Seabrook Bulkhead Replacement Preliminary Engineering Report

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1. Description of Project

The project involves replacement of a steel sheet pile bulkhead at the Port of Seabrook in Seabrook, New Hampshire. The town owned shorefront land at this project was originally built as an industrial facility for unloading of large equipment during the construction of the Seabrook Nuclear Power Plant. Following the plant construction, the Town of Seabrook acquired the property and redeveloped the southern area as a fisherman's cooperative, which also includes a retail seafood store.

The site is a multi-use waterfront facility with uses varying from routine daily use by commercial fishermen, to less frequent heavy industrial and commercial vessel uses including large transformer unloading, nuclear fuel containment unit unloading and dredging/construction barge use and armor rock loading.

This port facility is unique in providing a north bulkhead berth area (part of this project) that is a gently sloping sand beach that is highly valued by all users. This may be fishermen using the dry stand berth to clean marine growth off boat bottoms at no dry docking cost (improving speed and fuel efficiency); and for the heavy industrial and commercial users that ground out barges to get complete stability for loading and unloading heavy equipment.

2. EDA investment project description

This important project is located in Seabrook, NH, along the Hampton-Seabrook Harbor. The existing section of seawall is currently failing and is in imminent danger of complete collapse. The proposed project will 1) replace approximately 429 linear feet of steel sheet pile on the existing bulkhead; 2) repair the existing timber fender system; and 3) regrade and repave the land behind the failing seawall. All aspects will be designed by an engineer and all expired permits for the work will be re-secured through the proper agencies.

The overall purpose of this project is to secure the stability of the wharf used for loading and unloading equipment at the Seabrook Station Nuclear Power Plant, and maintain an open channel used by the commercial fishing industry, as well as tourism and recreational boaters/fishing.

3. Project Drawings

The following drawings illustrate the project vicinity and proximity to beneficiaries; the existing conditions; and proposed project work.

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PROJECT VICINITY MAP

IN

SEABROOK, NH.

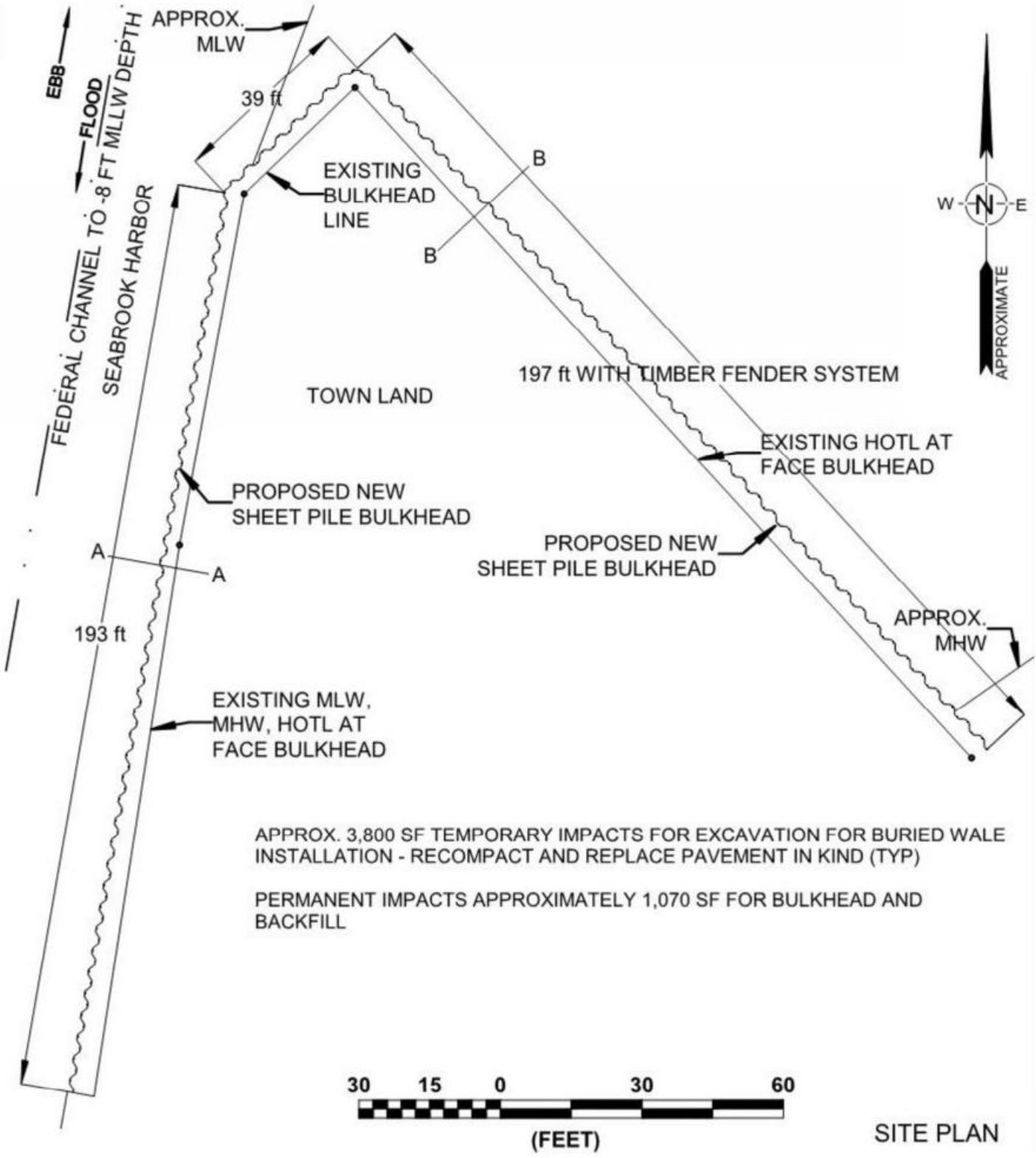
PROPOSED BULKHEAD REPLACEMENT
HARBORSIDE PARK
725 OCEAN BOULEVARD
SEABROOK, NH 03874

