

# CITY OF NEWBURYPORT



IN CITY COUNCIL

**ORDERED:**

January 31, 2022

**THAT**, \$600,000 is appropriated to pay costs of the Central Waterfront Bulkhead Repair project, including the payment of all costs incidental and related thereto, to serve as the local contribution should the City of Newburyport be awarded a grant through the U.S. Economic Development Administration's (EDA) Travel Tourism and Outdoor Recreation program. To meet this appropriation, the Treasurer with the approval of the Mayor, is authorized to borrow said amount under and pursuant to M.G.L. c. 44, §7(1), or pursuant to any other enabling authority, and to issue bonds or notes of the City therefor; and that the Mayor and the Treasurer are authorized to take any other action necessary or convenient to carry out this vote.

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Councillor Jennie L. Donahue

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Councillor Sharif I. Zeid



CITY OF NEWBURYPORT  
OFFICE OF PLANNING AND DEVELOPMENT  
60 PLEASANT STREET • P.O. BOX 550  
NEWBURYPORT, MA 01950  
(978) 465-4400

SEAN REARDON  
MAYOR

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MEMORANDUM

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TO: NEWBURYPORT CITY COUNCIL  
FROM: GEORDIE VINING, SENIOR PROJECT MANAGER  
SUBJECT: CENTRAL WATERFRONT BULKHEAD REPAIR PROJECT (PHASE II)  
DATE: 1/25/22

The City is planning to submit a \$3,000,000 grant application in February to the U.S. Economic Development Administration (EDA) Travel Tourism and Outdoor Recreation grant program of the American Rescue Plan Act to support a substantial portion of the construction of the Central Waterfront Bulkhead Repair project. We hope to bid and initiate the construction of this project during the fall of 2022, due in particular to the poor condition of the deteriorating bulkhead, and this is the largest source of funding we have been able to identify to date. This particular federal grant requires documentation of a 20% match authorization and commitment, and we respectfully request the City Council's authorization of \$600,000 in order to facilitate this project and the grant request. The grant application must be submitted in February 2022.

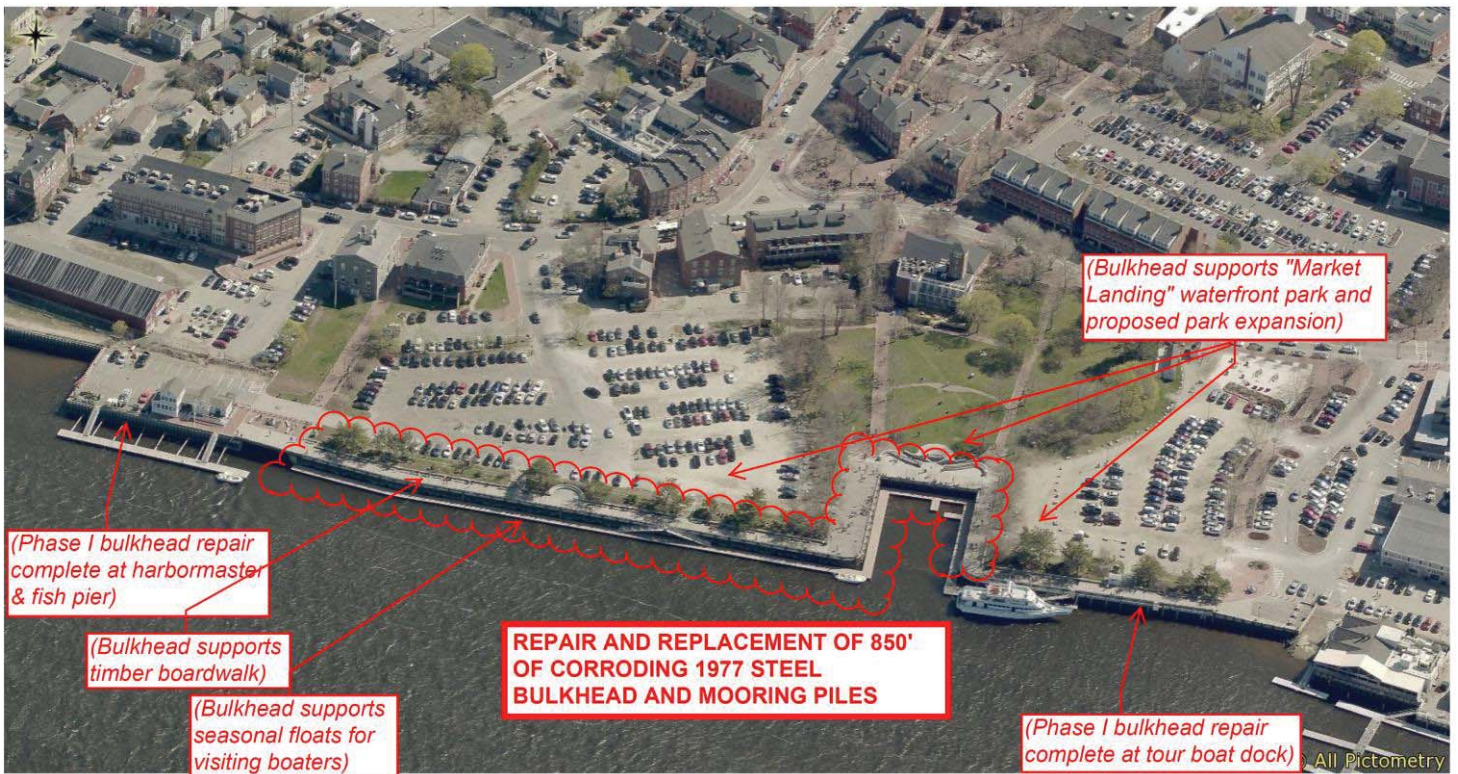
The exposed steel of the 1977 bulkhead that supports the edge of Newburyport's central waterfront is now 45 years old and is at the end of its service life. Corroding holes in the old steel sheet piles are growing visibly larger, and the more they expand the more they allow fill material to escape into the river, which will eventually undermine the Boardwalk's foundations and the edge of the waterfront park if left unchecked. Please see the attached photographs. An inspection during the summer of 2021 revealed that the exposed tie back anchor bolts in the embayment's bulkhead, which structurally support the sheet piles and prevent them from peeling off, have begun to corrode, break and fail in recent years. The Harbormaster is now monitoring them every three months so we can be alerted to the need to initiate interim repairs if absolutely necessary. In addition, the deteriorated old steel mooring piles, which are attached to the bulkhead and anchor the seasonal floats for visiting boaters, have been breaking underwater, including those where we have welded patches.

