill, MA

Approximate Site Locus

MassGIS

Legend

Wildlife Resources

- Estimated Habitat of Rare Wildlfie
- Priority Habitat of Rare Species
- Certified Vernal Pool
- Potential Vernal Pool
- Areas of Critical Environmental Concern (ACEC)
- Coldwater Fisheries

N
W E
S

0 200 400
Feet
1 inch = 200 feet

Data Source: MassGIS USGS Color Ortho Imagery (2023), NHESP Potential Vernal Pools (2013) NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2021), NHESP Estimated Habitats of Rare Species (2021), Areas of Critical Environmental Concern (2009), MA Wildlife Coldwater Fisheries Resources (2022)

BETA
IMPROVING COMMUNITIES TOGETHER

National Flood Hazard Layer FIRMette

FEMA

71°4'9"W 42°46'15"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

71°3'31"W 42°45'49"N

Basemap Imagery Source: USGS National Map 2023

Figure 5 - FEMA FIRMette

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/22/2026 at 4:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Essex County, Massachusetts, Northern Part



September 30, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map (S Kimball St).....9
Legend.....10
Map Unit Legend (S Kimball St).....11
Map Unit Descriptions (S Kimball St).....11
Essex County, Massachusetts, Northern Part.....13
1—Water.....13
602—Urban land.....13
References.....15

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

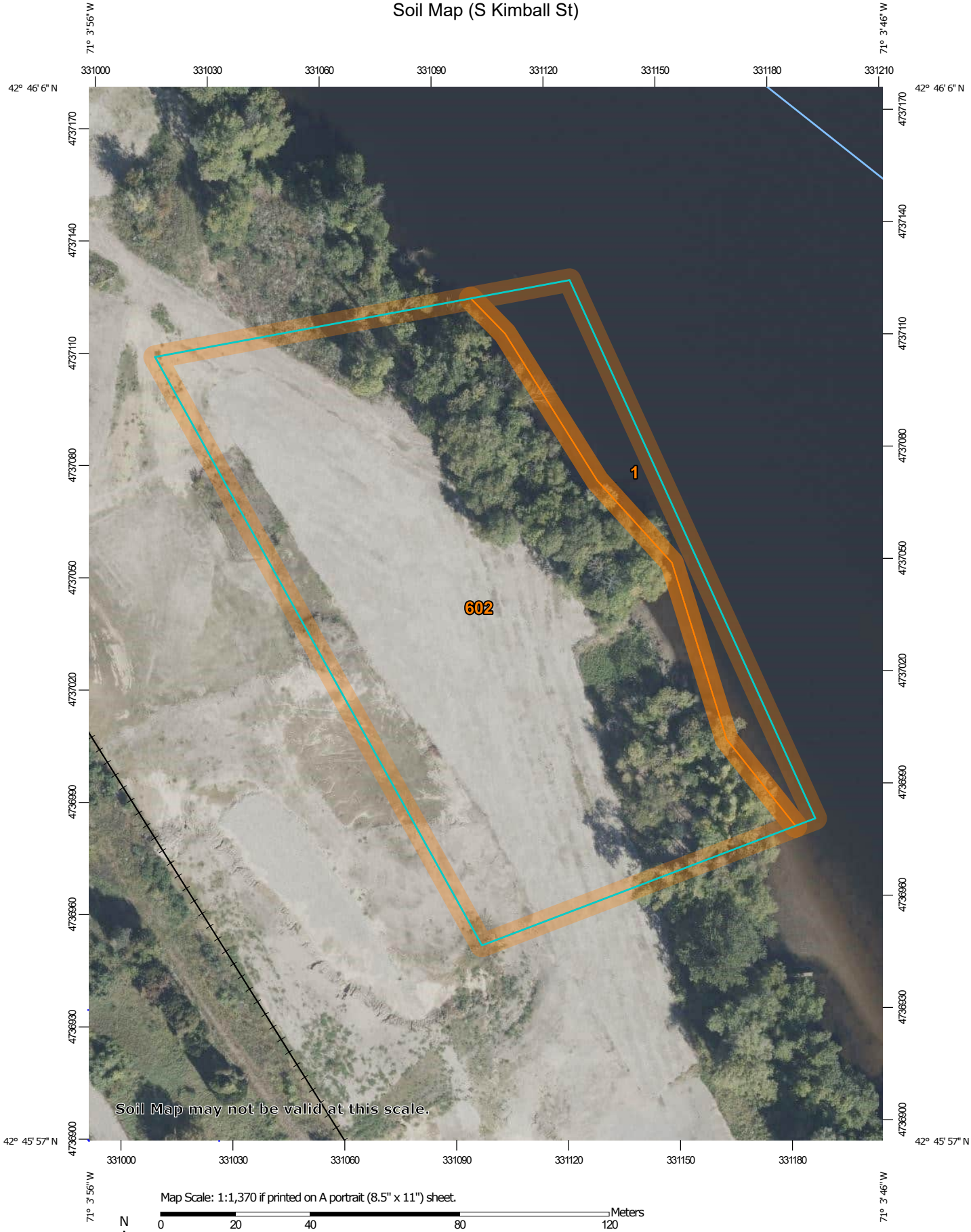
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (S Kimball St)



Map Scale: 1:1,370 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 21, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (S Kimball St)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.5	12.3%
602	Urban land	3.7	87.7%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions (S Kimball St)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Essex County, Massachusetts, Northern Part

1—Water

Map Unit Setting

National map unit symbol: vjx4
Frost-free period: 125 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

602—Urban land

Map Unit Setting

National map unit symbol: vjx3
Frost-free period: 125 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land

Minor Components

Udorthents

Percent of map unit: 10 percent
Hydric soil rating: No

Merrimac

Percent of map unit: 2 percent
Hydric soil rating: No

Windsor

Percent of map unit: 2 percent
Hydric soil rating: No

Charlton

Percent of map unit: 2 percent
Hydric soil rating: No

Paxton

Percent of map unit: 2 percent
Hydric soil rating: No

Hinckley

Percent of map unit: 2 percent

Hydric soil rating: No

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Photographic Documentation

Photo 1



View of the existing access road that will be utilized to access the Site—facing southeast.

Photo 2



View of the work area including the boat launch, degraded RA, and vegetation to be removed—facing east.

PHOTOGRAPHIC DOCUMENTATION

Temporary Yard Crane Pad and Floating Wharf

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 3



View of the top of the boat launch, vegetation along the Bank, and existing degraded RA—facing north-east.

Photo 4



View of the existing gravel boat launch and proposed location of the temporary wharf—facing east.

PHOTOGRAPHIC DOCUMENTATION

Temporary Yard Crane Pad and Floating Wharf

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 5



View of the degraded RA within the limits of the Site that consists of gravel, stone, and pavement—facing east.

Photo 6



View of the southwestern Bank of the Merrimack River—facing northeast.

PHOTOGRAPHIC DOCUMENTATION

Temporary Yard Crane Pad and Floating Wharf

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 7



Another view of the southwestern Bank of the Merrimack River—facing northeast.

Photo 8



View of the eroded conditions of the Bank of the Merrimack River—facing north.

PHOTOGRAPHIC DOCUMENTATION

Temporary Yard Crane Pad and Floating Wharf

Haverhill, Massachusetts

Photographs Documented September 28, 2026

APPENDIX A – Stormwater Management Checklist and Narrative

STORMWATER MANAGEMENT CHECKLIST NARRATIVE
TEMPORARY YARD CRANE PAD AND FLOATING WHARF, HAVERHILL, MA

The Middlesex Corporation proposes construction of a temporary crane pad that will support a temporary yard crane and construction of a temporary floating wharf (the Project) at 100 South Kimball Street in Haverhill, Massachusetts (the Site). The temporary crane will facilitate the loading of construction materials from the stockpile areas onto barges that will deliver materials for in-water work associated with the Basiliere Bridge Project (MassDOT Project No. 605304). The crane pad is proposed to consist of an approximately 3,000 square foot (sf) structure located near an existing boat ramp adjacent to the Merrimack River. The temporary floating wharf is proposed to facilitate the marine scope of work for the Basiliere Bridge Project. The Site is currently developed with impervious surfaces, various structures, and vegetative overgrowth. No new impervious surfaces will be constructed as a result of the Project. Once work is completed all elements of the Project will be removed and the Site will be fully restored to pre-construction conditions.

Proposed work generally includes:

- Installation of erosion and sedimentation controls;
- Burying of a portion of the above-ground sewer bypass pipe to allow for equipment access;
- Repairs to the existing boat ramp above mean high water (MHW) using existing materials;
- Removal of select trees and brush;
- Construction of the temporary yard crane pad;
- Staging of the crane on the completed crane pad;
- Installation of turbidity controls;
- Installation of the temporary spud piles, wharf, and gangway;
- Use of the crane to load construction materials from the stockpile area onto barges;
- Removal of the crane, crane pad, gangway, wharf, spud piles, and associated temporary infrastructure upon completion of construction activities;
- Removal of all construction material and establishment of pre-construction grades;
- Restoration of all impacted Resource Areas; and
- Stabilization of the Site.

The proposed Project meets the definition of a Redevelopment Project and therefore is considered a Redevelopment Project under the Stormwater Management Standards as the Project includes, "Development, rehabilitation, expansion and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area." Accordingly, the Project is required to meet Standards 1 and 7 through 10 fully; and Standards 2 through 6 only to the maximum extent practicable. The following narrative outlines the Stormwater Management Standards and their relation to the proposed Project.

LID Measures:

As the Project is temporary and the Site will be fully restored after construction is completed no Low Impact Development (LID) techniques will be utilized at the Site. However, the Project has been designed to facilitate drainage around the crane pad.

Standard 1: No New Untreated Discharge

No new discharges to wetland Resource Areas will occur as a result of the Project– **Project compiles**.

Standard 2: Peak Rate Attenuation

The Project does not propose any new permanent impervious surfaces. No measurable changes to peak runoff rates of volumes are anticipated as part of the Project – **Standard does not apply.**

Standard 3: Recharge

The proposed Project is limited in scope and no stormwater management system consisting of infiltration is proposed as a part of the Project, as there is no increase in impervious area coverage – **Standard does not apply.**

Standard 4: Water Quality

As noted in Standard 3 above, there will be no construction of impervious surfaces and no runoff will require structural treatment. There is currently no formal stormwater system in the Project area – **Standard does not apply.**

Standard 5: Land Uses with High Potential Pollutant Loads (LUHPPLs)

The Project does not propose Land Uses with High Potential Pollutant Loads – **Standard does not apply.**

Standard 6: Critical Area

The Project will not include discharge to any critical areas – **Standard does not apply.**

Standard 7: Redevelopment

The Project is classified as a redevelopment project under the second definition, "*Development, rehabilitation, expansion and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area.*" Standards 1, 8, 9, and 10 are met and Standards 2, 3, 4, and 6 are met to the maximum extent practicable. Standard 5 is not applicable to this project.

Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

This Project is associated with a larger project that will disturb over one (1) acre of land (the Basiliere Bridge Project); therefore, a Stormwater Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI) must be submitted to the Environmental Protection Agency (EPA). The SWPPP associated with the Basiliere Bridge Project, which has been approved by MassDOT/MassDEP and is currently in effect for ongoing work, will be updated to reflect measures required for the Project and can be submitted to the Haverhill Conservation Commission upon request – **Project complies.**

Standard 9: Long Term Operation and Maintenance Plan

The Project does not propose the construction of any formal stormwater management infrastructure that would require a Long-Term Operation and Maintenance Plan (O+M) as the Project is temporary in nature – **Standard does not apply.**

Standard 10: Prohibition of Illicit Discharges

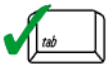
The Project does not propose to construct any new discharges, and no illicit discharges were observed in the field – **Standard does not apply.**

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

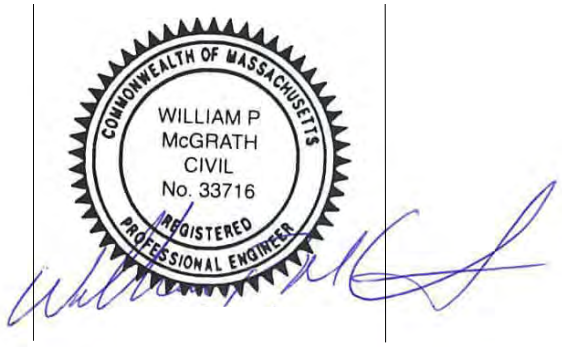
Checklist for Stormwater Report

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10-3-2026

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): N/A - Project is for construction access within a disturbed area

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☐ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☐ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☐ Name of the stormwater management system owners;
- ☐ Party responsible for operation and maintenance;
- ☐ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

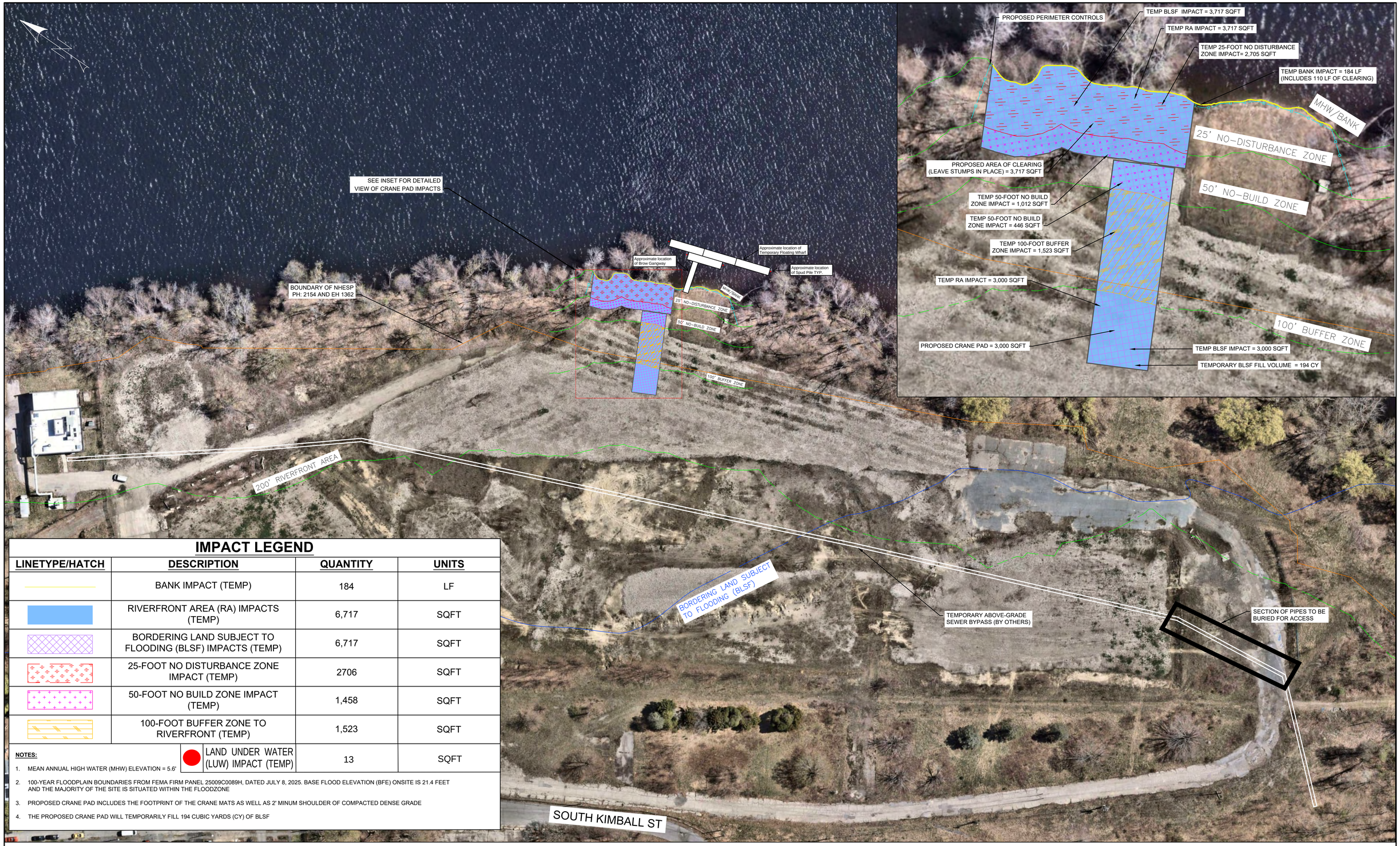
☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX B – Project Plans

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IMPACT LEGEND

LINETYPE/HATCH	DESCRIPTION	QUANTITY	UNITS
	BANK IMPACT (TEMP)	184	LF
	RIVERFRONT AREA (RA) IMPACTS (TEMP)	6,717	SQFT
	BORDERING LAND SUBJECT TO FLOODING (BLSF) IMPACTS (TEMP)	6,717	SQFT
	25-FOOT NO DISTURBANCE ZONE IMPACT (TEMP)	2706	SQFT
	50-FOOT NO BUILD ZONE IMPACT (TEMP)	1,458	SQFT
	100-FOOT BUFFER ZONE TO RIVERFRONT (TEMP)	1,523	SQFT
	LAND UNDER WATER (LUW) IMPACT (TEMP)	13	SQFT

NOTES:

1. MEAN ANNUAL HIGH WATER (MHW) ELEVATION = 5.6'
2. 100-YEAR FLOODPLAIN BOUNDARIES FROM FEMA FIRM PANEL 25009C0089H, DATED JULY 8, 2025. BASE FLOOD ELEVATION (BFE) ONSITE IS 21.4 FEET AND THE MAJORITY OF THE SITE IS SITUATED WITHIN THE FLOODZONE
3. PROPOSED CRANE PAD INCLUDES THE FOOTPRINT OF THE CRANE MATS AS WELL AS 2' MINUM SHOULDER OF COMPACTED DENSE GRADE
4. THE PROPOSED CRANE PAD WILL TEMPORARILY FILL 194 CUBIC YARDS (CY) OF BLSF

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: ML
DESIGNED BY: INITIALS
CHECKED BY: INITIALS

REGISTERED PROFESSIONAL

For Review Only

PREPARED BY

BETA
www.BETA-Inc.com

SUBCONSULTANT

SCALE

50 0 50 100
SCALE IN FEET: 1"=50'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE

TEMPORARY YARD CRANE IMPACT PLAN

100 SOUTH KIMBALL STREET, HAVERHILL, MA

BETA JOB NO. 26.12108

ISSUE DATE 10/01/2026

SHEET NO. 1 OF 1

APPENDIX C – Construction Work Plan

So. Kimball St. Yard Crane Access Platform Construction
TMC-520 # - 00XX
Revision# – 00

HAVERHILL
Bridge Replacement, H-12-007, Bridge Street (SR 125) over the Merrimack River and the Bradford Rail Trail

Contract No. 129076

Revision	Author	Date	Checker	Date
00	BUSHNELL	2026.08.03		

Middlesex Project No. 520
MassDOT Project No. 605304
City/ Town of Haverhill
Contract No. 129076

TABLE OF CONTENTS

Contents

1.0 GENERAL INFORMATION 3
2.0 SAFETY 3
3.0 WORK ACTIVITY SEQUENCE 3
4.0 PRODUCTION & QUANTITY CLAIMING (INTERNAL USE ONLY) 5
5.0 BILL OF MATERIALS 5
6.0 QUALITY 6
7.0 ENVIRONMENTAL 6
8.0 PERMIT REQUIREMENTS / THIRD PARTY NOTIFICATION 7
9.0 KEY PROJECT CONTACTS 7
10.0 MANAGEMENT APPROVAL 9
11.0 CREW REVIEW 9
12.0 ATTACHMENT A.1 JOB HAZARD ANALYSIS (JHA) 10
13.0 ATTACHMENT C.1 CONSTRUCTION QUALITY CONTROL CHECKLISTS 10

1.0 GENERAL INFORMATION

As part of our scope of work for MassDOT Project no. 605304 – Haverhill Bridge Replacement, is to establish a safe and sufficient working access point for the So. Kimball Street yard crane (Crane TBD) to perform both water and land-based activities to support the construction efforts. Within this task, Middlesex will be responsible for establishing a platform for the crane to sit on. Work consists of establishing a suitable subgrade and compacting per contractor liking. Installing filter fabric and dense grade and then installing crane mats and ¾" stone to help facilitate drainage around the crane mats. Crew will be using the following equipment: tracked excavator, dozer, triaxle dump trucks, vibratory roller. The following small equipment will be used to help construct the crane pad such as a walk behind compactor and chainsaw. Once the crane mat pad is constructed and in service, the crane will walk up onto the pad and be positioned to begin construction related activities within the Merrimack River to help support construction of the new bridge.

2.0 SAFETY

Job Hazard Analysis (JHA) and included in Attachment A.1	☒ Yes	☐ No
Other Safety Related Document(s) included in Attachment D.1	☒ Yes	☐ No

3.0 WORK ACTIVITY SEQUENCE

As part of our scope of work for MassDOT Project no. 605304 – Haverhill Bridge Replacement, is to establish a safe and sufficient working access point for the So. Kimball Street yard crane (Crane TBD) to perform both water and land-based activities to support the construction efforts. The following sequence below is the step-by-step schedule to be taken to safely construct this access pad for the yard crane. All steps of this work activity sequence will be covered in an onsite Job Hazard Analysis that will be reviewed and retained on site. The Job Hazard Analysis is attached to the appendix of this document. The crane access pad will be reviewed by engineering and analyzed for loading. Restrictions, if any, will be documented and reviewed with onsite front-line supervisors. If a change needs to be made to the construction work plan, the crew will stop operations, huddle up with front-line supervisors, discuss a path forward and ensure the change is documented in the work activity sequence, prior to resuming work.

Step	Activity Description	Hold Point Type	Construction Sequence Narrative
1.0	***Setup Access***		
1.1	*DigSafe*	*Construction*	*Call DigSafe 72 Hours before you dig. (If applicable)*
1.2	*Daily Huddle*	*Construction*	*Conduct a daily huddle to assure safety and quality. Review of Job Hazard Analysis with crew.*
1.3	*Access to Work*	*Safety*	*Work zone will be established by implementing traffic and equipment controls.*
1.4	*Mobilization of Equipment*	*Construction*	*Mobilize equipment to site with lowbed trucks. Ensure sufficient and safe access for trucks and unloading areas.*
1.5	*Environmental Controls*	*Construction*	*Set up silt socks at designated areas as shown on construction plans. Ensure proper overlap and spacing of stakes is followed.*
1.6	*Engineering Review*	*Engineering*	*Review yard loading with crane and confirm design is acceptable for crane loads on existing structure.*

2.0	***Prep and Set Up***		
2.1	*Mobilize Equipment*	*Planning*	*Mobilize equipment to site. Verify vertical and horizontal clearances*
2.2	*Set up*	*Construction*	*Mark out 100' x 30' pad with survey stakes and marking paint. Establish proper grades with existing subgrade and confirm dimensions.*
2.3	*Brush removal*	*Construction*	*Mobilize tracked skid steer and brush hog to site. Walk area with general superintendent and operator prior to brush removal to set limits of brush removal. Once established, remove brush with skid steer and brush hog. Ensure spotter is working with operator to point out anything operator cannot see.*
2.4	*Tree falling and removal*	*Construction*	*After brush is removed, set limits of tree removal for future crane pad. Tag trees with marking paint with red X to be taken down. With red marking paint, paint a line on the stump of where tree is to be cut. Trees shall be taken down, but stumps are to remain. Fall trees towards existing yard. Do not let trees fall towards the water. Utilize tracked excavator to pull trees out and assist with processing wood. Limb trees and grind limbs with brush hog. Dispose of all wood, unable to be ground by the brush hog, in dumpsters.*
2.5	*Existing boat ramp revitalization*	*Construction*	*Utilize brush hog to clean existing boat ramp down to water level. Mow everything in and around the existing boat ramp. Re-set up existing erosion control wattle and stakes to hold wattle around boat ramp. Replace any wash out that occurred in existing boat ramp with existing material. Use tracked excavator to pull material back into wash out holes.*
3.0	***Road & Pad Installation***		
3.1	*Establishing Road/Yard*	*Construction*	*Walk existing yard and establish limits of road and yard with general superintendent and mark out limits of yard with marking paint and bin blocks to delineate the area.*
3.2	*Hauling Road/Yard Material*	*Construction*	*Mobilize tracked dozer to site and through the utilization of dump trucks, haul in 1.5" minus dense grade material to the yard and build a stockpile of material in the area marked out with paint and bin blocks.*
3.3	*Establishing Yard*	*Construction*	*Push the piles with the dozer to 3" lifts of dense grade all in the area marked out with paint and bin blocks. When lift has been installed, utilize vibratory roller to compact the lift of dense grade over the existing material in the yard. If needed, wet down the material to achieve proper compaction and to keep dust down.*
3.4	*Setting crane pad limits with survey and laser level*	*Construction*	*Once yard grade is established with new layer of 1.5" minus dense grade material and all the existing concrete rubble is buried, set limits of 100' x 30' crane pad with survey stakes and flagging tape. Set survey stakes with sledgehammer. Square up pad to the riverbank.*

