## Notice of Intent

## Roadway Foundation Repair

88 Black Falcon

Boston, MA



Submitted to: The Boston Conservation Commission 1 City Hall Sq. Boston, MA

> Submitted by: The Davis Company 125 High Street Boston, MA



#### PILE PROTECTION PROJECT

#### 88 BLACK FALCON

#### **Project Description**

In general, the proposed repairs are intended to stabilize and protect the existing roadway support piles from further deterioration. Some of the piles have undergone both mechanical and biological degradation. The deterioration noted appears to be fungal attack which has softened the timber surface. Piles which remain encased in the original concrete are assumed to be in good condition since they have been protected from exposure to oxygen and abrasion. In some cases, the overall cross-section of the piles has been reduced and/or the piles have lost contact with the concrete pile caps/beams.

Eliminating oxygen exposure will protect the piles from additional fungal deterioration. The encapsulation in concrete will also protect the piles from abrasion. The encapsulation repair will maintain the piles in their current "structural" condition.

The proposed repairs include protection of the piles by encapsulating them in low strength concrete. This will protect them from further fungal attach and abrasion. The repair also includes creating a concrete connection from the top of the new slab to the underside of the pile cap/beam. The extent of this reconnection repair is based on the required live load capacity of the roadway structure. The attached plans illustrate the proposed repair concept and the extent to which it will be implemented.

The proposed sequence of construction is "cleaning" the piles by washing with fresh water under pressure. The pressure wash will remove loose surface material which will enhance the bond of the concrete to the timber. Material which is removed during cleaning will be collected and disposed of properly. Once the cleaning is complete the concrete will be placed around the footings and in the bays. Once the slabs are placed and concrete has gained full strength, concrete will be placed from the slab to the bottom of the existing pile caps/beams. The proposed concrete extensions will occur directly over existing piles. The exposed piles under the building support footing at the east end of the structure will be protected in the same way as the piles in each roadway support bent. The extent of cleaning of the piles under the footing will be limited to the available access. No excavation of soil will be performed to access piles for cleaning.

#### **Coastal Resource Areas**

All work will occur behind the existing seawall and below the roadway surface. As such the repairs will have no impact on flood storage capacity or water circulation. The proposed work will not result in any change or impact to existing stormwater systems or drainage patterns.

#### Alternatives

The proposed repairs will protect the existing roadway support piles from continued deterioration. If the piles are not protected it is estimated that the roadway capacity will be reduced to a point that load restriction will be required which will require modification of vehicle operations on the site.

If the piles aren't protected it is possible that the roadway foundation will need be replaced at some time in the future. The replacement would include removing the roadway surface and associated support beams and pile caps. New piles would have to be driven and new pile caps and a roadway surface installed. We estimate that rebuild would have a significant impact on flood storage during the construction phase.

Childs Engineering Corporation David L. Porter, P.E.

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- **B PROJECT NARRATIVE**
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- D ABUTTERS LIST AND NOTIFICATION
- E PLANS PREPARED BY CHILDS ENGINEERING CORPORATION
- F NOI FEE TRANMITTAL FORMS



# 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 Boston City/Town



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.

Α.	General Information
1	Draiget Logation (Note: clastronic filera will a

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

88 Black Falcon Avenue	Boston	02127
a. Street Address	b. City/Town	c. Zip Code
Latitude and Langitude:	42.343953N	71.023962E
Latitude and Longitude:	d. Latitude	e. Longitude
	0602674015	
f. Assessors Map/Plat Number	g. Parcel /Lot Number	
. Applicant:		
Brian	Bishop	
a. First Name	b. Last Name	
The Davis Companies		
c. Organization		
125 High Street		
d. Street Address		
Boston	MA	02110
e. City/Town	f. State	g. Zip Code
617-799-4341	Brian Bishop <bbishop< td=""><td>@TheDavisCompanies.com:</td></bbishop<>	@TheDavisCompanies.com:
h. Phone Number i. Fax Number	j. Email Address	
a. First Name	b. Last Name	nore than one owner
Property owner (required if different from     a. First Name     Massachusetts Port Authority     c. Organization	b. Last Name	nore than one owner
Property owner (required if different from     a. First Name     Massachusetts Port Authority     c. Organization     One Harborside Drive	b. Last Name	nore than one owner
Property owner (required if different from     a. First Name     Massachusetts Port Authority     c. Organization     One Harborside Drive     d. Street Address	b. Last Name	nore than one owner
Property owner (required if different from     a. First Name     Massachusetts Port Authority     c. Organization     One Harborside Drive     d. Street Address     Fast Boston	h applicant): ∐ Check if m	020128
Property owner (required if different from     a. First Name <u>Massachusetts Port Authority     c. Organization     One Harborside Drive     d. Street Address     East Boston     e. City/Town </u>	h applicant): ∐ Check if m b. Last Name b. Last Name 	<u>020128</u> g. Zip Code
Property owner (required if different from         a. First Name         Massachusetts Port Authority         c. Organization         One Harborside Drive         d. Street Address         East Boston         e. City/Town         h. Phone Number         i. Fax Number	b. Last Name MA f. State j. Email address	<u>020128</u> g. Zip Code
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Property owner (required if different from     a. First Name     Massachusetts Port Authority     c. Organization     One Harborside Drive     d. Street Address     East Boston     e. City/Town     h. Phone Number     i. Fax Number     . Representative (if any):     David     a. First Name	Image: Applicant):       Image: Check If m         b. Last Name       b. Last Name          MA          f. State          j. Email address          Porter          b. Last Name	020128 g. Zip Code
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<ul> <li>Property owner (required if different from a. First Name <u>Massachusetts Port Authority</u> c. Organization <u>One Harborside Drive</u> d. Street Address <u>East Boston</u> e. City/Town h. Phone Number i. Fax Number</li> <li>Representative (if any): <u>David</u> a. First Name <u>Childs Engineering Corporation</u> c. Company <u>34 William Way</u> d. Street Address <u>Bellingham</u> e. City/Town</li> </ul>	applicant):       □ Check if m         b. Last Name       b. Last Name	020128 g. Zip Code
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5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

a. Total Fee Paid

b. State Fee Paid

c. City/Town Fee Paid

4

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**Document Transaction Number** 

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#### Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

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Act M.G.L	L. C. 131, §40	Boston		
				City/Town
ued)				
on of the acc	cess	road	dway and parl	king area at 88 Black
d with fresh	wate	er ar	nd encased in	concrete. Where the
e plies do to	1051	CON	Siele new con	
	500	tion	∧ 7b)	
i Types see	Sec	lion	A. 70.)	
	2.		Residential S	Subdivision
	4.		Dock/Pier	
		_		
	6.		Coastal engi	neering Structure
restry)	8.		Transportatio	n

## A. General Information (continu

6. General Project Description:

The project will protect the pile foundation Falcon Avenue. The piles will be cleaned concrete pile cap no longer engages the

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)?

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)

2. Limited Project Type

1. Yes

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:

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

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

- 1. D 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.



Provided by MassDEP:



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

	<u>Resou</u>	rce Area	Size of Proposed Alteration	Proposed Replacement (if any)
For all projects	a. 🗌	Bank	1. linear feet	2. linear feet
affecting other Resource Areas, please attach a	b. 🛄	Bordering Vegetated Wetland	1. square feet	2. square feet
narrative explaining how the resource	c. 🗌	Land Under Waterbodies and	1. square feet	2. square feet
area was delineated.		Waterways	3. cubic yards dredged	
domioatoa.	<u>Resou</u>	rce Area	Size of Proposed Alteration	Proposed Replacement (if any)
	d. 🗌	Bordering Land Subject to Flooding	1. square feet	2. square feet
	_ □	Isolated Land	3. cubic feet of flood storage lost	4. cubic feet replaced
	0.	Subject to Flooding	1. square feet	
			2. cubic feet of flood storage lost	3. cubic feet replaced
	f. 🗌	Riverfront Area	1. Name of Waterway (if available) - sp	ecify coastal or inland
	2.	Width of Riverfront Area	a (check one):	
		25 ft Designated	Densely Developed Areas only	
		🔲 100 ft New agricu	ltural projects only	
		200 ft All other pr	ojects	
	3.	Total area of Riverfront A	rea on the site of the proposed proje	ect: square feet
	4.	Proposed alteration of the	e Riverfront Area:	
	a. 1	total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
	5.	Has an alternatives analy	sis been done and is it attached to t	his NOI?
	6.	Was the lot where the act	ivity is proposed created prior to Au	gust 1, 1996? 🛛 🛛 Yes 🗌 No
3	3. 🛛 Co	astal Resource Areas: (Se	ee 310 CMR 10.25-10.35)	
	Note:	for coastal riverfront area	s, please complete Section B.2.f. a	bove.