The City conducted a Phase I central waterfront bulkhead repair project in 2013-2014 based on available funding and the sections in the worst condition. We have pushed off completing the project for a number of years due to the cost, but the City cannot afford to continue to delay indefinitely as the system deteriorates more and more. The public infrastructure at the central waterfront is central to Newburyport's tourism economy as well as the character and identity of our City. It is the City's "flagship" public space, and the bulkhead is an essential foundation for the entire area. The design and permitting phase of the project is funded and we are in the process of updating the plans and specifications with our consulting marine engineers at GEI, Inc. The repairs primarily consist of driving new fiber-reinforced polymer (FRP) sheet piles in front of the old system and infilling between them and the old sheet piles with concrete, which will encapsulate the old steel and arrest its corrosion. Once repaired, the bulkhead system is anticipated to function for many decades in its structural capacity, and the FRP sheets will not corrode. In addition, we anticipate raising the bulkhead's concrete cap approximately 18" higher to 10' in order to address future sea level rise. The current Highest Astronomical Tide at the bulkhead and boardwalk (the "HAT" is the highest tide expected under average conditions in the spring) is at 6.1', and the existing cap is at 8.4'. By 2040, however, the

state's projections for "extreme" sea level rise are an additional 2.2' which would bring regular spring tides all the way up to the level of the existing boardwalk and cap if no work is done and associated regular and chronic flooding. By 2070, the intermediate to high sea level rise projections for the HAT are between 9'-10'. The bulkhead's concrete cap can be elevated higher in the future, as needed.

The full itemized cost estimate for repairing the bulkhead in the embayment and the entire eastern section over towards the harbormaster's office, including raising the concrete cap in anticipation of future sea level rise, is now at approximately \$6M with a contingency. We anticipate applying for an additional grant from the state Seaport Economic Council in May, and are hoping that there could be additional federal funding available as well. The mobilization costs for bringing a crane barge to Newburyport to drive the sheet piles and mooring piles are particularly high, and ideally the City should complete the repairs as one full project rather than additional future phases which will cost the City considerably more. Regardless, we need to do as much as possible during the next construction season in order to address the critical areas of repair.

