ORIGINAL CONTRACT – PROJECT MANUAL

Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project

Town of Chatham
Chatham, Massachusetts

September 26, 2022

Project I.D.: 21C036

Solving our clients' toughest science and engineering challenges.

Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project

DATE SIGNED: 09/26/2022

Alex I Mora, PE, D.PE
Engineer of Record
Foth Infrastructure & Environment, LLC

Project ID: 21C036

Prepared for
Town of Chatham
Chatham, Massachusetts

Prepared by
Foth Infrastructure & Environment, LLC

September 26, 2022

REUSE OF DOCUMENTS

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 9/14/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Alliant Insurance Services, Inc. 131 Oliver Street, 4th Floor Boston MA 02110	**CONTACT NAME:** Mitchell Ross **PHONE (A/C, No, Ext):** 617-535-7246 **FAX (A/C, No):** **E-MAIL ADDRESS:** Mitchell.Ross@alliant.com
INSURED MAS Building & Bridge, Inc. 18 Sharon Avenue Norfolk, MA 02056	**INSURER(S) AFFORDING COVERAGE** — **NAIC #** **INSURER A :** Allied World National Assuranc — 10690 **INSURER B :** New Hampshire Insurance Compan — 23841 **INSURER C :** National Union Fire Insurance — 19445 **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 566079948 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
C	X COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR X XCU X Contractual GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:	Y	Y	GL 9925704	6/1/2022	6/1/2023	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG [ ]	$ 2,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 4,000,000 $ 4,000,000 $
C	AUTOMOBILE LIABILITY X ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY	Y	Y	CA 4607361	6/1/2022	6/1/2023	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) [ ]	$ 2,000,000 $ $ $ $
A	X UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000	Y	Y	0310-8512	6/1/2022	6/1/2023	EACH OCCURRENCE AGGREGATE [ ]	$ 10,000,000 $ 10,000,000 $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBEREXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WC 39326840	6/1/2022	6/1/2023	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Project ID: 21C036 Chatham Fish Pier-Bulkhead Resheeting and South Jog Improvements Project

Town of Chatham, MA is to be included as additional insured when required in written agreement prior to loss. USL&H Coverage applies for Worker's Compensatoin.

CERTIFICATE HOLDER

Town of Chatham, MA
Office of the Town Manager
549 Main St.
Chatham MA 02633

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ENDORSEMENT

This endorsement, effective 12:01 A.M. 06/01/2022 forms a part of

policy No. 460-73-61 issued to MAS Building & Bridge, Inc.

by NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - WHERE REQUIRED UNDER CONTRACT OR AGREEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

SCHEDULE

ADDITIONAL INSURED:

ANY PERSON OR ORGANIZATION FOR WHOM YOU ARE CONTRACTUALLY BOUND TO PROVIDE ADDITIONAL INSURED STATUS BUT ONLY TO THE EXTENT OF SUCH PERSON'S OR ORGANIZATION'S LIABILITY ARISING OUT OF THE USE OF A COVERED "AUTO".

I. **SECTION II - LIABILITY COVERAGE, A. Coverage, 1. - Who Is Insured,** is amended to add:

d. Any person or organization, shown in the schedule above, to whom you become obligated to include as an additional insured under this policy, as a result of any contract or agreement you enter into which requires you to furnish insurance to that person or organization of the type provided by this policy, but only with respect to liability arising out of use of a covered "auto". However, the insurance provided will not exceed the lesser of:

(1) The coverage and/or limits of this policy, or

(2) The coverage and/or limits required by said contract or agreement.

_____

Authorized Representative

ENDORSEMENT

This endorsement, effective 12:01A.M. 06/01/2022 forms a part of

policy No. 460-73-61 issued to MAS Building & Bridge, Inc.

by NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

INSURANCE PRIMARY AS TO CERTAIN ADDITIONAL INSUREDS

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

Section IV - Business Auto Conditions, B., General Conditions, 5., Other Insurance, c., is amended by the addition of the following sentence:

The insurance afforded under this policy to an additional insured will apply as primary insurance for such additional insured where so required under an agreement executed prior to the date of accident. We will not ask any insurer that has issued other insurance to such additional insured to contribute to the settlement of loss arising out of such accident.

All other terms and conditions remain unchanged.

Authorized Representative

74445 (10/99)

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
Any person or organization whom you become obligated to include as an additional insured as a result of any written contract or agreement you have entered into.	Per the written contract or agreement
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS - SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location(s) Of Covered Operations
Any person or organization whom you become obligated to include as an additional insured as a result of any contract or agreement you have entered into.	Per the contract or agreement.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

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C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

© Insurance Services Office, Inc., 2018

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

SCHEDULE

Name Of Person(s) Or Organization(s):
PURSUANT TO APPLICABLE WRITTEN CONTRACT OR AGREEMENT YOU ENTER INTO.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery against the person(s) or organization(s) shown in the Schedule above because of payments we make under this Coverage Part. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person(s) or organization(s) prior to loss. This endorsement applies only to the person(s) or organization(s) shown in the Schedule above.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

This endorsement changes the policy to which it is attached effective on inception date of the policy unless a different date is indicated below.

This endorsement, effective 12:01 AM 06/01/2022 forms a part of Policy No. 3932-68-40

Issued to **MAS Building & Bridge, Inc.**

By NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA.

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.

This agreement shall not operate directly or indirectly to benefit any one not named in the Schedule.

Schedule

ANY PERSON OR ORGANIZATION TO WHOM YOU BECOME OBLIGATED TO WAIVE YOUR RIGHT OF RECOVERY AGAINST, UNDER ANY WRITTEN CONTRACT OR AGREEMENT YOU ENTER INTO PRIOR TO THE OCCURRENCE OF LOSS.

This form is not applicable in Kansas for private construction contracts as defined in K.S.A. 16-1801 through K.S.A 16-1807 or public construction contracts as defined in K.S.A. 16-1901 through 16-1908, except where permitted by statute or other applicable law, such as for use in wrap-up insurance programs.

Any person or organization for which the employer has agreed by written contract, executed prior to loss, may execute a waiver of subrogation. However, for purposes of work performed by the employer in Missouri, this waiver of subrogation does not apply to any construction group of classifications as designated by the waiver of right to recover from others (subrogation) rule in our manual.