SCALE: 1"=1,000' DATE: 4/30/2019

Prepared for:

TOWN of SEABROOK N.H. INCORPORATED 1768

Town of Seabrook, New Hampshire
99 Lafayette Road
PO Box 456
Seabrook, NH 03874



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SITE PLAN
IN
SEABROOK, NH.

PROPOSED BULKHEAD REPLACEMENT
HARBORSIDE PARK
725 OCEAN BOULEVARD
SEABROOK, NH 03874

SCALE: 1"=30' DATE: 4/30/2019

Prepared for:

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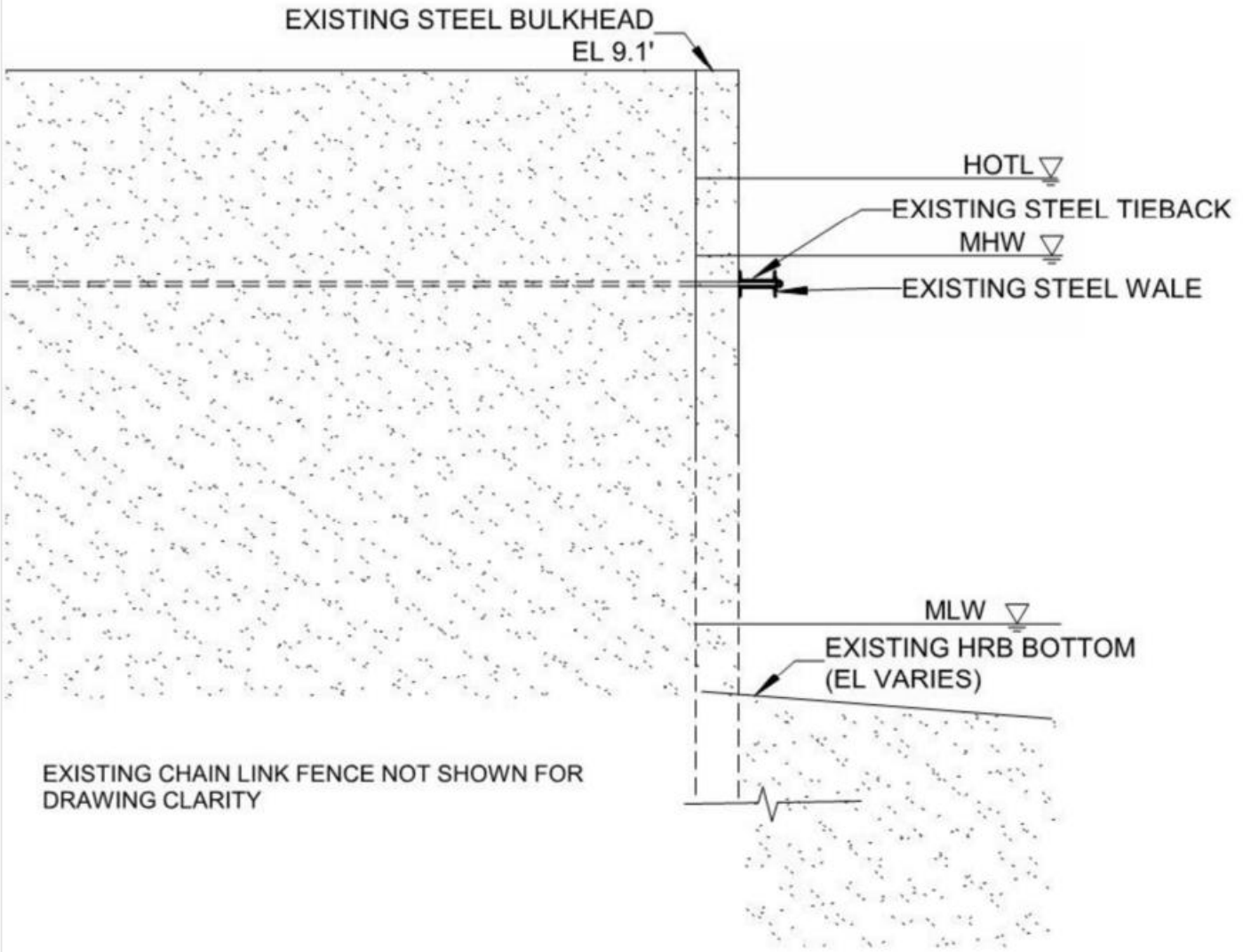

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SECTION A-A EXISTING

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EXISTING SECTION A—A

IN

SEABROOK, NH.