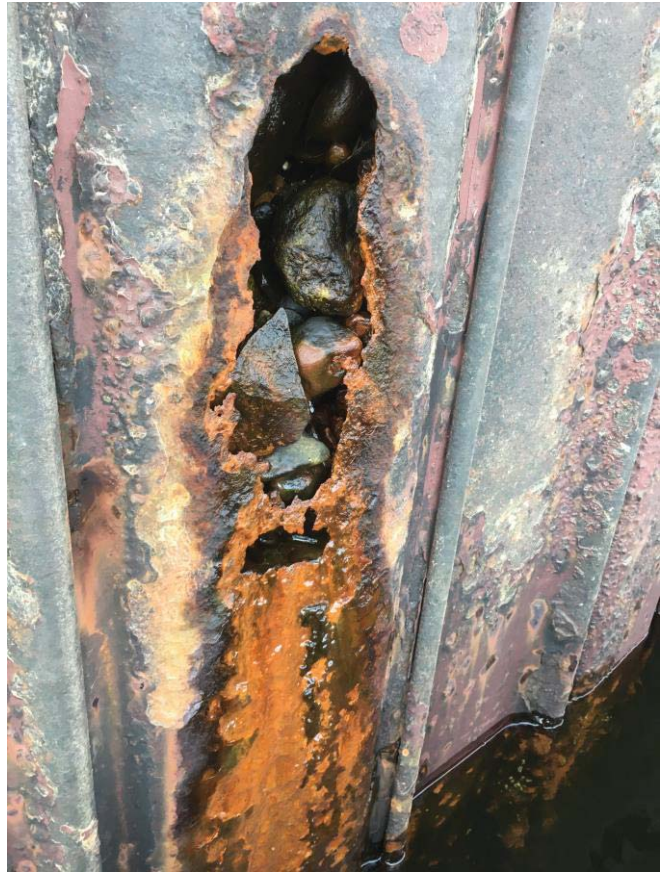
Thank you for your consideration.



**Newburyport Central Waterfront Bulkhead  
Existing Conditions (2013 vs. 2021)**



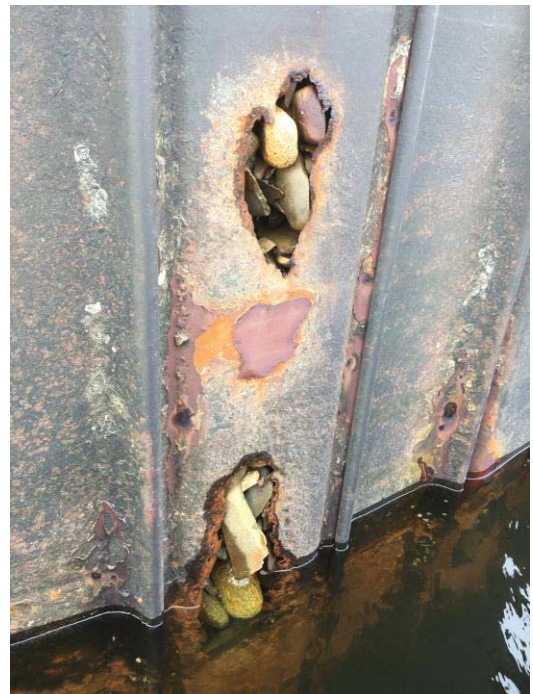
**2013 typical conditions: corroding weep hole**