This form is not applicable in California, Kentucky, New Hampshire, New Jersey, Texas, or Utah.

WC 00 03 13
(Ed. 04/84)

Countersigned by _____

Authorized Representative

ENDORSEMENT

This endorsement, effective 12:01 A.M. forms a part of
policy No. 250-76-50 issued to MAS Building & Bridge, Inc.

by

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY. WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

Section IV - Business Auto Conditions, A. - Loss Conditions, 5. - Transfer of Rights of Recovery Against Others to Us, is amended to add:

However, we will waive any right of recover we have against any person or organization with whom you have entered into a contract or agreement because of payments we make under this Coverage Form arising out of an " accident" or " loss" if:

(1) The " accident" or " loss" is due to operations undertaken in accordance with the contract existing between you and such person or organization; and
(2) The contract or agreement was entered into prior to any " accident" or " loss" .

No waiver of the right of recovery will directly or indirectly apply to your employees or employees of the person or organization, and we reserve our rights or lien to be reimbursed from any recovery funds obtained by any injured employee.

AUTHORIZED REPRESENTATIVE

62897 (6/95)

SECTION 00 91 13

ADDENDUM

August 9, 2022

ADDENDUM NO. 3

TO: Prospective Bidders

FROM: Foth Infrastructure & Environment, LLC
15 Creek Road
Marion MA 02738

RE: Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project
Town of Chatham, Massachusetts
Project I.D.: 21C036

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents published on July 20, 2022.

Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This addendum consists of 32 pages.

ISSUED FOR INFORMATIONAL REASONS

1. The Bid Due Date has been extended 1 week – to August 19, 2022, at 10:00 a.m.

CHANGES TO DRAWINGS

1. The following Drawings have been revised to reflect the cantilevered walkway removal and are provided in **Attachment 1**:

Drawing G-001	Cover Sheet
Drawing C-101	Existing Site and Demolition Plan
Drawing S-102	Bulkhead and South Pier Design Plan
Drawing S-103	Bulkhead and South Pier Design Plan and Section
Drawing S-104	Bulkhead Sections
Drawing S-107	Bulkhead and Pier Details
Drawing S-108	Guardrail and Handrail Details
Drawing S-110	Timber Deck Plan Design
Drawing S-114	Walkway Plan and Profile

QUESTIONS AND RESPONSES FROM PROSPECTIVE BIDDERS FOLLOWING THE PRE-BID CONFERENCE and ADDENDUM NOs. 1 and 2

1. Q: Is there any geotechnical reporting or boring logs? The boring log is required to price the contractor designed tiebacks. If there are no borings or geotechnical recommendations, that should be noted in the next addenda.

   A: Boring logs and related geotechnical information are provided in **Attachment 2.**

2. Q: Drawing G-002 note 3 of PARKING LOT PERIMETER SWALE SEEDING:
   a. Note 3 indicated "Sediment and debris to be removed manually at least once a year." Is the intent to have the Contractor come back the following year to clean sediment and debris from the swale and re-seeded as necessary?

   A: Please disregard this statement as it is for the Client's maintenance planning.

3. Q: Detail A drawing S-102 call for "Fabricated corner pile". Please provide detail/size for this fabricated corner pile.

   A: Steel sheet pile layout, including corner piles, shall be provided by sheet pile distributor, after site is surveyed for accuracy of dimensions.

4. Q: Drawing S-101 call for "proposed valve box location see sheet P100". There is no sheet P100, please advise.

   A: Valve box detail is provided in Drawing S-105.

5. Q: Detail 5 of S-105, show a weld sleeve steel to sheet pile. What is the diameter and wall thickness of this steel sleeve pipe?

   A: The steel sleeve for the pipe penetration through the steel sheet pile bulkhead will have a minimum thickness of 1/2".

6. Q: Drawing P-3 call "Valve Box with cover (by others)". Is the valve box not part of this Contract?

   A: The valve box is part of this contract.

7. Q: Drawing S-102, along south side of Jug area, Detail A labeled 16 double of AZ sheet. but when we count it, it is 17 double of AZ sheet. Also on the North side of the Jug, drawing labeled 12 double, when we count it show 13.5 double.

   A: The south wall of the jog has 17 doubles, not 16 as shown. Otherwise, the count of sheets is correct.

8. Q: Drawing CP-001 calls for anodes at every other inner belly of the East/North/ South/Heading north wall of the main pier. Please provide the existing drawing of this main pier, so the Contractor can quantify the number of anodes at these locations.

   A: This question was answered in Addendum No. 2.

9. Q: Drawing S-103 section 1 calls "Design dredge: EL -12.3'. Please confirm there is no dredging work involved in this Contract.

   A: There is no dredging requirement for this contract.

10. Q: Can the Contractor use the parking lot adjacent to the existing bulkhead as a staging area? Or can Owner provide a staging area for Contractor to use (at no extra cost to Contractor)?

    A: The Town of Chatham would like to review contractor requirements after the bid is awarded. Generally, the entire lower lot will be available after January 1, 2023 for staging. If work will be planned prior to January 1, 2023, the Town will assign an acceptable area for staging, likely along the west boundary of the lower lot.

11. Q: How is the conduit at the pier to be mounted where the cantilevered walkway has been deleted?

    A: To expand on Drawing E-3, the conduit mounting method indicated at the pier shall be changed per the attached sketch (SKE-1), which is provided as **Attachment 3.**

12. Q: Please reference Drawing S-115 showing (2) Gas Mains, (1) Sewer crossing the proposed Barcliff Ave Retaining Wall. The cut at the Ga crossing is aprox 10-ft deep and SOE will be needed. Does the Town know the elevation of these Gas Mains & Sewer Mains crossing of the wall?

    A: Bids should consider interferences with the retaining wall footer and existing drain and utility (fuel and sewer) lines. Note: there is also a concrete pad that was poured between the drain line and the fuel lines at the time that the fuel lines were installed. Line elevation information for the existing lines can be provided in the Issue for Construction release of the engineering plans. Drain lines and concrete pad are depicted on the sketch provided in **Attachment 4.**

13. Q: Please quantify the number of Anodes that are to be installed on the float and finger piers.

    A: Bids should include, for the purposes of the float and finger piers:
    (30) 3x3x36, 32.4# anodes
    (24) 4x4x36 57.6# anodes

14. Q: Please quantify the number of Anodes that are to be installed on the existing sheet piles.

    A: This question was answered in Addendum No. 2.