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#### 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		Resource Area		Size of Propose	d Alteration	Proposed Replacement (if any)
transaction number		а. 🔀	Designated Port Areas	Indicate size ur	nder Land Under	r the Ocean, below
(provided on your receipt page) with all		b. 🗌	Land Under the Ocean	0 1. square feet		
supplementary information you submit to the				2. cubic yards dredg	ed	
Department.		c. 🗌	Barrier Beach	Indicate size und	der Coastal Bead	ches 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
				Size of Propose	d Alteration	Proposed Replacement (if any)
		f. 🛛	Coastal Banks	0 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 dredg	ed	
		j. 🗌	Land Containing Shellfish	1. square feet		
		k. 🗌	Fish Runs	Indicate size und Ocean, and/or in above	der Coastal Banl Iland Land Unde	ks, inland Bank, Land Under the er Waterbodies and Waterways,
				1. cubic vards dredg	ed	
		I. 🛛	Land Subject to	Approximately 5	0,000 s.f.	
	4.	Re:	Coastal Storm Flowage storation/Enhancement	1. square feet		
		square amount	folder is for the purpose of r footage that has been ente t here.	red in Section B.2	2.b or B.3.h abov	ve, please enter the additional
		a. square	e feet of BVW		b. square feet of S	alt Marsh
	5.	🗌 Pro	ject Involves Stream Cross	ings		
		a. numbe	er of new stream crossings		b. number of repla	cement stream crossings



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### 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

 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
_	1 Rabbit Hill Road
Oct. 1, 2008	Westborough MA 01591
b. Date of map	westbolough, MA 01561

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. Dercentage/acreage of property to be altered:

(a) within wetland Resource Area

percentage/acreage

(b) outside Resource Area

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

<sup>\*</sup> Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <a href="http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/">http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/</a>). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

<sup>\*\*</sup> 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.



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

(c) MESA filing fee (fee information available at <u>http://www.mass.gov/dfwele/dfw/nhesp/regulatory\_review/mesa/mesa\_fee\_schedule.htm</u>). 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, <u>http://www.mass.gov/dfwele/dfw/nhesp/regulatory\_review/mesa/mesa\_exemptions.htm;</u> the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

$^{\circ}$	Separate MESA review engoing		
∠. ∟	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
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If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and	North Shore - Hull to New Hampshire border:
the Cape & Islands:	

Division of Marine Fisheries -Southeast Marine Fisheries Station Attn: Environmental Reviewer 1213 Purchase Street – 3rd Floor New Bedford, MA 02740-6694 Email: <u>DMF.EnvReview-South@state.ma.us</u> Division of Marine Fisheries -North Shore Office Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930 Email: <u>DMF.EnvReview-North@state.ma.us</u>

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.

X	Massachusetts Department of Environmental Protection       Provided by MassDEP:         Bureau of Resource Protection - Wetlands       MassDEP File Number         WPA Form 3 – Notice of Intent       Document Transaction Number         Massachusetts Wetlands Protection Act M.G.L. c. 131, §40       Document Transaction Number					
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	C.	Other Applicable Standards and Requirements	(cont'd)			
	4.	Is any portion of the proposed project within an Area of Critical Enviror	mental Concern (ACEC)?			
Online Users: Include your document		a. Yes No If yes, provide name of ACEC (see instruction: Website for ACEC locations). <b>Note:</b> electronic	s to WPA Form 3 or MassDEP filers click on Website.			
transaction		b. ACEC				
(provided on your receipt page) with all	5.	Is any portion of the proposed project within an area designated as an (ORW) as designated in the Massachusetts Surface Water Quality Sta	Outstanding Resource Water ndards, 314 CMR 4.00?			
supplementary		a. 🗌 Yes 🖾 No				
submit to the Department.	6.	Is any portion of the site subject to a Wetlands Restriction Order under Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restrict	the Inland Wetlands ion Act (M.G.L. c. 130, § 105)?			
		a. 🗌 Yes 🖾 No				
	7.	Is this project subject to provisions of the MassDEP Stormwater Manag	gement Standards?			
		<ul> <li>a. Yes. Attach a copy of the Stormwater Report as required by the Standards per 310 CMR 10.05(6)(k)-(q) and check if:</li> <li>1. Applying for Low Impact Development (LID) site design creation Stormwater Management Handbook Vol. 2, Chapter 3</li> </ul>	e Stormwater Management edits (as described in )			
		2. A portion of the site constitutes redevelopment				
		3. Proprietary BMPs are included in the Stormwater Manage	ment 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 sing equal to 4 units in multi-family housing project) with no dis	le-family houses or less than charge to Critical Areas.			
	D.	Additional Information				
		This is a proposal for an Ecological Restoration Limited Project. Skip S Appendix A: Ecological Restoration Notice of Intent – Minimum Requir 10.12).	ection D and complete ed Documents (310 CMR			

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

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### 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.

Concrete Cap Repair 8 sheets	
a. Plan Title	
Childs Engineering Corporation	David Porter PE
b. Prepared By	c. Signed and Stamped by
as noted	as noted
d. Final Revision Date	e. Scale
Notice of Intent	12/28/17
f. Additional Plan or Document Title	g. Date
If there is more than one property of	wher please attach a list of these property owners no

- 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

4. State Check Number

3. Check date

5. Check date

Childs Engineering Corporation 6. Payor name on check: First Name

7. Payor name on check: Last Name



**Bureau of Resource Protection - Wetlands** 

WPA Form 3 – Notice of Intent

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

MassDEP File Number

Document Transa	ction Number
Boston	
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.

DIV BLACK FALTON, LLC		
the k and	5/24/18	
1. Signature of Applicant	2. Date	
tames Stolechi	5/24/18	
3 Spnature of Property Owner (if different)	4. Date	
~ ~ / L. / 151	5/24/18	
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.

EXHIBIT A

USGS PROJECT VICINITY MAP



EXHIBIT B

**PROJECT NARRATIVE** 

#### PILE PROTECTION PROJECT

#### 88 BLACK FALCON

In general, the proposed repairs are intended to stabilize and protect the existing roadway support piles from further deterioration. Some of the piles have undergone both mechanical and biological degradation. The deterioration noted appears to be fungal attack which has softened the timber surface. It is estimated that the softened surface has been abraded. Piles which remain encased in the original concrete are assumed to be in good condition since they have been protected from exposure to oxygen and abrasion. In some cases, the overall cross-section of the piles has been reduced and/or the piles have lost contact with the concrete pile caps/beams.

Eliminating oxygen exposure will protect the piles from additional fungal deterioration. The encapsulation in concrete will also protect the piles from abrasion. The encapsulation repair will maintain the piles in their current "structural" condition.

The proposed repairs include protection of the piles by encapsulating them in low strength concrete. This will protect them from further fungal attach and abrasion. The repair also includes creating a concrete connection from the top of the new slab to the underside of the pile cap/beam. The extent of this reconnection repair is based on the required live load capacity of the roadway structure. To achieve 250 pounds per square foot live load capacity it is estimated that every other pile in each bent will need to be connected to the beam. In most areas, the pile to concrete connection is still intact. The attached plans illustrate the proposed repair concept and the extent to which it will be implemented.