**2021 typical conditions: corroding weep hole**

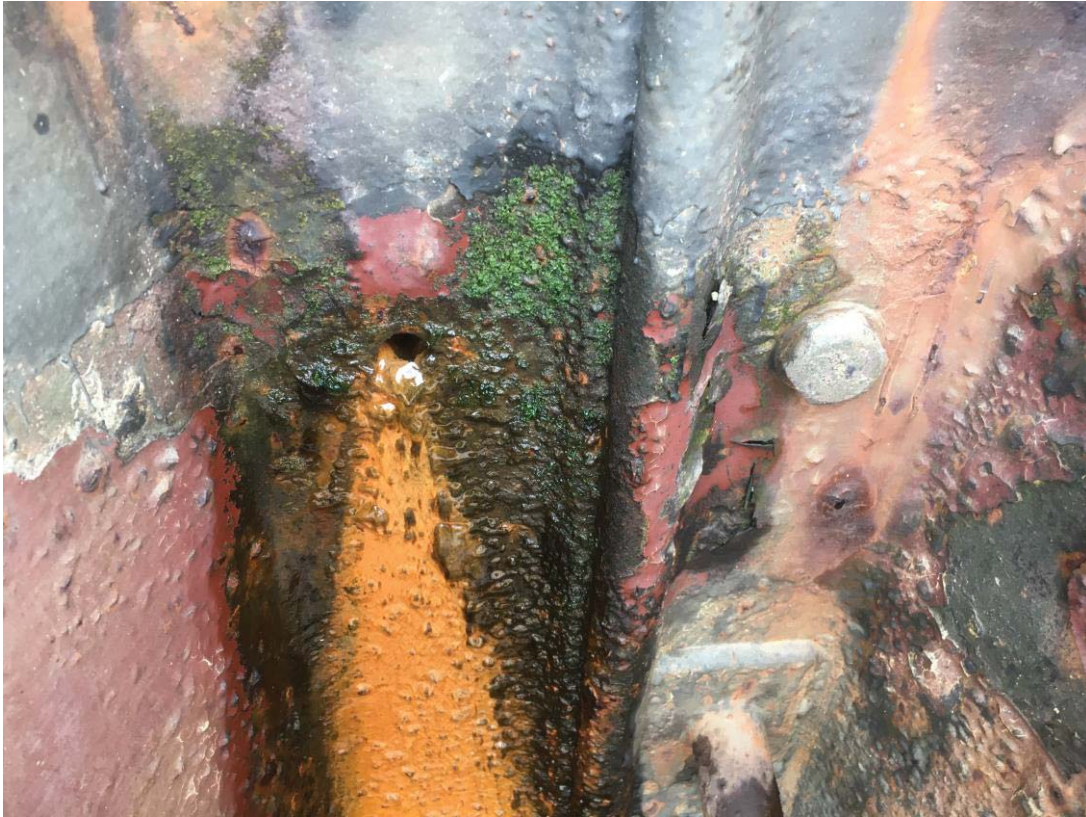


**March, 2021**

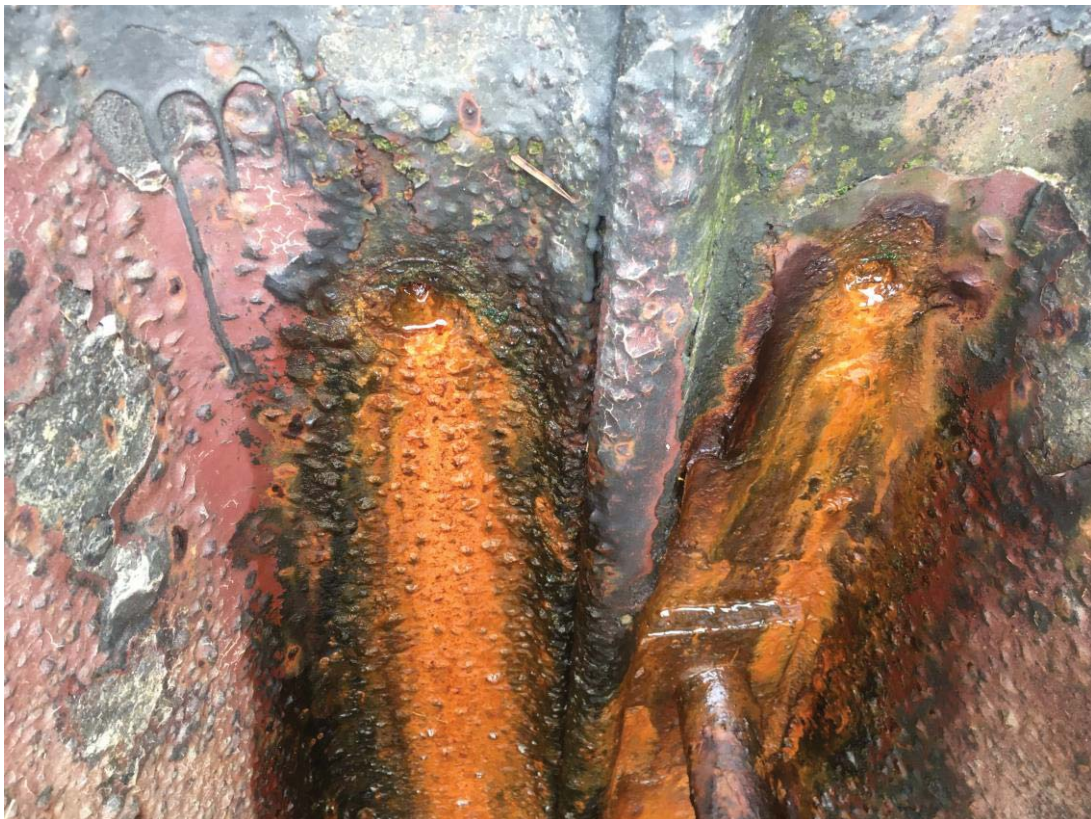