15. Q: Please issue the existing drawings of the existing sheet piles.

    A: This question was answered in Addendum No. 2.

16. Q: Please issue the existing drawings of the existing Extruded Rubber Fender and existing connection bracket.

    A: See Drawing S-109 in **Attachment 1.**

17. Q: Sheet S-104 and S-105 show only the Double C-channel attached to the sheet pile in the South jog area. Sheet S-107 shows a HP 14 wale also attached. Please clarify.

    A: This question was answered in Addendum No. 2.

18. Q: Sheets S-110 to S-113 call out both "Non-interlocking Deck Planks" and "Admiral Space Maker Decking". Please clarify which type is used where.

    A: Use non-interlocking deck planks by WearDeck.

19. Q: The "Monument Stairs Handrail Notes" on Sheet S-110 is obscured by the PE stamp. Please clarify what is written.

    A: Refer to revised Drawing S-110 in **Attachment 1.**

20. Q: Please reference Drawings C-101 and S-108 showing pavement demo and new paved walkway and provide thicknesses of existing and new pavement?

    A: Consider existing pavement similar to the new pavement: 8 inch dense aggregate base layer, 2 inch binder layer, and 3 inch hot mix asphalt layer.

21. Q: Please reference Drawings C-103, S-101, S-102, S-103, S-104, S-105 and S-107 and provide the thickness of the existing and new concrete pad along the new bulkhead?

    A: Consider existing concrete pad has a thickness of 12 inches. New pad will have a minimum thickness of 12 inches.

22. Q: Will the Contractors be allowed a staging area adjacent to the work to store materials (including excavation spoils, steel sheeting, reinforcing steel, etc) and set up a field office?

A: Refer to the response to Question #10.

23. Q: Please reference Drawing S-107 Details K and J and confirm that the Concrete Deck is only reinforced to the limits shown in Detail J?

A: The concrete deck shall be reinforced to the edge of concrete, at face of bulkhead.

24. Q: Please reference Drawing S-103 Detail 1 and confirm that the only reinforcing in the Concrete Pad along the Parking Area and in the South Jog is the #9 Dowels cast in the Concrete Cap?

A: The concrete pad adjacent to the bulkhead in the parking area shall have reinforcement shown in section K on sheet S-107, in addition to the #9 dowels.

25. Q: Please reference Drawing S-105 Detail 2 (Ladder Elevation) and confirm that (4) 1" dia. bolts are needed to secure 8x12 Tangent Timber to Concrete Cap? What is the length of embedment for these bolts?

A: The tangent marine timber chocks shall be anchored to the concrete cap using ¾" Φ Hilti HAS SS 316 Rods in Hit-RE 500 epoxy adhesive, with 6.75" embedment in concrete. Anchors shall be spaced 12 inches.

26. Q: Please reference Drawing S-105 Detail 2 (Ladder Elevation) and confirm that no bolts are needed to secure 14" dia. Greenheart Pile to Concrete Cap.

A: Greenheart piles shall be anchored to concrete cap using 1" Φ A307 Bolts, HDG, in Hit-RE 500 epoxy adhesive, with 9" embedment in concrete.

27. Q: Please provide a detail as to how the existing gangway is to be attached to the new gangway platform.

A: Existing gangway shall be installed to existing landing in-kind. Existing landing will be reused.

28. Q: Please reference the Bid Form for Item #8 (Reinforced Concrete Deck) and confirm that this item is to include the reinforced concrete wall, handrails and grab rail?

A: Reinforced concrete deck includes the concrete pad adjacent to the parking lot bulkhead, the south jog deck, and the concrete wall, including timber strips.

29. Q: Please reference Drawing S-108 Detail N and provide hardware type and sizes for making timber to concrete connections?

A: The 4x6 rails shall be anchored to the concrete wall using ¾" Φ Hilti HAS SS 316 Rods in Hit-RE 500 epoxy adhesive, with 6.75" embedment in concrete. Anchors shall be spaced 24 inches.

30. Q: Please reference Drawing S-110 and provide a complete listing of the Notes in the lower righthand corner of the drawing covered by the Engineers Seal.

A: Refer to response for Question #19.

31. Q: Please reference Drawing S-112 Detail 3 concerning Fiberforce Lemon Yellow Nosing and confirm that this is required only on the outside of each and every stair tread? Or is the entire 12" wide stair tread to be made from this material?

A: The yellow nosing Fiberforce shall be installed on each and every stair tread, similar to other stairs on site. This nosing strip is 1x5.5 inches.

32. Q: Please reference Drawing S-110 Detail B (showing 4x6 clips securing 6x6 handrail posts) and provide details of clip to post/concrete connection including embedment into existing concrete slab?

A: The clips will be anchored to concrete using 2-¾" Φ Hilti HAS SS 316 Rods in Hit-RE 500 epoxy adhesive, with 6.75" embedment in concrete, per clip. The timber post will connect to the clips using 2-3/4" Φ A307 through bolts, HDG.

33. Q: We respectfully request a 2-week extension to the Bid Date.

A: The Bid Due Date has been extended to Friday, August 19, 2022, at 10:00 am.

34. Q: Please provide any borings and geotechnical information available.

A: Refer to the response for Question #1.

35. Q: There is conflicting information regarding timber treatment: Specification 06135 mentions timbers should be SYP #1, drawing notes on G-002 mention SYP #2 or better S4S, timber notes on G-002 only mentions treatment for Pile Caps + Stringers, the specifications mention all timbers to be pressure treated. Please clarify the grade, treatment, and finish of all timbers on this contract.

A: For timber grade and treatment requirements refer to notes on Drawing G-002.

36. Q: The drawing notes on Sheet G-002 call for the rebar to be galvanized. Specification 03300 calls for the rebar to be epoxy coated. Please clarify.

A: Concrete reinforcement shall be epoxy-coated.

37. Q: Steel notes on Sheet G-002 and Specifications 05110 have contradicting material properties for Waterfront Structural Steel. H-Piles and C-Chanel Wales on the Sheet G-002 notes are called out as A690 Gr.50, but in the 05110 Specifications they call for steel shapes to be ASTM A992, A572 Gr.50. Please clarify.

A: Waterfront steel shall comply with ASTM A690.