The proposed sequence of construction is will call for the "cleaning" the piles by washing with fresh water under pressure. The pressure wash will remove loose surface material which will enhance the bond of the concrete to the timber. Once the cleaning is complete the concrete will be placed around the footings and in the bays. Once the slabs are placed and concrete has gained full strength, concrete will be placed from the slab to the bottom of the existing pile caps/beams. The proposed concrete extensions will occur directly over existing piles and only over enough piles (every other pile) to develop the 250 psf load capacity on the roadway surface. The exposed piles under the building support footing at the east end of the structure will be protected in the same way as the piles in each roadway support bent. The extent of cleaning of the piles under the footing will be limited to the available access. No excavation of soil will be performed to access piles for cleaning.

Childs Engineering Corporation David L. Porter, P.E.

EXHIBIT C

2016 FEMA FLOOD MAPS



EXHIBIT D

ABBUTTERS LIST AND NOTIFICATION



Childs

## CHILDS ENGINEERING CORPORATION



34 WILLIAM WAY, BELLINGHAM, MA 02019 (508) 966-9092 FAX (508) 966-9096

July 12, 2018

Notification to Abutters Under the Massachusetts Wetlands Protection Act

RE: Notice of Intent for Roadway Pile Foundation Protection 88 Black Falcon Avenue South Boston, MA

The Davis Companies are proposing a project to protect the piles supporting the roadway and repair areas of deterioration of the concrete support beams at 88 Black Falcon Avenue in South Boston.

As an abutter to this project, in accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified that a Notice of Intent (NOI) has been filed with the City of Boston Conservation Commission. The NOI describes the proposed roadway repair.

Copies of the Notice of Intent may be examined at the Office of the Boston Conservation Commission, Boston City Hall – Room 709, between the hours of 9:00 AM to 4:00 PM Monday through Friday. For additional project information, you may also contact Brian Bishop of the Davis Companies at (617) 499-4341.

A Public Hearing will be held by the Boston Conservation Commission on August 1, 2018, at 6:00 PM in Boston City Hall Piedmont Room, 5<sup>th</sup> Floor. The following website provides information regarding the agenda for Conservation Commission Hearings, and you are encouraged to check this website for any changes and the exact time of each agenda item, should you plan to attend:

#### http://www.boston.gov/publicnotices

Notice of the Public Hearing, including its date, time and place, will be published at least five (5) days in advance in the Boston Herald, and will also be posted in the City Hall not less than forty-eight (48) hours in advance.

You may also contact the Department of Environmental Protection, Northeast Region Office, at (978) 694-3200 for more information about this application or the Wetlands Protection Act.

#### **ABUTTER NOTIFICATION**

#### 88 BLACK FALCON

#### Requirements

Per the NOI filing guidelines the applicant must provide notification to abutters within 100 feet of the property line from where the work is proposed.

The roadway support pile repair project has one abutter within 100 feet:

Parcel ID:.0602674019

Parcel Address: 36 Drydock Avenue, Boston, MA 02127

Current Owner: Economic Development & Industrial Corporation

Mailing Address: 1 City Hall Plaza, 9th Floor

Boston, MA 02201

EXHIBIT E

PLANS PREPARED BY CHILDS ENGINEERING



QUINN K:\2715-16.00 88 BLACK FALCON - DAVIS COMPANIES\CADD\PERMIT DWGS\NOI\271516 X-101 CONCRETE CAP REPAIRS.DWG Jan 15, 2018 - 12:





Q





EXISTING PILE











SCALE:1"=1'-0"

		5	
	ANT		EERING CORPORATION IELLINGHAM, MA 02019 U.S.A. -9092 Fax: (508) 966-9096 seng.com
	RVE EXISTING REBAR		LNGINE 4 wAY, B 38) 966- ail@childs
			LDS E bhone: (56 -mail: m
	NEEDED TO LEVEL		DAVID LIVINGSTON PORTER No. 30110 PO
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FOR NOTICE of INTENTSheet reference number: X-104 Sheet 4 of 8			BLACK FALCON PIER DAVIS COMPANIES BOSTON, MA EXPANSION JOINT REPAIR DETAILS
		FOR NOTICE OF INTENT	Sheet reference number: X - 104 Sheet 4 of 8

		1						2
			South de	eteriorated Tra	nsverse Beam	s Cap locations	Nor	th deteriorated Tr
			Pile Cap Walls #	Repa Length	ir Size Height	Number of Exposed piles	Pile Ca Walls	ap Reg # Length
			S60 S61	2 12	3 5	5	N60 N61	18
			S62 S63	8	4 4	5	N62 N63	<u> </u>
			S64	4	1.5	1	N64	10
			S65 S66	4 8	2 3	0 3	N65 N66	10
	D		S67	8	4	4	N68	2
			S68 S69	6 8	2	3	N70	4
			S70 S72	6	6	2	N71 N72	4
			S73	6	4	2	N73	8
			S74 S75	8	3	3	N74 N75	8
			S77	5	2	2	N76	1
			S78 S79	3 3.5	1 2.5	0	N77 N78	<u> </u>
			S80	1	1	0	N79	2
			S81 S82	6	2	3	N80 N81	2
			S83	5	1	0	N82	4
			585	0.5	1	0	N84	1
			S87 S88	1	2	0	N85 N86	5
			S89	2	2	0	N87	8
			S91 S92	1	2	1	N88 N89	8
			S93	4	1	1	N90	6
			S94 S96	<u> </u>	3.5 1	1	N91 N92	3
			S97	1	1	0	N93	4
	С		S98 S99	4	2	0	N94 N95	<u> </u>
			S100	1	1	0	N96	3
			S102 S106	3	3 1.5	2	N97 N98	2
			S107	2	1	1	N99	2
			S111 S124	<u> </u>	2.5	0	N100 N101	4
			S125	1	1	0	N102	4
			S130 S139	1	1	1	N103	6
			S140	1	1	1	N105	19
			S141 S142	8	2	2	N107	1
			S143 S144	4	4	1	N109 N110	3.5
			S145	4	3	1	N111	4
			S146 S149	3 2.5	2	1	N112 N113	3
			S150	18	2	4	N114	2
			S151 S152	18 1.5	3	<u>4</u> 0	N116 N117	4
			S153	3	2	0	N118	4
			S155 S156	2.5	2	0	N119 N120	4
	R		S157	3	2	0	N121	8
	D		S158 S159	4	3.5	0	N122	5
			S160 S161	4	3	0	N124 N125	5.5
			S161	2	3	0	N126	6
			S163 S164	2.5 2	4	0	N127 N129	3
			S165	2	1.5	0	N130	3
			S166 S167	4 5	3.5	0	N131 N132	4
			S168	4	2.5	2	N133	3
			S109 S170	4	2.5 3	2	N134	3
			S171	4 2	3	1	N136 N137	<u> </u>
			S173	3	2	0	N140	4.5
			S174 S175	2	2.5	1	N141 N143	<u> </u>
			S176	2	2.5	1	N144	4
			S177 S178	3 2.5	2 2.5	1	N145 N146	<u> </u>
			S179	2.5	2	2	N147	3
			S180 S181	2.5	3	0	<u>N</u>	<u>OTE:</u>
			S182	2	1.5	1	Т	ABLE INDICATES
	А		5183 5184	4	2.5	0	D	LIERIORATED ON
			S185	3	2	1		
			5180 S187	<u> </u>	<u> </u>			
			S188	12	3	3		
			S190	4 3	1.5	0		
			S191 S192	11 &	1.5	0		
			NOT	<u> </u>	<u> </u>			
			TABI	_E INDICATES	KNOWN LOCA	ATIONS OF		
			DETE	ERIORATED ON	TRANSVERSI	E BEAM CAP.		
		I				1		
L								

sverse Beams Cap locations				
Size	Number of			
Height 4	Exposed piles 3			
6	5			
<u> </u>	3			
5.5	5			
2	3			
2	1			
3	2			
2.5	1			
2	0			
2	1			
4	1			
<u>1.5</u> 3.5	0			
2.5	1			
2	1			
4	1			
3.75	3			
<u> </u>	0			
2	1			
3 1	0			
3	2			
4	3			
<u> </u>	2			
2	1			
2	1			
3.5	1			
3	0			
4.5	0			
4	1			
1	1			
4	1			
4	1			
2	2			
1.5	1			
2	1			
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4	1			
3.5	1			
3.5	0			
1	0			
1	1			
1	0			
<u> </u>	2			
13	3			
2.5 10	1			
3	2			
2	1			
2	1			
3.5	0			
2.5	1			
3	1			
4	2			
<u> </u>	2			
3.5	2			
2	1			
4.5	2			
1.5	1			
<u>1.5</u> 1	1 2			
2	- 1			

S KNOWN LOCATIONS OF DN TRANSVERSE BEAM CAP.