3.5	*Install filter fabric*	*Construction*	*On top of the 3" of dense grade that has been installed and compacted in the yard, roughly paint out the crane pad and install filter fabric directly on the ground. Do not stake or staple the filter fabric. Ensure minimum of 2' of overlaps on each row. Hold down filter fabric with rocks or piles of dense grade.*
3.6	*Install dense grade*	*Construction*	*Follow grade stakes and install approx. 6" of dense grade dozer and tracked excavator. To get the material onto the filter fabric, use the tracked excavator to pull dense grade from the pile to spread out on the filter fabric before the dozer tracks on it. Ensure enough material is on the filter fabric before the dozer tracks on it, to avoid cutting to tearing the fabric. Utilize vibratory roller and compact the grade as needed to achieve a solid base.*
3.7	*Install 6" of dense grade*	*Construction*	*Install 2 lifts (each lift will be 3" thick, total of 6") of dense grade over the whole pad and compact as needed to achieve proper compaction. Utilize vibratory roller to achieve proper compaction.*
3.8	*Install 12" thick crane mats*	*Construction*	*Layout and install 12" crane mats per drawing shown in appendix, with rigging attached to tracked excavator.*
3.9	*Install 10" of dense grade*	*Construction*	*Install 10" of dense grade in the crane pad with tracked excavator and compact in 3" lifts. Utilize vibratory roller and if needed, use walk behind compactor to achieve desired compaction where needed in tight areas. Leave dense grade low for future ¾" stone installation between the crane mats.*
3.10	*Sloping material*	*Construction*	*Have a minimum of 2' of dense grade extend out past the edge of the crane mats on all 4 sides, at the grade of the crane mats. After 2', gently slope the material down to meet existing grade at no more than a 3 to 1 slope. Compact the dense grade material.*
3.11	*Install 3" of ¾" stone*	*Construction*	*Protect the slopes around the crane mat pad with 2" of ¾" stone and compact into place to minimize wash out. Install and compact ¾" stone in between crane mats to protect dense grade.*

4.0 PRODUCTION & QUANTITY CLAIMING (INTERNAL USE ONLY)

Attachment C.1 Production Information

Attachment C.2 Quantity Claiming Plan

5.0 BILL OF MATERIALS

Material Description	Quantity	Unit of Measure	Supplier	Lead Time / Delivery Time	Note
Erosion Control Sock	*375*	*LF*	*White Cap/ Colony*	*1-2 Business Days*	*15% extra LF for overlap*
Wooden Grade Stakes	*94*	*EA*	*White Cap/ Colony*	*1-2 Business Days*	*Assuming every 4' on center*

¾" Stone	*15*	*CY*	*Brox/Benevento*	*ASAP*	*3" lift on dense grade areas*
Dense Grade (For crane pad)	*181*	*CY*	*Brox/Benevento*	*ASAP*	*Just for crane pad, 10% extra (not counting road/yard)*
Black Filter Fabric	*4,000*	*SF*	*White Cap/ Colony*	*1-2 Business Days*	*10% extra on SQFT*
12" x 4' x 24" Mixed Hardwood Notched Crane Mats	*16*	*EA*	*Viking Mat*	*7-10 Days ARO*	*Ordered*
Rigging Description	***Quantity***	***Unit of Measure***	***Supplier***	***Lead Time/ Delivery Time***	***Note***
¾" Crosby G-209 Screw Pin Shackle	*2*	*EA*	*TMC*	*HAVE*	*Lifting equipment must be domestic/Made in USA all components*
2" x 20' eye and eye nylon web sling	*2*	*EA*	*TMC*	*HAVE*	*Lifting equipment must be domestic/Made in USA all components*
2 Way 9/32" chain bridle (or similar)	*1*	*EA*	*TMC*	*HAVE*	*Lifting equipment must be domestic/Made in USA all components*
½" Min Diameter Tag Line Rope (or similar)	*100*	*FT*	*TMC*	*HAVE*	

Material information included in Attachment D.2? (Product Data Sheets)	☐ Yes	☒ No

6.0 QUALITY

Document	Document	Revision

7.0 ENVIRONMENTAL

The following Environmental Plans and Checklist are pertinent to the work:

Plan / Checklist Title SDS / MSDS	Revision No.	Description

8.0 PERMIT REQUIREMENTS / THIRD PARTY NOTIFICATION

The following additional permits or stakeholder approval(s) are required for this work:

Permit / Notification Requirement	Issuing Authority	Status / Notes

9.0 KEY PROJECT CONTACTS

Company	Name	Position	Phone	Email
TMC	Andrew Currier	Operations Manager	508-726-3109	acurrier@middlesexco.com
TMC	Brent Mawdsley	Senior Project Manager	617-304-5303	bmawdsley@middlesexco.com
TMC	Zach Burkhart	Assistant Project Manager	617-352-8075	zjburkhart@middlesexco.com
TMC	Henry Mulvey	General Superintendent	978-429-1388	hmulvey@middlesexco.com
TMC	Shawn Brown	Superintendent	978-870-3679	sbrown@middlesexco.com
TMC	Kyle Bushnell	Asst. Superintendent	978-870-0423	kbushnell@middlesexco.com
TMC	Alex Beaulieu	Field Engineer	978-793-6720	abeaulieu@middlesexco.com
TMC	Stephen Spencer	Safety Manager	978-449-1324	sspencer@middlesexco.com
TMC	Owen MacKinnon	Quality Manager	978-742-4496	omackinnon@middlesexco.com

MANAGEMENT APPROVAL

Position	Date	Name	Signature
Project Manager		Brent Mawdsley	
Assistant Project Manager		Zach Burkhart	
General Superintendent		Henry Mulvey	
Superintendent		Shawn Brown	
Assistant Superintendent		Kyle Bushnell	
Field Engineer		Alex Beaulieu	
Safety Manager		Stephen Spencer	
Quality Control Manager		Owen MacKinnon	

10.0 CREW REVIEW

Name	Date	Signature	Name	Date	Signature

11.0 ATTACHMENT A.1 JOB HAZARD ANALYSIS (JHA)

12.0 ATTACHMENT B.1 CONSTRUCTION LAYOUT AND YARD DRAWINGS

13.0 ATTACHMENT C.1 SPECIFICATION SHEETS AND EQUIPMENT CUT SHEETS

14.0 ATTACHMENT D.1 LICENSES AND CERTIFICATIONS

15.0 ATTACHMENT E.1 RIGGING CUT SHEETS

16.0 ATTACHMENT F.1 PROPER TREE FELLING TECHNIQUES

APPENDIX B.1

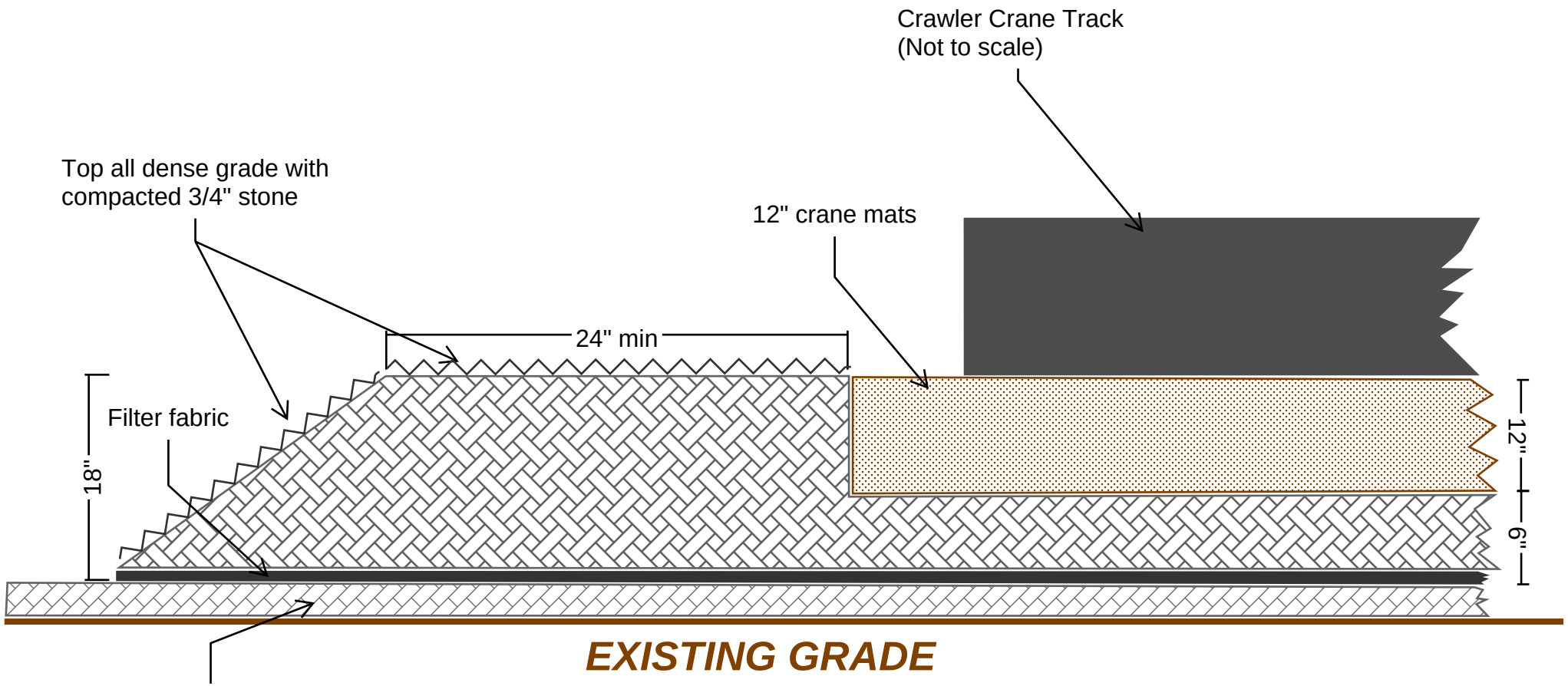




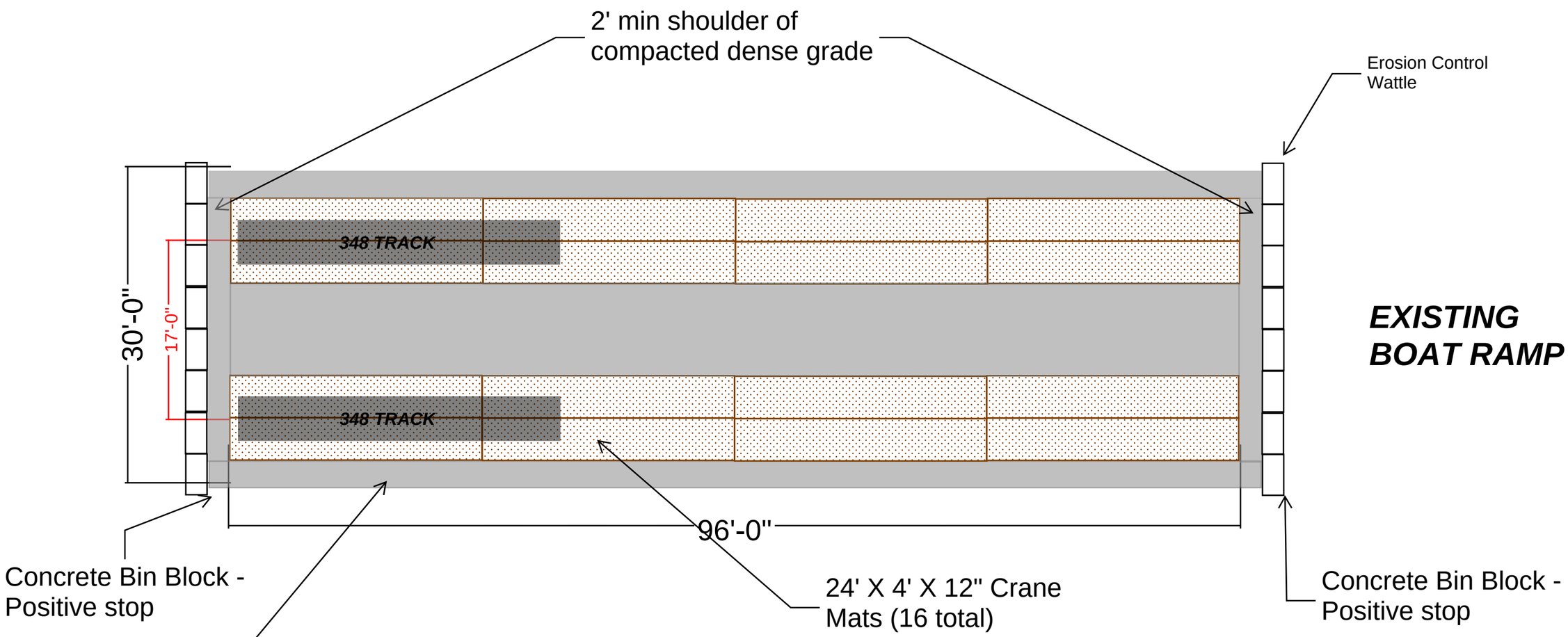
NOTES:
1. Restore Environmental controls around existing boat ramp before start of work.
2. Crane Pad to be filter fabric layer on existing base, 6" thick layer of compacted 1.5" dense grade, with timber crane mats on top. 1.5" dense grade installed around timber crane mats sloped around edges.
3. Dimensions of crane pad are wooden crane mats only. Dimensions do not account for 2' minimum edge of dense grade all around.

APPENDIX B.1

PROPOSED FILL FOR YARD CRANE PAD



PROPOSED FILL FOR YARD CRANE PAD



EXISTING BOAT RAMP

ALL DENSE GRADE TO BE TOPPED WITH COMPACTED 3/4" STONE

- NOT SHOWN: FILTER FABRIC UNDER ALL PROPOSED FILL -

Back

Current Date/Time: 8/9/2026, 2:45:08 PM ET



KYLE W. BUSHNELL

CCO ID: 555384854

CCO CERTIFIED

Certifications Held

Rigger Level I (RIG-I)

ISSUE DATE **4/30/2026**

EXP DATE **4/30/2031**

KYLE W. BUSHNELL
CCO ID: 555384854

Note: Issue Date represents the initial date the certification was achieved.

Disclaimer: CCO certifications are authorized by responsible personnel and issued subject to applicable conditions and limitations, including ongoing

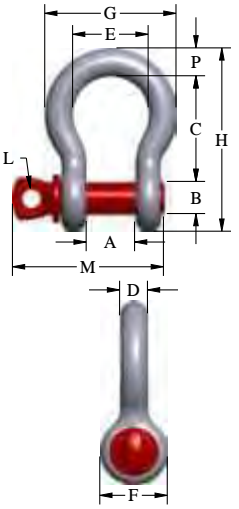
APPENDIX E.1

G-209



S-209





- Meets performance requirements of Grade 6 shackles.Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS Marine Vessel Rules, ABS Mobile Offshore Units, and ABS Guide for the Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Meets all performance and design requirements of ISO 2415.
- Look for the Red Pin®... the mark of genuine Crosby quality

G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)													Replacement Pin Stock No.
		G-209	S-209		A	Tol. A ±	B	C	Tol. C ±	D	E	F	G	H	L	M	P	
3/16	1/3	1018357	–	.06	.38	.06	.25	.88	.06	.19	.60	.56	.98	1.47	.16	1.14	.19	-
1/4	1/2	1018375	1018384	.10	.47	.06	.32	1.13	.06	.25	.78	.62	1.28	1.84	.19	1.43	.25	-
5/16	3/4	1018393	1018400	.18	.53	.06	.38	1.21	.06	.31	.84	.75	1.46	2.09	.22	1.71	.31	-
3/8	1	1018419	1018428	.31	.66	.06	.44	1.45	.13	.38	1.03	.92	1.79	2.50	.25	2.06	.38	-
7/16	1 1/2	1018437	1018446	.38	.75	.06	.50	1.69	.13	.44	1.16	1.06	2.04	2.91	.31	2.37	.44	-
1/2	2	1018455	1018464	.72	.81	.06	.63	1.88	.13	.50	1.31	1.18	2.31	3.28	.38	2.69	.50	-
5/8	3 1/4	1018473	1018482	1.37	1.06	.06	.75	2.38	.13	.62	1.69	1.50	2.93	4.19	.44	3.34	.69	-
3/4	4 3/4	1018491	1018507	2.35	1.25	.06	.88	2.81	.25	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	-
7/8	6 1/2	1018516	1018525	3.62	1.44	.06	1.00	3.31	.25	.88	2.28	2.10	4.04	5.83	.50	4.50	.97	-
1	8 1/2	1018534	1018543	5.03	1.69	.06	1.16	3.76	.25	1.00	2.69	2.38	4.69	6.56	.56	5.13	1.06	-
1-1/8	9 1/2	1018552	1018561	7.41	1.81	.06	1.25	4.27	.25	1.16	2.91	2.68	5.15	7.47	.63	5.97	1.25	1082599
1-1/4	12	1018570	1018589	9.50	2.03	.06	1.41	4.69	.25	1.29	3.26	3.00	5.76	8.26	.69	6.50	1.38	1082615
1-3/8	13 1/2	1018598	1018605	13.53	2.25	.13	1.56	5.22	.25	1.42	3.62	3.31	6.38	9.16	.75	6.93	1.50	1082633
1-1/2	17	1018614	1018623	17.20	2.38	.13	1.66	5.76	.25	1.53	3.88	3.62	6.94	10.00	.81	7.43	1.62	1082651
1-3/4	25	1018632	1018641	30.90	2.88	.13	2.03	7.00	.25	1.84	5.00	4.19	8.80	12.34	1.00	9.19	2.25	1082679
2	35	1018650	1018669	45.00	3.25	.13	2.28	7.75	.25	2.08	5.75	4.81	10.15	13.68	1.13	10.36	2.40	1082697
2-1/2	55	1018678	1018687	85.75	4.12	.25	2.78	10.51	.25	2.72	7.25	5.81	12.75	17.92	1.38	13.17	3.13	1082713

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

APPLICATION AND WARNING INFORMATION SECTION 17

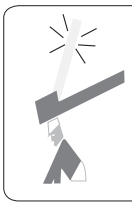
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EYE & EYE WEB SLING CAPACITY CHART

			Rated Capacity (lbs.)			Eye Dimensions		Approximate Sling Weight (lbs.)		
	Part Number	Web Width (inches)	Vertical	Choker	Vertical Basket	Width (inches)	Length (inches)	Min. Standard Length (ft)	Base	Adder/ft.
One Ply	EE191	1	1,600	1,250	3,200	1	9	3	.4	.06
	EE192	2	3,200	2,560	6,400	2	9	4	.9	.12
	EE193	3	4,800	3,840	9,600	1 1/2	9	4	1.4	.18
	EE194	4	6,400	5,120	12,800	2	12	4	1.9	.24
	EE196	6	9,600	7,680	19,200	2	14	5	3.4	.36
	EE198	8	12,800	10,240	25,600	3	18	6	5.3	.48
	EE1910	10	16,000	12,800	32,000	4	22	8	8.0	.60
	EE1912	12	19,200	15,360	38,400	5	26	8	9.8	.72
Two Ply	EE291	1	3,200	2,560	6,400	1	9	3	.4	.13
	EE292	2	6,400	5,120	12,800	2	9	3	.9	.25
	EE293	3	9,300	7,440	18,600	1 1/2	12	4	1.7	.38
	EE294	4	11,500	9,200	23,000	2	12	4	2.3	.50
	EE296	6	16,500	13,200	33,000	2	14	6	4.9	.76
	EE298	8	22,750	18,200	45,500	3	18	6	6.5	1.0
	EE2910	10	28,400	22,720	56,800	4	22	7	9.4	1.3
	EE2912	12	34,100	27,280	68,200	5	26	8	13	1.5
Three Ply	EE391	1	4,100	3,280	8,200	1	12	4	1.0	.20
	EE392	2	8,300	6,640	16,600	2	12	4	2.1	.40
	EE393	3	12,500	10,000	25,000	1 1/2	18	5	3.7	.59
	EE394	4	16,000	12,800	32,000	2	18	5	5.0	.79
	EE396	6	23,000	18,400	46,000	3	20	5	7.6	1.2
	EE398	8	30,700	24,560	61,400	4	24	7	13	1.6
	EE3910	10	36,800	29,440	73,600	5	28	7	16	2.0
	EE3912	12	44,000	35,200	88,000	6	32	7	20	2.4
Four Ply	EE491	1	6,200	4,960	12,400	1	12	4	1.1	.26
	EE492	2	12,400	9,920	24,800	2	12	4	2.2	.53
	EE493	3	17,000	13,600	34,000	1 1/2	18	5	4.1	.79
	EE494	4	22,000	17,600	44,000	2	18	5	5.5	1.1
	EE496	6	33,000	26,400	66,000	3	20	5	8.3	1.6
	EE498	8	44,000	35,200	88,000	4	24	7	15	2.1
	EE4910	10	55,000	44,000	110,000	5	28	7	19	2.6
	EE4912	12	66,000	52,800	132,000	6	32	7	23	3.2

** Before ordering slings that are going to be used in a chemically active environment, contact Liftex® Customer Service, to recommend the right sling for the right usage.*

Chemically Active Environments can affect the strength of webbing slings in varying degrees, ranging from little to total degradation.



WARNING

SLING FAILURE CAN CAUSE
DEATH OR INJURY
SLING FAILURE RESULTS FROM MISUSE, DAMAGE, AND EXCESSIVE WEAR

ADHERE TO INDUSTRY STANDARDS & REGULATIONS

Available in:

PRO EDGE® Tougher. Stronger. Better.®

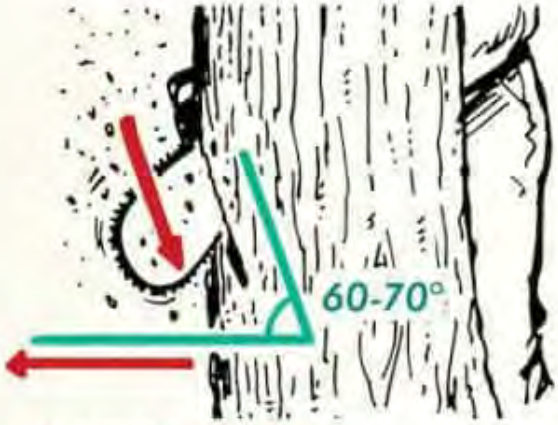
HOW TO FELL A TREE



1: DETERMINE WHERE THE TREE SHOULD FALL. Look for areas that are downhill and clear of any structures or other trees.



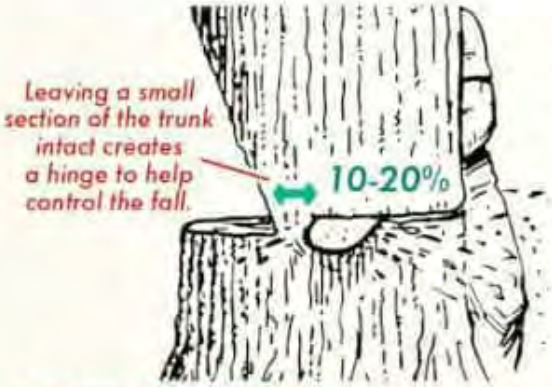
2: PLAN TWO ESCAPE ROUTES opposite where the tree will fall. They should be about 45 degrees apart. Clear any branches or obstacles from these paths.



3: MAKE YOUR INITIAL, or notch, cut at the base of the fall side of the tree. Cut at a 60–70 degree angle to about one-third through the tree's diameter.



4: TO FINISH THE NOTCH CUT, cut a line parallel to where the first cut ended, and remove the wedge.



5: MAKE YOUR FINAL, or felling, cut on the opposite side of the tree, a few inches above the previous parallel cut. Stop when 10–20% percent of the trunk remains.



6: AS THE TREE FALLS, quickly but carefully back away along your escape route.

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MS 250

STIHL







Cat®
279D

Compact Track Loader

Features:

The Cat® 279D Compact Track Loader, with its radial lift design, delivers impressive mid-lift reach and excellent digging performance with outstanding drawbar power. Its standard, suspended undercarriage system provides superior traction, flotation, stability and speed to work in a wide range of applications and underfoot conditions. The 279D features the following:

- **Industry leading sealed and pressurized cab option** provides a cleaner and quieter operating environment with excellent work tool visibility.
- **Available high-back, heated, air ride seat with seat mounted adjustable joystick controls** makes the D Series the industry leader in operator comfort.
- **High performance power train** provides maximum performance and production capability through the Electronic Torque Management system, standard two speed travel and an electronic hand/foot throttle with decel pedal capability.
- **High Flow XPS hydraulic system** is available for applications that demand maximum hydraulic work tool performance.
- **Electronically controlled Cat C3.3B engine** provides high horsepower and torque while meeting U.S. EPA Tier 4 Final (EU Stage IIIB) emission standards.
- **Cat "Intelligent Leveling" system (ILEV)** provides industry leading technology, integration and optional features such as dual direction self level, work tool return to dig and work tool positioner.
- **Standard fully independent torsion axle suspension** combined with the optional Speed Sensitive Ride Control system improves operation on rough terrain, enabling better load retention, increased productivity and greater operator comfort.
- **Maximize machine capability and control** with optional Advanced Display providing on-screen adjustments for implement response, hystat response and creep control. Also features multi-language functionality with customizable layouts, security system and rearview camera.
- **Ground level access** to all daily service and routine maintenance points helps reduce machine downtime for greater productivity.
- **Broad range of performance matched Cat Work Tools** make the Cat Compact Track Loader the most versatile machine on the job site.

Specifications

Engine

Engine Model	Cat C3.3B DIT (turbo)	
Gross Power SAE J1995	55.4 kW	74.3 hp
Net Power SAE 1349	54.4 kW	72.9 hp
Net Power ISO 9249	54.9 kW	73.7 hp
Peak Torque at 1,500 rpm SAE J1995	265 N·m	195 lbf-ft
Displacement	3.3 L	203 in^3
Stroke	120 mm	4.7 in
Bore	94 mm	3.7 in

Weights*

Operating Weight	4487 kg	9,893 lb

Power Train

Travel Speed (Forward or Reverse):		
One Speed	7.2 km/h	4.5 mph
Two Speed	11.3 km/h	7.0 mph

*Operating Weight, Operating Specifications and Dimensions all based on 75 kg (165 lb) operator, all fluids, two speed, OROPS, 1981 mm (78 in) dirt bucket, 400 mm (15.7 in) tracks, dual flange front idler/single flange rear idler, standard flow hydraulics, mechanical suspension seat, no optional counterweights and manual quick coupler (unless otherwise noted).