PROPOSED BULKHEAD REPLACEMENT
HARBORSIDE PARK
725 OCEAN BOULEVARD
SEABROOK, NH 03874

SCALE: 1"=4' DATE: 4/30/2019

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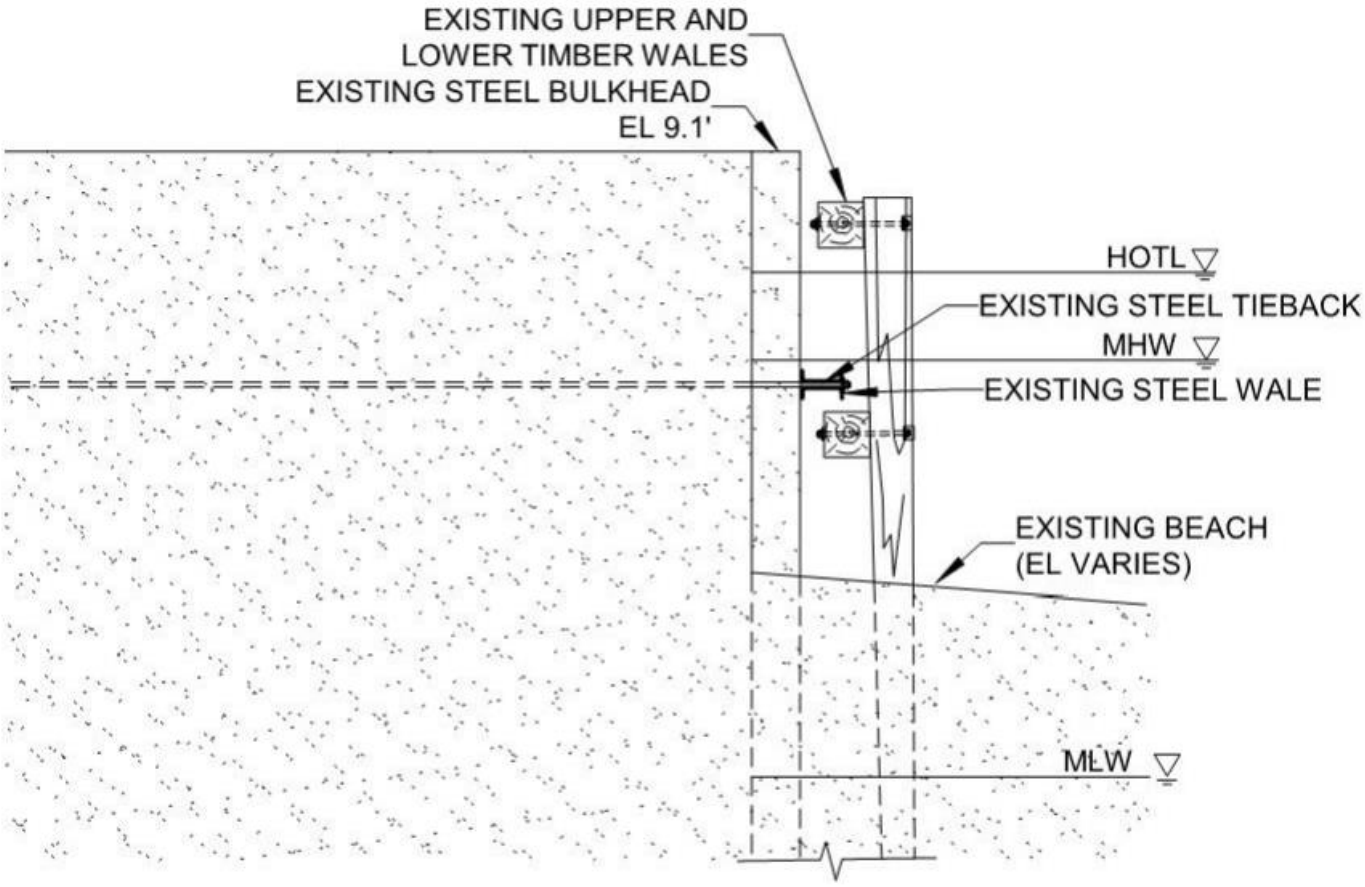

EXISTING CHAIN LINK FENCE NOT SHOWN FOR DRAWING CLARITY

4 0 4 8

(FEET)

SECTION B-B EXISTING

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EXISTING SECTION B–B

IN

SEABROOK, NH.

PROPOSED BULKHEAD REPLACEMENT
HARBORSIDE PARK
725 OCEAN BOULEVARD
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SCALE: 1"=4' DATE: 4/30/2019