East deteriorated Transverse Beams Cap locations						
Pile Cap	Repa	ir Size	Number of			
Walls #	Length	Height	Exposed piles			
N59	4	2	1			
N58	6	2.5	2			
N57	5	3.5	2			
N56	2.5	5	1			
N54	2	1	1			
N53	2	2	1			
N52	6	2.5	2			
N51	19	3	4			
N50	5	2	1			
N49	5	3	2			
S49	5	2.5	1			
S50	4.5	1	1			
S51	2.5	1.5	0			
S52	3	2	1			
S53	3	3	1			
S54	3	3	1			
S55	4	1	0			
S56	2	1	0			
S57	6	4.5	2			
S58	4	1	1			

3

NOTE:

TABLE INDICATES KNOWN LOCATIONS OF DETERIORATED ON TRANSVERSE BEAM CAP.

Expansion Joint Repairs/ Rebuilds					
Location	Renair type	Length in	Width in	Depth in	
Location	Repair type	feet	feet	inches	
	Repair	38	2.5	10	
	Rebuild	10	2.5	10	
Inboard	Repair	10	1	6	
	Repair	1	1	6	
Inboard	Repair	10	1	6	
Inboard	Repair	10	1	12	
	Repair	4	1	8	
	Repair	10	1	8	
	Repair	21	1	8	
	Repair	4	1	8	
S75-Inboard	Repair	3	1	12	
S45-Outboard	Repair	5	1	8	
	Repair	3	1	6	
S3-Outboard	Repair	1	1	6	
N85-Outboard	Repair	2	1	6	
N84-Outboard	Repair	2	1	6	
N79-Outboard	Repair	6	1	6	
N76-Outboard	Repair	4	1	6	
N73-Outboard	Repair	2	1	6	
N72-Outboard	Repair	3	1	6	
N70-Outboard	Repair	8	1	6	
N67- Outboard	Repair	10	1.5	6	
N61- Outboard	Repair	3	2	6	
N57- Outboard	Repair	8	2	6	
N52- Outboard	Repair	3	1	6	
N49/N50 - Outboard	Repair	10	1	8	
N46/N47 - Outboard	Repair	5	1.5	6	
N43/N44 -Outboard	Repair	10.5	1.5	8	
N39/N42- Outboard	Repair	24	2	10	
N37 - Outboard	Repair	2	1	6	
N34 - Outboard	Repair	6	1	6	
N27/N28 - Outboard	Repair	10	1		
N25 - Outboard	Repair	6	1	6	
N24 - Outboard	Repair	10	1		
N23 - Outboard	Repair	2	1	6	
N18/N19 - Outboard	Repair	10	1		
N17 - Outboard	Repair	2	1	4	
N14 - Outboard	Repair	8	1	4	
N12 - Outboard	Repair	3	1	4	
N8 - Outboard	Repair	4	1	6	
N6/N7 - Outboard	Repair	6	1	6	
N5/N6 - Outboard	Repair	10.5	1	10	
N4 - Outboard	Repair	8	1		
N2 - Outboard	Repair	2	2	6	
E4 - Outboard	Repair	10	1	10	

4

<u>NOTE:</u>

TABLE INDICATES KNOWN LOCATIONS OF DETERIORATED EXPANSION JOINTS.



CONCRETE CAP REPAIR

SCALE: 1/2"=1'-0"

5

FOR NOTICE

**OF INTENT** 



CORPORATION MA 02019 U.S.A.

ENGINEERING IAM WAY, BELLINGHAM,

CHILDS 34 WILL Phone: E-mail:

	<u>SCOPE OF WORK:</u>
	This repair project is intended to halt the ongoing deterioration of the timber pile elements which support the roadway and limited components of the building structures at 88 Black Falcon Terminal. In general, halting the deterioration of the existing timber piles and foundation system will be accomplished by encapsulating the expose portions of these timber piles in concrete protecting them from continued exposure to tidal waters of Boston Ho and readily available oxygen. In general, the work consists of cleaning up miscellaneous debris from the subfloc below the roadway surfaces, power washing the surface of the existing cobble/concrete bottom, cleaning of the existing exposed timber including pile caps, pile clamps and timber piles of soft wood and exposing the sound to be encapsulated in the concrete. These same conditions apply to areas of building support footings and the associated piles however the cleaning will be limited to accessible timber piles at the perimeter of footings.
D	In addition to encapsulating the existing timber piles select areas where roadway support beams have deteriorate significantly, the missing sections of these beams will be replaced with new concrete and some reinforcing steel the concrete. The final element of this project is the repair of selected areas of the expansion joint area in the roadway surface between the new (1955) seawall and the original pier construction. These repairs will be protect of existing exposed rebar and in very small section the replacement of the expansion joint. The project will be that a lump sum cost including all labor, materials, equipment and overhead for the project. The Contractor is constructed unit prices for expansion joint repair, cubic yards of concrete for "floor" and Beam replacement. In response to the solicitation, the Contractor should provide a project approach including access, concrete placement techniques and anticipated disturbance to normal pier operations.
	SPECIFICATIONS
	STANDARD SPECIFICATION FOR CONCRETE REPAIRS TO 88 BLACK FALCON UNDERDECK <u>PART 1 GENERAL</u>
_	The work covered under this specification includes the furnishing of all materials, labor, tools, equipment, service incidentals necessary to complete the repairs of underdeck areas and expansion joints as indicated on the drawi and/or specified herein.
	Work under this item shall consists of removing concrete, waterblasting exposed timber piles, cleaning areas to repaired, and repairing with Portland cement concrete formed as shown on the drawings.
	The purpose of the repair work is to protect the exposed piles and repair select areas of expansion joints The following describes the materials, repair procedures and monitoring of the concrete areas to be repaired. T procedures are intended to be general and flexible, while also specifying minimum acceptable levels of performar
	1.1 REFERENCES The publications listed below form a part of this specification to the extent referenced. The publications are ref to in the text by basic designation only.
	AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)
С	ACI 117(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentar
	ACL 304.2R(1996; R 2008) Placing Concrete by Pumping Methods
	ACI 546R(2004) Concrete Repair Guide
	ACI 546.3R(2006) Guide for the Selection of Materials for the Repair of Concrete
	ACI 562(2013) Code Requirements for Evaluation, Repair and Rehabilitation of Concrete Buildings (Structures) and Commentary
	ASTM INTERNATIONAL (ASTM)
-	ASTM A615/A615M(2016) Standard Specification for Deformed and Plain Carbon—Steel Bars for Concrete Reinforce ASTM C109/C109M(2016a) Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 or (50—mm) Cube Specimens)
	ASTM C117(2013) Standard Test Method for Materials Finer than 75—um (No. 200) Sieve in Mineral Aggregates b Washina
	ASTM C136(2014) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
	ASTM C143/C143M(2015a) Standard Test Method for Slump of Hydraulic-Cement Concrete
	ASTM C31/C31M(2015a; E 2016) Standard Practice for Making and Curing Concrete Test Specimens in the Field
	ASTM C39/C39M(2016) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
В	ASTM C496/C496M(2011) Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
	INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)
	U.S. ARMY CORPS OF ENGINEERS (USACE)
	COE CRD-C 400(1963) Requirements for Water for Use in Mixing or Curing Concrete
	EM 385-1-1((2014) Safety and Health Requirements Manual
	CONCRETE SAWING AND DRILLING ASSOCIATION (CSDA)
	CSDA-W-104(June 1, 1998; R 2007) Track Mounted Wall Sawing
_	1.2 DEFINITIONS The concrete and concrete repair terminology and definitions used are provided by ACI 116R and ICRI "Concrete Repair Terminology" unless otherwise defined in the specifications.
	1.2.1 Pre-Packaged Repair Material
	A composite material that consists of a mixture of cement paste, and fine to coarse aggregate, with or without admixtures for concrete restoration.
	1.3 REPAIR MATERIAL PERFORMANCE REQUIREMENTS
	All repair materials should be in accordance with applicable provisions of ACI 546.3R, ICRI Guideline No. 320.2R conform to the following requirements.
A	The most important characteristics governing the selection of repair materials for this project is the repair mater durability, compatibility with the existing substrate, and sensitivity to cracking caused by restrained volume change The critical material properties that affect its resistance to cracking include splitting tensile strength and drying shrinkage.
	1.3.1 Pre-Packaged Repair Material
	Pre-packaged material should satisfy the following performance criteria:
	PropertyTest MethodCriteria Compressive StrengthASTM C109/C109M3,000 psi (minimum) @ 28 Days Splitting Tensile StrengthASTM C496/C496M300 psi (minimum) @ 28 Days Drving Sprinkage ASTM C157/C157M0.05% (maximum) @ 28 Days