**April, 2021**

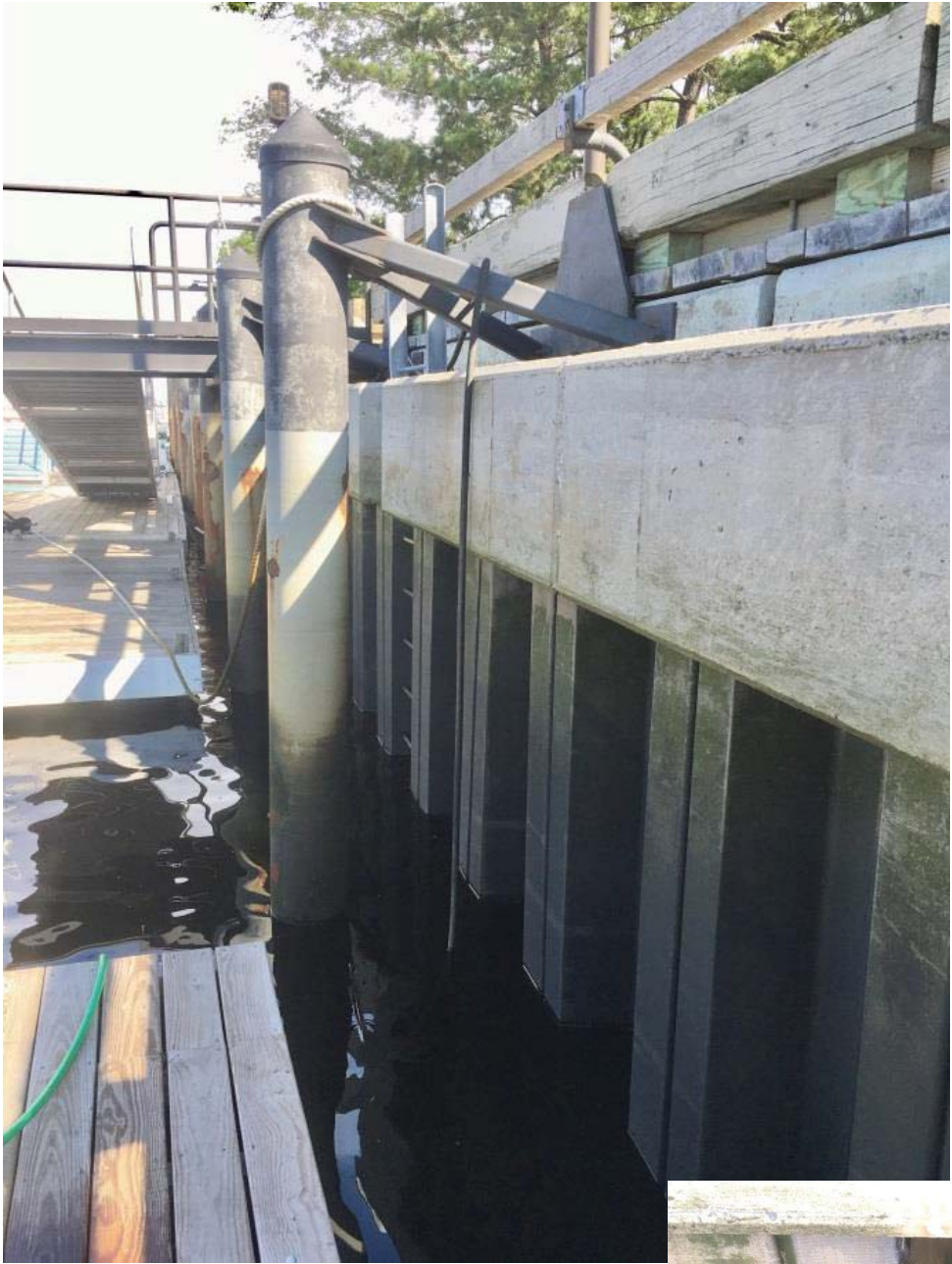
**Newburyport Central Waterfront Bulkhead  
Existing Conditions (2021) – Embayment**