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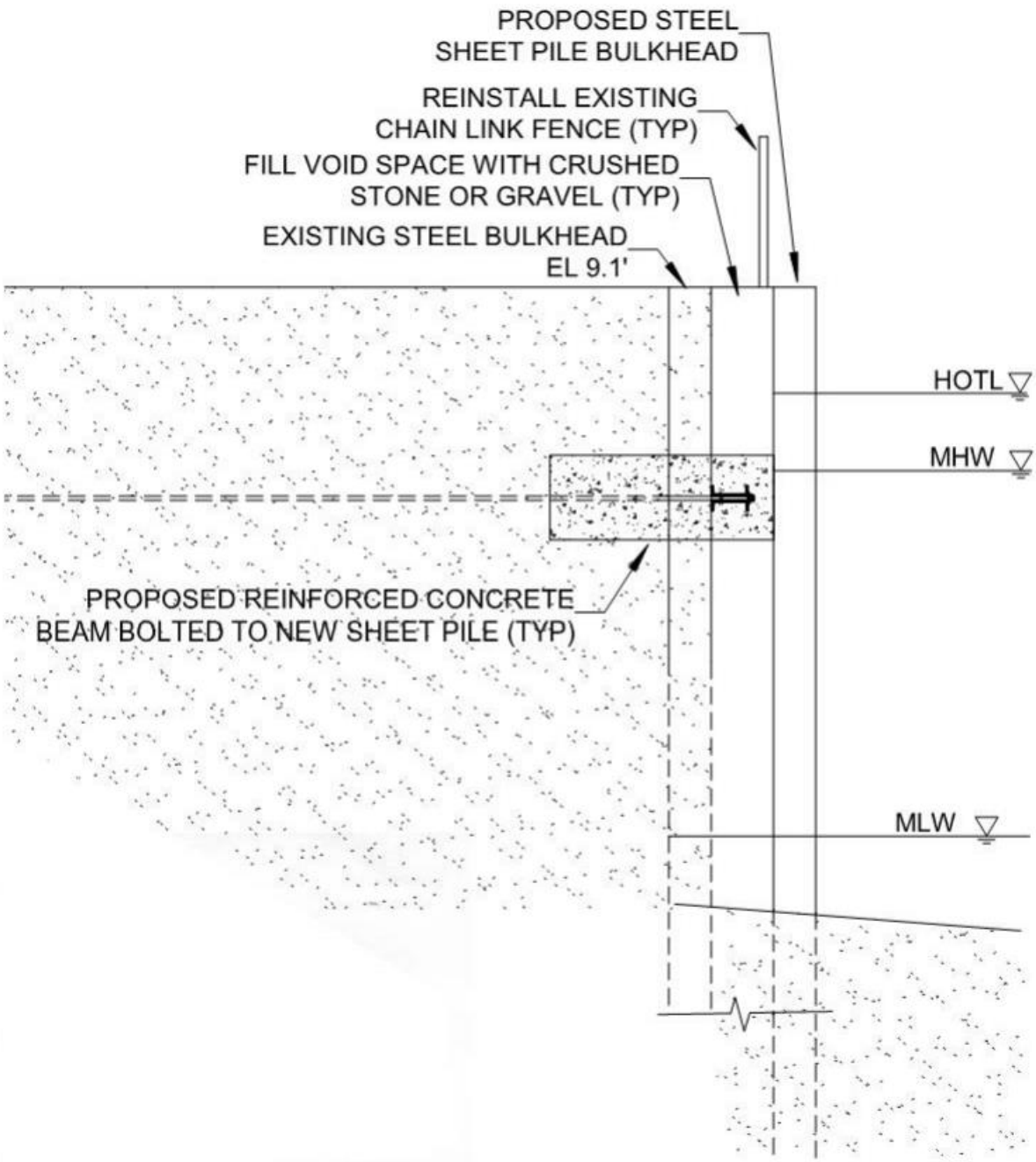

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SECTION A-A PROPOSED

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PROPOSED SECTION A—A

IN

SEABROOK, NH.