1

Restrained Shrinkage CrackingASTM C1581No Cracks within 14 Days ACI 347. Include design calculation Chloride Ion Penetration ASTM C1201 or AASHTO T2772,000 coulombs (maximum) @ 28 Days and related components. Indicate pl joints. Include locations of inserts, Bond StrengthASTM C882/C882M2,000 psi (minimum) @ 28 Days 1.5.4.3 Form Removal Schedule 1.4 SUBMITTALS Submit schedule for form removal i Submit for approval by the Owner the following items: literature of forming material or line Preconstruction Submittals construction joints. Provide a full de 1.5.5 Repair Material Mixing Propo Chipping Plan Repair Plan Submit, at least 30 days before wo Testing Technicians mixture proportions. Identify the pro Testing Agencies When determining the mixture design Submit statements that the concrete testing technicians and agencies meet the specified requirements. Field Survey Results a. Trial batch: Trial batches and tes Shop Drawings material manufacturer and Contracto operations. The laboratory performin Method of Performing the Surface Preparation aggregates shall be obtained in acc Formwork aggregate shall be representative of Method of Placing and Vibrating Concrete test reports indicating compliance w consistencies, and air content suitab Product Data which will produce a range of stren b. Supporting criteria: Include in the Concrete Reinforcing Steel Pre-Packaged Repair Material (1) Proportions by weight Admixtures (2) Unit weights and specific grav Design Data (3) Batch weights Repair Material Mixing Proportioning, Slump and Air-Entrainment Trial Batch (4) Compressive strengths Test Reports (5) Curing time Concrete (6) Working time Pre-Packaged Repair Material Aggregates (7) Slump Admixtures Cement (8) Air content Water 1.5.6 Test Reports of Field Batche Certificates 1.5.6.1 Pre-Packaged Repair Mate Form Removal Schedule Placement and Compaction Include the following: Mix Design a. Compressive Strength Manufacturer's certifications should be submitted with test results for proposed materials. Certificates should certify compliance with the appropriate specification referenced herein. The contractor shall perform all testing on site to b. Splitting Tensile Strength verify manufacturer's certification. Do not place materials without prior approval from the Engineer. c. Drying Shrinkage Manufacturer's Instructions d. Restrained Shrinkage Cracking Pre-Packaged Material Admixtures e. Chloride Ion Penetration Submit manufacturer's written surface preparation, mixing, application and curing instructions. f. Bond Strength Manufacturer's Material Safety Data Sheets g. Aggregates Submit manufacturer's Material Safety Data Sheets for potentially hazardous materials. h. Admixtures 1.5 QUALITY ASSURANCE I. Cement Halt work when weather conditions detrimentally affect the quality of patching or bonding concrete. Follow j. Air Content manufacturer's instructions for weather conditions and temperature ranges. 1.5.6.2 Water 1.5.1 Qualifications Submit test results. Submit Contractor qualifications and worker qualifications for approval in accordance with paragraph SUBMITTALS. The submittals shall, where applicable, identify individuals who will be working on this contract and their relevant 1.5.7 Placement and Compaction experience. Do not make changes in approved project and site management personnel without prior approval of the Engineer. a. Submit technical literature for eq or conveying equipment including typ 1.5.1.1 Contractor Qualifications height concrete will be pumped. No The Contractor performing the repair work shall have been involved in a minimum of 3 concrete repair projects b. Submit technical literature for eq similar in size and scope to this project for at least 5 years. Submittal shall include technical liter amplitude, centrifugal force, and ma Contractor should be capable of demonstrating successful experience in all types of repairs specified in this project. to be cast, provide similar informati placement. 1.5.1.2 Worker Qualifications 1.5.8 Repair Plan Each worker engaged in the use of specialized removal or application equipment, including saw operators and form-and-pump process shall have satisfactorily completed an instruction program in the operation of the equipment. The plan shall include, but shall not Each worker engaged in the operation of specialized equipment for the contract work shall have a minimum of 3 and/or constituents, and requiremen years of experience in the operation of the equipment. requirements for placement, finishing contain a proposed schedule for rep 1.5.1.3 Field Testing Technicians and Agency accordance with paragraph SUBMITTA The individuals who sample and test concrete and other repair materials as required in this specification shall have 1.5.9 Field Demonstration demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade 1. Field demonstrations shall be comple placement, repair material, and plac Testing agencies that perform testing service on concrete materials shall meet the requirements of ASTM C 1077 demonstrations shall be tested in ac and/or ACI 311. Successful completion of the field d 1.5.2 Regulatory Requirements inspection of the repair at 28 days Perform all work in accordance with applicable Federal, State and Local safety, health and environmental 1.6 DELIVERY, STORAGE, AND HANI requirements, and EM 385-1-1. The Contractor shall be responsible for obtaining all permits required by Federal, State and Local agencies for the performance of the work. 1.6.1 Packing, Shipping, Handling, 1.5.3 Pre-Construction Conference Inspect materials delivered to site f Before starting the repair project, the Engineer or authorized representative shall meet the Contractor's project 1.6.2 Chemical Admixtures manager and superintendents at the pre-construction conference. At this meeting, the Contractor should present a work schedule to determine its acceptability to the owner and determine if there are going to be any conflicts with Protect chemical admixtures and sto daily operations that should be resolved. any admixtures subjected to temper manufacturer. Do not use any admi All aspects of field demonstrations, application procedures, and repair materials employed should be discussed to manufacturer. Remove such material ensure that the Contractors' personnel understand all aspects of the repair project. The conference shall also include competent technical representatives of repair materials to be used on the project. 1.7 PROJECT/SITE CONDITIONS

1.5.4 Drawings

1.5.4.1 Temporary Work Platforms (If required)

Include design calculations for temporary work platforms. Indicate type and location of anchors necessary to support the platforms.