38. Q: We have been told A690 C-Channels do not exist, and there is a 100 TON minimum order on A690 H-Piles. Can an acceptable alternative please be provided?

A: Bidders shall provide the TOC with reasons for this change request. TOC will review request for change of material and will issue a statement with their decision.

39. Q: Steel notes on Sheet G-002 and Specifications 05500 have contradicting material properties for Metal Fabrication. The drawing notes call for ASRM A276 S.S. 316, while the specifications call for ASTM 36, ASTM A500, ASTM A53 Steel hot dip galvanized. Based on notes for the ladders on sheet G-003 it seems that Metal Fabrications should be hot dip galvanized per the specifications. Please clarify.

A: Preferred material would be stainless steel in compliance with general notes on sheet G-002. Metal fabrication for ladders will use A36 Steel, HDG. Additionally, access ladders will have the bottom 42 inches epoxy-coated.

40. Q: 05110 and 05500 Structural Steel and Metal Fabrication Specifications call for PE Stamped Shop Drawings. The Waler Systems, ladders and other misc. metals are already designed. Please confirm PE stamped shop drawings are not necessary.

A: The Shop Drawings need not be stamped by a PE.

41. Q: Anode specifications call for the contractor to obtain a Professional Corrosion Engineer to supervise, inspect and test the anodes. Please confirm this individual does not need to be onsite for the entire duration of installation, provided the installers are trained at the start and the inspections are performed.

A: The specialist will need to be onsite to perform pre installation testing and post installation testing. They will also have to be there for the first couple of days of installation to be sure the contractor is comfortable with the installation process and doing it properly. The reminder of the construction can be completed without a specialist onsite.

42. Q: Are Town fees for permits (i.e., Building/Electrical) waived for this project?

A: Yes, the Town of Chatham will waive permit fees.

43. Q: Please clarify what is included in the electrical scope for Bid Item #16 – Bar Cliff Ave Extension, i.e., remove and replace 2 each light poles only?

    A: Bid Item #16's items that relate to the Barcliff Ave Extension are the demo of (2) light post assemblies, the relocation of (1) of the bases, and the furnish and install of (2) new light post assemblies.

44. Q: For Bid Item #16 – Please confirm if existing electrical conduits must be removed. If yes, are the existing conduits concrete encased?

    A: If Existing Conduits are being abandon, they must be removed. Existing conduits are NOT concrete encased.

45. Q: Please provide information on valve box and cover for plumbing – contract drawing P-4.

    A: The following are provided for reference: Valve box shall be same or equivalent alternate.

    Fibrelite piping sump. Reference model number S7SB-390-WT

    Fibrelite sump extensions, as necessary. Reference model number S7-EX12

    Fibrelite 36" manhole ring with watertight cover. Reference model number FL 90

46. Q: Grab rails are called out as Marine Grade Aluminum on the drawings. Is 6061 acceptable and does it need to be anodized?

    A: Aluminum in compliance with 6061 is acceptable. Coordinate aluminum finish with the Town of Chatham.

47. Q: Can you also confirm this project is Tax Exempt?

    A: Yes, the project is tax exempt.

48. Q: Question and answer #23 and #24 provides the following approximate count of anodes in these areas:

    North Jog Wall: 27 anodes
    East wall of main pier: 19 anodes
    North wall of main pier: 8 anodes
    South wall of main pier: 11 anodes
    South Jog Wall: 27 anodes; as many as 8 will be shallow water anodes
    (The entire south side, but likely, the last couple, the water is deep enough to accommodate the standard vertical mount anode.)
    Total 5x5x48" anodes for sheet pile walls: 92

As well as defined the 120# anode as 5”x5”x48”. Will there be a revised bid item sheet for item #17 Cathodic Protection System reflecting these anode sizes and fixed quantities for equal bidding?

A: No, the bid form will not be updated.

49. Q: Design criteria notes on sheet G-002 of the contract drawings, state the following:
b. TIMBER POSTS SYP NO 2 OR BETTER
c. TIMBER PILE CAPS AND BRACES SYP NO. 2 OR BETTER
d. TIMBER STRINGERS SYP NO. 2 OR BETTER

The written specifications for SECTION 06135 TIMBER CONSTRUCTION states:
2.1 MATERIALS
A. Timber shall meet the requirements of the Southern Pine Inspection Bureau Inspection Rule, for **Southern Yellow Pine No. 1**, Paragraph 508 Marine Grade minimum.
B. Clean-peel and preservative pressure treat timber in accordance with AWPA Standard P5 for Alkaline Copper Quat (ACQ) to the following retentions:
1. All timber components except as noted below that will be subject to marine use, brackish or saltwater immersion, shall be **Greenheart timber**.

Please clarify the timber specifications for the projects for all non-piling timbers.

A: For timber grade and treatment requirements, refer to Notes on Drawing G-002.

50. Q: Will Type 201 Stainless Steel be acceptable for 1” wide stainless steel green heart pile banding?

A: No, Type 201 SS is not acceptable.

51. Q: Please provide specification and/or make and model for post connectors to sonotube foundations for the new timber deck on sheets S-110 to S-113?

A: The anchor for the lamp post is usually provided by the lamp post manufacturer.

52. Q: Please provide a base material specification for the typical grab rail to be provided per the Typical Handrail Detail 4 on Sheet S-113.

A: Please use marine grade aluminum, in compliance with 6061 alloy.

53. Q: Will the Bid Date be extended?

A: The Bid Due Date has been extended to Friday, August 19, 2022, at 10:00 am.

54. Q: Is the Wharf Finger Building part of this project?

A: Wharfinger Building is part of the project to the extent as shown on Drawings.

55. Q: Is the ground grid for the Wharf Finger Building part of this project?

A: Yes, the ground grid for the Wharfinger Building is part of the project scope.

56. Q: Is there any other work for the Wharf Finger Building?

A: Wharfinger Building is part of the project to the extent as shown on Drawings.

57. Q: Please provide details as to the wharf conduit mounting.

A: Refer to response to Question #11.

58. Q: Addendum 2 Q&A 25 states this is buy american project. Drawing S-102 specified AZ-38 steel sheet pile, AZ-38 steel sheet pile is a non-American product. Please advise.

A: Please consider an equivalent replacement sheet pile section.