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HARBORSIDE PARK
725 OCEAN BOULEVARD
SEABROOK, NH 03874

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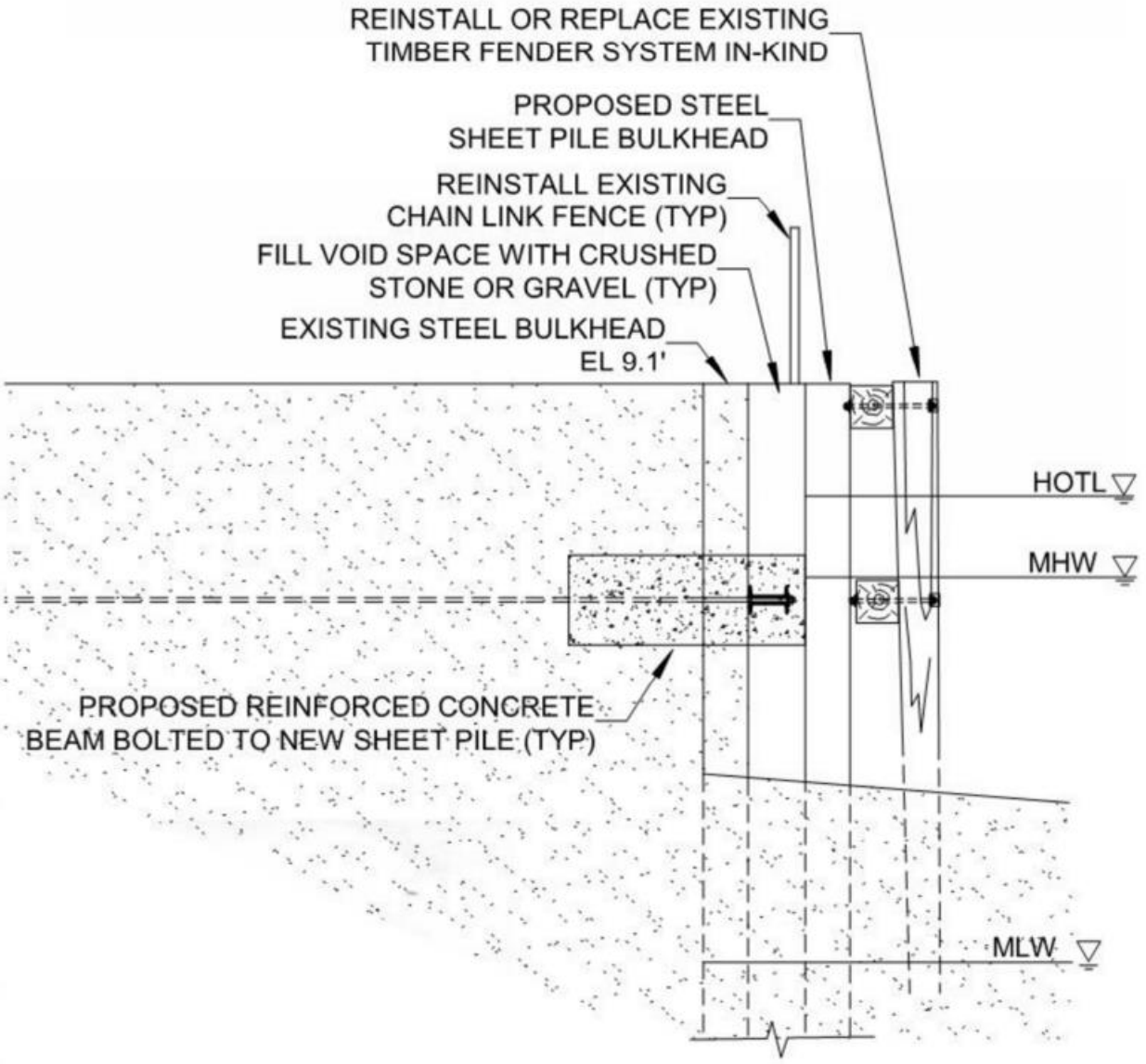

SECTION B-B PROPOSED

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PROPOSED SECTION B—B

IN

SEABROOK, NH.

PROPOSED BULKHEAD REPLACEMENT
HARBORSIDE PARK
725 OCEAN BOULEVARD
SEABROOK, NH 03874

SCALE: 1"=4' DATE: 4/30/2019

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4. Feasibility Analysis

The existing steel sheet pile bulkhead has advanced corrosion deterioration of the exposed sheet piles and steel wales to the point where there are corrosion holes through the sheet piling near low tide level that has allowed backfill sand and gravel to wash out, causing pavement collapses above. These is a steel channel wale system on the outside of the sheet piles which is connected to the tiebacks and buried deadmen and the exposed wales are severely corroded. The sheet piles and wale system are at the end of their service life and if not replaced, the bulkhead can collapse into the harbor, adversely impacting the adjacent recently maintenance dredged Federal navigation channel and commercial fishing boat mooring area.