1.5.4.2 Formwork

4	5	
ACI 347. Include design calculations indicating arrangement and related components. Indicate placement schedule, constr joints. Include locations of inserts, pipework, conduit, sleeves 1.5.4.3 Form Removal Schedule	of forms, sizes and grades of supports (lumber), panels, ruction, and location and method of forming control s, and other embedded items.	PORATION 019 U.S.A. 3) 966-9096
Submit schedule for form removal indicating element and m literature of forming material or liner, form release agent, for construction joints. Provide a full description of materials ar	inimum length of time for form removal. Submit technical orm ties, and gasketing to prevent leakage at form and nd methods to be used to patch form—tie holes.	AG COR AM, MA 02 Fax: (502
1.5.5 Repair Material Mixing Proportioning Submit at least 30 days before work commences a repair	material mix design. Test reports shall accompany the	ERING 9092 eng.co
When determining the mixture design, use samples of mater	terials and state the proportions of each constituent. ials to be used on the job.	LNGINE A WAY, BE D8) 966–9 Iail@childse
a. That batch: That batches and testing requirements for rep material manufacturer and Contractor. The pre-packaged mo operations. The laboratory performing the tests shall be on aggregates shall be obtained in accordance with the requirer aggregate shall be representative of those proposed for the test reports indicating compliance with applicable specified re consistencies, and air content suitable for the work shall be which will produce a range of strength encompassing those	aterial manufacturers shall be on-site for all trial batch site and shall conform to ASTM C 1077. Samples of ments of ASTM D 75. Samples of materials including the project and shall be accompanied by the manufacturer's equirements. Trial mixtures having proportions, made based on methodology described in ACI 211.4R, required for the work.	CHILDS E 34 WILLIAN Phone: (56 E-mail: m
b. Supporting criteria: Include in the submittal the following	data for each trial batch:	
(1) Proportions by weight		
(2) Unit weights and specific gravities of constituents		
(3) Batch weights		MULLITH OF MASSPE
(4) Compressive strengths		
(5) Curing time		No. 30110
(6) Working time		Solial and
(7) Slump		
(8) Air content		Appr
1.5.6 Test Reports of Field Batched Products		Date
I.S.O.T Pre-Packaged Repair Material		
a. Compressive Strength		
b. Splitting Tensile Strength		
c. Drying Shrinkage		
d. Restrained Shrinkage Cracking		
e. Chloride Ion Penetration		ption
f. Bond Strength		Descr
g. Aggregates		
h. Admixtures		
I. Cement		
J. Air Content		
1.5.6.2 Water		
1.5.7 Placement and Compaction		¥
a. Submit technical literature for equipment and methods pr	oposed for use in placing repair material. Include pumping	
or conveying equipment including type, size and material for height concrete will be pumped. No adjustments shall be mo	pipe, valve characteristics, and the maximum length and ade to the mixture design to facilitate pumping.	
Submit technical interature for equipment and methods pr Submittal shall include technical literature describing the equi amplitude, centrifugal force, and manufacturer's description to be cast, provide similar information relative to the propo- placement.	ipment including vibrator diameter, length, frequency, of the radius of influence under load. Where flat work is sed compacting screed or other method to ensure dense	
1.5.8 Repair Plan		
The plan shall include, but shall not be limited to, repair m and/or constituents, and requirements for handling, storage, requirements for placement, finishing, curing and protection contain a proposed schedule for repairs. Submit the repair accordance with paragraph SUBMITTAL.	aterials to be used with specific information on products etc., equipment to be used, surface preparation, and specific to the materials used. Repair plan shall also plan for approval 30 days after notice to proceed, in	/17 -101 TED
1.5.9 Field Demonstration		2/28 file no. S NO
Field demonstrations shall be completed to verify the metho- placement, repair material, and placement technique prior to demonstrations shall be tested in accordance with Section 3	d of performing the surface preparation, formwork production repair work. Materials utilized in field .8, Field Quality Control.	Pate: y: Design Scale: A
Successful completion of the field demonstration will be dete inspection of the repair at 28 days to ensure that the requ	ermined by the results of the test reports and the irements of this specification have been met.	and by: by: wed by: DI
1.6 DELIVERY, STORAGE, AND HANDLING		Revie
1.6.1 Packing, Shipping, Handling, and Unloading		
Inspect materials delivered to site for damage, unload and s	store with a minimum of handling.	
Protect chemical admixtures and store and maintain betweer any admixtures subjected to temperatures outside this range manufacturer. Do not use any admixture that has been in s manufacturer. Remove such materials from the site.	n 40 degrees F to 90 degrees F. Remove from the site e, or stored for longer than recommended by the storage for longer than recommended by the	FALCON PIER COMPANIES STON, MA IFICATIONS
1.7 PROJECT/SITE CONDITIONS		DAVIS DAVIS BC SPEC
1.7.1 Environmental Requirements		
Do not place repair materials when weather conditions detrir place cement—based repair materials when the air temperate	nentally affect the quality of the finished product. Do not ure is below 40 degrees F in the shade. When air	
		Sheet reference number:
		X-106
		Sheet 6 of 8

	SPECIFICATIONS CONTINUED
	temperature is likely to exceed 90 degrees F, the cement-based repair material shall have a temperature not exceeding 85 degrees F when deposited, and the surface of such placed cement-based repair material shall be damp with a water fog until the approved curing medium is applied. Placement restrictions shall be in accordar with the manufacturer's published literature. Halt work when weather conditions are potentially detrimental to the quality of repairing or bonding concrete.
	1.7.2 Existing Conditions
	Prior to submitting a bid, the Contractor shall visit the site to identify obstructions or restricting conditions that
D	Impact the work.
	The contract drawings and reference drawings do not constitute a complete description of all metal parts and ot materials that may be encountered, but represent the best information available to the Owner. Other items, or different locations for items shown, may exist. Exercise care to avoid functional embedded items intended to rem in service. The Contractor's selection of equipment and methods shall consider the presence of such materials, o the Owner will not be responsible in any way for the effect of such items on the Contractor's equipment or progress. Where indicated, remove existing metal items to the limits noted on drawings.
	Unless otherwise specified, perform the work in such sequence that new work does not damage previously comple work. Do not perform concrete removal and other operations which cause vibrations within 30 feet of repair mat that have cured less than 24 hours. Provide protective measures as required to protect completed work.
_	1.09 SAFETY
	Perform all work in accordance with EM 385-1-1. To protect personnel from overexposure to toxic materials, conform to the applicable Manufacturer's Material Safety Data Sheets (MSDS) or local regulation. The Contractor responsible for safety during all corbel repair activities. <u>PART 2 PRODUCTS</u> 2.1 MATERIALS
	2.1.1 Cast-in-Place Concrete
	The Contractor shall be responsible for the proper mix design for the conditions encountered. Concrete mix des shall be in accordance with ACI and meet the following criteria:
	a. Maximum water cement ratio $(w/c) = 0.40$
C	<ul> <li>c. Minimum air content = 5.0 - 8.0%</li> <li>d. Minimum ultimate compressive strength at 28 Days = 3,000 psi.</li> <li>e. Minimum cement factor = 555 PCY</li> <li>f. The use of concrete admixtures conforming to ASTM C494 shall be used as required for weather and workabil conditions.</li> </ul>
	Cast—in—place concrete shall be RapidSet Low — P FA1 by CTS Manufacturing Corp of Cypress, California or appr equivalent.
	2.1.2 Water Water for cleaning, mixing and curing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, s
	or alkali, except that non-potable water may be used if it meets the requirements of ACOE CRD-C 400.
_	Steel bars shall comply with the requirements of ASTM A615/A615M, deformed, uncoated Grade 60 and sizes sho
	unless noted otherwise. 2.1.4 Bonding Compound
	Bonding compounds shall not be permitted. Provide a roughened clean surface for bonding.
	2.2 MIXTURE PROPORTIONING
	Proportion materials in accordance with manufacturer's recommendations. Materials shall comply with the requirements of Section 1.3.1.
	PART 3 EXECUTION
	3.1 EQUIPMENT
В	Assemble at the site of the work sufficient equipment that is dependable, appropriate and adequate to accomplis the work specified and as recommended by product manufacturers. Deliver the equipment a sufficient time before start of repairs to permit thorough inspection, calibration of weighing and measuring devices, adjustment of parts and the making of any repairs that may be required. Machines, tools, and equipment used in the performance of work shall be approved before the work is started and shall be maintained in satisfactory condition at all times. Maintain the equipment in good working condition. 3.1.1 Surface Preparation
	3.1.2 Drilling Equipment
	only rotary drilling equipment where vibration from percussion drilling could damage the concrete to remain or adjacent structures. Use equipment capable of maintaining the required alignment. 3.1.3 Diamond-Blade Cutting
_	Use diamond—blade cutting for cutting through relatively thin sections and defining limits of removal to be perfor by other methods. Perform diamond blade cutting using equipment of the correct type and power and with appropriate blade composition for the material being cut.
	3.1.4 Demolition Equipment
	3.1.4.1 Mechanical Demolition Equipment
	ose 30 pound breaker for removal of concrete above reinforcing steel. Use 15 pound chipping hammer to remov concrete around reinforcing steel. 3.1.5 Pumping Equipment
	The specified repairs require pumping through a pump line to the forms. Use hydraulic/swing valve pump for the best results. All pumping equipment must have adequate controls to regulate flow rates and pressure.
	3.2 PROTECTION
	3.2.1 Protection of Existing Features
	Before beginning any work, carefully survey the structure and examine the drawings and specifications to determi the extent of the work. Take all necessary precautions to insure against damage to existing concrete or other structures to remain in place, and repair or replace any damage to such items as approved by the Engineer at additional cost to the Owner. Carefully coordinate the work of this section with all other work, and construct and maintain shoring, bracing and supports, as required. Insure that structural elements are not overloaded, and incre structural supports or add new supports as may be required as a result of any removal work performed under of part of this contract.