*Missing Tie Back Anchor Bolts*

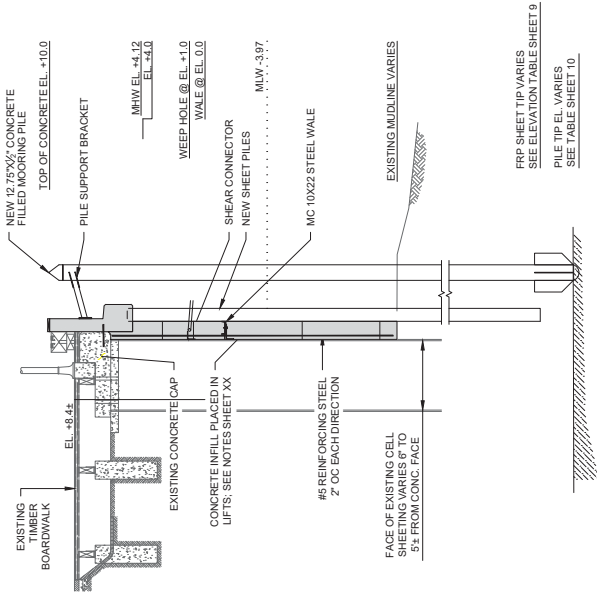


**Newburyport Central Waterfront Bulkhead  
Existing Conditions (2021) – Repaired Transportation Dock Section of Bulkhead**