The project will install new coated steel sheet piling just outboard of the existing bulkhead with the existing bulkhead remaining in place, and the new sheets will be connected to the existing buried tiebacks and deadmen anchors with bolts and new reinforced concrete internal wales (providing a more vessel friendly outside surface for berthing). The feasibility and constructability of this replacement method has been proven effective when it was used in 2005 to replace the southern portion of the bulkhead adjacent the fisherman's coop buildings.

With this site proven method there are no anticipated problem expected to delay the project. If the existing bulkhead does fail or collapse before the project begins, the failed portion of sheet piling and associated fill into the harbor will need to be removed before the new sheet piling can be installed. The sheet piling, steel and concrete are all locally/regionally readily available with standard order times.

5. Proposed Method of Construction

Bid documents including drawings and specifications will be prepared by a licensed professional engineer qualified and experienced in designing waterfront dock structures. The work will be bid using traditional design/bid/build contracting with independent construction phase oversight. The design engineer will provide construction phase observation services to help ensure the construction contractor complies with the project construction documents (drawings & technical specifications) and the resulting structure is built as intended.

6. Construction Contracts

The construction will be publicly competitively bid in a single contract for all work with assurances including performance and payment surety, and warranty, to standard Town of Seabrook requirements. Town staff will provide overall project management, bid evaluations and construction monitoring.

7. Construction Cost Estimate

Proposed Bulkhead Replacement
Harborside Park
725 Ocean Boulevard
Seabrook, New Hampshire

Opinion of Probably Construction Cost

Item	Unit	Quantity	Unit Cost	Total Cost
Survey	LS	1	$7,000	$7,000
Soil Test Borings and Logs	LS	1	$9,000	$9,000
Subsurface Test Pits, Tieback Inspection	LS	1	$4,000	$4,000
Permitting	LS	1	$5,000	$5,000
Engineering - Design	LS	1	$35,000	$35,000
Bid Documents	LS	1	$30,000	$30,000
Bid Phase Services	LS	1	$2,000	$2,000
Submittal Reviews	LS	1	$6,000	$6,000
Construction Inspection - Technical	LS	1	$15,000	$15,000
Construction Inspection - Administrative	LS	1	$9,000	$9,000
Permit Compliance Monitoring	LS	1	$1,000	$1,000
Mobilization	LS	1	$14,000	$14,000
Steel Sheet Piling	LF	430	$1,375	$591,250
Bulkhead Wale, Concrete	CY	225	$605	$136,125
Bulkhead Backfill	CY	600	$75	$45,000
Bolts / Threaded Rod Ties	EA	900	$105	$94,500
Surface Preparation	Days	5	$1,600	$8,000
Excavation, Backfill, & Compaction	Days	10	$2,700	$27,000
Paving	SF	9000	$4	$36,000
Fender Pile Trated Timber	EA	18	$1,000	$18,000
Fender Wales Threaded Timber	LF	200	$125	$25,000
Fender Bolts	EA	50	$100	$5,000
Removal of Existing Fender System	LS	1	$9,500	$9,500
Consumables	LS	1	$6,000	$6,000
Fish Coop Bulkhead Cap & Gangway	LS	1	$12,000	$12,000
Grant Administration	LS	1	$60,000	$60,000
			SUBTOTAL	1,210,375
			Contingency (15%)	181,556
			TOTAL	**1,391,931**

8. Land Purchase (not applicable)

9. Permits Required

The following permit applications and notifications are anticipated:

- NH DES Wetlands Bureau, Wetland Permit Application (was previously issued but has expired and needs to be re-filed.)
- Army Corps, Programmatic General Permit (PGP)
- Historical resource notifications (NH Division of Historical Resources) previously reviewed file #3991
- NH Natural Heritage Inventory (previous filing found no adverse impacts, but this needs to be updated)
- NH Fish & Game for construction timing restrictions (will be based on Natural Heritage Inventory response)

10. Estimated Project Schedule

Task	Duration	Date of Completion
Notice of Award (estimated)		October 2019
Survey	1 month	November 2019
Engineering Design	3 months	February 2020
Permitting	6 months	August 2020
Bid Documents	1 month	September 2020
Bidding	1 month	October 2020
Contract Award	1 month	November 2020
Construction Period	6 months	May 2021