59. Q: Drawing G-002 specified HP14x102 (BH Closure & BH Wale) as ASTM A690 Grade 50 steel. It is our understanding that the steel milling supplier required a minimum of 100 ton per order of A690 steel H-Pile. In this project, there is not enough quantity of HP14x102 to make the order for A690 steel. Would the A572 or A588 Grade 50 steel HP14x102 be acceptable to the Owner?

A: Submit proposed material for project. The Town of Chatham will review request for change of material and will decide if equivalent or not.

60. Q: Drawing G-002 specified Double Channel C15x33.9 (BH Wale) as ASTM A690 Grade 50 steel. It is our understanding that the steel milling supplier does not make A690 steel channel. Would the A572 or A588 Grade 50 steel channel be acceptable to the Owner?

A: Refer to response for Question #59.

Alex I. Mora, PE, D.PE
Engineer of Record
Registered P.E. for the Commonwealth of Massachusetts, License #55309

END OF ADDENDUM

Attachment 1

Drawings – Revised

Drawing G-001	**Cover Sheet**
Drawing C-101	**Existing Site and Demolition Plan**
Drawing S-102	**Bulkhead and South Pier Design Plan**
Drawing S-103	**Bulkhead and South Pier Design Plan and Section**
Drawing S-104	**Bulkhead Sections**
Drawing S-107	**Bulkhead and Pier Details**
Drawing S-108	**Guardrail and Handrail Details**
Drawing S-110	**Timber Deck Plan Design**
Drawing S-114	**Walkway Plan and Profile**

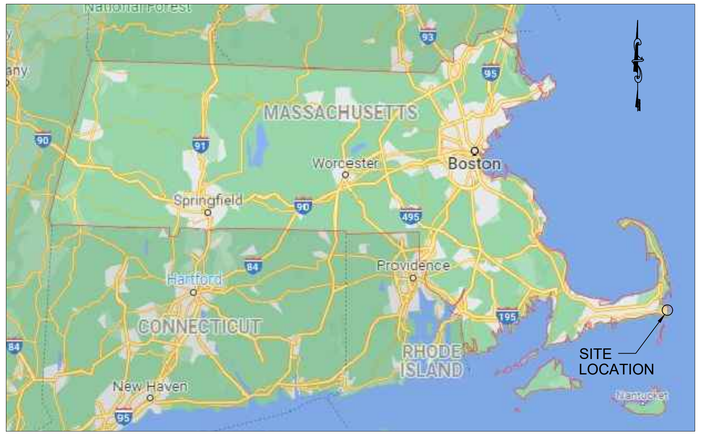
CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM, MASSACHUSETTS
AUGUST, 2022

Prepared by:
Foth Infrastructure & Environment, LLC

ISSUED FOR BID

DRAWING INDEX	
SHEET #	**TITLE**
G-001	COVER SHEET
G-002	GENERAL NOTES
G-003	GENERAL NOTES AND LEGEND
C-101	EXISTING SITE AND DEMOLITION PLAN
C-102	EXISTING UTILITY LAYOUT
C-103	EXISTING BULKHEAD DEMOLITION AND EXCAVATION SECTIONS
C-104	EXISTING TIMBER DECK PLAN AND SECTION
S-101	SITE PLAN IMPROVEMENTS
S-102	BULKHEAD AND SOUTH PIER DESIGN PLAN
S-103	BULKHEAD AND SOUTH PIER DESIGN PLAN AND SECTION
S-104	BULKHEAD SECTIONS
S-105	BULKHEAD SECTION, OUTFALL AND VALVE BOX DETAILS
S-106	BULKHEAD AND PIER DETAILS
S-107	BULKHEAD AND PIER DETAILS
S-108	GUARDRAIL AND HANDRAIL DETAILS
S-109	FENDER MOUNTING DETAILS
S-110	TIMBER DECK PLAN DESIGN
S-111	TIMBER DECK DESIGN
S-112	TIMBER DECK SECTIONS
S-113	TYPICAL FRAMING AND HANDRAIL SECTIONS
S-114	WALKWAY PLAN AND PROFILE
S-115	SIDEWALK PLAN & PROFILE
S-116	SIDEWALK DETAILS
E-1	ELECTRICAL SITE DETAILS
E-2	ELECTRICAL SITE PLAN
E-3	ELECTRICAL SITE PLAN
E-4	ELECTRICAL POWER RISER DIAGRAMS
CP-1	CATHODIC PROTECTION PLAN
CP-2	CATHODIC PROTECTION PLAN DETAILS
P-1	PLUMBING LEGEND AND DETAILS
P-2	PLUMBING DEMOLITION PLAN
P-3	PLUMBING RENOVATION SITE PLAN
P-4	PLUMBING RENOVATION SITE PLAN