Hydraulic System

Hydraulic Flow – Standard:		
Loader Hydraulic Pressure	23 000 kPa	3,335 psi
Loader Hydraulic Flow	86 L/min	23 gal/min
Hydraulic Power (calculated)	33 kW	44 hp
Hydraulic Flow – High Flow XPS:		
Maximum Loader Hydraulic Pressure	28 000 kPa	4,061 psi
Maximum Loader Hydraulic Flow	121 L/min	32 gal/min
Hydraulic Power (calculated)	57 kW	76 hp

Operating Specifications*

Rated Operating Capacity:		
35% Tipping Load	932 kg	2,055 lb
50% Tipping Load	1331 kg	2,935 lb
Rated Operating Capacity with Optional Counterweight	1444 kg	3,185 lb
Tipping Load	2663 kg	5,870 lb
Breakout Force, Tilt Cylinder	3304 kg	7,285 lb
Ground Contact Area (400 mm/15.7 in track)	1.30 m^2	2,015 in^2
Ground Contact Area (450 mm/17.7 in track)	1.47 m^2	2,272 in^2
Ground Pressure (400 mm/15.7 in track)	33.9 kPa	4.9 psi
Ground Pressure (450 mm/17.7 in track)	30.0 kPa	4.4 psi

CAT®

BUSH HOG®

Skid Steer Brush Cutters

IF IT DOESN'T SAY BUSH HOG® IT JUST WON'T CUT IT™

BCSS SERIES



D5K2

Track-Type Tractor



Engine		
Engine Model*	Cat® C4.4 ACERT™	
Rated Net Power at 2,200 rpm		
SAE J1349	77.6 kW	104 hp
ISO 9249/EEC 80/1269	77.6 kW	104 hp

Weights		
Operating Weight – XL	9314 kg	20,534 lb
Operating Weight – LGP	9646 kg	21,266 lb
Operating Weight – LGP, 762 mm (30 in)	9850 kg	21,716 lb

*Engine meets U.S. EPA Tier 4 Interim/EU Stage IIIB/Japan MLIT Step 4 emission standards.

325F L

Hydraulic Excavator



Engine		
Engine Model	Cat® C4.4 ACERT	
Engine Power – ISO 14396	122 kW	164 hp
Net Power – SAE J1349	120 kW	161 hp

Drive		
Maximum Travel Speed	5.6 km/h	3.5 mph
Maximum Drawbar Pull	203 kN	45,591 lbf
Weights		
Operating Weight	25 907 kg	57,115 lb



Cat® CS11 GC

Smooth Drum Vibratory Soil Compactor

Cat® CS11 GC Vibratory Soil Compactors bring a balance of easy operation, low operating costs and performance-boosting technology to the jobsite. Using a proven vibratory system designed for high reliability, the CS11 GC smooth drum roller is ideally suited for granular soil applications or cohesive soil applications with the use of an optional padfoot shell kit.

Reliable Power

- The propel system is driven by a single pump design and is ideal for flat to moderate grades.
- Powered by a Cat® C4.4 engine that meets Brazil MAR-1, equivalent to U.S. EPA Tier 3 and EU Stage IIIA emission standards.
- Eco-mode limits engine RPM helping to reduce fuel consumption.

Comfortable and Ergonomic Operator Station

- The ISO-mounted operator station and rubber floormats help reduce noise and vibration for comfort during operation.
- Easy to use controls are grouped by function and a large display informs operators of machine performance.
- The seat, armrest and steering column are adjustable for all-day comfort.
- Operators are protected from the elements by a standard equipped sun canopy, optional ROPS/FOPS canopy or optional climate-controlled ROPS/FOPS cab with hinged glass windows.
- Upgrade the standard adjustable vinyl seat to a vinyl suspension seat with arm rest for enhanced operator comfort. A deluxe high back air-ride seat option is available for cab configurations.

Safety Features

- Angled steps, handrails, and an antiskid surface help provide stability during entry and exit of the operator station.
- Internal and external mirrors are available to provide the operator with a broad view of the jobsite.
- Enhance visibility with an optional rear vision camera with large color touchscreen display for more complete operator control and safety.
- Optional operator presence seat sensor and seat belt switch.

Excellent Compaction Performance

- The exclusive pod-style eccentric weight vibratory system is designed to provide high reliability, smooth performance and low noise levels with a 3-year, 3000-hour maintenance interval.
- High static linear loads and amplitudes.
- The optional Traction Control system helps improve traction in soft underfoot conditions such as sand or loose material.
- The Auto-vibe function helps operators easily maintain consistent, high-quality compaction.
- Enhance machine versatility with the addition of an oval or square padfoot shell kit, allowing your smooth drum machine to compact semi-cohesive and cohesive materials.
- An optional MicroVibe™ drum configuration provides a lower range of amplitude than the standard drum for vibration-sensitive applications.
- Upgrade the CS11 GC to a heavier size class with an optional XT weight kit for use on a wider range of jobsites and lift thicknesses.

Enhance Quality and Productivity with Technology

- Optional Cat Compact technologies help you consistently meet compaction targets faster, more uniformly, and in fewer passes – saving on fuel and reducing rework and material costs.
  - Exclusive Machine Drive Power (MDP) is an energy-based measurement and can be used on all soil types in either static or vibratory mode.
  - Compaction Meter Value (CMV) is an accelerometer-based measurement for granular soils, measuring only when the vibratory system is active.

MACK®

Dump Trucks



GRANITE®

Temp Wharf Sectional Barge Assembly
TMC-520

HAVERHILL
Bridge Replacement, H-12-007, Bridge Street (SR 125) over the Merrimack River and the Bradford Rail Trail

Contract No. 129076

Revision	Author	Date	Checker	Date
00	BUSHNELL	2026.10.09		

Middlesex Project No. 520
MassDOT Project No. 605304
City/ Town of Haverhill
Contract No. 129076

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

This work plan is for assembling a temporary wharf at Middlesex's construction laydown site at 90 South Kimball Street in Haverhill, MA to support construction activities on the Basiliere Bridge Replacement Project. This temporary wharf is being constructed to facilitate the marine scope of work for the project. Once this wharf is established, this will give the project an area to access the water and build barges from the laydown yard. Within this work plan, a step-by-step guide for assembling sectional floats and setting the spud wells and spuds will be covered as well as a job hazard analysis of the assembly procedure. All spec sheets of the equipment used in constructing the sectional barge as well as deck equipment will be included within the details of the work plan.

2.0 SAFETY

Job Hazard Analysis (JHA) and included in Attachment A.1	☒ Yes	☐ No
Other Safety Related Document(s) included in Attachment A.2	☒ Yes	☐ No

3.0 WORK ACTIVITY SEQUENCE

At a later date, there will be additional equipment on the deck of the sectional barge such as a welder, fuel cell and other misc. equipment, which will be restrained to the deck in similar fashions. After the barge is fully constructed, all required safety equipment will be placed on the deck of the barge, such as, but not limited to 1EA 30" throw ring with 90' of throw rope contained in a bag, 1EA air horn to alert of possible man overboard, 1EA 20 LB fire extinguisher inspected monthly by a competent person and annually by a third party, 1EA ladder secured to the side of the barge at all times and 1EA first aid kit for basic first aid treatment.

All equipment hoisted with a crane will be under the supervision of a minimum NCCCO Rigger 1, who will be present during the crane work, assembly and construction of the sectional barge.

Step	Activity Description	Hold Point Type	Construction Sequence Narrative
1.0	***Setup/Review Access***	***Hold Point***	***Work Description***
1.1	*Daily Huddle*	*Planning*	*Conduct a daily huddle to assure safety and quality of all operations. Review of Job Hazard Analysis and work plan with crew for each day.*
1.2	*Safety Review*	*Planning*	*Review PPE requirements for team members working on and around water. Life jackets to be zipped and clipped. Review man overboard procedure with crew prior to work. Review safety boat procedure. Ensure functioning safety boat is in place before starting work. Document any findings of the safety boat to the SSHO or superintendent. If safety boat does not function, all work on or near water shall be halted.*
1.3	*Access to Work*	*Safety*	*Work zone will be established by implementing traffic and equipment controls. Use a crane swing protection, such as cones to delineate swing radius of rental crane Set parking location for work and service trucks to minimize disruption to rented yard space and kept out of swing area of crane.*
1.4	*Mobilization of equipment*	*Planning*	*Mobilize crane to site and place center pin on location. Predetermined by superintendent. All crane set-up shall be*

			completed by certified A/D directors for the company. Mobilize Underdog boat and yellow works boat and aluminum safety boat to site. Ensure proper truck route is established with spotters. Minimizing backing opportunities. Always have a spotter for every truck.
1.5	*Environmental Controls*	*Environmental*	*Have white absorbent pads readily available when tightening hoses and dealing with oils and fuels. Minimize drips over water by covering the nozzle with pad and placing them in 5-gallon bucket. Report any spills immediately to supervisor.*
1.6	*Review*	*Engineering*	*Review JHA, work plan, truck routing and lift plan with crew, supervisors, truck driver and crane operator. Ensure complete understanding of all documents prior to work.*
2.0	***Prep and Set Up***	***Hold Point***	***Work Description***
2.1	*Mobilize Equipment*	*HEI*	*Mobilize rotator to So. Kimball St. yard. Walk area with operator of rotator. Determine area with flat level ground to set up rotator. Ensure both parties are comfortable with set up prior to rigging and truck loading activities.*
2.2	*Set up*	*Inspection*	*Inspect rigging prior to use for floats to load to truck.*
3.0	***Barge Assembly***	***Hold Point***	***Work Description***
3.1	*Pick 1st 40' float to water*	*Construction*	*Inspect picking location via manlift. Hook up rigging via manlift. Tie two tag lines to the float, one on each corner, same side of the float. With the use of a rotator, fly to truck. Remove rigging from hook of the rotator with the manlift. Back the truck up to the crane with a spotter. Crawl the manlift to the crane and hook up the rigging to the hook of the crane. Fly the float into the water and splash down in the water. Tie the float up to the Underdog. Cut the rigging free from the float. Utilize Johnson bar and 2x4 wedges and pin up two locks on female side of 10' section of barge, to allow for next float to be pinned together. Swing crane back to land for next float.*
3.2	*Pick 2nd 40' float to water*	*Construction*	*Inspect the pick point and attach the rigging from the manlift. Secure two tag lines to the float, one at each corner on the same side. Use the rotator to lift the float onto the truck, then remove the rigging from the rotator hook using the manlift. With a spotter, back the truck to the crane. Move the manlift to the crane and attach the rigging to the crane hook. Lower the float into the water beside Manny P. Use the yellow boat (Manny P) to align and connect the two floats, forming an 80 ft × 10 ft barge. After the locks engage, drive them into position with a sledgehammer; keep hands clear. Utilize Johnson bar and 2x4 wedges and pin up the two locks on the female side of the 10' section of barge, to allow for next float to be pinned together. Remove the rigging from the float, then swing the crane back to land for the next float.*

3.3	*Pick 3rd 40' float to water*	*Construction*	*Inspect the pick point and attach the rigging from the manlift. Secure two tag lines to the float, one at each corner on the same side. Use the rotator to lift the float onto the truck, then remove the rigging from the rotator hook using the manlift. With a spotter, back the truck to the crane. Move the manlift to the crane and attach the rigging to the crane hook. Lower the float into the water beside Manny P. Use the yellow boat (Manny P) to align and connect the two floats to the third float. After the locks engage, drive them into position with a sledgehammer; keep hands clear. Before cutting rigging free, utilize Johnson bar to pin up the locks on the female side of the 40' float in the center. When the locks are up, shove a 2x4 wedge in to hold it. Remove the rigging from the float, then swing the crane back to land for the next float. At this point, there will be a 120' x 10' barge tied to the Underdog boat.*
3.4	*Pick 4th 40' float to water*	*Construction*	*Inspect the pick point and attach the rigging from the manlift. Secure two tag lines to the float, one at each corner on the same side. Use the rotator to lift the float onto the truck, then remove the rigging from the rotator hook using the manlift. With a spotter, back the truck to the crane. Move the manlift to the crane and attach the rigging to the crane hook. Lower the float into the water beside Manny P. Use the yellow boat (Manny P) to align this 40' float in the center of the three floats to make a T. When floats are aligned with the use of the Manny P and aluminum boat, remove the 2x4 wedges with the use of sledgehammers and hammer the locks into position.*
3.5	*Pick and set both spud wells on port and starboard side of 120' x 10' barge*	*Construction*	*Hook up rigging to the picking points on the spud well. Where needed, pick up on the lock on the float and dog off with a 2x4 wedge. Spud well will lean to one side, top row of locks will want to engage first. Use aluminum safety boat to push on spud well and align with bottom locks. If needed, use the come along to pull the floats together and align. Set locks by removing 2x4 wedges and hit with sledgehammer to engage locks. Repeat this for the port/starboard side of barge.*
3.6	*Pick and set spuds in spud pockets*	*Construction*	*Set rigging to trip vertically and then set in spud pocket. Double wrap choke the spud, do not use the picking eye because there is no way to take the rigging off from the spud. Set spud in pocket and let weight of spud sink down. Pick up bin block with the crane and hit top of spud down to drive it into proper depth. Repeat with second spud on port/starboard side of 120' x 10' barge.*
3.7	*Pick and set both spud wells on port and starboard side of lone 40' float on the T*	*Construction*	*Hook up rigging to the picking points on the spud well. Where needed, pick up on the lock on the float and dog off with a 2x4 wedge. Spud well will lean to one side, top row of locks will want to engage first. Use aluminum safety boat to push on spud well and align with bottom locks. If needed, use the come along to pull the floats together and align. Set locks by removing 2x4 wedges and hit with sledgehammer to engage locks. Repeat this for the port/starboard side of barge.*

3.8	*Pick and set spuds in spud pockets on lone 40' spuds.*	*Construction*	*Set rigging to trip vertically and then set in spud pocket. Double wrap choke the spud, do not use the picking eye because there is no way to take the rigging off from the spud. Set spud in pocket and let weight of spud sink down. Pick up bin block with the crane and hit top of spud down to drive it into proper depth. Repeat with second spud on port/starboard side of 120'x 10' barge.*
3.9	*Fly tires to barge, sectional cleats and misc. deck equipment and install*	*Construction*	*Finish outfitting the barge with tire fenders and misc. deck equipment such as toolboxes, life rings, barge safety ladders, fire extinguishers, first aid kits, extra barge lines, etc. Use rope and tie around tire and into the hole in the float. Tie off with double knot. Basket sectional cleats and fly to barge. Install evenly across all four sides of the barge where bow, stern, and spring lines will be needed to safely tie up the barge. At this time, remove barge lines from holes in floats to dock and tie off barge with barge lines to cleats on dock.*
4.0	***Securing Barge for Future Tide Cycles***	***Hold Point***	***Work Description***
4.1	*Set spuds and tie up barge*	*Construction*	*Fill spuds with river water to weigh them down once set. To finalize the spuds hit the top of the spuds with bin block to set into final location.*
4.2	*Boat tie up*	*Construction*	*Tie up aluminum safety boat and Underdog push boat on barge. Ensure bow and stern line. Place minimum of one spring line on each boat. Let out enough slack on lines to account for tide cycle.*
4.3	*Warning lights*	*Construction*	*Prior to end of day, set a white light on the outboard most edge of the barge on the upriver and down river side of the barge to warn boaters of tied up barge.*
4.4	*Barge lines*	*Construction*	*Secure barge back to land with barge lines. Set two bin blocks on land at port and starboard side of barge and wrap barge lines through the picking eyes of the blocks for anchors.*
5.0	***Setting Access to Wharf***	***Hold Point***	***Work Description***
5.1	*Setting access*	*Construction*	*Set access to wharf with brow. Utilize 4 pick points on brow and hoist with crane. Set brow so polyurethane wheels land on float deck and other end, is on the slope of the existing boat ramp.*

4.0 PRODUCTION & QUANTITY CLAIMING (INTERNAL USE ONLY)

Attachment C.1 Production Information

Attachment C.2 Quantity Claiming Plan

5.0 BILL OF MATERIALS

Material Description	Quantity	Unit of Measure	Supplier	Lead Time / Delivery Time	Note
2x4 lumber wedges	*24*	*EA*	*TMC*	*Immediate*	
¾" or 1" 3 strand poly line	*1200*	*LF*	*TMC Shop*	*Immediate*	
¾" tag lines 25' and 50' lengths	*2*	*EA*	*TMC*	*Immediate*	
Sectional barge cleats	*12*	*EA*	*TMC Shop*	*Immediate*	
Commercial truck tires	*18*	*EA*	*TMC Shop*	*Immediate*	
30" Life ring	*1*	*EA*	*TMC*	*Immediate*	*Air horn, air horn holder, life ring holder, life ring and throw bag will all be affixed to wooden stand to be placed on barge*
Throw bag w/ 90' line	*1*	*EA*	*TMC*	*Immediate*	*Air horn, air horn holder, life ring holder, life ring and throw bag will all be affixed to wooden stand to be placed on barge*
Life ring holder	*1*	*EA*	*TMC*	*Immediate*	*Air horn, air horn holder, life ring holder, life ring and throw bag will all be affixed to wooden stand to be placed on barge*
Air horn	*1*	*EA*	*TMC*	*Immediate*	*Air horn, air horn holder, life ring holder, life ring and throw bag will all be affixed to wooden stand to be placed on barge*
Air horn holder	*1*	*EA*	*TMC*	*Immediate*	*Air horn, air horn holder, life ring holder, life ring and throw bag will all be affixed to wooden stand to be placed on barge*
20lb fire extinguisher	*1*	*EA*	*TMC*	*Immediate*	*Competent person monthly inspection and annual 3rd party inspection*
Red, plastic fire extinguisher holder	*1*	*EA*	*TMC*	*Immediate*	

Spill kit	*1*	*EA*	*TMC*	*Immediate*	
Steel barge access ladder	*1*	*EA*	*TMC*	*Immediate*	
Brow	*1*	*EA*	*TMC*	*Immediate*	
Rigging Description	***Quantity***	***Unit of Measure***	***Supplier***	***Lead Time/ Delivery Time***	***Note***
7/8" Crosby Screw Pin Shackles 6.5t WLL – G209	*2*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*
1" Crosby Screw Pin Shackles 8.5t WLL – G209	*4*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*
1-1/4" Crosby Screw Pin Shackles 12t WLL – G209	*4*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*
1-3/4" Crosby Screw Pin Shackle 25t WLL – G209A	*1*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*
10' Endless Poly round sling – Min. 40k# WLL/EA (color varies, WLL important)	*1*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*
20' Endless Poly Round Sling – Min. 20k# WLL/EA (Color varies, WLL important)	*4*	*EA*	*TMC*	*Immediate*	*Lifting equipment must be domestic/Made in USA all components*

Material information included in Attachment D.2? (Product Data Sheets)	☐ Yes	☒ No

6.0 QUALITY

Document	Document	Revision

7.0 ENVIRONMENTAL

The following Environmental Plans and Checklist are pertinent to the work:

Plan / Checklist Title SDS / MSDS	Revision No.	Description
N/A	*N/A*	*N/A*

8.0 PERMIT REQUIREMENTS / THIRD PARTY NOTIFICATION

The following additional permits or stakeholder approval(s) are required for this work:

Permit / Notification Requirement	Issuing Authority	Status / Notes
N/A	*N/A*	*N/A*

9.0 KEY PROJECT CONTACTS

Company	Name	Position	Phone	Email
TMC	Andrew Currier	Operations Manager	508-726-3109	acurrier@middlesexco.com
TMC	Brent Mawdsley	Senior Project Manager	617-304-5303	bmawdsley@middlesexco.com
TMC	Zach Burkhart	Assistant Project Manager	617-352-8075	zjburkhart@middlesexco.com
TMC	Henry Mulvey	General Superintendent	978-429-1388	hmulvey@middlesexco.com
TMC	Kyle Bushnell	Asst. Superintendent	978-870-0423	kbushnell@middlesexco.com
TMC	Alex Beaulieu	Field Engineer	978-793-6720	abeaulieu@middlesexco.com
TMC	Stephen Spencer	Safety Manager	978-449-1324	sspencer@middlesexco.com
TMC	Owen MacKinnon	Quality Manager	978-742-4496	omackinnon@middlesexco.com

MANAGEMENT APPROVAL

Position	Date	Name	Signature
Project Manager		Brent Mawdsley	
Assistant Project Manager		Zach Burkhart	
General Superintendent		Henry Mulvey	
Asst. Superintendent		Kyle Bushnell	
Field Engineer		Alex Beaulieu	
Safety Manager		Stephen Spencer	
Quality Control Manager		Owen MacKinnon	

10.0 CREW REVIEW

Name	Date	Signature	Name	Date	Signature

11.0 ATTACHMENT A.1 JOB HAZARD ANALYSIS (JHA)

12.0 ATTACHMENT B.1 ROUTINE AND CRITICAL LIFT PLAN FORM

13.0 ATTACHMENT D.1 RIGGER AND SIGNALMAN CERTIFICATION

14.0 ATTACHMENT E.1 CRANE OPERATOR CERTIFICATION

15.0 ATTACHMENTS H.1 CRANE AND RIGGING CUT SHEETS

16.0 ATTACHMENT I.1 SAFETY SKIFF DESCRIPTION AND DAILY CHECKLIST

17.0 ATTACHMENT J.1 WHARF ASSEMBLY DRAWING

18.0 ATTACHMENT K.1 SECTIONAL FLOAT FIELD ASSEMBLY GUIDE

19.0 ATTACHMENT L.1 EQUIPMENT CUT SHEETS

SAFETY ITEMS

Job Hazard Analysis (JHA)

Work Task: Sectional Barge Assembly		
Project Name: 520 Basillere Bridge Replacement	Creation Date: 10/9/2026	Revision Date:
Prepared by: Kyle Bushnell	HSE Reviewed/Approved by:	PM Review/Approved by: Enter Name

****When completing JHA, please pay attention to OSHA's Focus Four: Fall Protection, Electrical, Struck-By, and Caught In Between****

Sequence of basic work tasks/steps	Identify potential Hazards	Recommended action and/or procedure
1. Pre-job meeting and review of work plan.	• Employees unfamiliar with work sequence, hazards, or responsibilities. • Inadequate communication. • Changes to work plan or site conditions.	• All visitors and workers shall be in proper attire and shall have the required PPE during their time on the site: 1. Studson Safety Helmet (with chin strapped buckled at all times) (N/A to subs) 2. Clothing – long pants 3. Safety glasses (clear or tinted. Clear is to be worn at dawn or dusk, when visibility is limited due to lack of daylight). If wearing reading glasses, side shields to be affixed to glasses 4. Boots – safety toe work shoes 5. High visibility vest, with company logo and if applicable, personal flotation device (zipped and always clipped when working on or near water) 6. Appropriate task specific gloves. When handling wire rope, especially spud cable, leathers are to be worn. • Conduct a Daily Huddle meeting with all personnel

		involved in work. If workers are delayed in arriving, conduct follow up Daily Huddle with workers at time of arrival. • Review the JHA, lift plan(s), detailed work plan, truck routing with entire crew prior to work and have crew sign off acknowledging all items. • Report any near misses or safety concerns immediately to the SSHO and superintendent on duty.
2. Inspect work area and water conditions. Prior to water work.	• Falls into water/drowning. • Waves, current, tides, and vessel traffic. • Submerged hazards. • Wind, lightning, poor visibility, and changing weather conditions.	• Inspect the work area and evaluate water, weather, vessel traffic, access/egress, and visibility. • Monitor conditions throughout the operation and suspend work when conditions exceed established limits, such as excessive wind, strong current, excessive vessel traffic effecting work. • At all times when working on and around the water, employees shall be wearing company issued PFD with water activated rescue beacon and emergency whistle. Even when working on land, with the possibility of working on the water, a life vest shall be worn. • Prior to the start of shift, a daily visual inspection report must be completed on the rescue boat. Safety boat checklist must be filled out, and all safety equipment must be verified prior to starting work. If safety boat does not start, all marine activity shall be halted for the day until boat is back in service.

3. Crane setup and inspection in yard.	• Crane overturning or instability. • Unstable ground or inadequate setup/operation. • Crane/equipment failure. • Inadequate crane capacity. • Overhead utilities or structures.	• Crane shall be inspected and set up by qualified personnel. (Only required on erection of crane). • Verify crane configuration, load chart, capacity, boom length, operating radius, ground conditions, and clearances based on days work. Ensure crane operator fills out daily lift plan book with heaviest pick at furthest radius to ensure understanding of all work. • Use mats/cribbing as required to level out crane to proper operating condition. Cribbing shall be reviewed with crane operator and superintendent prior to any hoisting activities to ensure it matches plan drawings. • Maintain required clearance from overhead utilities and structures, such as power lines, telephone poles and underground utilities. Walk swing path and travel path with operator prior to booming up to ensure no obstructions are present. For crane in yard, it is recommended to walk the area every morning and inspect the area for any abnormalities.
4. Determine load weights and lifting requirements.	• Crane or rigging overload. • Dropped load. • Unstable lift. • Unknown center of gravity or improper lifting configuration.	• Rigger and crane operator shall know the weight of every item being lifted. • Verify weights of barge sections, floats, 40-foot spuds, spud wells, winch motors, miscellaneous equipment and ensure deductions in crane such as wire rope weight and rigging are calculated into lifted load. • Verify crane capacity at the actual operating radius and configuration for each pick. • Confirm center of gravity and designated lifting points. Only a certified NCCCO rigger shall supervise all rigging and signaling

		activities. A TM is able to rig and signal under direct supervision of a NCCCO rigger/signaler. • Never exceed rated capacities of picking points on objects or sling and shackle capacities. Base four leg picks off three legs for safety. Ensure sling tensions are calculated and determined.
5. Inspect rigging before use.	• Rigging or lifting-point failure. • Dropped load. • Improper rigging configuration. • Exceeding working load limits.	• Inspect all rigging before each use. Slings, shackles, hooks, lifting points on equipment. • Defects such as bowed shackles, bent pins, rips in jackets of endless slings, illegible tags on rigging, foreign rigging (domestic only), screw pins that don't seat all the way, missing cotter pins on safety shackles, etc. shall be taken out of service immediately and reported to foreman and superintendent. • Verify WLL of rigging is adequate for the planned lift and configuration of the rigging such as vertical, basket or choker hitch. If WLL is not verified and lifted object exceeds WLL of sling and if the load is picked, remove all rigging from service immediately as that rigging has now been "over loaded". • Use designated lifting points and designated rigging hitches only. Do not lift around non designated lifting points as that runs the risk of potential dropped objects.
6. Access floats and connect rigging.	• Falls from height. • Fall into water. • Dropped tools or rigging.	• Use an approved manlift to access the top of the float. • Inspect the manlift before use and document a daily equipment report. • Remain tied off to the designated manlift anchor point while

	• Struck-by hazards. • Pinch points. • Improper rigging. • Manlift instability.	exposed to a fall hazard when hooking up rigging to the top of the float. Utilize single leg or dual leg, leading edge SRL to restrain from falls. • Do not climb on or stand on manlift rails per manufacturer guidelines, to gain access anywhere else. Reposition manlift if needed to gain better access. • Secure tools, via tool tethers to prevent dropped objects. Wrap manlift basket in flame retardant netting to secure tools and hardware that is unable to be tethered. If unable to secure tools via tethering, create a controlled access zone under the manlift basket and surrounding areas, by restricting access via cones and ropes. • Maintain safe clearance from the crane and surrounding structures. Ensure swing of manlift counterweight is free from obstructions and other pieces of equipment. Utilize spotters to help walk manlift into place. • Connect rigging to designated lifting points and keep personnel clear of pinch points and potential fall paths.
7. Establish lifting/exclusion zone.	• Personnel struck by suspended loads. • Unauthorized personnel entering the lift area. • Personnel beneath suspended loads. • Struck-by/caught-between hazards.	• Riggers will clear the path of the intended load. Riggers will swing loads over areas where crew is not working, if unable to do so, crew will stop work and get out of the way of the overhead load. Crane operator will sound the horn with two quick blasts to alert the crew if someone is not paying attention. Crane operator will not sound the horn on every pick. • No personnel shall stand or work beneath a suspended load or within its potential fall/swing path at any time. If seen on site, TM should report to foreman and superintendent immediately.