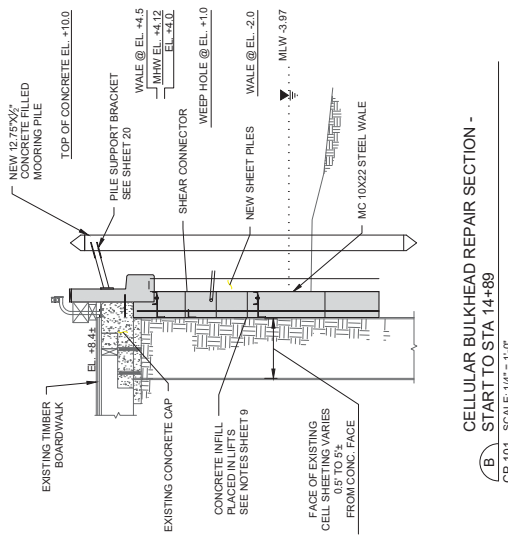


**FRP sheet piles with concrete  
infill and mooring pilings**

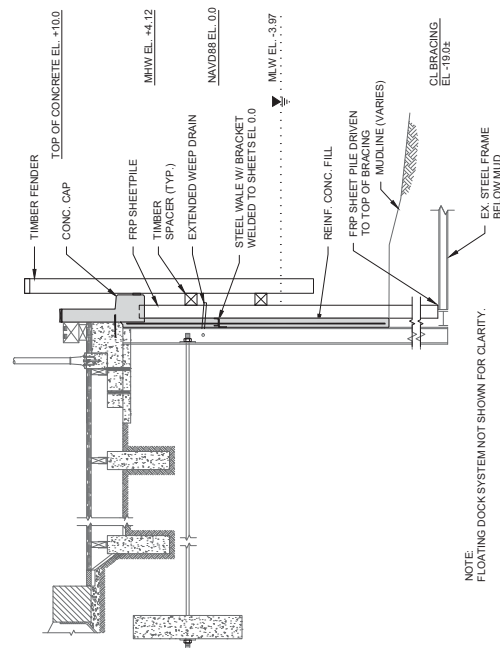




**(A) CELLULAR BULKHEAD REPAIR (TYP.) - SECTION**  
 CP-101 SCALE: 1/4" = 1'-0"  
 CP-102

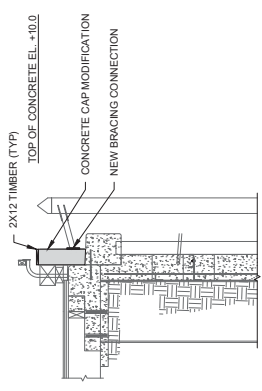


**CELLULAR BULKHEAD REPAIR SECTION - OP-101**  
 START TO STA 14+89  
 SCALE: 1/4" = 1'-0"



**(C) EMBAYMENT BULKHEAD REPAIR (TYP.) - SECTION**  
 CP-103 SCALE: 1/4" = 1'-0"

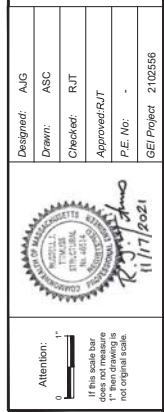
NOTE: FLOATING DOCK SYSTEM NOT SHOWN FOR CLARITY.



**(D) WEST BULKHEAD PILE CAP MODIFICATION (TYP.) - SECTION**  
 CP-104 SCALE: 1/4" = 1'-0"

Designed:	AJG
Drawn:	ASC
Checked:	RJT
Approved:	RJT
P.E. No.:	
GEI Project:	2102556

DATUM	+6.09
HTL	+4.12
M.W.	-0.78
NSVD29	-3.97
M.L.W.	



CITY OF NEWBURYPORT  
 60 PLEASANT ST  
 NEWBURYPORT, MA 01950

CENTRAL WATERFRONT  
 BULKHEAD REPAIR  
 PHASE II  
 NEWBURYPORT, MA

NO.	DATE	NOTICE OF INTENT	APP
0	11/15/2021	ISSUE/REVISION	

SHEET NO.	CP-301
SHEET NAME	BULKHEAD REPAIR SECTIONS

FOR PERMITS ONLY  
 NOT FOR CONSTRUCTION

City of Newburyport  
 Central Waterfront Bulkhead Rehabilitation  
 75% Design Cost Estimate  
 Phase 2 Project



12/23/2021

Item	Quantity	Unit	Rate	Total	
Mobilization	1	LS	\$500,000.00	\$500,000.00	\$500,000.00
Site Preparation	1	LS	\$250,000.00	\$250,000.00	\$250,000.00
<b>Steel Cells - East Bulkhead - 530 LF</b>					
Demolition					
Demolition 2012 Bids					
Existing mooring piles	41	EA	\$810.00	\$33,210.00	
Pile brackets	41	EA	\$810.00	\$33,210.00	
Ladders	2	EA	\$270.00	\$540.00	
Gangway Landings	1	EA	\$270.00	\$270.00	
Cleaning existing steel	17905	SF	\$2.70	\$48,343.50	
Composite Sheet Pile Bulkhead					
FRP Sheeting	17905	SF	\$67.50	\$1,208,600.00	
Steel inserts	180	EA	\$270.00	\$48,600.00	
Steel wale	11600	LB	\$5.40	\$62,700.00	
Steel wale brackets	85	EA	\$540.00	\$45,900.00	
Steel connection to cell	85	EA	\$202.50	\$17,300.00	
Concrete infill	1335	CY	\$675.00	\$901,200.00	
Reinforcing steel	26900	LB	\$4.73	\$127,200.00	
Concrete cap	98	CY	\$1,500.00	\$147,700.00	
Concrete cap extension	54	CY	\$2,500.00	\$133,900.00	
Timber cap on concrete	1626	BFM	\$15.00	\$24,400.00	
Weepholes	44	EA	\$405.00	\$17,900.00	
Concrete headwall	1	EA	\$9,000.00	\$9,000.00	
Ladders	2	EA	\$2,200.00	\$4,400.00	
Gangway landings	1	EA	\$30,000.00	\$30,000.00	
Electrical utilities	11	EA	\$950.00	\$10,500.00	
Water line	1	LS	\$3,500.00	\$3,500.00	
Modify Bollards at removed piles	41	EA	\$700.00	\$28,700.00	
Piles	686	LF	\$310.00	\$212,700.00	
Pile vanes	4	EA	\$5,000.00	\$20,000.00	
Timber rail reinstall	542	LF	\$10.00	\$5,500.00	
Pile brackets top	20	EA	\$1,200.00	\$24,000.00	
Pile brackets low	2	EA	\$1,800.00	\$3,600.00	
Pile caps	20	EA	\$800.00	\$16,000.00	
					\$3,218,880.00
continued below					