Insure that adequate measures are in place to protect workers, facility operation personnel and the public from injury due to the operations being performed. Provide protective measures in accordance with EM 385-1-1.

### 3.3 REMOVAL OF EXISTING CONCRETE

3.3.1 General Remove the existing concrete in the area to be repaired to the minimum depth indicated on the drawings and to such additional depth where necessary to expose a surface of sound concrete that is uncontaminated by oils, greases, or deicing salts or solutions. Remove concrete with care to avoid damage to adjacent structures and concrete that is not to be repaired under this contract and embedded metal that is not to be removed. Repair any such damage at no additional cost to the Owner. Mark on the surface the limits of concrete removal for approval by the Engineer prior to any removal.

Care must be exercised to ensure that further damage to reinforcement, ground cables, or pontoon guides is not caused by the concrete removal process. Chipping operation can damage reinforcing steel and/or its bond to existing concrete if used. Constant vigilance must be exercised to assure maintenance of the necessary standards of workmanship. For this reason, a reinforcing bar locator should be used to determine the depth, size, quantity, and approximate location of the reinforcement in the concrete.

Care should be taken not to vibrate the reinforcement or otherwise cause damage to its bond to concrete adjacent to the repair area.

Do not remove metal and other embedded items exposed during the concrete removal operations without authorization of the Engineer. Unless otherwise indicated, continue removal using appropriate equipment to remove sound and unsound concrete and to eliminate any offsets in the area to be repaired which would cause an abrupt chanae in thickness of the repair and to remove protrusions between holes. Variations in the final prepared surface shall not exceed the nominal maximum size aggregate of the repair material, except for relatively thin repairs in which case the variation shall not exceed 25 percent of the repair thickness. Any removal beyond the limits shown on the drawings shall be approved by the Engineer prior to performing the additional removal. All equipment and removal methods shall comply with applicable sections of EM 385-1-1 and ACI 546R.

Concrete removal addresses deteriorated and damaged material. Some sound concrete, however, may be removed to permit structural modifications and to ensure that all unsound material is removed. The effectiveness of various removal techniques can differ for deteriorated and sound concrete. Some techniques may be more effective in sound concrete, while others may work better for deteriorated concrete.

Concrete removal techniques selected should be effective, safe, economical, environmentally friendly, and minimize damage to the concrete left in place. The removal technique chosen may have a significant effect on the length of time that a structure will be out of service. Some techniques permit a significant portion of the work to be accomplished without removing the structure from service. The same removal technique, however, may not be suitable for all portions of a given structure.

#### 3.3.1.1 Determination of Removal Limits

Areas of repairs are indicated on the drawings. Removal of concrete around reinforcing bars shall extend to the point where the bar is well bonded to concrete and free of corrosion products.

In cases where apparently corroded or heavily oxidized reinforcing bars extend beyond marked repair areas into apparently sound concrete, the Engineer shall direct the Contractor how far to extend limits of repair area.

The extent and depth of concrete removal in each repair area shall be measured and recorded on drawings by the Contractor.

#### 3.3.1.2 Perimeter Saw Cut

For repair areas make a perpendicular saw cut at 3/4 inch deep, but no deeper than the reinforcing steel, 2 inches outside of the area to be repaired to delineate the perimeter of the repair area and avoid feather edges. The perimeter saw cut shall be beveled 3 to 5 degrees away from the repair areas. Exercise care not to cut through existing steel reinforcement or embedded metal that is not to be removed. Perform sawing in accordance with CSDA-W-104, except as specified herein.

The disc cut surfaces should be roughened prior to application of a repair material. It is best achieved by shot blasting at the same time as final surface preparation of exposed reinforcement and concrete is conducted. Care should be exercised when roughening the disc cut surfaces to prevent damage to the cavity edges.

#### 3.3.1.3 Reinforcing Steel

Exposing and undercutting reinforcing steel in the repair area should be accomplished by initial concrete removal operations. The reinforcing bars exposed in the repair areas should be undercut a minimum of 3/4 inches or 1/4 inch larger than the largest size aggregate in repair material. Removal of concrete around reinforcing bars should extend to the point where bars are well bonded to concrete and free of corrosion.

Following the concrete removal operation, carefully inspect the condition of all exposed reinforcing bars in accordance with ICRI 210.4.

The purpose of the inspection is to determine whether the reinforcing steel is capable of performing as intended by the design. If the cross-section of the repair has been reduced by corrosion by more than 20%, add supplemental bars as directed by the engineer.

Concrete reinforcement shall conform to the requirements of ASTM A615/A615M. Where the bond between the concrete and any reinforcing steel has been destroyed, or where the concrete deterioration is caused by corrosion of the reinforcing steel, remove the adjacent concrete to a depth that will permit cleaning of the steel and bonding of the concrete.

Contractor shall store an adequate supply of reinforcing steel on site to insure repairs can be completed in a timely manner.

#### 3.3.2 Impacting

Take adequate precautions to prevent impact equipment from vibrating on reinforcing steel. All demolition equipment shall be subject to approval of the Engineer

#### 3.4 MIXING MATERIALS

Make batches small enough to ensure placement before binder sets. Mix materials in accordance with manufacturer's

#### 3.5 SUBSTRATE SURFACE PREPARATION

#### 3.5.1 General

recommendations.

Regardless of the nature of repair material and methods of its application, the repair is only as good as the surface preparation of the substrate to form a composite system with the repair material.

The surface of existing concrete and reinforcement should be prepared in accordance with applicable requirements of ICRI 210.4 and ACI 546R unless specified otherwise.

After removal of concrete to the specified limits, clean the surface to which the repair material is to be applied to remove dust, debris and laitance. Perform final cleaning immediately prior to placement of the repair material.

#### 3.5.2 Cleaning

Mechanical demolition equipment leaves the resulting surface with varying degrees of microcracks and fractures, commonly referred to as "bruising." Bruising creates a zone of weakness that will affect the bond of the repair material to the substrate. Removal subjects the concrete substrate to a wide range of dynamic loads and the resulting bruising will depend on the method used and the quality of the concrete. The depth of the bruised layer varies, but is typically on the order of 1/8 in. (3.0 mm). Use shotblasting equipment capable of eroding the substrate concrete surface with amplitude of about 1/8 in. All grit must be approved by GDEB and shall be collected and disposed of in an environmentally compliant manner. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP6 Commercial Blast Cleaning, to remove all contaminates, rust and rust scale. When using sandblasting equipment, all work shall be shielded for the protection of the public. Adequate measures shall be taken by the Contractor to prevent chips, tools and/or materials from entering into adjacent areas or dropping to

platform during the corbel repair project.