8. Establish crane communication.	• Miscommunication. • Unexpected crane movement. • Conflicting directions. • Struck-by/caught-between injury.	• Maintain continuous communication between the designated signalperson and crane operator, via hand signals or radios. • Use standard hand signals from a certified signal person only. NCCCO signals shall be given and reviewed with crane operator and signalperson prior to start of shift so everyone is on the same page. • One designated signalperson shall direct all crane movements. Signals shall not be relayed through multiple team members back to the crane operator. Crane operator shall know the only signalperson, so if crane operator sees two people signaling, the crane operator knows the exact person to follow. • Stop immediately if communication is lost, unclear, or conflicting via hand signals or radio communication. • Anyone may give an emergency STOP signal at any time.
9. Lift and position sectional barge section into water.	• Suspended load. • Crane overload. • Load swing or uncontrolled movement. • Dropped load. • Struck-by hazards. • Falls into water. • Pinch/crush hazards.	• Maintain communication between the signalperson and crane operator throughout the lift. • Lift and position sections slowly and smoothly without sudden starts, stops, or side loading. • Use minimum two tag lines to control the load at all times. Ensure length of tag lines are sufficient for the load. Tag lines shall be free of knots and thickness shall be suitable for the weight of the load. • Review weather conditions with crew and operator prior to lifting activities. Determine if wind and or weather will effect the crane and determine the manufacturer restrictions on reduced capacities when dealing with wind load on the boom.

10. Align and connect all sectional barge sections.	• Pinch/crush injury at male/female connection. • Unexpected barge movement. • Hand injuries during pin installation.	• Align the male connection with the corresponding female connection using controlled crane movement. Keep hands and fingers out from between two floats. Utilize pry bars and ropes to keep control of the floats. • Once aligned and stable, remove wooden wedges from holding lock system up, via a sledge hammer or bar, not your hands or fingers. Slam down lock with sledgehammer, if locks do not go down all the way. • Always keep hands clear of pin locks. Never try to pry up the lock with hands at any time. Use a block(s) and a bar to lift the lock if needed.
11. Release rigging and continue assembly.	• Premature release. • Unexpected movement. • Incomplete connection. • Progressive barge instability.	• Do not release crane support until the connection and required locks are verified complete and secured to other floats (if applicable). • Confirm the barge section is stable before removing rigging. • Reassess partially assembled barge stability after each section. Reposition boats and lines as barge gets assembled in water to prevent barge from spinning and drifting with the weather and current. • Ensure no stored energy in cables or slings when removing rigging from load.
12. Lift and install 40-foot spuds.	• Suspended load. • Crane/rigging failure. • Struck-by hazards.	• Stand and lower the spud using controlled crane movements and a designated signalperson. • No personnel shall stand between the spud and spud well or use hands/feet to guide it. Major pinch/crush point between the spud and the spud well. When standing on the spud well,

	• Uncontrolled swing. • Major pinch/crush hazard between spud and spud well. • Falls into water.	utilize the handles on the spud well to guide into position. • Use approved positioning/tag-line methods from a safe location. Do not tie tag line into the sheave box as that will be the bottom most item, tie tag line to rigging or tie clove hitch knot to top of spud. • Stop if the spud binds or moves unexpectedly in the spud well. • Secure the spud before removing rigging.
13. Fly miscellaneous equipment to barge deck and position equipment.	• Suspended loads. • Crane/rigging failure. • Dropped objects. • Struck-by hazards. • Load swing. • Pinch/crush injuries. • Falls into water. • Barge instability, excessive list, or trim. • Equipment shifting after placement.	• Use tag lines when appropriate and safe. • Keep personnel out of the fall/swing path and away from pinch points. • Place equipment only in locations and sequence identified by the approved stability analysis. Verify location of equipment with foreman and superintendent for locations. • Monitor barge list, trim, and freeboard during loading. Utilize stop work authority if anything looks out of the ordinary. • Keep hands and feet clear while landing equipment. Do not reach up and put hands on the load until it is shoulder height. If TM reaches up for load, TM will be underneath the load. Control the load with taglines. • Secure equipment to deck before disconnecting rigging, if the equipment is able to roll, such as trailer mounted equipment or round steel that has potential to roll off barge. • Do not add, remove, or relocate equipment from the analyzed configuration without authorization.

		• Stop work if stability or positioning becomes unsafe.
14. Prepare for welding/hot work on barge deck.	• Fire or explosion. • Combustible materials. • Sparks and hot slag. • Welding fumes. • Burns. • Electrical shock. • Combustible gases/vapors in void spaces.	• Complete the required hot-work permit (if required by city/town/agency). • Remove or protect combustible materials and inspect areas above, below, and adjacent to the work. If unable to remove combustible material from barge, move combustible material minimum of 35’ away from hot work activity and cover with fire blanket to prevent sparks from going on objects. • Provide minimum of two 20LB fire extinguishers and one 10LB fire extinguisher and dedicated fire watch as required (if necessary). • Inspect welding equipment, leads, stingers, hoses, torches and grounding prior to hot work. Tag any defective items out of service. • Provide adequate ventilation and required atmospheric monitoring on void spaces on each float. Utilize copus blower to blow/suck air out of area when doing hot work. • Cover barge lines with welding blankets to avoid inadvertent spark being blown onto lines and catching fire. (If needed, wet down any combustible areas with water prior to performing hot work) • Before hot work on or adjacent to a void space, properly gas-free the affected void of combustible gases/vapors and verify the atmosphere is safe through required testing. • Continue atmospheric monitoring as required and log on Form

		74 and retain in project files. • Stop work if unsafe conditions are detected.
15. Perform welding on barge deck.	• Burns from hot metal, sparks, and slag. • Arc flash/UV exposure and eye injury. • Welding fumes. • Fire. • Electrical shock. • Slips/trips from welding leads and equipment. • Hot surfaces. • Ergonomic strain from kneeling, bending, reaching, twisting, lifting, or overhead work.	• Wear required welding PPE, including welding hood, proper lens, FR clothing, gloves, and eye protection. • Use welding screens/barriers and ventilation as required when working around others on the barge. • Keep electrical equipment and connections protected from water. Utilize electrical tape on electrical cord connections to keep free from moisture. • Maintain good housekeeping and route welding leads and torch hoses to prevent trips. Utilize cones and cord covers to protect from trip hazards in high traffic area. • When grinding paint off the deck of the barge, wear N95 mask to avoid inhalation of paint dust. (If applicable). If needed, wear project supplied PAPR when performing this work for a prolonged period. • Use proper work positioning, supports, platforms, and mechanical assistance to minimize awkward postures and manual handling. Use fire retardant kneeling pads and or knee pads when kneeling to grind and weld on the steel deck. Do not utilize a ladder on a single float. Only utilize a ladder when barge is fully assembled. Ladders shall be always supported by another team member. When applicable, ladder should be tied off to object to prevent teetering. • Rotate positions and take appropriate breaks to reduce ergonomic strain (if needed and welding for extended periods

		of time).
16. Post-weld inspection and hot-work closeout.	• Fire or smoldering materials. • Hot metal. • Incomplete welds. • Residual atmospheric hazards.	• Complete the required fire-watch period (if required by city/town/agency). • Inspect the work area, adjacent areas, and areas below the weld for sparks, slag, hot spots, or smoldering materials. • Verify welds are complete and acceptable per memos and operating standards and quality control standards. • If needed, wet down any combustible areas that were exposed to hot work to avoid smoldering overnight. • Close out the hot work permit only after the area is determined safe (if required by city/town/agency)
17. Final inspection.	• Missing pins/retainers. • Incomplete connections. • Improperly seated spuds. • Improperly positioned or unsecured equipment. • Structural damage. • Unstable assembly.	• Competent person shall inspect the completed assembly that it matches stability analysis memo. • Verify all connections, pins/retainers, and spuds are complete and properly secured. • Verify equipment locations and securing comply with the approved plans and stability analysis.
18. General work over water.	• Drowning. • Cold-water exposure.	• Wear an appropriate PFD when exposed to a fall-into-water hazard. All PFDs must be zipped and clipped at all times while working on and around water. All PFDs must be equipped with water activated rescue beacon and emergency whistle.

	• Slips, trips, and falls. • Inability to self-rescue. • Poor housekeeping.	• Maintain secure footing and good housekeeping on barge surfaces. Minimal square footage on barge deck, important for all team members to always know surroundings. • Keep rigging, welding leads, tools, and debris organized and run cords neatly to avoid tripping hazards. Immediately when done with task involving leads, cords, hoses, TM shall clean up area and coil up everything. • Do not jump between barges at any time. Use a bed ladder to cross the barges. • Maintain appropriate water-rescue equipment and review the site-specific man-overboard/emergency rescue procedure before performing work on the water each day.
19. Emergency / stop-work conditions.	• Continued work during unsafe conditions. • Delayed emergency response. • Uncontrolled crane, barge, or hot-work hazards.	• All personnel have stop-work authority at any time during any point of the work. • Stop work for unsafe crane conditions, defective rigging, loss of communication, uncontrolled loads, personnel entering exclusion zones, unsafe weather/water conditions, unstable barge conditions, unsafe atmospheric readings, fire hazards, or any other unsafe condition. • Follow site-specific emergency, man-overboard, and hot-work emergency procedures.

(To add additional lines, place your cursor within the table above and select the plus sign (+) at the end of the table)

Weekly Safety Meeting

Project: _____ Date: _____

☐ Weekly Topic: _____ ☐ Job Hazard Analysis

☐ TMC Communicator ☐ Job Related Matters

☐ Work Schedule/Safety Concerns ☐ Intro New Employees

☐ Additional Comments/Other Topics Discussed: _____

Days Without LTA: _____ Days W/O Incident: _____

Previous Best: _____ Previous Best: _____

TMC Employee

	Print Name	Signature
1		
2		
3		
4		
5		
6		
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Weekly Safety Meeting

Project: _____ Date: _____

Weekly Topic: _____

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33		
34		
35		
36		
37		
38		

Routine and Critical Lift Plan Form

NOTE: 1. Complete Routine Lift Plan for Single Crane Pick (Up to 75% of Crane Capacity) 2. Criteria for Critical Lift Plan on Page 2

PROJECT NAME: Basillere Bridge Replacement **LOCATION:** Haverhill, MA

JOB NUMBER: 520 **DATE:**

Anticipated Lift Date:

Lift Description

2. CRANE

Manufacturer:
Model:
Serial No.:
Crane Description:
Rated Capacity:
Area of Operation:
Crane Yearly Inspection Date:

3. LOAD DATA

1. Object to be lifted:
2. Dimensions (L/W/H):
3. Weight of object:
4. From Location to Location:

Additional Notes:

4. CRANE CONFIGURATION

MAIN BOOM
No. Sections:
Boom Length:
Boom Type:
Hoisting From Main Boom: ☐ Yes ☐ No
No. Parts of line required
Main Boom Line Size (Dia)
Capacity of Line @ Parts:
Max. Load Radius
Main Boom Max. Capacity of Lift Point
Angle of Main Boom at Pick (Deg)
Angle of Main Boom at Set (Deg)

5. LIFT WEIGHT DATA AND CALCULATIONS

Weight of Load to be Lifted
Max. Load Line Weight
Load Block Weight
Rigging - Lifting Beams QTY:
Rigging - Slings QTY:
Type: Capacity:
Rigging - Shackles QTY:
Type: Capacity:
Other:
Down Haul Weight:
Other:
Weight of Crane Components
Total Gross weight: *Load, Rigging and Components*

PERCENT CAPACITY OF LOAD

6. LIFT CHECKLIST

Has pre-lift meeting been held with Signal Person/Riggers/Operator/Site Supervisor/HSE		☐ Yes	☐ No
Operator assigned for the Lift (Name)	Print:		
Operator Certification Card (MUST BE CURRENT)		☐ Yes	☐ No
Lift director designated (Name)	Print:		
Signal person designated (Name)	Print:		
Rigger designated (Name)	Print:		
Communication Established: Hand signals, Radio, Both or Other (Please insert on line)			
Has JHA been completed?		☐ Yes	☐ No
Has swing clearance been checked?		☐ Yes	☐ No
Has area been checked for safe entry and exit?		☐ Yes	☐ No
Number of Tag lines to be used: ☐			
Pre-Lift Huddle Conducted		☐ Yes	☐ No

PRE-LIFT WORKSHEET

Potential Hazards to be Addressed:

Weather:	☐ Yes ☐ No	If yes, please explain:	
Electricity:	☐ Yes ☐ No	If yes, please explain:	
Surrounding Obstacles:	☐ Yes ☐ No	If yes, please explain:	
Ground Compact:	☐ Yes ☐ No	If yes, please explain:	
Crane mats:	☐ Yes ☐ No		

What is the Wind Speed?: ☐ 20 MPH - consider shutting down lift ☐ 25 MPH - cancel lift

Review & Approval:

	Print	Signature	Date
Operator: Required signature			
Superintendent (or higher): Required signature			
Project Engineer: Required signature 75% and above			
Site Safety Manager: Required signature 75% and above			
Project Manager: Required signature 75% and above			

Critical Lifts Criteria:

1. Any lift in which the combination of weight and lift radius will load the crane above 75% of its rated capacity
2. Any lift requiring the use of more than one crane
3. Any lift within ten (10) feet of electric power lines
4. Any lift with significant risk to Team Members, the public, sensitive/restricted areas and environmental conditions.
5. Owner requirements.
6. Nonstandard rigging requirements.
7. Critical lifts over 85% of the crane's rated capacity may require a signed and sealed stamped drawing by a 3rd party.
8. Critical Lifts over 85% of the crane's rated capacity must be submitted to Construction Operations Manager and HSE for review.

Additional Notes and Comments:

RIGGER AND SIGNALMAN CERTIFICATION

Current Date/Time: 10/9/2026, 1:20:40 PM ET



THOMAS GYNAN

CCO ID: 555384852

CCO CERTIFIED

Certifications Held

Rigger Level I (RIG-I)

ISSUE DATE 5/31/2024

EXP DATE 5/31/2029

THOMAS GYNAN
CCO ID: 555384852

Rigger Level II (RIG-II)

ISSUE DATE 5/31/2024

EXP DATE 5/31/2029

THOMAS GYNAN
CCO ID: 555384852

Signalperson (SGP)

ISSUE DATE 5/31/2024

EXP DATE 5/31/2029

THOMAS GYNAN
CCO ID: 555384852

Note: Issue Date represents the initial date the certification was achieved.

CRANE OPERATOR CERTIFICAITON

INSERT CRANE OPERATOR MEDICAL CARD HERE

CRANE AND RIGGING CUT SHEETS

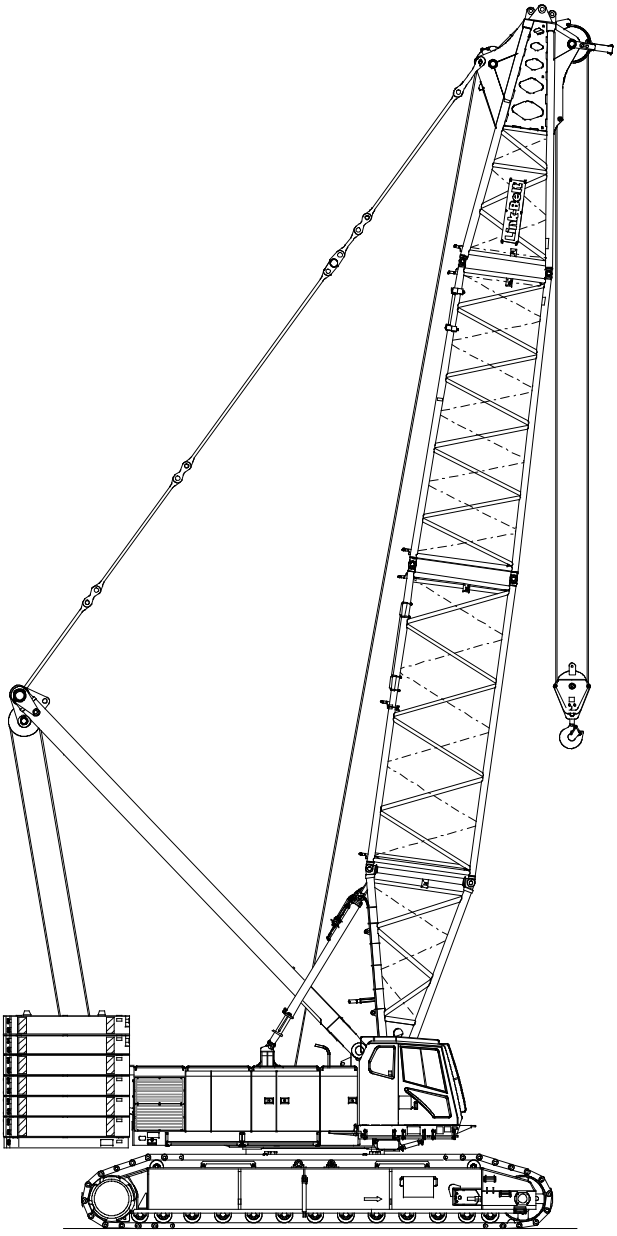
Technical Data

Specifications & Capacities

348 HYLAB 5

Crawler Crane

300 Ton *(272.16 metric ton)*



CAUTION: This material is supplied for reference use only. Operator must refer to in – cab Crane Rating Manual and Operator's Manual to determine allowable crane lifting capacities and assembly and operating procedures.

Load Chart – Extended Gauge

Heavy Duty Boom With Heavy Duty Top – Extended Gauge (22') – 360° Rotation
ABC + A [221,300 + 75,000 lb *(100.3 + 34.0mt)*] Ctwt
[All capacities are listed in kips *(mt)*]

Load Radius ft *(m)*	Boom Length ft *(m)*													Load Radius ft *(m)*
	70 *(21.34)*	90 *(27.43)*	110 *(33.53)*	130 *(39.62)*	150 *(45.72)*	170 *(51.82)*	190 *(57.91)*	210 *(64.01)*	230 *(70.10)*	250 *(76.20)*	270 *(82.30)*	290 *(88.39)*	300 *(91.44)*	
16 *(4.88)*	600.0 *(272.7)*													16 *(4.88)*
17 *(5.18)*	569.0 *(258.6)*													17 *(5.18)*
18 *(5.49)*	539.8 *(245.4)*													18 *(5.49)*
19 *(5.79)*	513.5 *(233.4)*	510.1 *(231.9)*												19 *(5.79)*
20 *(6.10)*	489.4 *(222.5)*	486.4 *(221.1)*												20 *(6.10)*
30 *(9.14)*	331.2 *(150.5)*	329.8 *(149.9)*	327.8 *(149.0)*	325.5 *(148.0)*	322.9 *(146.8)*	308.7 *(140.3)*								30 *(9.14)*
40 *(12.19)*	235.1 *(106.9)*	235.6 *(107.1)*	235.5 *(107.0)*	235.2 *(106.9)*	234.8 *(106.7)*	234.4 *(106.5)*	233.9 *(106.3)*	225.3 *(102.4)*	186.9 *(85.0)*	153.4 *(69.7)*	128.5 *(58.4)*			40 *(12.19)*
50 *(15.24)*	170.9 *(77.7)*	171.2 *(77.8)*	171.0 *(77.7)*	170.6 *(77.5)*	170.0 *(77.3)*	169.4 *(77.0)*	168.7 *(76.7)*	168.0 *(76.4)*	167.2 *(76.0)*	151.5 *(68.9)*	126.9 *(57.7)*	105.3 *(47.9)*	97.5 *(44.3)*	50 *(15.24)*
60 *(18.29)*	132.9 *(60.4)*	133.3 *(60.6)*	133.0 *(60.5)*	132.4 *(60.2)*	131.8 *(59.9)*	131.0 *(59.5)*	130.2 *(59.2)*	129.4 *(58.8)*	128.6 *(58.5)*	127.8 *(58.1)*	118.2 *(53.7)*	100.0 *(45.5)*	92.6 *(42.1)*	60 *(18.29)*
70 *(21.34)*	107.5 *(48.9)*	108.1 *(49.1)*	107.8 *(49.0)*	107.2 *(48.7)*	106.5 *(48.4)*	105.7 *(48.0)*	104.9 *(47.7)*	104.0 *(47.3)*	103.1 *(46.9)*	102.1 *(46.4)*	101.2 *(46.0)*	92.5 *(42.0)*	84.5 *(38.4)*	70 *(21.34)*
80 *(24.38)*		90.1 *(41.0)*	89.9 *(40.9)*	89.4 *(40.6)*	88.6 *(40.3)*	87.8 *(39.9)*	86.9 *(39.5)*	85.9 *(39.0)*	85.0 *(38.6)*	83.9 *(38.1)*	82.9 *(37.7)*	82.0 *(37.3)*	75.5 *(34.3)*	80 *(24.38)*
90 *(27.43)*		76.5 *(34.8)*	76.5 *(34.8)*	76.0 *(34.5)*	75.2 *(34.2)*	74.3 *(33.8)*	73.4 *(33.4)*	72.4 *(32.9)*	71.5 *(32.5)*	70.3 *(32.0)*	69.3 *(31.5)*	68.3 *(31.0)*	67.8 *(30.8)*	90 *(27.43)*
100 *(30.48)*			66.0 *(30.0)*	65.6 *(29.8)*	64.8 *(29.5)*	63.9 *(29.0)*	63.0 *(28.6)*	62.0 *(28.2)*	61.0 *(27.7)*	59.8 *(27.2)*	58.7 *(26.7)*	57.7 *(26.2)*	57.2 *(26.0)*	100 *(30.48)*
110 *(33.53)*			57.5 *(26.1)*	57.2 *(26.0)*	56.5 *(25.7)*	55.6 *(25.3)*	54.7 *(24.9)*	53.7 *(24.4)*	52.6 *(23.9)*	51.3 *(23.3)*	50.3 *(22.9)*	49.3 *(22.4)*	48.7 *(22.1)*	110 *(33.53)*
120 *(36.58)*				50.3 *(22.9)*	49.7 *(22.6)*	48.8 *(22.2)*	47.9 *(21.8)*	46.8 *(21.3)*	45.8 *(20.8)*	44.5 *(20.2)*	43.4 *(19.7)*	42.4 *(19.3)*	41.8 *(19.0)*	120 *(36.58)*
130 *(39.62)*				44.5 *(20.2)*	44.0 *(20.0)*	43.1 *(19.6)*	42.2 *(19.2)*	41.2 *(18.7)*	40.1 *(18.2)*	38.8 *(17.6)*	37.7 *(17.1)*	36.6 *(16.6)*	36.1 *(16.4)*	130 *(39.62)*
140 *(42.67)*					39.1 *(17.8)*	38.3 *(17.4)*	37.4 *(17.0)*	36.4 *(16.5)*	35.3 *(16.0)*	33.9 *(15.4)*	32.8 *(14.9)*	31.8 *(14.5)*	31.2 *(14.2)*	140 *(42.67)*
150 *(45.72)*					34.8 *(15.8)*	34.1 *(15.5)*	33.2 *(15.1)*	32.2 *(14.6)*	31.2 *(14.2)*	29.8 *(13.5)*	28.7 *(13.0)*	27.6 *(12.5)*	27.0 *(12.3)*	150 *(45.72)*
160 *(48.77)*						30.5 *(13.9)*	29.6 *(13.5)*	28.6 *(13.0)*	27.6 *(12.5)*	26.2 *(11.9)*	25.1 *(11.4)*	24.0 *(10.9)*	23.4 *(10.6)*	160 *(48.77)*
170 *(51.82)*						27.2 *(12.4)*	26.5 *(12.0)*	25.5 *(11.6)*	24.4 *(11.1)*	23.0 *(10.5)*	21.9 *(10.0)*	20.8 *(9.5)*	20.3 *(9.2)*	170 *(51.82)*
180 *(54.86)*							23.6 *(10.7)*	22.7 *(10.3)*	21.7 *(9.9)*	20.2 *(9.2)*	19.1 *(8.7)*	18.0 *(8.2)*	17.5 *(8.0)*	180 *(54.86)*
190 *(57.91)*							21.0 *(9.5)*	20.2 *(9.2)*	19.2 *(8.7)*	17.7 *(8.0)*	16.7 *(7.6)*	15.6 *(7.1)*	15.0 *(6.8)*	190 *(57.91)*
200 *(60.96)*								17.9 *(8.1)*	16.9 *(7.7)*	15.5 *(7.0)*	14.4 *(6.5)*	13.3 *(6.0)*	12.8 *(5.8)*	200 *(60.96)*
220 *(67.06)*									13.0 *(5.9)*	11.6 *(5.3)*	10.6 *(4.8)*	9.5 *(4.3)*	8.9 *(4.0)*	220 *(67.06)*
240 *(73.15)*										8.4 *(3.8)*	7.4 *(3.4)*	6.3 *(2.9)*	5.8 *(2.6)*	240 *(73.15)*
260 *(79.25)*											4.6 *(2.1)*	3.6 *(1.6)*	3.1 *(1.4)*	260 *(79.25)*
270 *(82.30)*											4.6 *(2.1)*	3.6 *(1.6)*		270 *(82.30)*

This material is supplied for reference use only. Operator must refer to in–cab Crane Rating Manual and Operator's Manual to determine allowable crane lifting capacities and assembly and operating procedures.

TUFLEX® ENDLESS ROUNDSLINGS

The Most Versatile *Tuflex* Roundsling

Features and Benefits

Maintains all the basic *Tuflex* features plus...

Promotes Safety

- Load stability and balance can be achieved by spreading sling legs.
- EN360 and larger *Tuflex* roundslings feature *Tufhide*™ wear-resistant nylon jacket for extra sling life.

Saves Money

- Wear points can be shifted to extend sling life.
- The most flexible style of sling.
- Individual slings can be attached together using appropriate hardware.

FOR BOTH 20' AND 40' FLOATS



Tuflex Endless Roundslings

Part Number	Color	Rated Capacity* (lbs.) Vertical	Choker	Basket @ 90°	Basket @ 45°	Min. Length (ft.)	Approximate Measurements Weight (lbs./ft.)	Body Dia. Relaxed (in.)	Contact Width (in.)	Min. Hardware Dia.** (in.)
EN30	Purple	2,600	2,100	5,200	3,600	1.5	0.20	0.63	1.00	0.44
EN60	Green	5,300	4,200	10,600	7,400	1.5	0.30	0.88	1.38	0.63
EN90	Yellow	8,400	6,700	16,800	11,800	1.5	0.52	1.13	1.75	0.75
EN120	Tan	10,600	8,500	21,200	14,000	2.0	0.60	1.13	1.88	0.88
EN150	Red	13,200	10,600	26,400	18,000	2.0	0.76	1.38	2.00	1.00
EN180	White	16,800	13,400	33,600	23,000	3.0	0.87	1.38	2.13	1.13
EN240	Blue	21,200	17,000	42,400	29,000	3.0	1.10	1.75	2.63	1.19
EN280	Orange	25,000	20,000	50,000	35,000	3.0	1.25	1.87	3.00	1.25
EN360	Gray	31,000	24,800	62,000	43,000	3.0	1.70	2.25	3.25	1.50
EN460	Orange	40,000	32,000	80,000	56,000	3.0	2.30	2.50	3.75	1.62
EN600	Brown	53,000	42,400	106,000	74,000	8.0	2.90	2.75	4.00	2.00
EN800	Olive	66,000	52,800	132,000	93,000	8.0	3.40	3.13	4.63	2.13
EN900	Orange	77,000	61,600	154,000	108,000	8.0	3.90	3.42	5.00	2.25
EN1000	Black	90,000	72,000	180,000	127,000	8.0	4.40	3.63	5.25	2.50
EN1100	Orange	100,000	80,000	200,000	140,000	8.0	4.80	4.10	5.50	2.62

** This is the minimum recommended diameter for the connection hardware to be used for a vertical hitch.

* **WARNING** Do not exceed rated capacities. Sling tension increases as the angle from horizontal decreases. Slings should not be used at angles of less than 30°. Refer to the Effect of Angle chart in the General Information section of this catalog. **Always protect synthetic slings from being cut by corners and edges. See the Sling Protection section in this catalog.**

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Saves Money

- Wear points can be shifted to extend sling life.
- The most flexible style of sling.
- Individual slings can be attached together using appropriate hardware.



FOR 40' SPUDS, SPUDWELLS AND WINCH BRACKETS

Tuflex Endless Roundslings

Part Number	Color	Rated Capacity* (lbs.) Vertical	Choker	Basket @ 90°	Basket @ 45°	Min. Length (ft.)	Approximate Measurements Weight (lbs./ft.)	Body Dia. Relaxed (in.)	Contact Width (in.)	Min. Hardware Dia.** (in.)
EN30	Purple	2,600	2,100	5,200	3,600	1.5	0.20	0.63	1.00	0.44
EN60	Green	5,300	4,200	10,600	7,400	1.5	0.30	0.88	1.38	0.63
EN90	Yellow	8,400	6,700	16,800	11,800	1.5	0.52	1.13	1.75	0.75
EN120	Tan	10,600	8,500	21,200	14,000	2.0	0.60	1.13	1.88	0.88
EN150	Red	13,200	10,600	26,400	18,000	2.0	0.76	1.38	2.00	1.00
EN180	White	16,800	13,400	33,600	23,000	3.0	0.87	1.38	2.13	1.13
EN240	Blue	21,200	17,000	42,400	29,000	3.0	1.10	1.75	2.63	1.19
EN280	Orange	25,000	20,000	50,000	35,000	3.0	1.25	1.87	3.00	1.25
EN360	Gray	31,000	24,800	62,000	43,000	3.0	1.70	2.25	3.25	1.50
EN460	Orange	40,000	32,000	80,000	56,000	3.0	2.30	2.50	3.75	1.62
EN600	Brown	53,000	42,400	106,000	74,000	8.0	2.90	2.75	4.00	2.00
EN800	Olive	66,000	52,800	132,000	93,000	8.0	3.40	3.13	4.63	2.13
EN900	Orange	77,000	61,600	154,000	108,000	8.0	3.90	3.42	5.00	2.25
EN1000	Black	90,000	72,000	180,000	127,000	8.0	4.40	3.63	5.25	2.50
EN1100	Orange	100,000	80,000	200,000	140,000	8.0	4.80	4.10	5.50	2.62

** This is the minimum recommended diameter for the connection hardware to be used for a vertical hitch.

* **WARNING** Do not exceed rated capacities. Sling tension increases as the angle from horizontal decreases. Slings should not be used at angles of less than 30°. Refer to the Effect of Angle chart in the General Information section of this catalog. **Always protect synthetic slings from being cut by corners and edges. See the Sling Protection section in this catalog.**

Crosby

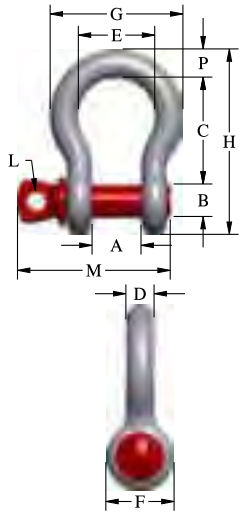
G-209/S-209



S-209



- Meets performance requirements of Grade 6 shackles.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- All 209 and 210 shackles can meet charpy requirements of 42 Joules (31 ft-lb) avg. at -20° C (-4° F) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS Marine Vessel Rules, ABS Mobile Offshore Units, and ABS Guide for the Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Meets all performance and design requirements of ISO 2415.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (kg)	Dimensions (mm)													Replace-ment Pin Stock No.
		G-209	S-209		A	Tol. A ±	B	C	Tol. C ±	D	E	F	G	H	L	M	P	
3/16	1/3	1018357	–	.03	10	1.5	6	22	1.5	5	15	14	25	37	4	29	5	-
1/4	1/2	1018375	1018384	.05	12	1.5	8	29	1.5	6	20	16	32	47	5	36	6	-
5/16	3/4	1018393	1018400	.09	14	1.5	10	31	3.3	8	21	19	37	53	6	43	8	-
3/8	1	1018419	1018428	.14	17	1.5	11	37	3.3	10	26	23	46	64	6	52	10	-
7/16	1 1/2	1018437	1018446	.17	19	1.5	13	43	3.3	11	30	27	52	74	8	60	11	-
1/2	2	1018455	1018464	.33	21	1.5	16	48	3.3	13	33	30	59	83	10	68	13	-
5/8	3 1/4	1018473	1018482	.62	27	1.5	19	60	6.4	16	43	38	74	106	11	85	18	-
3/4	4 3/4	1018491	1018507	1.07	32	1.5	22	71	6.4	19	51	46	89	126	13	101	21	-
7/8	6 1/2	1018516	1018525	1.64	37	1.5	25	84	6.4	22	58	53	103	148	13	114	25	-
1	8 1/2	1018534	1018543	2.28	43	1.5	30	96	6.4	25	68	60	119	167	14	130	27	-
1-1/8	9 1/2	1018552	1018561	3.36	46	1.5	32	108	6.4	30	74	68	131	190	16	152	32	1082599
1-1/4	12	1018570	1018589	4.31	52	1.5	36	119	6.4	33	83	76	146	210	18	165	35	1082615
1-3/8	13 1/2	1018598	1018605	6.14	57	3.3	40	133	6.4	36	92	84	162	233	19	176	38	1082633
1-1/2	17	1018614	1018623	7.80	60	3.3	42	146	6.4	39	99	92	176	254	21	189	41	1082651
1-3/4	25	1018632	1018641	14.02	73	3.3	52	178	6.4	47	127	106	224	313	25	233	57	1082679
2	35	1018650	1018669	20.4	83	3.3	58	197	6.4	53	146	122	258	347	29	263	61	1082697
2-1/2	55	1018678	1018687	38.9	105	6.4	71	267	6.4	69	184	148	324	455	35	335	80	1082713

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

Load Rated · Fatigue Rated · TA TYPE APPROVED · QUIC-CHECK® · Q&T QUENCHED & TEMPERED · MAXTOUGH® · CE

APPLICATION AND WARNING INFORMATION SECTION 17

FOR BOTH 20' AND 40' FLOATS

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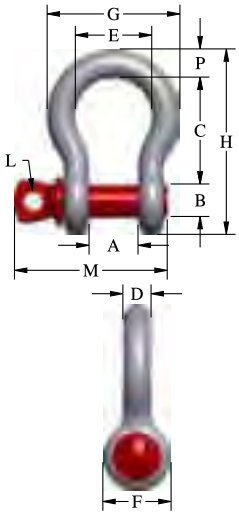
Crosby

G-209/S-209



S-209





- Meets performance requirements of Grade 6 shackles.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
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- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
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- All 209 and 210 shackles can meet charpy requirements of 42 Joules (31 ft-lb) avg. at -20° C (-4° F) upon special request.
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- Type Approval certification in accordance with ABS Marine Vessel Rules, ABS Mobile Offshore Units, and ABS Guide for the Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Meets all performance and design requirements of ISO 2415.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (kg)	Dimensions (mm)													Replace-ment Pin Stock No.
		G-209	S-209		A	Tol. A ±	B	C	Tol. C ±	D	E	F	G	H	L	M	P	
3/16	1/3	1018357	–	.03	10	1.5	6	22	1.5	5	15	14	25	37	4	29	5	-
1/4	1/2	1018375	1018384	.05	12	1.5	8	29	1.5	6	20	16	32	47	5	36	6	-
5/16	3/4	1018393	1018400	.09	14	1.5	10	31	3.3	8	21	19	37	53	6	43	8	-
3/8	1	1018419	1018428	.14	17	1.5	11	37	3.3	10	26	23	46	64	6	52	10	-
7/16	1 1/2	1018437	1018446	.17	19	1.5	13	43	3.3	11	30	27	52	74	8	60	11	-
1/2	2	1018455	1018464	.33	21	1.5	16	48	3.3	13	33	30	59	83	10	68	13	-
5/8	3 1/4	1018473	1018482	.62	27	1.5	19	60	6.4	16	43	38	74	106	11	85	18	-
3/4	4 3/4	1018491	1018507	1.07	32	1.5	22	71	6.4	19	51	46	89	126	13	101	21	-
7/8	6 1/2	1018516	1018525	1.64	37	1.5	25	84	6.4	22	58	53	103	148	13	114	25	-
1	8 1/2	1018534	1018543	2.28	43	1.5	30	96	6.4	25	68	60	119	167	14	130	27	-
1-1/8	9 1/2	1018552	1018561	3.36	46	1.5	32	108	6.4	30	74	68	131	190	16	152	32	1082599
1-1/4	12	1018570	1018589	4.31	52	1.5	36	119	6.4	33	83	76	146	210	18	165	35	1082615
1-3/8	13 1/2	1018598	1018605	6.14	57	3.3	40	133	6.4	36	92	84	162	233	19	176	38	1082633
1-1/2	17	1018614	1018623	7.80	60	3.3	42	146	6.4	39	99	92	176	254	21	189	41	1082651
1-3/4	25	1018632	1018641	14.02	73	3.3	52	178	6.4	47	127	106	224	313	25	233	57	1082679
2	35	1018650	1018669	20.4	83	3.3	58	197	6.4	53	146	122	258	347	29	263	61	1082697
2-1/2	55	1018678	1018687	38.9	105	6.4	71	267	6.4	69	184	148	324	455	35	335	80	1082713

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

Load Rated · Fatigue Rated · TA TYPE APPROVED · QUIC-CHECK® · Q&T QUENCHED & TEMPERED · MAXTOUGH® · CE

APPLICATION AND WARNING INFORMATION SECTION 17

FOR 40' SPUDS, SPUDWELLS AND WINCH BRACKETS

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SAFETY SKIFF DESCRIPTION AND DAILY CHECKLIST

THE MIDDLESEX CORPORATION

- Safety Skiffs

A designated safety skiff is required on all projects where employees are working on or above water. Per OSHA a designated safety skiff/rescue boat must be capable of being launched by a single person and able to reach the individual(s) needing rescue within 3-4 minutes. The Safety Skiff shall be equipped with the following items:

- Paddle with T-Top
- Life Ring with 90 feet of Throw Rope
- 1 – 10lb ABC rated fire extinguisher
- Boat Hook or Pike Pole
- Anchor with line
- Working Outboard w/ Fuel
- Picking attachments on the skiff with bridle (do not use Molly's for picking skiffs).
- Hand Rail (Bailey Rail)
- Skiff Capacity stenciled (or welded) on the side of the skiff
- Waterproof Emergency box containing:
    - First-Aid kit
    - Flares
    - Air Horn

(The stated requirements above also apply to all double engine work/survey skiffs)

- Work Skiffs

- Paddle with T-Top
- 1 – 10lb ABC Rated Fire Extinguisher
- Skiff Capacity Stenciled (or Welded) on the side of the skiff
- Hand Rail (Bailey Rail)
- Boat Hook or Pike Pole
- Working Outboard with Fuel

MIDDLESEX CORPORATION

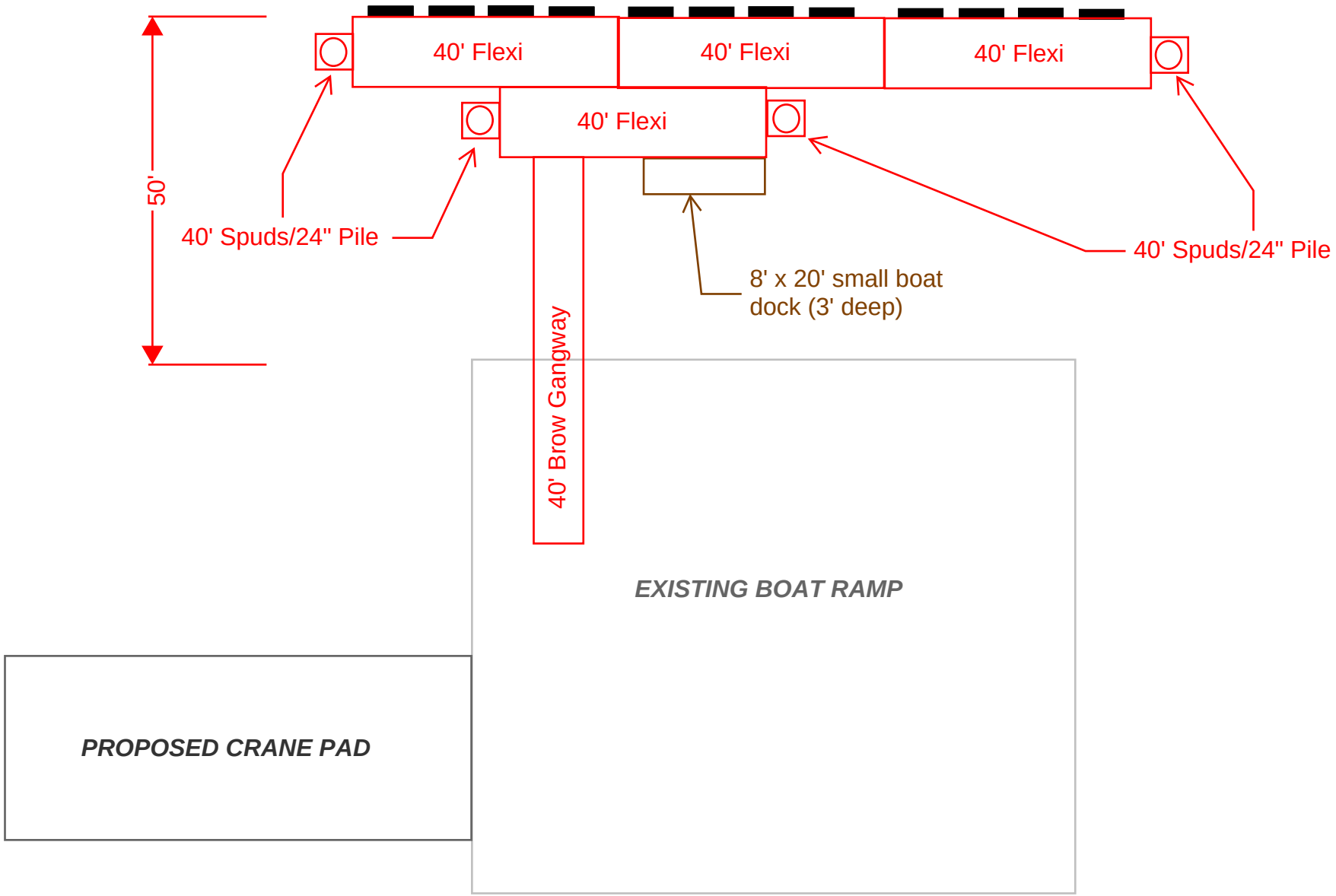
Life Saving Skiff Pre-Inspection Checklist

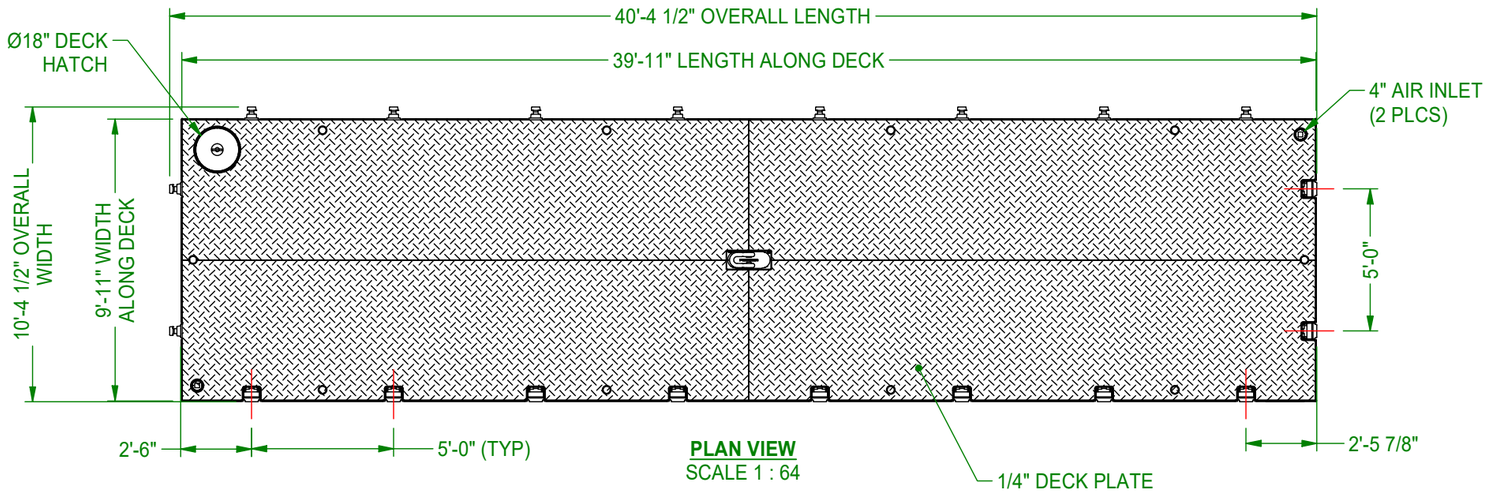
Note: please indicate the following with Y=Yes, N=No or C=Corrected.

Item		M	T	W	T	F	S	S
1.	Check overall appearance and structural appearance of skiff and is it in good condition?							
2.	Are life vests being worn?							
3.	Fire extinguisher in good working order?							
4.	Air horn on skiff for emergency only?							
5.	Boat hook on skiff?							
6.	Life ring with rope on it in skiff for rescue?							
7.	Check engine- is it in good operating condition?							
8.	Check prop for damage.							
9.	Inspect gas tank and hose line for leaks.							
10.	Check fuel level, if under half tank it must be filled. Check steering fluid, 2-cycle fuel, engine coolant.							
11.	Inspect mooring lines to make sure they are in good working order.							
12.	Check forward and reverse to see if operational.							
13.	Check throttle to see if in good working order.							
14.	Is skiff free from leaks?							
15.	Is skiff free from debris on walking/working surfaces?							
16.	Is there enough water to operate skiff?							
17.	Are weather conditions safe to operate skiff (weather, current and wind)?							
18.	Will motor turn to the right and to the left properly?							
19.	Are oars on skiff in case of motor failure?							
Date								
Operator's Initials								

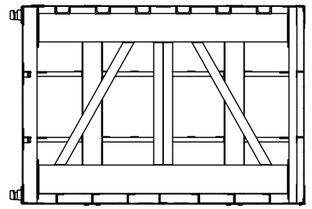
DRAWINGS

TEMPORARY WHARF - NOT TO SCALE

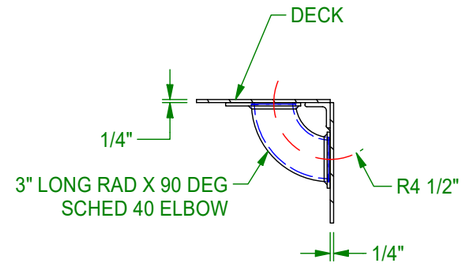




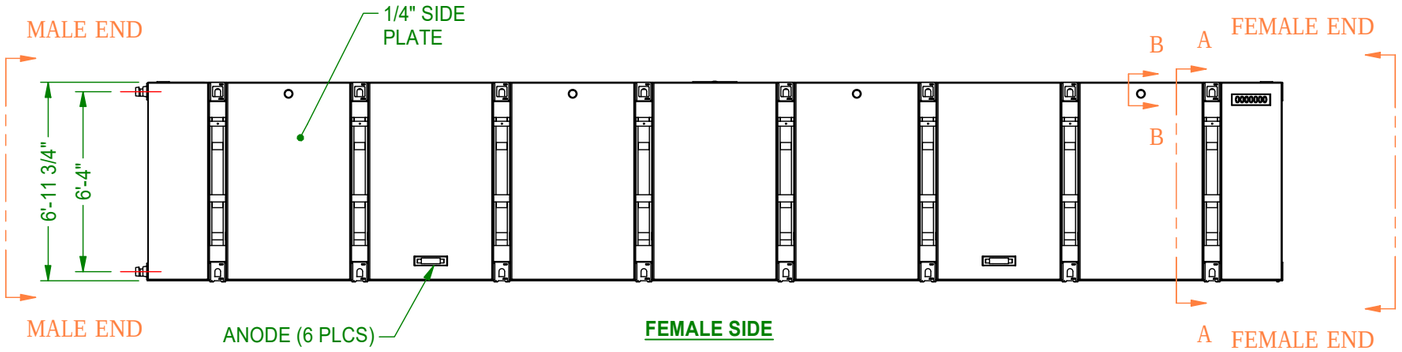
PLAN VIEW
SCALE 1 : 64



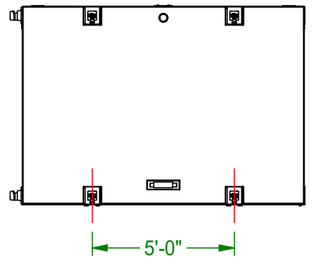
SECTION A-A



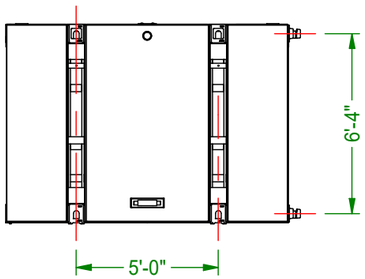
SECTION B-B (NTS)
THIMBLE DETAIL



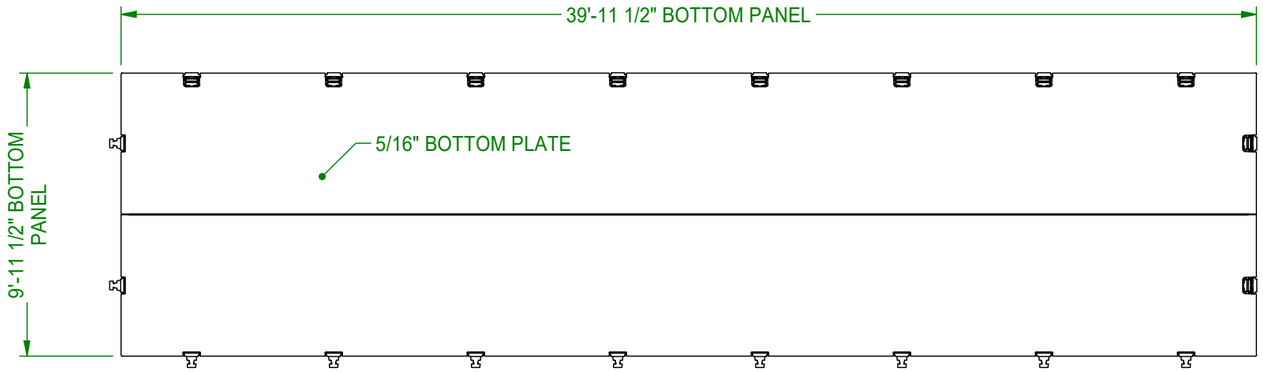
FEMALE SIDE



MALE END



FEMALE END



BOTTOM VIEW

SPECIFICATIONS *P2-7BP-40 BARGE*

APPROXIMATE UNIT WEIGHT:	33,900 LBS
RATED LOAD CAPACITY AT 4.0 FT DRAFT:	33.0 TONS
HORIZONTAL LOCK SPACING:	5.0 FT
VERTICAL LOCK SPACING:	6.3 FT
LOCK LOAD RATING:	140 KIP AXIAL/SHEAR
DECK BEARING CAPACITY:	5,000 PSF UNIFORM
DECK CONCENTRATED LOAD CAPACITY:	25,000 PSF OVER 12" X 12" AREA