#### 3.5.3 Rust Cleaning

reinforcement should be cleaned again before repair material is placed.

3.6 Pile protection, void and expansion joint 3.6.1 General

searegation of the aggregates.

the areas as thoroughly as possible.

3.7 FIELD QUALITY CONTROL

3.7.1 General

service will be paid for by the Contractor.

3.7.2 Preparations for Placing

to certify that the surfaces are ready to receive the repair material.

3.7.3 Concrete and Pre-Packaged Material Testing

3.7.3.1 Time and Mix Pot Life

Verify repair material has not exceeded allowable time or pot life. 3.7.3.2 Sampling

C31/C31M.

#### 3.7.3.3 Temperature

Test temperature once during each shift that the repair material is produced. 3.7.3.4 Air Content

172 and test in accordance with ASTM C 231.

3.7.3.5 Slump

and test in accordance with ASTM C143/C143M. 3.7.3.6 Consolidation and Protection

Ensure that the concrete is properly consolidated, protected, and cured.

3.7.3.7 Compression Tests

or ASTM C39/C39M.

3.7.3.8 Curing

subject to moist curing. Note and record the surface moisture condition.

3.7.3.9 Aggregates

washing in accordance with ASTM C117.

3.7.4 Action Required





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# FOR NOTICE **OF INTENT**

EXHIBIT F

NOI FEE TRANSMITTAL FORMS



#### 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:				
88 Black Falcon Avenue	Boston			
a. Street Address	b. City/Town			
	State share \$512.50			
c. Check number	d. Fee amount			
2. Applicant Mailing Address:				
Brian	Bishop			
a. First Name	b. Last Name			
The Davis Companies				
c. Organization				
125 High Street				
d. Mailing Address				
Boston	MA	02110		
e. City/Town	f. State	g. Zip Code		
617-799-4341	bbishop@TheDavisCc	bbishop@TheDavisCompanies.com		
h. Phone Number i. Fax Nu	mber j. Email Address			
3. Property Owner (if different):				
a. First Name	b. Last Name			
Massachusette Port Authority				

a. First Name		b. Last Name	
Massachusetts Port	Authority		
c. Organization			
One Harborside Driv	ve		
d. Mailing Address			
East Boston		MA	02128
e. City/Town		f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address	

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

#### **B.** Fees

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 3 - Roadway Repair	1	\$1050	\$1050
City of Boston	%3M Cost	0.075%	\$1500 (max)
	Step 5/Te	otal Project Fee:	\$2550
	Step 6/	/Fee Payments:	
	Total Project F		\$2550 a. Total Fee from Step 5
	State share	of filing Fee:	\$512.50 b. 1/2 Total Fee <b>less \$</b> 12.50
	City/Town share	e of filling Fee:	\$1500 c. 1/2 Total Fee <b>plus</b> \$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.)

#### PILE PROTECTION PROJECT

#### 88 BLACK FALCON

This summary outlines the proposed project activities, existing conditions, anticipated impacts and mitigation measures to ensure that the proposed project minimizes impacts on wetland resource areas.

#### 1.0 Project Purpose and Need

The proposed repairs are intended to stabilize and protect the existing roadway support piles from further deterioration. Some of the piles have undergone both mechanical and biological degradation. The deterioration noted appears to be fungal attack which has softened the timber pile surface. Piles which remain encased in the original concrete are assumed to be in good condition since they have been protected from exposure to oxygen and abrasion. In some cases, the overall cross-section of the piles has been reduced and/or the piles have lost contact with the concrete pile caps/beams.

Eliminating oxygen exposure will protect the piles from additional fungal deterioration. The encapsulation in concrete will also protect the piles from abrasion. The encapsulation repair will maintain the piles in their current "structural" condition.

The proposed repairs include protection of the piles by encapsulating them in low strength concrete. This will protect them from further fungal attach and abrasion. The repair also includes creating a concrete connection from the top of the new slab to the underside of the pile cap/beam. The extent of this reconnection repair is based on the required live load capacity of the roadway structure. The attached plans illustrate the proposed repair concept and the extent to which it will be implemented.

The proposed sequence of construction is "cleaning" the piles by washing with fresh water under pressure. The pressure wash will remove loose surface material which will enhance the bond of the concrete to the timber. Material which is removed during cleaning will be collected and disposed of properly. Once the cleaning is complete the concrete will be placed around the footings and in the bays. Once the slabs are placed and concrete has gained full strength, concrete will be placed from the slab to the bottom of the existing pile caps/beams. The proposed concrete extensions will occur directly over existing piles. The exposed piles under the building support footing at the east end of the structure will be protected in the same way as the piles in each roadway support bent.

#### 2.0 Anticipated Impacts and Mitigation Measures

Resource Areas and Anticipated Impacts

#### Designated Port Area

A Designated Port Area means those areas designated in 301 CMR 25.00: Designation of Port Areas. The proposed project will not affect the concrete seawall which is located above Mean High Water within a Designated Port Area. Under section 310 CMR 26.00, when land under the ocean in designated port areas is found to be significant to the protection of marine fisheries, storm damage, prevention of flood control, 310 CMR 10.26 (3) and (4) shall apply.

There will be no permanent alterations to the land under the ocean within the designated port area as part of this project. The proposed repairs will be made within the same footprint of the roadway and will not change the overall footprint of the structure. The concrete repairs will be behind the existing seawall and any impacts to the harbor/resource area will be temporary in nature. Any construction debris will be collected and removed from the construction area daily. Thus there should be no adverse effects on the land under the ocean within the designated port area.

#### Coastal Banks

A Coastal Bank means the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of land subject to tidal action or other wetland. The roadway is located inshore of a concrete seawall which is considered a manmade coastal bank and is significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, thus the repairs performed inshore of the seawall will be subject 310 CMR 10.30, more specifically 10.30 (6) through (8).

The timber piles are inshore of the coastal bank and the repairs will be completed in the dry. The repairs will not significantly affect the coastal bank since they will have no adverse effects on the stability of the coastal bank. Additionally, the project site is not located within an estimated habitat of rare wildlife so it will not adversely affect this resource area.

#### **Mitigation Measures**

One of the proposed mitigation measures to reduce impacts due to the construction activities will be to have the Contractor deploy a floating debris boom around the proposed repair areas. This will prevent dispersal of debris material during construction work from migrating into the harbor. Additionally, the contractor shall be required to have hazardous materials spill prevention and clean up kits available on site for any waterborne equipment.

It is anticipated that the contractor will stage the construction, including all equipment and materials, from the roadway surface behind the seawall. We anticipate the contractor will use a small work skiff to remove all construction debris on a daily basis. At the completion of the project, all construction equipment, material, and debris will be removed from the site.

#### Floodplain

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the City of Boston FEMA Community Panel 25025C0081J was reviewed. As per review of the FIRM map, the project is located in Zone AE (EL. 12.0) and a VE (EL. 15.0) of this resource area. The proposed will not alter the topography of the site so it will have no impact on flood storage.

#### Alternatives

The proposed repairs will protect the existing roadway support piles from continued deterioration. If the piles are not protected it is estimated that the roadway capacity will be reduced to a point that load restriction will be required which will require modification of vehicle operations on the site.

If the piles aren't protected it is possible that the roadway foundation will need be replaced at some time in the future. The replacement would include removing the roadway surface and associated support beams and pile caps. New piles would have to be driven and new pile caps and a roadway surface installed. We estimate that rebuild would have significantly greater impacts on flood storage during the construction phase.



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