POSEIDON BARGE LTD
725 E. Parr Road
Berne, Indiana 46711
Phone: 1-260-422-8767
Fax: 1-260-207-8636

ALL DIMENSIONS ARE IN INCHES
EXCEPT WHERE STATED OTHERWISE.
x.x = ± 0.03
x.xx = ± 0.015
FRACTIONS = ± 1/16
ANGLES = ± 0.5°

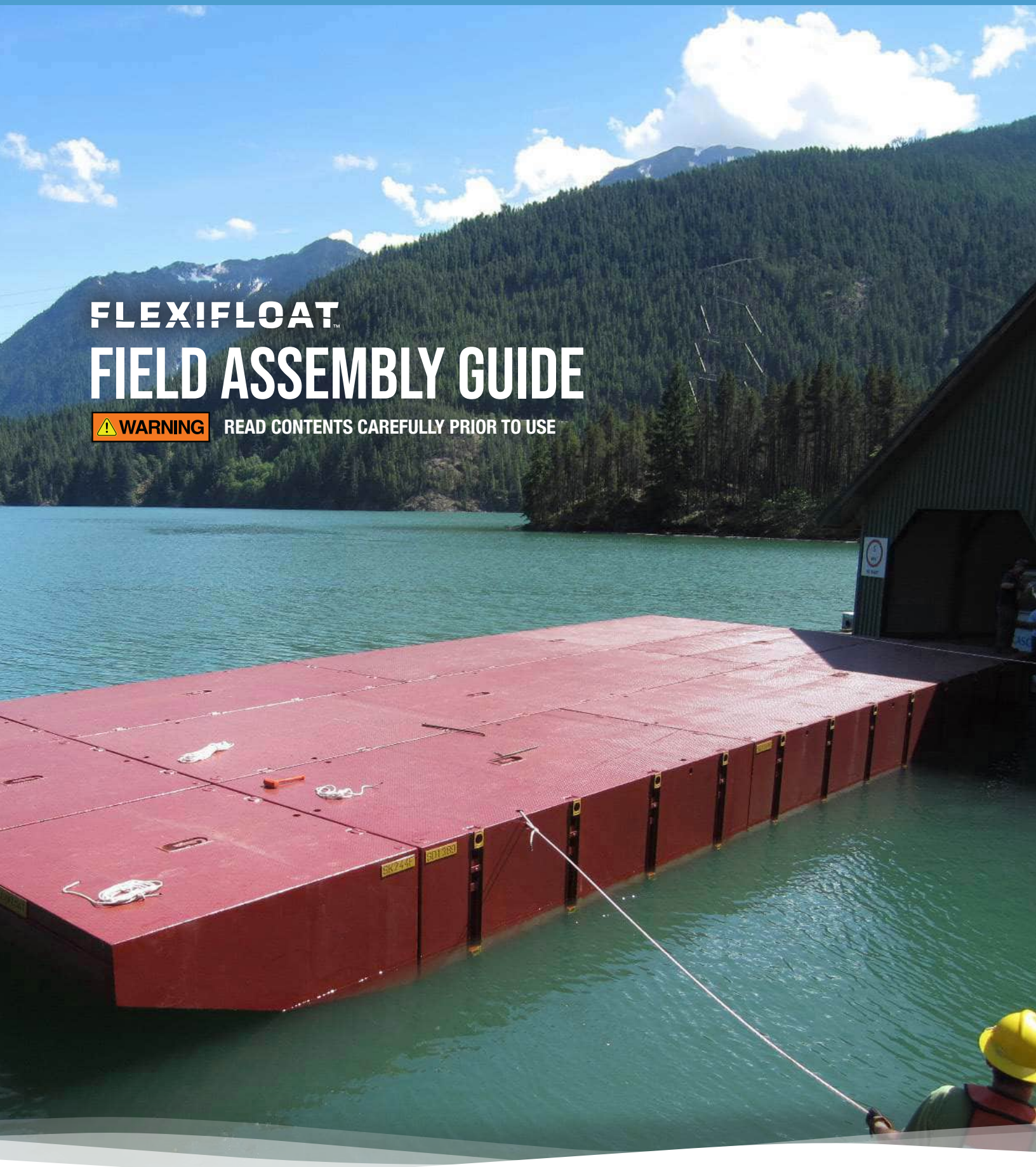
PROPRIETARY INFORMATION
Poseidon Corp. claims rights to all information disclosed on this drawing. It is in confidence for engineering information only and may not be reproduced or used to manufacture anything disclosed within the confines of this drawing without written authorization from Poseidon Corp.

SCALE	As Noted		
DRAWN BY	AEtzkorn	DATE	8/23/2022
CHECKED BY	JEmch	DATE	8/23/2022
APPROVED BY	JEmch	DATE	8/23/2022

WORKING DRAWING
BARGE, ASSEMBLY, P2-7BP-40

DRAWING NO.	SHEET #	REV
810-043	of 3	2.0

SECTIONAL FLOAT FIELD ASSEMBLY GUIDE



FLEXIFLOAT™

FIELD ASSEMBLY GUIDE

⚠ WARNING READ CONTENTS CAREFULLY PRIOR TO USE

FLEXIFLOAT™

This Field Assembly Guide is intended to give users a basic understanding on how to assemble Flexifloat units. It is important that you read this guide carefully prior to use. If there is anything in this Guide that is not clear or you do not understand, immediately contact Robishaw Engineering, Inc. (REI). As the recipient of this Guide, it is your responsibility to ensure that it is provided to any person assembling, disassembling, using, maintaining or repairing this equipment.

This is only a guide and cannot anticipate every possible circumstance that might involve a potential hazard. You must satisfy yourself that the application and operating conditions are safe for you and others. Contact REI or other qualified professional prior to use. REI offers its engineering services free of charge to all Flexifloat users.

⚠ WARNING

The use of Flexifloat equipment requires competent personnel and the application of engineering principles. The improper use, operation, modification, maintenance or repair of Flexifloat equipment can be dangerous and result in property damage, injury or death. Contact Robishaw Engineering, Inc. (REI) or other qualified professional prior to use. REI offers its engineering services free of charge to all Flexifloat users. Equipment used on or with Flexifloat barges must have the manufacturer's approval for use in marine applications.

Accidents involving the use, maintenance and repair of Flexifloat equipment are often caused by failure to observe basic safety rules or precautions. The majority of accidents can be avoided by recognizing potentially hazardous situations and observing basic safety rules and procedures. Flexifloat users must always be aware of potential hazards and possess the necessary training, skills and tools to safely operate Flexifloat equipment. Failure to do so could result in injury or death.

REI cannot anticipate every possible circumstance that might involve a potential hazard. If REI does not recommend or is not consulted, you must satisfy yourself that the application and operating conditions are safe for you and others. You should also make certain that the product will not be damaged or made unsafe by the use, operation, modification, maintenance or repair procedure you choose.



INSTALLATION & ASSEMBLY

Flexifloat modules are specifically designed for easy handling and rapid, in-water assembly. Most installations can be completed within one or two normal workdays. The primary tools needed for assembly are sledge hammers, pry bars, and short lengths of rope for hand lines. Certain modules or attachments may require additional slings or other standard lifting hardware, typically available on most jobsites. See attached Suggested Tools list.

Due to the orientation of the male and female Flexilocks, individual Flexifloat modules cannot be inserted into a “corner“, bounded by two adjacent units. The modules are usually first assembled into rows, or “strings”, then connected to a second, third or fourth row until the entire configuration is complete. Ancillary attachments, such as Loading Ramps and Spud systems, should be added after all Flexifloat units have been assembled.

⚠ CAUTION Keep hands and feet away from locks when they are in the raised position!

⚠ WARNING Never assemble or disassemble Flexifloat modules under loaded conditions!

CUSTOMER SERVICE

Robishaw Engineering, Inc. is the sole designer and manufacturer of Flexifloat Construction Systems. For over 65 years of operations we have dedicated ourselves to providing not only superior products, but in-depth technical support and complimentary engineering services.

We offer comprehensive project analysis, barge design, and, when necessary, on-site consultation to assist users in the application of Flexifloat technology. Working closely with the customer, we develop and analyze information as to the scope of work to be performed, site conditions, access, and environmental restrictions as well as the type, weight, and layout of the equipment for the project.

SUGGESTED TOOLS

The following tools and equipment are normally required for the loading/unloading and assembly of Flexifloat equipment:

Pry bars, 5’ Length	2 ea.
Sledge hammers, 10 to 12 lbs.	2 ea.
¾” manila, nylon, or poly rope for hand lines	300 ft.
1½ to 2-ton cable pull ratchets (“Come-a-longs”)	3 ea.
Single-leg wire rope sling with appropriate hook or shackle into the FlexiDecks. Select wire size according to the following unit weights below:	1 ea.

Equipment Series	Maximum Weight	*Minimum Crane Capacity for Assembly
H-50	14,500 lbs.	35-ton
S-50	27,000 lbs.	50-ton
S-70	33,000 lbs.	80-ton

**Crane selection is dependent upon several factors including hook load weight, dimensions, required reach (radius), site conditions, and rigging. Appropriate crane and rigging selection is the responsibility of the user.*

ADDITIONAL TOOLS FOR SPUDS AND SPUDWELLS

One two-leg sling with appropriate hooks or shackles for lifting spud pipe sections weighing up to 12,000 lbs. (60-foot-long x 24” diameter spuds). A 25-ton capacity 2" dia. lifting bale is located at the top of the spud. Please note, non-standard spuds may weigh more.

⚠ WARNING Always ensure the load does not exceed the sling’s maximum capacity. Failure to comply can lead to property damage,injury, or death.

IMPORTANT NOTICES

All Flexifloat female locks have a ½” bolt, friction plate, and nut located approximately 12” below each upper female casting. This bolt is used to adjust the friction force that enables the locking bar to remain in the raised position during assembly operations. The proper force was set at the factory. Field adjustment should not be necessary for the initial barge installation.

A 3/4" socket with back-up wrench can be used to loosen or tighten the friction plate as needed.



⚠ WARNING

When the locking bar is in the raised position, never use a female lock connection as a toe or hand hold for climbing onto a float or to pull floats together by grabbing the top portion of the locking bar. Any inadvertent downward force could cause the locking bar to fall resulting in severe injury to fingers and hands.





LOADING AND UNLOADING EQUIPMENT



Flexifloat barge sections and attachments are typically delivered to the jobsite using conventional tractor trailers.



Flotation units have a single 25-ton capacity 1-3/4" recessed lift shackle located on the deck at the center of balance for rapid loading and unloading of the equipment.

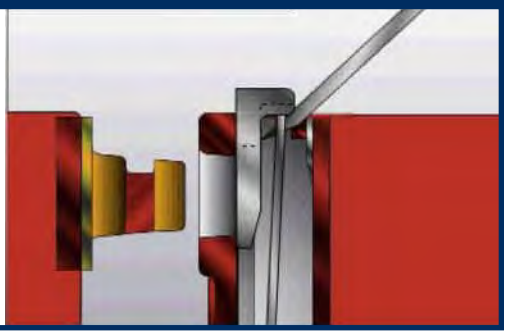


Taglines (long ropes) should be used when lifting the barge sections with a crane. Lines attached to one or two points will help stabilize the load and prevent unwanted rotation that may cause a collision with other equipment or the crane itself. This also provides a safe working distance between ground personnel and the load (never stand under the load). Ropes may be fastened through the rope thimbles (5-ton capacity 3" dia. tube turns) that are located around the perimeter of each barge section.

LOCK OPERATION

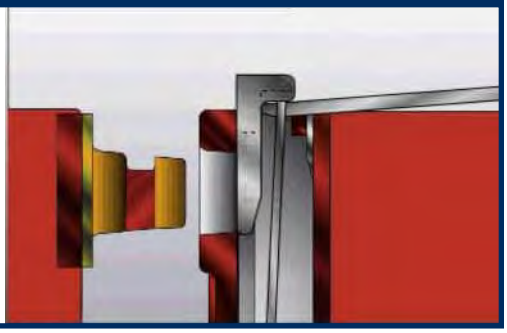
Step 01: FlexiFloat Locking System

Flexifloat barge sections and attachments are typically delivered to the jobsite using conventional tractor trailers.



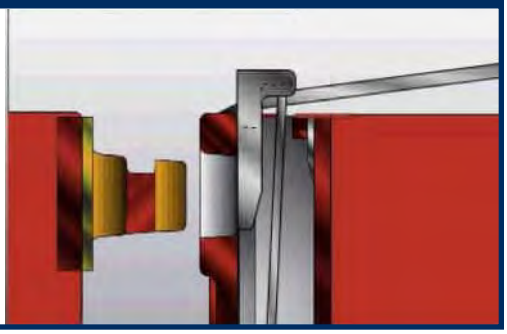
Step 02: FlexiFloat Locking System

Insert pry bar into female lock behind the spring bar and raise locking bar upwards.



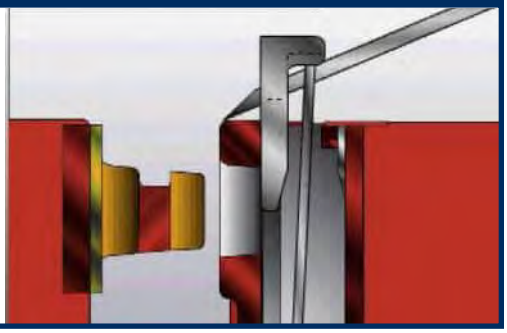
Step 03: FlexiFloat Locking System

Turn pry bar over and push it through the opening in the upper locking bar casting.



Step 04: FlexiFloat Locking System

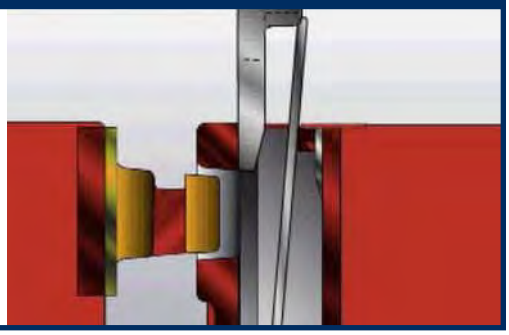
Lift pry bar and continue raising locking bar until the opening in the female lock casting is completely clear and the locking bar stops.



LOCK OPERATION

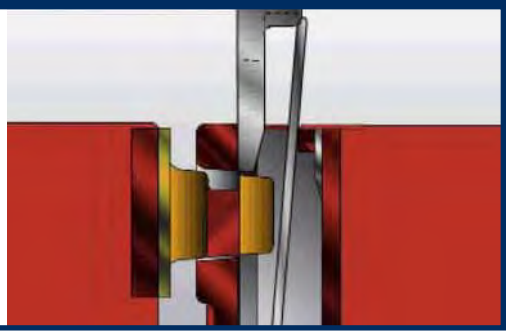
Step 05: FlexiFloat Locking System

Repeat Steps 1 through 4 for all connectors along the row. Be sure all locking bars are completely raised; otherwise the connection cannot be completed.



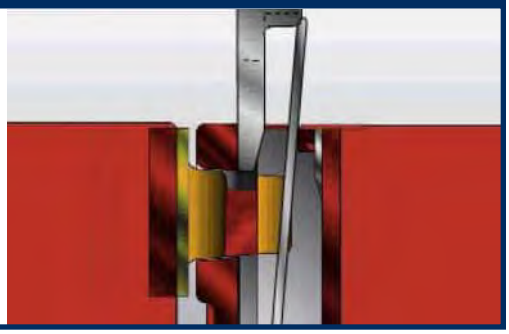
Step 06: FlexiFloat Locking System

Drift the Flexifloats together, using hand lines until the male pin enters the female lock casting.



Step 07: FlexiFloat Locking System

Continue to pull the adjoining Flexifloat rows together until the shoulder of the male pin is in close proximity to the female lock casting. All upper and lower lock connections along the entire row must be in this position before attempting further lock operations.



LOCK OPERATION NOTES



NOTE:
Barges can be pulled together by utilizing rope and the rope thimbles (5-ton capacity 3" dia. tube turns) located along the perimeter of the deck.



NOTE:
The use of multiple hand lines and/or small come-a-long installed across the deck of the two rows may be necessary to overcome friction forces. Check bottom locks are also properly engaged by inspecting the vertical gap between the Flexifloats.

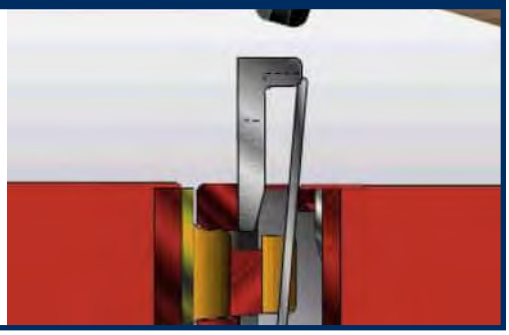


NOTE:
Under certain conditions, it may be helpful to thread a small wire rope sling through a matching pair of the rope thimbles and gently lift with the crane. This will help close the upper lock gap and engage the lower lock faces.

LOCK OPERATION

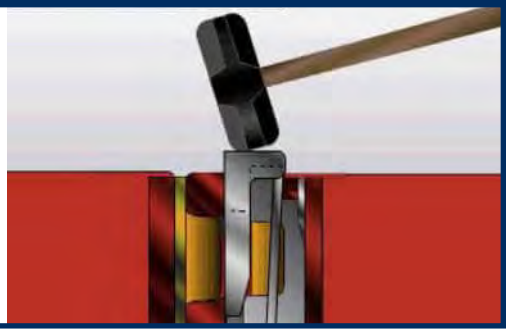
Step 08: FlexiFloat Locking System

Begin driving the locking bar starting at the first connector location on one end of the row.



Step 09: FlexiFloat Locking System

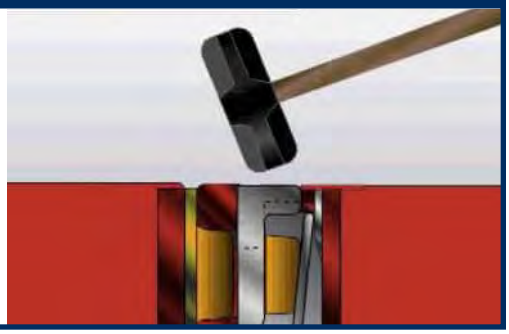
Continue driving the locking bar. If driving becomes difficult or a ”metal-on-metal” sound is heard; stop, raise the locking bar, and reinspect the vertical gap to ensure both the top and bottom male pins are being engaged, then continue driving.



Step 10: FlexiFloat Locking System

Drive locking bar until the spring bar secures in place under the two protrusions at the back of the female lock.

Repeat Steps 8, 9, 10 in sequence (like closing a zipper), along the entire length of the row.



LOCK OPERATION SUMMARY

1: **Use pry bar to raise locks.**



2: **Raise all locks on connection row.**



3: **Use rope to pull floats together, inserting** male pin into female lock casting.



4: **Use sledgehammer to drive locks down.**



5: **Check that floats are securely connected by making sure all locking bars are down and flush with deck.**



EQUIPMENT CUT SHEETS

Miller

OM-252 624E 2013–02

Processes

MIG (GMAW) Welding
Flux Cored (FCAW) Welding

Stick (SMAW) Welding

TIG (GTAW) Welding

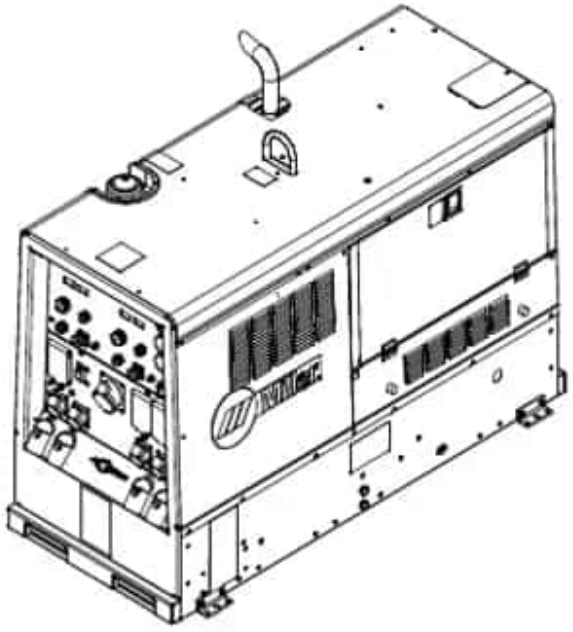
Air Carbon Arc (CAC-A) Cutting and Gouging

Description

CC CV DC

Engine Driven Welding Generator

Big Blue® 700 Duo Pro®
Big Blue® 700X Duo Pro®



OWNER'S MANUAL

File: Engine Drive



Visit our website at
www.MillerWelds.com

660SJ
TELESCOPIC BOOM LIFT

BOOM LIFT



KEY SPECS

Platform Height
65-ft 8-in / 20.02-m

Horizontal Outreach
57-ft 1-in / 17.40-m

Drive Speed
3.8 mph / 6.1 km/h

Platform Capacity
Restricted: 750-lb / 340-kg
Unrestricted: 550-lb / 249-kg

KEY FEATURES

- One of the most popular JLG 60-ft boom lifts.
- Delivers a zero calibration automatic load sensing system that eliminates the need to use external weights to calibrate the machine.
- Utilizes intuitive platform controls to reduce operator training time.
- Available accessories and options provide the flexibility to upfit the machine to meet unique job requirements.

ACCESSORIES & OPTIONS

- 1/2-in Air Line to Platform
- AC Generator, 4000W
- Accessory Packages
  - SkyGlazier® Package
  - SkyPower® Package
  - SkyWelder® Package
- Arctic Package[1]
- Bolt On Fall Arrest System
- Cold Weather Package[2]
- Hostile Environment Package[3]
- Light Packages
- Platform Mesh to Mid or Top Rail
  - Aluminum or Plastic
- Platforms
  - Drop Bar, 30 x 36-in, 30 x 48-in, 30 x 60-in, 36 x 72-in, 36 x 96-in
  - Fall Arrest, Rear Entry, 36 x 72-in, 36 x 96-in
  - Inward Self-Closing Swing Gate, 30 x 48-in 30 x 60-in, 36 x 72-in, 36 x 96-in
  - Tri-Entry, Drop Bar or Swing Gate, 36 x 72-in, 36 x 96-in
- SkySense® Enhanced Detection System
- Soft Touch System

STANDARD SPECIFICATIONS

Performance

Platform Height	65-ft 8-in / 20.02-m
Horizontal Outreach	57-ft 1-in / 17.40-m
Swing	360 Degrees Continuous
Platform Capacity (Restricted)	750-lb / 340-kg
Platform Capacity (Unrestricted)	550-lb / 250-kg
Platform Rotator	180 Degrees Hydraulic
Jib Length	6-ft / 1.83-m
Jib Range of Articulation	132 Degrees (+71, -61)
Weight*	25,341-lb / 11,494-kg
Max. Ground Bearing Pressure	86 psi / 6.00 kg/cm²
Drive Speed	3.8 mph / 6.1 km/h
Gradeability	45%
Tilt Cut Out	5 Degrees
Axle Oscillation	8-in / 20-cm
Turning Radius 2WS (Inside/Outside)	Inside: 9-ft 7-in / 2.92-m Outside: 19-ft 7-in / 5.96-m
Turning Radius 4WS (Inside/Outside)	Inside: 5-ft 3-in / 1.61-m Outside: 12-ft 8-in / 3.87-m

Engine

Dual Fuel – Ford MSG425-DF	84 hp / 62.6 kW
Diesel Fuel – Deutz D2.9L4 Tier 4 Final	48.8 hp / 36.4 kW
Fuel Tank Capacity	31 gal / 117 L

Tires

Standard	Foam Filled, 14(IN355)X17.5(55D625)
Optional	Foam Filled Non-Marking, 14(IN355)X17.5(55D625)
	Foam Filled, Turf & Sand, 41/18LLx22.5
	Quad Tracks

Hydraulic System

Hydraulic Reservoir	34 gal / 129 L
Auxiliary Power	12V DC

STANDARD FEATURES

- 5 Degree Tilt Alarm / Indicator Light
- 12V-DC Auxiliary Power
- 110V-AC Receptacle in the Platform
- 180 Degree Hydraulic Platform Rotator
- Center Storage Tray
- ClearSky Smart Fleet™ Hardware (CS550)
- Control ADE® System
- Four-Wheel Hydrostatic Drive
- Glow Plugs (Diesel Engines)
- Horn
- Hourmeter
- Improved Multi-Function Controls
- Interactive Display at Ground Controls
- LED Motion / Amber Beacon (CS550)
- Lifting / Tie Down Lugs
- Motion Alarm
- Oscillating Axle
- Platform Console Machine Status Light Panel**
- Proportional Controls
- Rapid Replaceable Platform with Self-Closing Gate
- SkyGuard SkyLine™
- Swing-Out Engine Tray
- USB-A and USB-C Charger

*Certain Options or Country Standards Increase Weight.
**Provides Indicator Lights at Platform Control Console for System Distress, Low Fuel, Degree Tilt Light and Foot Switch Status.

1. Includes arctic hydraulic hoses (drive and steer only) and main boom cable, arctic hydraulic oil, extreme cold engine oil, fuel conditioner, engine block heater, battery blanket, glow plugs, hydraulic tank heater, and oversized footswitch.
2. Includes battery blanket, hydraulic tank heater, block heater.
3. Includes console cover, boom wipers and cylinder bellows.

Note: Some options may increase lead time, and some option combinations may not be available.
Additional accessories and options available via JLG Aftermarket.

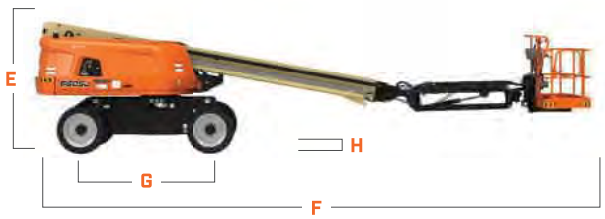
660SJ
TELESCOPIC BOOM LIFT

BOOM LIFT

DIMENSIONS

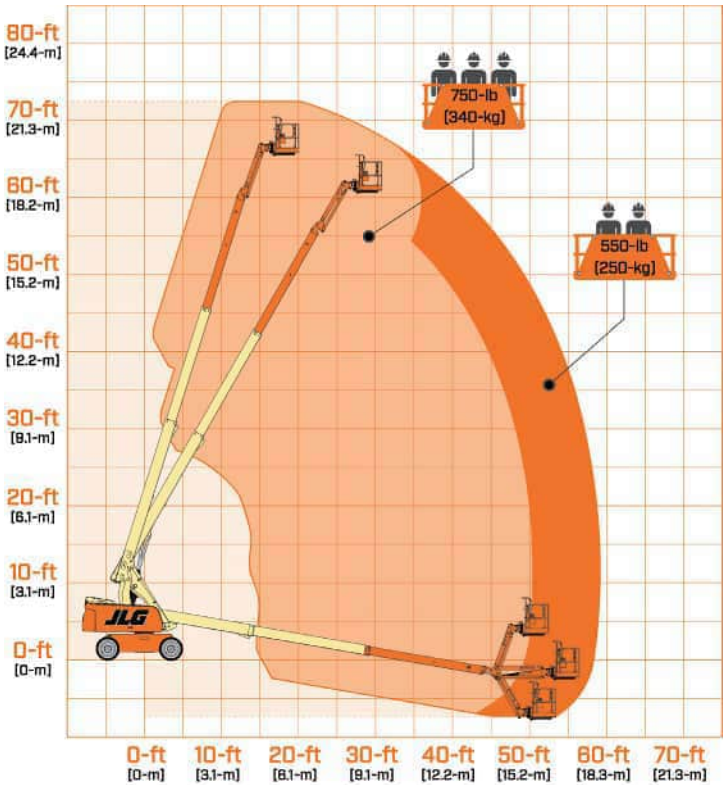
All dimensions are approximate





A.	Platform Width	36-in / 0.91-m
B.	Platform Length	96-in / 2.44-m
C.	Machine Width	8-ft 2-in / 2.48-m
D.	Tailswing	4-ft / 1.22-m
E.	Machine Height	8-ft 5.4-in / 2.58-m
F.	Machine Length	33-ft 0.4-in / 10.01-m
G.	Wheelbase	8-ft 2.7-in / 2.5-m
H.	Ground Clearance	11.3-in / 29-cm

REACH DIAGRAM



THE JLG 1&5 WARRANTY

We provide coverage for one (1) full year, and cover all specified-major structural components for five (5) years. Due to continuous product improvements, we reserve the right to-make specification and/or equipment changes without prior notification. This-machine-meets or exceeds applicable ANSI and CSA requirements based on-machine configuration as originally-manufactured for intended applications. Please reference the serial number plate on the-machine for additional information.

Part No. 3131052 | R0626_05

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APPENDIX D – Detailed Wildlife Habitat Evaluation

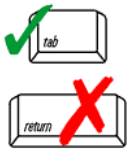
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1. Summary Sheet

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Temporary Yard Crane Pad and Floating Wharf
Project Name

100 South Kimball Street, Haverhill, MA
Location

6,730 square feet of temporary impacts
Size of Area Being Impacted

Date

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/ Waterway	Wetland	Upland*	Total Area
1. Bank Impacts	Merrimack River	184 LF (temp)		184 LF
2. Riverfront Area Impacts	Merrimack River		6,717 SF (temp)	6,717 SF
3. BLSF Impacts			6,717 SF (temp)	6,717 SF
4. LUW Impacts	Merrimack River	13 SF (temp)		13 SF
5.				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

The Project is located at 100 South Kimball Street in Haverhill, Massachusetts, along the southwestern Bank of the Merrimack River. The Site consists of previously developed and industrial altered areas, including an existing boat ramp, narrow edge vegetated Bank consisting of a mix of native, non-native, and invasive species, and a degraded Riverfront Area characterized by gravel, stone, and pavement. Historical land uses include industrial operations, an existing wastewater treatment facility that bisects the Site, and a sewer ~~main bypass present above ground throughout a portion of the Site. The Project area~~ is located within NHESP Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife.
See attached narrative.

Certification

I hereby certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Jonathan Niro, PWS
Typed or Printed Name

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (for each wetland or non-wetland resource area)

I. General Information

100 South Kimball Street, Haverhill
Project Location (from NOI page 1)

1, 2, and 3 (Bank Impacts, Riverfront Areas Impacts, and BLSF Impacts)
Impact Area (number/name)

September 28, 2026
Date(s) of Site Visit(s) and Data Collection

Light Rain, 55 Degrees
Weather Conditions During Site Visit (if snow cover, include depth)

Jonathan Niro, PWS and Anna Haznar
Person completing form per 310 CMR 10.60(1)(b)

9/29/2026
Date this form was completed

The information on this data sheet is based on my observations unless otherwise indicated

Signature

II. Site Description (complete A or B under Classification - see instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Riverine
Subsystem: Perennial
Class: Unconsolidated Bottom
Subclass:

Hydrology/Water Regime

- ☒ Permanently flooded
- ☐ Saturated
- ☐ Intermittently exposed
- ☐ Temporarily flooded
- ☐ Semi-permanently flooded
- ☐ Intermittently flooded
- ☐ Seasonally flooded
- ☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following. Use a terrestrial classification system such as one of the two listed below:
   a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (Department of Fish & Game Website)
   b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Disturbed Riparian Habitat / Deciduous Forest
Community Name

Upland: Acer and Betula species (majority) with invasive species pressure
Vegetation Description

Narrow edge early to mid-successional riparian area with eroded Banks adjacent to industrial use
Physical Description

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

B. Inventory (Plant community)

% Cover:

90	35	30	N/A	20
Trees (> 20')	Shrubs (< 20')	Woody vines	Mosses	Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Betula nigra	Shrub	Rose multiflora
Tree	Acer saccharinum	Herbaceous	Carex pensylvanica
Tree	Catalpa speciosa	Woody vines	Toxicodendron radicans
Tree	Ailanthus altissima	Woody vines	Celastrus orbiculatus
Shrub	Robinia pseudoacacia		
Shrub	Gleditsia triacanthos		

C. Inventory (Soils)

Urban land	N/A
Soil Survey Unit	Drainage Class
Disturbed fill and urban soils	N/A
Texture (upper part)	Depth
N/A	
Depth to Water Table	

III. Important Habitat Features (complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach.

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting

☐ Present ☒ Absent

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 0

Number (or density) of Standing Dead Trees (potential for cavities and perches):

6-12" dbh	12-18" dbh	18-24" dbh	> 24" dbh
1	1		

Number of Tree Cavities in trunks or limbs of:

None identified
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

1 identified
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

None identified
>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows

☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☒ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☐ Rock piles, crevices, or hollow logs suitable for:

☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools

☐ Present ☒ Absent

Standing water present at least part of the growing season, suitable for use by

☐ Breeding amphibians ☐ Non-breeding amphibians (foraging, re-hydration)

☐ Turtles ☐ Foraging waterfowl

Sphagnum hummucks or mats, moss-covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander)

☐ Present ☒ Absent

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and quantify them on a separate sheet)

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)

☐ Present ☒ Absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)

☒ Present ☐ Absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter)

☐ Present ☒ Absent

Undercut or overhanging banks (small mammals, mink, weasels)

☒ Present ☐ Absent

Vertical sandy banks (bank swallow, kingfisher)

☐ Present ☒ Absent

Areas of ice-free open water in winter

☐ Present ☒ Absent

Mud flats

☐ Present ☒ Absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting

☐ Present ☒ Absent

Wildlife dens/nests (if present, describe & quantify them on the back of this sheet)

Turtle nesting sites

☐ Present ☒ Absent

Bank swallow colony

☐ Present ☒ Absent

Nest(s) present of ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of ☐ Otter ☐ Mink ☐ Beaver

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Project area is within:

☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area

☐ 200' of Great Blue Heron or osprey nest(s)

☐ 1400' of a Bald Eagle nest[1]

Emergent Wetlands (if present, describe & quantify them on a separate sheet)

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, Virginia rail, coot, etc.)

Flooded > 5 cm ☐ Present ☐ Absent

Flooded > 25 cm (pied-billed grebe) ☐ Present ☐ Absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm ☐ Present ☐ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☐ Absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren) ☐ Present ☐ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☐ Absent

Fine-leafed emergent vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm ☐ Present ☐ Absent

Flooded > 25 cm (least bittern, common moorhen) ☐ Present ☐ Absent

IV. Landscape Context

A. **Habitat Continuity** (if present, describe the landscape context on a separate sheet and its importance for area-sensitive species)

Is the impact area part of an emergent marsh at least	1.0 acre in size?	☐ Yes	☒ No
(marsh and waterbirds)	2.0 acres in size?	☐ Yes	☒ No
	5.0 acres in size?	☐ Yes	☒ No
	10.0 acres in size?	☐ Yes	☒ No

[1] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

Is the impact area part of a wetland complex at least	2.5 acres in size?	☐ Yes	☒ No
(turtles, frogs, waterfowl, mammals)	5.0 acres in size?	☐ Yes	☒ No
	10.0 acres in size?	☐ Yes	☒ No
	25.0 acres in size?	☐ Yes	☒ No
For upland resource areas is the impact area part of contiguous forested habitat at least			
(forest interior nesting birds)	50 acres in size?	☐ Yes	☒ No
	100 acres in size?	☐ Yes	☒ No
	250 acres in size?	☐ Yes	☒ No
	500 acres in size?	☐ Yes	☒ No
(grassland nesting birds)	> 1.0 acre in size?	☐ Yes	☒ No
(special habitat such as gallery floodplain forest, alder thicket, etc.)	> 1.0 acre in size?	☐ Yes	☒ No

B. **Connectivity with adjoining natural habitats**

- ☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)
- ☐ Connectors numerous or impact area is embedded in a large area of natural habitat (limited connectivity function)
- ☒ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)
- ☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)
- ☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. Habitat Degradation (describe degradation and wildlife impacts on the back of the sheet)

- ☐ Evidence of significant chemical contamination
- ☒ Evidence of significant levels of dumping
- ☒ Evidence of significant erosion or sedimentation problems
- ☒ Significant invasion of exotic plants (e.g., purple loosestrife, *Phragmites*, glossy buckthorn)
- ☐ Disturbance from roads or highways ☒ Other human disturbance
- ☒ Is the site the only resource area in the vicinity of an otherwise developed area

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

Wildlife Habitat Protection Guidance

Appendix B: Detailed Wildlife Habitat Evaluation

Part 2. Field Data Form (continued)

VI. Quantification Table for Important Habitat Characteristics

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: standing dead trees 6-12” dbh	4	12	8
Standing dead tree 12-18" dbh	1	1	0
Standing dead tree 6-12" dbh	1	1	0
Crevices within undercut Banks	3	>3	3
Logs on Bank	4	>4	4
Overhanging trees	6	>6	6
Trees with DBH > 5" baring nuts/fruit	4	>6	8

IMPROVING COMMUNITIES TOGETHER

DETAILED WILDLIFE HABITIAT EVALUATION

Temporary Yard Crane Pad and Floating Wharf
Haverhill, Massachusetts

NARRATIVE DESCRIPTION OF SITE

The Temporary Yard Crane Pad and Floating Wharf Project proposes construction of a temporary crane pad that will support a temporary yard crane and construction of a temporary floating wharf (the Project) associated with the Basiliere Bridge Project (MassDOT Project No. 605304) at 100 South Kimball Street in Haverhill, Massachusetts (the Site). The proposed crane pad and underlying dense grade is proposed to occupy approximately 3,000 square feet (sf) of the Site located adjacent to an existing boat ramp along the Merrimack River. The temporary floating wharf will consist of a four- section, 1,600-sf Flexifloat wharf and a 160-sf boat dock, supported by four 24-inch-diameter spud piles, connected to the existing boat ramp by a 40-foot gangway. Clearing of vegetation will be required to accommodate the swing radius of the crane placing equipment on barges.

Generally, the following work is proposed to complete the Project:

- Installation of erosion and sedimentation controls;
- Burying of a portion of the above-ground sewer bypass pipe to allow for equipment access;
- Repairs to the existing boat ramp above mean high water (MHW) using existing materials;
- Removal of select trees and brush;
- Construction of the temporary yard crane pad;
- Staging of the crane on the completed crane pad;
- Installation of turbidity controls;
- Installation of the temporary spud piles, wharf, and gangway;
- Use of the crane to load construction materials from the stockpile area onto barges;
- Removal of the crane, crane pad, gangway, wharf, spud piles, and associated temporary infrastructure upon completion of construction activities;
- Removal of all construction material and establishment of pre-construction grades;
- Restoration of all impacted Resource Areas; and
- Stabilization of the Site.

Areas Subject to Protection and Jurisdiction at the Site include Bank to the Merrimack River, Land Under Water (LUW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RA), and the 100-foot Buffer Zone to Bank. Existing conditions within the southeastern portion of the Site are generally degraded and include impervious and pervious surfaces, a boat ramp, herbaceous overgrowth, commercial buildings, utility infrastructure, and active construction operations. A sewer plant owned by the City of Haverhill bisects the Site on a separate parcel at 0 South Kimball Street and a temporary sewer main bypass associated a recent pipe break is present above ground throughout the southern portion of the Site.

The Project proposes approximately 184 linear feet (lf) of temporary Bank impacts associated with installation of erosion and sedimentation controls and vegetation removal necessary to accommodate crane operations. As the proposed alteration exceeds the wildlife habitat evaluation (WHE) threshold under 310 CMR 10.54, a Detailed WHE has been prepared. Temporary impacts to BLSF including clearing of vegetation and construction of the crane pad are also evaluated, as the Project includes approximately 6,717 square feet (sf) of temporary impacts to BLSF, which exceeds the WHE threshold under 310 CMR 10.57 and requires a Simplified WHE. As work within RA is being evaluated under the Performance

Standards at 310 CMR 10.55(5), no WHE is required. After construction is completed all Resource Areas will be fully restored to pre-construction conditions and Resource Areas will be stabilized and restored using a native seed mix, erosion controls blanket, if determined necessary, and native tree and shrub plantings. Stumps associated with cleared vegetation will not be grubbed to limit soil disturbance.

BANK, BLSF, AND RA

Impacts to the southwestern Bank of the Merrimack River are proposed adjacent to the existing boat launch extending approximately 184 linear feet from the southern side of the boat launch to the limits of clearing. This Site has historically been used for various industrial operations and is characterized by existing pavement, gravel, stone, utility infrastructure, and active construction activities.

The area proposed for clearing consists of a disturbed vegetated strip along the Bank and within BLSF and RA that is approximately 3,717 sf. This area is bounded to the west and south by degraded surfaces consisting of the gravel boat ramp, stone, gravel, and pavement ground cover, and to the north by additional disturbed vegetated areas that are larger and provide similar wildlife habitat functions to the area proposed for clearing. No work is proposed below Bank / MHW.

The canopy layer within this area consists of a mix of river birch (*Betula nigra*), silver maple (*Acer saccharinum*), tree of heaven (*Ailanthus altissima*), northern catalpa (*Catalpa speciosa*), white oak (*Quercus alba*), swamp white oak (*Quercus bicolor*), red oak (*Quercus rubra*), and gray birch (*Betula populifolia*). The understory consists primarily of poison ivy (*Toxicodendron radicans*), bittersweet (*Celastrus orbiculatus*), black locust (*Robinia pseudoacacia*), honey locust (*Gleditsia triacanthos*), multiflora rose (*Rosa multiflora*), Norway maple (*Acer platanoides)* burning bush (*Euonymus alatus*), and Pennsylvania sedge (*Carex pensylvanica*).

The Bank is characterized by steep eroded slopes that are undercut in several locations and may provide cover and shelter opportunities for small mammals, reptiles, and amphibians utilizing the river corridor. The slopes also provide suitable substrate for burrowing wildlife, and one potential burrow was identified along the Bank within the limits of the Project. Due to the eroded Bank, several trees overhang the river and provide potential perch, roosting, and foraging habitat for birds and bats. Two snags are present within the impact area with one snag containing a cavity close to the base of the snag. Some fallen wood was observed within the vegetated strip that could provide shelter. Additionally, one dead tree was observed as being partially submerged and exposed roots that are present along the Bank may become submerged providing shelter and refuge for turtles, snakes, and frogs.

Multiple species within the vegetated strip provide foraging for wildlife. White oaks and red oaks are important wildlife forage species, as the acorns produced by these trees provide food for a variety of mammals and birds. Poison ivy provides an important food source for numerous bird species through the production of berries. Gray birch, silver maple, and river birch also provide seeds that serve as a food source for birds and small mammals, including squirrels. Additionally, although considered invasive species, multiflora rose, bittersweet, and burning bush produce fruits that are consumed by a variety of wildlife species.

Outside of the vegetated strip, the RA and BLSF within the Project area consist primarily of degraded surfaces including stone, gravel, pavement, and fill material with minimal vegetative cover present. Vegetation within these disturbed areas consists primarily of mugwort (*Artemisia vulgaris*), mullein (*Verbascum thapsus*), and evening primrose (*Oenothera* spp.). This area is also directly adjacent to the aboveground sewer line where active maintenance operations are ongoing that may deter wildlife use.

Evidence of wildlife species observed at the Site included white-tailed deer (*Odocoileus virginianus*) and gray squirrel (*Sciurus carolinensis*) through direct observation and evidence of wildlife use identified during the Site investigation including scat. Portions of the Site and adjacent Merrimack River are mapped as NHESP Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. According to the National Oceanic and Atmospheric Administration (NOAA) Essential Fish Habitat Mapper, 13 species are designated within the Merrimack River adjacent to the Site. The Merrimack River is also mapped as a diadromous fish run and provides migratory and foraging habitat for shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*).

Important Habitat Features

Important habitat features present within the Site include:

- Upland/Wetland food plants;
  - Oak species, poison ivy, birch species, maple species, multiflora rose, bittersweet, and burning bush.
- Standing dead trees;
  - Two standing dead trees with a total of 1 cavity.
- Woody debris on the ground;
  - Fallen branches from overhanging trees create cover.
- Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface;
  - Overhanging trees and branches are present along the Bank of the Merrimack River that provide perch habitat.
- Live or dead standing vegetation;
  - Mature trees that line the area overhang the stream.
- Undercut or overhanging Banks;
  - Slopes along the stream throughout the Site are undercut and eroded.

Habitat Degradation

The Site consists predominantly of degraded habitat due to past and ongoing industrial land uses. Habitat degradation at the Site includes removal of topsoil, installation of stone, gravel, and pavement ground coover, historic clearing of vegetation, the presence of invasive plant species, utility infrastructure, active construction activities, and other anthropogenic disturbances.

Habitat degradation at the Site includes the following:

Significant Communities of Exotic Plants

Invasive and non-native nuisance vegetation is abundant throughout the Site and the surrounding area. Invasive species found on the Site include:

- Japanese knotweed (*Reynoutria japonica*);
- Asiatic bittersweet;
- Black locust;
- Burning bush;
- Tree of heaven;
- Norway maple; and;
- Multiflora rose.

These species will be disturbed and removed during construction operations. Management of invasive species will occur during construction to ensure spread of these species does not occur as a result of the Project.

Removal of Top Soil and Installation of Stone, Gravel, and Pavement

The Site has been significantly developed directly up to the Banks of the Merrimack River. Throughout the Project area limited areas with topsoil are present and only consists of the vegetated strip along some portions of the Bank and the inland portions of the Site outside of all Resource Areas. Throughout a majority of the RA and BLSF the Site has been developed to have a ground cover consisting of stone, gravel, and pavement which reduce the habitat value and only support minimal vegetative cover, if any.

Other Human Disturbances

Surrounding land use at the Site is generally developed with residential homes, commercial buildings, the waste water treatment plant, and industrial use which impact Resource Areas. These disturbances include untreated stormwater runoff, road salt/ sand, and effluent from washing machinery and equipment. In addition, trash can be found throughout the Site. These impacts contribute to poor water quality within the Merrimack River and pose a danger to local wildlife.

Summary

The Project proposes temporary impacts to approximately 184 linear feet of Bank and associated BLSF and Riverfront Area along the Merrimack River to facilitate construction of a temporary crane pad supporting the Basiliere Bridge Project. The impact area consists primarily of a narrow-vegetated strip located within a Site degraded by industrial use characterized by existing pavement, gravel, stone, utility infrastructure, and ongoing construction activities. Although vegetation clearing is proposed within an approximately 3,717 sf area, the vegetated areas directly north of this section provide a larger vegetated cover with similar wildlife habitat value.

Wildlife habitat within the impact area consists of a disturbed riparian corridor containing trees, understory vegetation, trees and branches overhanging the Merrimack River, woody debris, standing dead trees, and areas of undercut Bank. These features provide food, cover, perching, and shelter opportunities for a variety of wildlife species. Evidence of wildlife use observed during the site investigation included white-tailed deer and gray squirrel. The Site is also located within NHESP Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife.

Habitat quality within the Project area has been diminished by historical industrial development, the installation of pavement, gravel, and stone surfaces, populations of invasive species, utility infrastructure, and ongoing anthropogenic disturbances. Although habitat at the Site has been degraded, the vegetated Bank, RA, and BLSF provide some habitat value and a habitat connection to the Merrimack River.

Proposed impacts are temporary and primarily involve vegetation clearing and construction of the crane pad necessary to accommodate crane operations. Tree stumps will remain in place and no grubbing is proposed. Following completion of construction activities, all temporarily impacted Bank, BLSF, and RA will be restored to pre-construction grades and stabilized with a native Riparian Seed Mix.

As a result, wildlife habitat functions within the temporary impact area are expected to be reestablished following restoration.

Photo 1



View of the location where the crane pad is proposed and the vegetated strip proposed for clearing – facing east.

Photo 2



Typical view of the understory vegetation within the vegetated strip including bittersweet, poison ivy, and herbaceous species—facing south.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 3



Another typical view of vegetation within the understory of the vegetated strip including poison ivy, bittersweet, and Norway maple – facing east.

Photo 4



Typical view of the canopy cover within the vegetated strip including tree of heaven, river birch, and white oak and one snag—facing east.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 5



Another view of species within the canopy cover including river birch, white oak, and tree of heaven and a snag—facing east.

Photo 6



View of overhanging trees along the Bank—facing north.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 7



View of a submerged dead tree and overhanging trees and branches along the Bank—facing north.

Photo 8



View of trees leaning over the Merrimack River—facing east.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 9



View of the undercut and eroded conditions of the Bank with vegetation including Japanese knotweed, black locust, bittersweet, and river birch—facing northwest.

Photo 10



View of a potential wildlife burrow along the Bank—facing west.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 11



View of a cavity within a snag adjacent to the Bank—facing southeast.

Photo 12



View of the existing gravel boat ramp adjacent to the vegetated strip—facing west.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

Photo 13



View of the degraded conditions of RA and BLSF directly upgradient of the vegetated strip – facing north.

Photo 14



Another view of the degraded conditions of RA and BLSF directly upgradient of the vegetated strip – facing southeast.

PHOTOGRAPHIC DOCUMENTATION

Wildlife Habitat Evaluation

Haverhill, Massachusetts

Photographs Documented September 28, 2026

APPENDIX E – Sturgeon Protection Plan

Sturgeon Protection Plan
Basiliere Bridge Replacement Project

Contract No. 100470 – Statewide Environmental Services
Assignment 29

NHESP File No.: 24-18824

October 25, 2024

Prepared for:

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Table of Contents

1.0 INTRODUCTION 1

2.0 PROTECTION PLAN 2
2.1 HISTORICAL SURVEYS AND RESULTS 2
2.2 TIME OF YEAR RESTRICTIONS 3
2.3 UNDERWATER NOISE IMPACTS MITIGATION 4
2.4 ENTRAPMENT AVOIDANCE 4
2.5 VESSEL TRAVEL CONTROL MEASURES 4
2.6 CONSTRUCTION REPORTING 5

3.0 REFERENCES 6

LIST OF FIGURES

Figure 1. Project Locus Figure
Figure 2. Project Location with Impacts Area and Priority Habitat Indicated

October 25, 2024

1.0 INTRODUCTION

Massachusetts Department of Transportation (MassDOT) Highway Division proposes to replace the Basiliere Bridge (No. H-12-007), which carries Massachusetts State Route 125 over the Merrimack River in the City of Haverhill in northwest Essex County, Massachusetts (Project; Figure 1). The Basiliere Bridge crosses the Merrimack River at approximate river mile 18.6, approximately 10 miles (16.2 kilometers) downriver of the Essex Dam in Lawrence, Massachusetts. The Basiliere Bridge was constructed in 1925, rehabilitated in 1937 and 1971, and currently carries approximately 20,000 vehicles per day across the Merrimack River. MassDOT previously explored restoring the bridge's deck and arches on the existing foundations beginning in 2018. However, MassDOT bridge studies have indicated the bridge is structurally deficient due to scouring of the foundations and therefore must be completely replaced. Constructed in 1964, the current bridges are experiencing routine deterioration and are approaching the end of their initial design life. The I-495 bridges function as important components of the local and regional thoroughfares. Approximately 150,000 vehicles transit the bridges per day and upwards of 10,000 vehicles transit the bridges per hour during peak travel periods. Replacing the bridges will provide a minimum 75-year design life, meet current criteria for bridge lane and shoulder widths, and allow for continued connectivity and safety along the I-495 corridor in Haverhill and Methuen.

The Project area encompasses the 271,839 square feet (sf; 6.24 acres [ac]) portion of the river extending 241.4 feet (73.6 meters) upriver and downriver of the Basiliere Bridge wherein construction noise may exceed the threshold for behavioral impacts on fishes (Figure 2), and the Merrimack River from the mouth to the Basiliere Bridge that construction barges and support vessels will be required to transit. The replacement bridge will consist of a 690-feet-long (210 meters) precast concrete open spandrel arch superstructure constructed on the same horizontal alignment as the existing bridge. The existing bridge has five piers with footings in land under water. The new bridge will have four piers constructed in land under water.

In-water construction will be conducted within dewatered cofferdams and staged from four construction barges and a temporary support dock that will be constructed at the waterline of the southern shoreline adjacent to the east side of the bridge. The construction barges will consist of two spud barges and two materials barges that will be fastened to the spud barges. The barges and supporting push boats and small vessels will initially transit to the construction site from the mouth of the Merrimack River and will remain onsite until construction is completed. Installation of sheet piles to construct the temporary support dock and cofferdams, including placement of turbidity curtains; steel pipe piles to support the temporary bridge shoring; and placement of construction support spud barges would temporarily impact approximately 42,940 sf (0.99 ac) of potential shortnose sturgeon and Atlantic sturgeon migrating, foraging, and spawning habitat across the duration of construction. Excavating the footprints of the new bridge piers and subsequently installing the bridge piers would permanently remove approximately 6,800 sf (0.16 ac) of potential habitat. The total of temporary and permanent impacts on river bottom is 49,740 sf (1.10 ac).

The Project area is mapped as Priority Habitat for state-listed rare species and Estimated Habitat for state-listed rare wildlife species. It is subject to the Massachusetts Endangered Species Act (MESA) (321 CMR 10.00), as administered by the Massachusetts Natural Heritage and Endangered Species Program (NHESP). Upon review of the Project's MassDOT MESA Project Review Checklist, NHESP determined the Project will result in a take of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*) and will require a Conservation Management Plan Permit (CMP) pursuant to MESA (321 CMR 10.).

The protection plan presented below has been developed per guidance received from NHESP and NOAA Fisheries during several consultations and our knowledge of existing conditions at the Project location. The plan outlines protection measures that will be employed prior to and during construction to avoid and minimize Project impacts to the following state-listed endangered species and meet the eligibility requirements for the Project to receive a CMP:

- Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus)
- Shortnose Sturgeon (*Acipenser brevirostrum*).

Life history information and habitat use by Atlantic sturgeon and shortnose sturgeon in the Project area is presented in the CMP application project description.

2.0 PROTECTION PLAN

General construction period mitigation measures that will be employed to minimize impacts on Atlantic sturgeon and shortnose sturgeon potentially in the vicinity of the Project area will include the following:

- Use of protective shielding or a debris containment system during demolition of the superstructure of the existing bridge and construction of the superstructure of the new bridge to prevent any debris from falling into the open water. Demolition debris will be recovered and removed from the Project site.
- Implementation of erosion and sedimentation control measures during active construction on the banks adjacent to the Merrimack River and until soil stabilization and site restoration is completed to minimize the potential for bank erosion to occur and stormwater runoff to enter the Merrimack River and to prevent or minimize the release of disturbed sediment from the riverbank construction site into the Merrimack River.
- Use of floating turbidity curtains during pile driving and removal of the cofferdam and temporary support dock sheet piles to minimize sedimentation of downstream riverine habitat.

In addition to the avoidance and minimization measures presented above, sturgeon-specific protection measures are described below.

2.1 HISTORICAL SURVEYS AND RESULTS

The MassDOT completed an acoustic monitoring and side scan sonar (SSS) study for state endangered shortnose sturgeon in 2020 and 2021 in preparation, in part, for the replacement of Basiliere Bridge

(Stantec 2023a). In 2020, acoustic receivers were deployed at the Basiliere Bridge in April and retrieved in November. In 2021, acoustic receivers were deployed in March and retrieved in November. SSS surveys were conducted during the winters of 2020-2021 and 2022-2023 to assess the presence of overwintering shortnose sturgeon downriver of the Basiliere Bridge.

In 2020, the acoustic receiver at the Basiliere bridge registered 2,335 detections of 23 tagged shortnose sturgeon between April and November. Most detections were in late April, early May, and October, with no shortnose sturgeon detected in August or September and only one shortnose sturgeon detected in November. In 2021, the receiver at the Basiliere bridge registered 7,104 detections of 20 tagged shortnose sturgeon between March and October. Combined, shortnose sturgeon were detected every month from March through November except for September across the two periods of monitoring.

The SSS survey was successful in surveying and estimating the number of overwintering shortnose sturgeon across an approximately 10-mile (15-kilometer) stretch of the Merrimack River near the Basiliere Bridge. Both the 2020-2021 and 2022-2023 surveys documented overwintering shortnose sturgeon in the vicinity of Hales Island, approximately 2 miles (3 kilometers) down river of the Basiliere Bridge.

2.2 TIME OF YEAR RESTRICTIONS

Based on pre-consultation coordination with NOAA Fisheries and NHESP, time of year restrictions for in-water work (pile driving, excavation, and removal of the existing bridges) will be followed to minimize or avoid impacts on adult, juvenile, and larval stages of Atlantic sturgeon and shortnose sturgeon. The restricted periods for in-water work will be as follows:

- Between March 1 and November 15, no in-water work that may cause adverse acoustic impacts or increased turbidity levels will be allowed.
- Between November 16 and February 28, no restrictions will be placed on in-water work.

Based on their life history, it is unlikely that less mobile early life stages (i.e., eggs, larvae, juveniles) of Atlantic sturgeon and shortnose sturgeon will be present in the Project area during the November 16 through February 28 work window. The SSS surveys conducted near the Project site (see Section 2.1) indicate adult shortnose sturgeon could be present in the vicinity of the Basiliere Bridge during the November 16 through February 28 work window; therefore, mitigation measures for in-water work will still be required during this time including a fisheries biologist or protected species observer being present at all times during in-water construction activities.

2.3 UNDERWATER NOISE IMPACTS MITIGATION

The following acoustic mitigation measures will be implemented to avoid or minimize underwater noise impacts on Atlantic and shortnose sturgeon:

- Bubble curtains will be used to reduce the transmittance of noise from the work area during impact pile driving activities.
- Soft start-up of pile driving will be implemented during all pile driving activities (vibratory and impact pile driving). Soft-start pile driving will occur as follows:
  - For impact pile driving, pile driving will commence with an initial set of three strikes by the hammer at 40 percent energy, followed by a 1-minute wait period, then two subsequent three-strike sets at 40 percent energy, with 1-minute waiting periods, before initiating continuous impact driving.
  - For vibratory pile installation, pile driving will be initiated for 15 seconds at reduced energy followed by a 1-minute waiting period. This sequence of 15 seconds of reduced energy driving followed by a 1-minute waiting period will be repeated two additional times, followed immediately by pile driving at full rate and energy.
- No pile driving of any type or activities that may cause adverse acoustic impacts will be conducted during the March 1 through November 15 period.

2.4 ENTRAPMENT AVOIDANCE

The risk of Atlantic sturgeon and shortnose sturgeon entrapment and injury during excavation of the Merrimack River bottom will be avoided by conducting all excavation activities within construction cofferdams.

The risk of injury to Atlantic sturgeon and shortnose sturgeon resulting from entrapment within the construction cofferdams will be minimized by having a fisheries biologist or protected species observer on-site during cofferdam installation. Before a partially constructed cofferdam is completed, a visual assessment will be completed to observe for sturgeon within the cofferdam. If a sturgeon is present, work will be paused until the fish leaves of its own accord. During dewatering, the on-site monitor will visually assess the decreasing water levels to confirm there are no sturgeon entrapped within the cofferdam. If Atlantic sturgeon or shortnose sturgeon are observed in the work area, in-water work will be delayed until they have departed the work area and NHESP and NOAA Fisheries will be notified within 48 hours.

2.5 VESSEL TRAVEL CONTROL MEASURES

Project vessels will consist of two construction spud barges and two materials barges that will be fastened to the spud barges. Push boats and small vessels will support the construction barges. The vessels will initially transit to the construction site from the mouth of the Merrimack River. Once onsite, the barges will be infrequently moved by the push boats to various locations within the Project construction area to support construction activities and the small vessels will transport personnel and gear to and from the barges and the temporary support dock approximately three to four times per day. Upon completion of

construction, the vessels will transit downriver to the mouth of the Merrimack River. The following vessel travel control measures will be implemented.

All construction vessels will be required to travel at speeds of less than 6 nautical miles per hour at all times.

A fisheries biologist or protected species observer will be present on the construction vessels during their transits to and from the construction site and the mouth of the Merrimack River. For daily vessel movements, sturgeon recognition training will be provided to the vessel operators. If sturgeon are observed during vessel operations, vessel activity will be temporarily stopped until sturgeon are no longer visually observed in the vicinity of the in-river work area and NHESP and NOAA Fisheries will be notified within 48 hours.

The Merrimack River bottom within the construction footprint was surveyed as having coarse and highly embedded substrates (i.e., pebble/gravel/cobble or gravel/cobble/boulder; Stantec 2023b). Thus, while it may be possible for sturgeon, if present within the Project Area, to be attracted to areas of recently disturbed substrate (e.g., from propeller wash) to feed on newly exposed benthic food sources, it is unlikely these coarse substrate types will be disturbed by work vessel traffic. Nonetheless, construction vessels operators will be directed to use alternating routes, to the extent practicable, when traveling to and from the construction and materials barges to reduce the potential that sturgeon foraging in recently disturbed areas may be affected by work vessels.

2.6 CONSTRUCTION REPORTING

Daily construction summaries will be recorded by the fisheries biologist of protected species observer when on-site during construction. The time, location, weather, river conditions, and condition of Atlantic sturgeon or shortnose sturgeon will be documented by the observer if any individuals are observed. If any Atlantic sturgeon or shortnose sturgeon are detected within the Project area, NHESP and NOAA Fisheries will be notified within 48 hours.

3.0 REFERENCES

Stantec Consulting Services Inc. (Stantec). 2023a. Merrimack River Shortnose Sturgeon Monitoring, 2020-2022. Prepared for: Massachusetts Department of Transportation. April 6, 2023.

Stantec. 2023b. SR 125 Haverhill Bridge and I-495 Kimball Island Bridge Substrate Survey Report. Prepared for Massachusetts Department of Transportation. November 20, 2023.

Attachment 5

Massachusetts Endangered Species Act Conservation and Management Plan Sturgeon Habitat Study for the Basiliere Bridge Replacement Project (dated 10/25/24, prepared by Stantec Consulting Services); the “Sturgeon Study Mitigation Plan”

Massachusetts Endangered Species Act Conservation and Management Plan Sturgeon Habitat Study for the Basiliere Bridge Replacement Project

Contract No. 100470 – Statewide Environmental Services
Assignment 29

NHESP File No.: 24-18824

October 25, 2024

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Table of Contents

1.0 INTRODUCTION 1
1.1 STURGEON HABITAT IN THE MERRIMACK RIVER 2
1.2 PLAN OBJECTIVE 3
2.0 METHODS 3
1.3 DATA COLLECTION 3
1.4 DATA PROCESSING AND INTERPRETATION 4
3.0 SUMMARY REPORT 5
4.0 LITERATURE CITED 6

LIST OF TABLES

Table 1. Example substrate classes for the Basiliere Bridge Replacement MESA Conservation and Management Plan. 5

LIST OF FIGURES

Figure 1. Study Area 8

1.0 INTRODUCTION

Massachusetts Department of Transportation (MassDOT) Highway Division proposes to replace the Basiliere Bridge (No. H-12-007), which carries Massachusetts State Route 125 over the Merrimack River in the City of Haverhill in northwest Essex County, Massachusetts (Project; Figure 1). The Basiliere Bridge crosses the Merrimack River at approximate river mile (RM) 18.6, approximately 10 miles downriver of the Essex Dam in Lawrence, Massachusetts. The Basiliere Bridge was constructed in 1925, rehabilitated in 1937 and 1971, and currently carries approximately 20,000 vehicles per day across the Merrimack River. MassDOT previously explored restoring the bridge's deck and arches on the existing foundations beginning in 2018. However, MassDOT bridge studies have indicated the bridge is structurally deficient due to scouring of the foundations and therefore must be completely replaced.

Upon review of the MassDOT Massachusetts Endangered Species Act (MESA) Project Review Checklist for the Project, the Massachusetts Natural Heritage and Endangered Species Program (NHESP) provided a letter to MassDOT, dated September 10, 2024, declaring the Project, as currently proposed, will result in a Take (321 CMR 10.18(2)(b)) of state-listed Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*). NHESP noted the Project will alter a total of 49,740 square feet of feeding, migrating, sheltering, and potential spawning habitat for these species through excavation, dewatering, hardening (new footings), and disturbance of the river bottom. Projects resulting in a Take of MESA species may only be permitted if they meet the performance standards for a Conservation and Management Permit (CMP; 321 CMR 10.23). A detailed summary table of proposed impacts is provided in the Project's CMP application.

To meet the standards for a CMP, an applicant agrees to carry out a Conservation and Management Plan (CMP Plan) that provides a long-term net benefit to the conservation of the affected MESA-listed Species. After receiving pre-filing guidance and preliminary approval from NHESP for a research-based CMP Plan, MassDOT is proposing to implement a mapping study of potential sturgeon habitat in the Merrimack River. This document describes the basis for the CMP Plan and outlines the anticipated study methods and conservation benefit for Take of sturgeon.

NHESP has provided MassDOT approval for this proposed CMP Plan to provide a long-term conservation benefit to sturgeon that will exceed the harm of the proposed Project described above and a second bridge replacement project proposed by MassDOT, the I-495 bridges over the Merrimack River at Kimball Island replacement project, for which MassDOT is also preparing a CMP application to be filed during fall 2024. NHESP has informed MassDOT that the Kimball Island I-495 bridge replacement project, which will affect 37,192 square feet of feeding, migrating, sheltering, and potential spawning habitat for Atlantic sturgeon and shortnose sturgeon, will also result in Take of MESA-listed species.

The full CMP Plan will characterize the composition of the Merrimack River bottom between the I-495 crossing of the Merrimack River at Lawrence, Massachusetts, and the Groveland – West Newbury town line, approximately 13 miles downriver. In accordance with the proportion of total impacts on Priority Habitat resulting from replacement of the Basiliere and I-495 Kimball Island bridges (86,932 square feet), the 5.5-mile section of the CMP Plan extending from the I-495 crossing of the Merrimack River at

Lawrence to approximate RM 21.8 (approximately 1.5 miles downriver of the I-495 Kimball Island bridge) will be ascribed as the conservation benefits for the I-495 Kimball Island bridge replacement project. The remaining 7.5-mile section of the CMP Plan extending from approximate RM 21.8 to the Groveland – West Newbury town line will be ascribed as conservation benefits for the Basiliere Bridge replacement project (Figure 1).

1.1 Sturgeon Habitat in the Merrimack River

Atlantic sturgeon are large, slow-growing, demersal fish. They are anadromous fish that spawn in freshwater rivers, migrate to the ocean as juveniles, and return to freshwater rivers to spawn at adulthood (NOAA Fisheries 2023a). Atlantic sturgeon generally spawn in the spring (April–May) in mid-Atlantic and northeast US rivers (ASSRT 2007). Spawning typically occurs in flowing water over hard bottom substrates, such as gravel, rocks, and cobbles, between the salt front and the fall line of rivers (ASSRT 2007). Spawned eggs are demersal and become highly adhesive shortly after fertilization. After a brief pelagic stage (3 to 4 days post-hatch), yolk-sac larvae are also primarily demersal and use interstitial spaces between the rocks and gravel for shelter and early life stage (ELS) development (Mohler 2003). After 8 to 12 days post-hatch, larvae absorb their yolk-sac and begin free swimming. Post yolk-sac larvae primarily occur in silty, soft bottom habitat in the deepest portions of rivers. Adult female Atlantic sturgeon typically emigrate downstream to the ocean quickly after spawning (i.e., within 4 to 6 weeks) while males remain in the lower river and nearshore estuarine environments through early to late fall (ASSRT 2007, Bain 1997, NOAA Fisheries 2023a). Although appropriate Atlantic sturgeon spawning habitat is present in the Merrimack River, Atlantic sturgeon spawning has not been documented in the Merrimack River to-date.

Shortnose sturgeon are also anadromous, slow-growing, demersal fish with a late age at maturation. They are similar in appearance to Atlantic sturgeon but are smaller in size with a larger mouth, a shorter and broader snout shape, and have a different tail scute pattern (NOAA Fisheries 2023b). Shortnose sturgeon inhabit the main stems of their natal rivers, migrating between salt water and freshwater areas. They generally spawn in deepwater channels over gravel, rubble, or other hard substrates in freshwater areas, while feeding and overwintering activities may occur in both fresh and saline habitats (NOAA Fisheries 1998, 2023b). Shortnose sturgeon spawning in the Merrimack River is believed to occur in April as water temperatures are increasing and has been documented between approximate RM 19 and RM 20 (Kieffer and Kynard 1996, SSSRT 2010). The substrate in this area consists of boulders and rubble and is typically less than 20 feet deep. After spawning, adults move rapidly downstream from the spawning grounds to the areas of the river in which they feed, rest, and spend most of the year (NOAA Fisheries 2023b). Spawned eggs are demersal and adhere to the bottom substrate. After hatching, yolk-sac larvae remain demersal and at the spawning site for 8 to 10 days. Eight to 12 days after hatching, larvae absorb the yolk-sac and migrate downstream for a short distance (in the range 7 to 9 miles) before settling again for upwards of a year (SSSRT 2010, Kynard and Horgan 2002). Post yolk-sac larvae tend to remain in silty, soft bottom habitat in the deepest parts of rivers (SSSRT 2010).

1.2 Plan Objective

Aside from research conducted by Kieffer and Kynard in the 1990s (e.g., Kieffer and Kynard 1993, 1996; Kynard et al. 2000), sturgeon spawning habitat in the Merrimack River is not well documented in literature. Accordingly, the goal of the CMP Plan is to map and characterize the composition of the current Merrimack River bottom relative to sturgeon potential habitat suitability between the I-495 Bridge crossing the Merrimack River at Lawrence, Massachusetts (42.706° N, -71.139° W; approximate RM 27), to the Groveland – West Newbury town line (42. 784° N, -71.020° W; approximate RM 14), a distance of approximately 13 river miles (Figure 1).

The primary objective of the CMP Plan is to map the following potential habitat types for shortnose and Atlantic sturgeon:

- potential spawning habitat (i.e., hard bottom such as cobble and/or gravel)
- potential ELS and juvenile rearing habitat (i.e., sand bars)
- large woody debris piles, which can be used as potential refuge during high river flows for ELS and juvenile sturgeon.

Recent literature provided by NHESP suggests using side scan sonar (SSS) is a viable method for delineating and classifying major substrate classes and mapping large woody debris, riverbanks, and other key features of riverine habitats of aquatic species. For example, methods for riverine benthic habitat mapping have been successfully demonstrated and validated on upwards of 124 miles of rivers and creeks in southwest Georgia (Kaeser and Litts 2008, 2010; Kaeser et al. 2012). As specified by Litts and Kaeser (2016), sonar habitat mapping is a feasible method to characterize benthic habitats throughout entire river basins, providing both high spatial resolution to identify discrete patches of suitable spawning substrate for sturgeon and large-scale spatial coverage required to quantify these patches across the vast reaches of river traversed by migratory fish. Additionally, during the winters of 2020-2021 and 2022-2023, a MassDOT-directed project used SSS to survey approximately 10 miles of the Merrimack River downriver of the Basiliere Bridge for overwintering shortnose sturgeon (Stantec 2023). Although the purpose of this project was not to identify river bottom substrate, the resolution of the imaging collected showed large groups of overwintering sturgeon, at previously undocumented numbers, and indicates substrate identification should be achievable using the methods described below.

2.0 METHODS

1.3 Data Collection

The Merrimack River bottom substrate composition will be mapped and characterized using SSS, and a combination of SCUBA, drop camera, and/or underwater drone imaging to ground truth the SSS images. The approximately 13-mile stretch of river will initially be surveyed using SSS. SSS imagery will be collected using an Edgetech 4125 towfish operating at 600-kHz and 1600-kHz and Edgetech Discover software. The operating frequency of 600-kHz provides a detailed overview of the river bottom and substrate. The operating frequency of 1600-kHz allows collection of ultra-high-resolution imagery of targets and features of interest to aid in classification. Typically, surveys are conducted by maneuvering

the SSS along parallel transects to thoroughly cover the entirely of the river bottom from shoreline to shoreline. Depending the on width of the river, survey lines can be run parallel to the axis of the river at spacing distances of 60 feet, 40 feet, or 20 feet. Data acquisition and processing will be completed using Hypack 2019, Edgtech Discover, Chesapeake Sonarwiz 6, and AutoCAD.

Upon review and post-processing of the initially collected SSS images, identified sections of the river where the sonar images indicate different types of substrates will be visually confirmed and ground truthed using diver surveys, drop cameras, and/or underwater drone imaging, as appropriate for the river conditions at the time of the surveys. The locations and extent of the visual confirmation to be conducted will be dependent upon the heterogeneity of the river bottom as indicated from the SSS imagery and the professional judgement of the Certified Hydrographer overseeing the data collection. Steele Associates Marine Consultants LLC (Steele) will conduct the SSS survey during the summer of 2025 when water levels are appropriate to safely conduct data collection. Steele has extensive experience in the Merrimack River, including conducting the SSS surveys during the winters of 2020-2021 and 2022-2023 described in Section 1.2.

1.4 Data Processing and Interpretation

The SSS data processing and interpretation will be based on a review of methods detailed in published literature such as Litts and Kaeser (2016), Kaeser *et al.* (2012), and Kaeser and Litts (2008, 2010), which document the use of SSS to map Atlantic and shortnose sturgeon spawning habitat, general benthic habitats, and large woody debris used as refugia. Generally, once the SSS imaging is processed, sonar image maps will be loaded into a GIS workspace to provide a spatially continuous, two-dimensional representation of the river bottom across the surveyed stretch of river. Substrate polygons representing areas of similar sonar signatures will be fine-tuned and classified based on visual interpretation of the image signatures using texture, tone, shape and pattern in conjunction with the field collected diver observations and drop camera/underwater drone imaging. The exact location and number of ground truthing visually assessed points will be determined based on the results and relative heterogeneity of the SSS imagery. The anticipated resolution of the substrate delineations is represented by the general substrate classes described by Litts and Kaeser (2016) and provided in Table 1; however, final substrate classifications will be based on the SSS imagery, river bottom substrate conditions, and the visual confirmations.

Table 1. Example substrate classes for the Basiliere Bridge Replacement MESA Conservation and Management Plan.

Substrate class	Definition
Sand	≥ 75 percent of area composed of particles < 2 millimeters (mm) and > 0.075 mm in diameter, excepting those classified as clay/mud
Rocky fine	> 75 percent of area composed of rocks > 63 mm but < 500 mm in diameter across the longest axis (i.e. cobble/small boulder)
Rocky boulder	An area that includes ≥ 3 large boulders, each ≥ 500 mm diameter across longest axis, each boulder within 1.5 meters (m) of the next adjacent boulder. Any area meeting these criteria, regardless of underlying substrate, is classified rocky boulder.
Mixed rocky	An area comprising two or more substrate classes (at least one being rocky) arranged such that no homogenous portion is greater than the project-specific minimum mapping unit
Bedrock	≥ 75 percent of area composed of bedrock (e.g., limestone, sandstone, or claystone)
Clay/mud	> 75 percent of area composed of clay or mud (< 0.075 mm diameter)
Large woody debris	Wood with diameter ≥ 0 centimeters and length ≥ 1.5 m

Source: Litts and Kaeser 2016

3.0 SUMMARY REPORT

Following the in-river SSS and ground truthing surveys and data post-processing, a summary report will be prepared with the study's methodology, representative images and GIS files, and potentially suitable sturgeon habitat mapping of the Merrimack River stretch between the I-495 Bridge crossing the Merrimack River at Lawrence (RM 27) and the Groveland – West Newbury town line (RM 14). The GIS files will contain the polygons of the distributions of the different substrate classifications and an assessment of which portions of the river stretch are characterized as potential suitable sturgeon spawning habitat (i.e., hard bottom) or ELS and juvenile sturgeon rearing habitat (i.e., sand bars), and large woody debris refugia. The summary report is anticipated to be provided to the NHESP by December 31, 2025.

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