LOCATION MAP

VICINITY MAP

ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

DATE SIGNED: 08/04/2022

ENGINEER OF RECORD

SHEET TITLE
COVER SHEET

SHEET NUMBER
G-001

Friday, August 05, 2022 10:17:12
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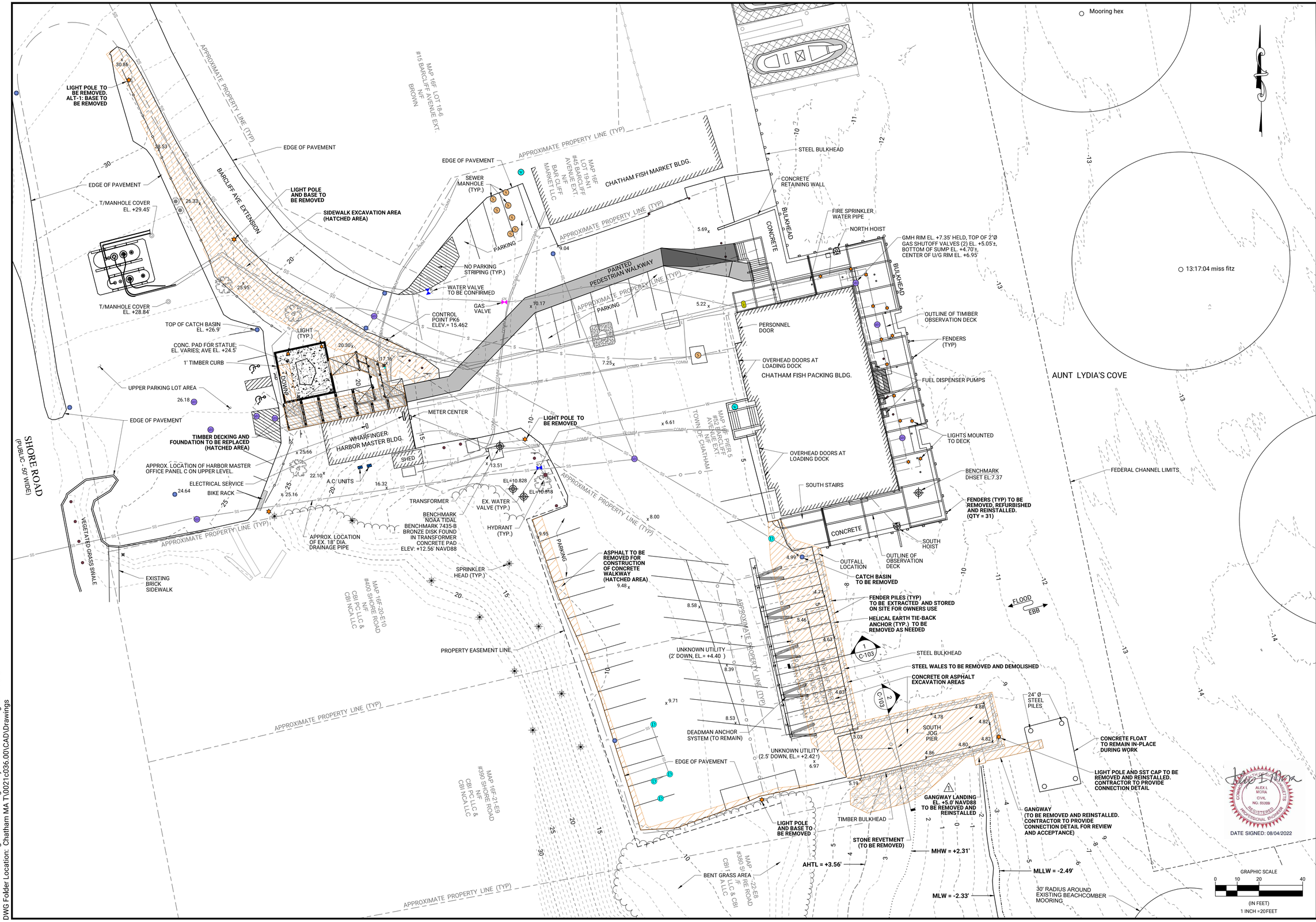
DWG Folder Location: Chatham MA T\0021C036.00\CAD\Drawings



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DWG Folder Location: Chatham MA TV0021c036.00\CAD\Drawings

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Updated Gangway Landing Note

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/10/2022
DESIGNED	JRJ	5/10/2022
CHECKED	JRJ	7/19/2022

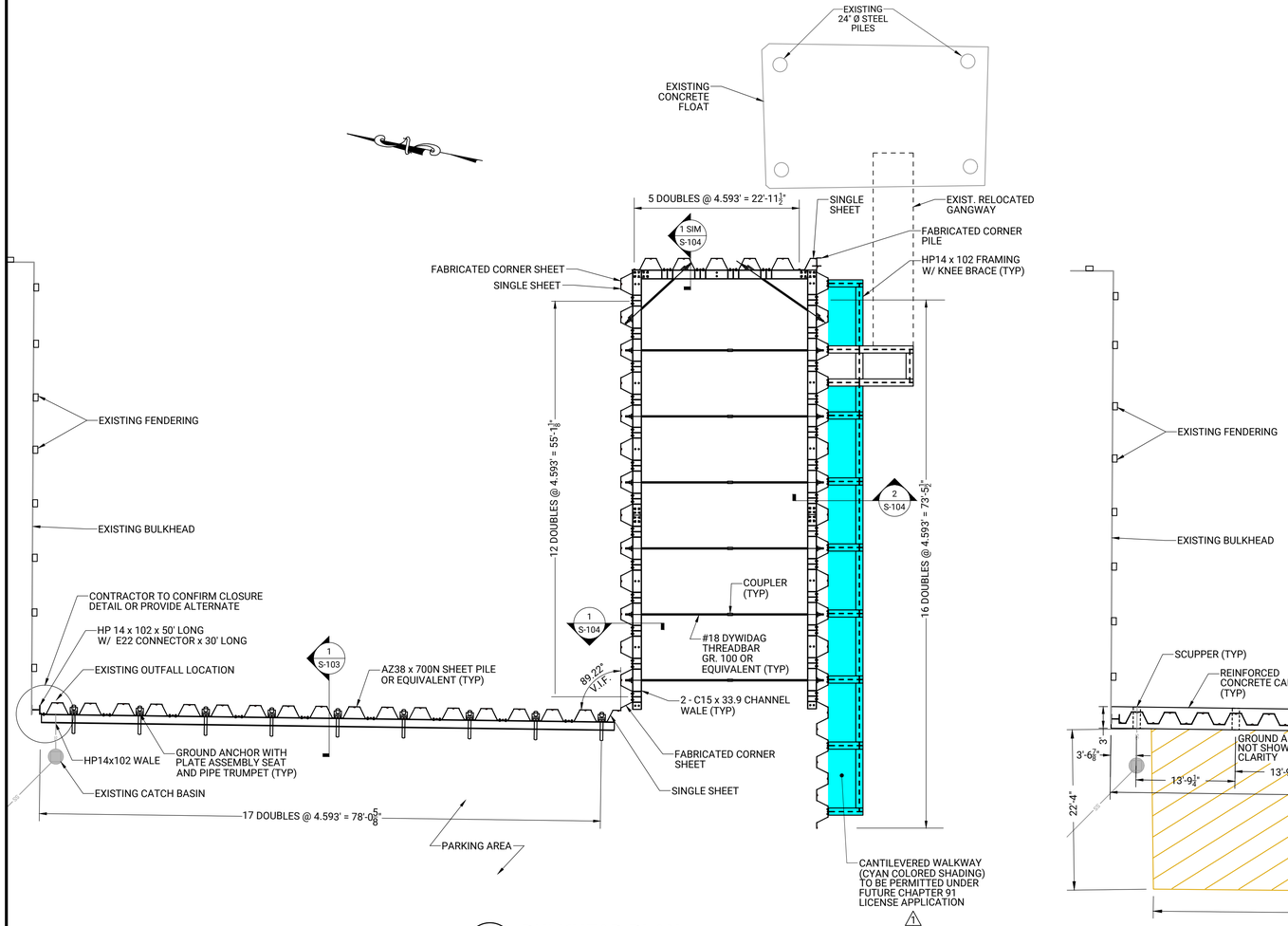
SHEET TITLE:

EXISTING SITE AND DEMOLITION PLAN

(ISSUED FOR BID)

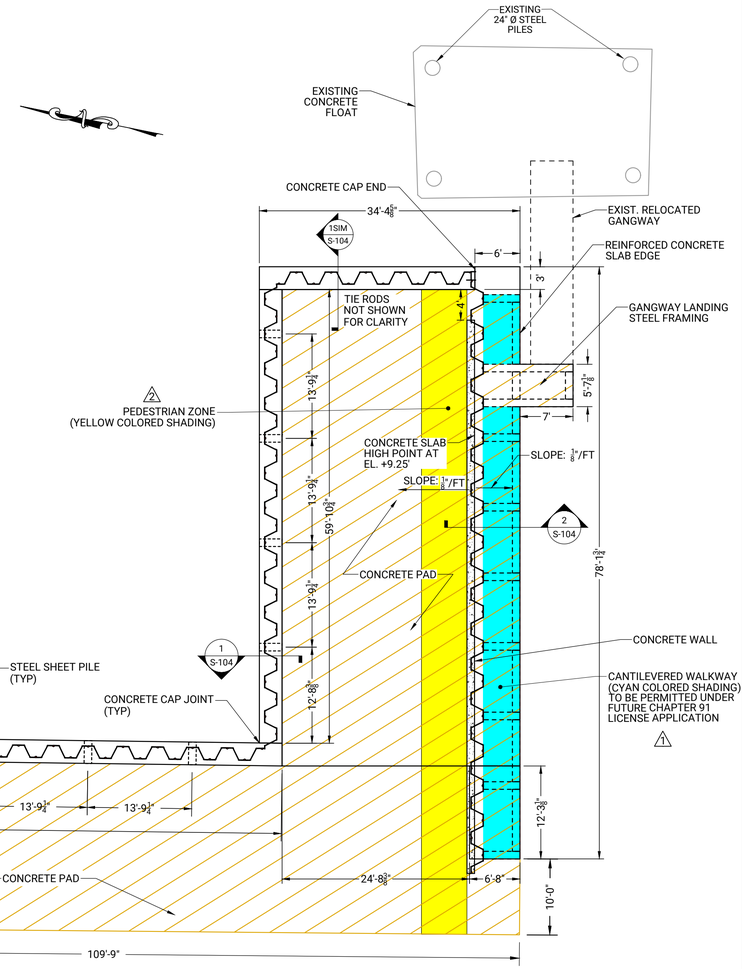
PROJECT NO: 021C036.00

SHEET NUMBER
C-101



A S-102 BULKHEAD PLAN

SCALE: 1" = 10'



B S-102 REINFORCED CONCRETE CAP AND SLAB PLAN

SCALE: 1" = 10'

NOTE:

1. Contractor to survey site for generation of sheet pile bulkhead shop drawing.

DATE SIGNED: 08/04/2022

0 5 10 20

(IN FEET)
1" = 10 FEET
GRAPHIC SCALE

Foth

CHATHAM FISH PIER BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM

54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/16/2022
DESIGNED	AIM	5/16/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

BULKHEAD AND SOUTH PIER DESIGN PLAN

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER

S-102

Wednesday, August 03, 2022 12:56:44 PM
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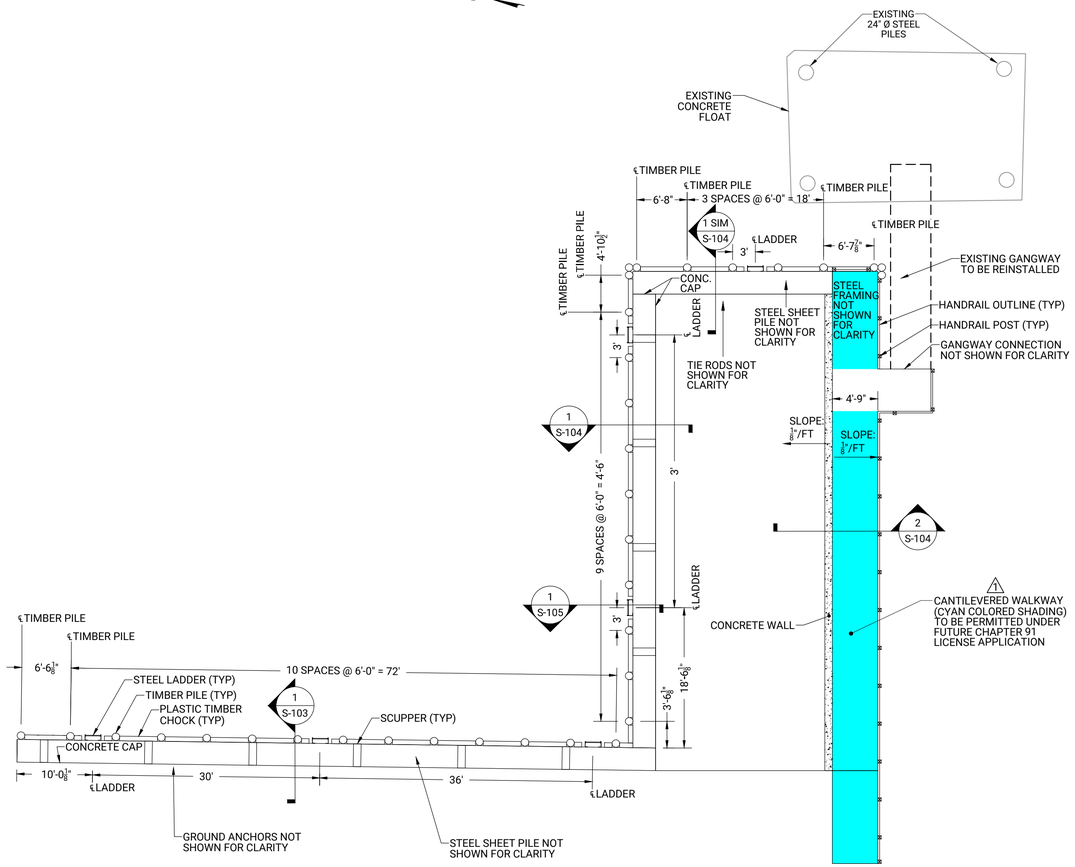
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings

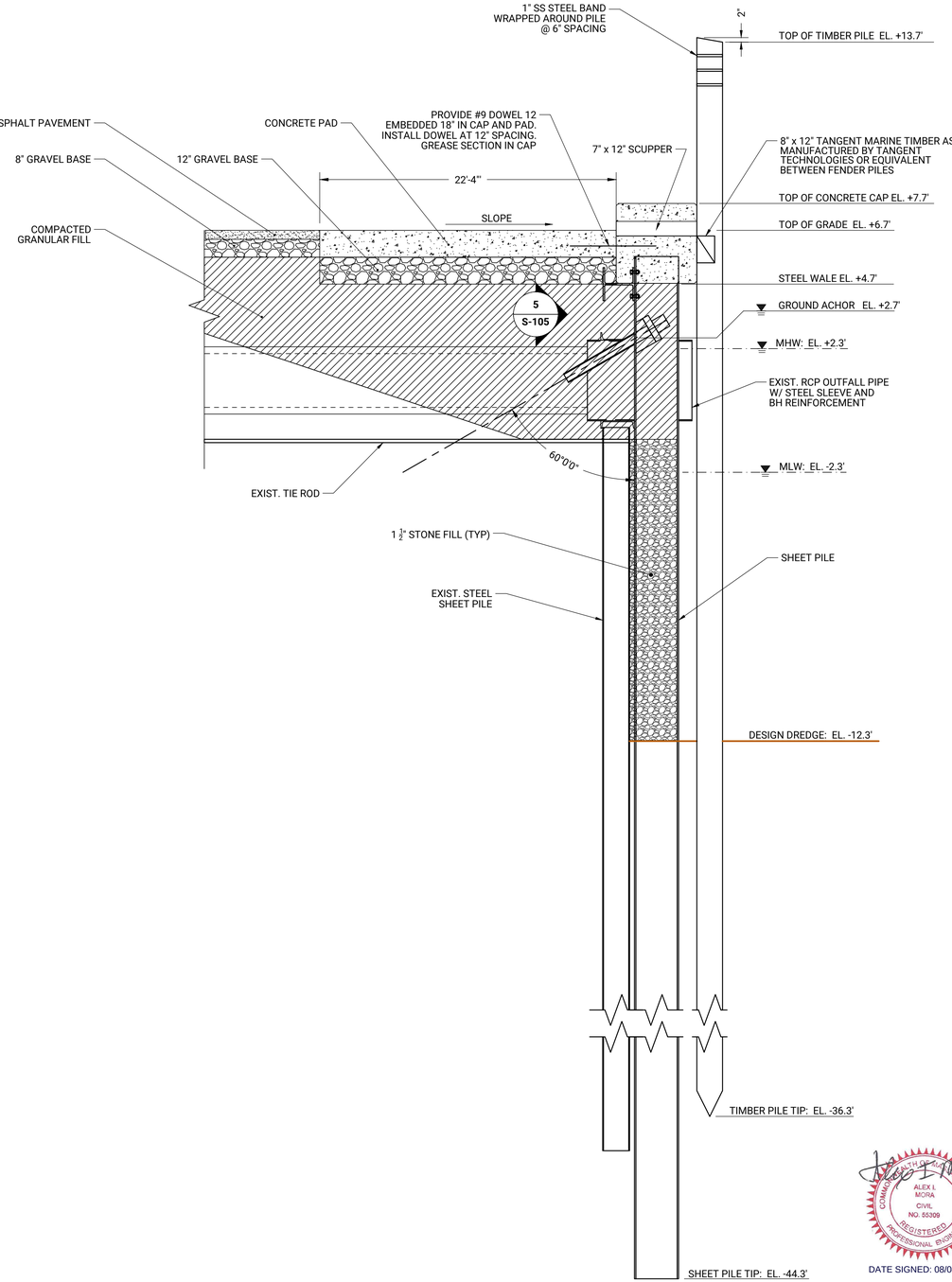


NOTES:

1. THE PARKING AREA BULKHEAD IS DESIGNED FOR A UNIFORM DISTRIBUTED LOAD (UDL) SURCHARGE OF 300 PSF.
2. IN LIEW OF THIS UDL SURCHARGE WILL CONSIDER THE PRESSURE OF A 50 TON TRUCK-MOUNTED CRANE (GROVE TMS700E) WITH OUTRIGGER LOAD AT 10 FEET FROM BACK OF BULKHEAD.
3. THE SOUTH JOG BULKHEAD IS DESIGNED FOR A UDL SURCHARGE OF 300 PSF.
4. IN LIEW OF THIS UDL SURCHARGE WILL CONSIDER THE PRESSURE OF A 50,000 LB EXCAVATOR (CAT 320).
5. EXCAVATOR TRACKS SHALL BE AT LEAST 6 FEET FROM BACK OF BULKHEAD.
6. CONTRACTOR SHALL PROVIDE GANGWAY CONNECTION FOR REVIEW AND ACCEPTANCE BY ENGINEER.

A / S-103 TIMBER PILE, CURB, AND STEEL LADDER PLAN

SCALE: 1" = 10'



1 / S-102 SECTION OF BULKHEAD AT PARKING AREA

SCALE: 3/8" = 1'

NOTE:
FOR CONCRETE PAD RENFORCEMENT SEE DETAIL K ON SHEET S-107.

ALEX L MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

DATE SIGNED: 08/04/2022

GRAPHIC SCALES

0 5 10 20
(IN FEET)
1" = 10 FEET

0 3/16 3/8 3/4
(IN INCHES)
3/8 INCH = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM

54 BARCLIFF AVE. CHATHAM, MA 02633

NO.	BY	DATE	DESCRIPTION
1	JRB2	8-2-2022	Cantilever Work on Pier Moved to Future Permit

REVISIONS

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/10/2022
DESIGNED	AIM	5/10/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

BULKHEAD AND SOUTH PIER DESIGN PLAN AND SECTION

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER

S-103

Thursday, August 4, 2022 8:25:08 AM
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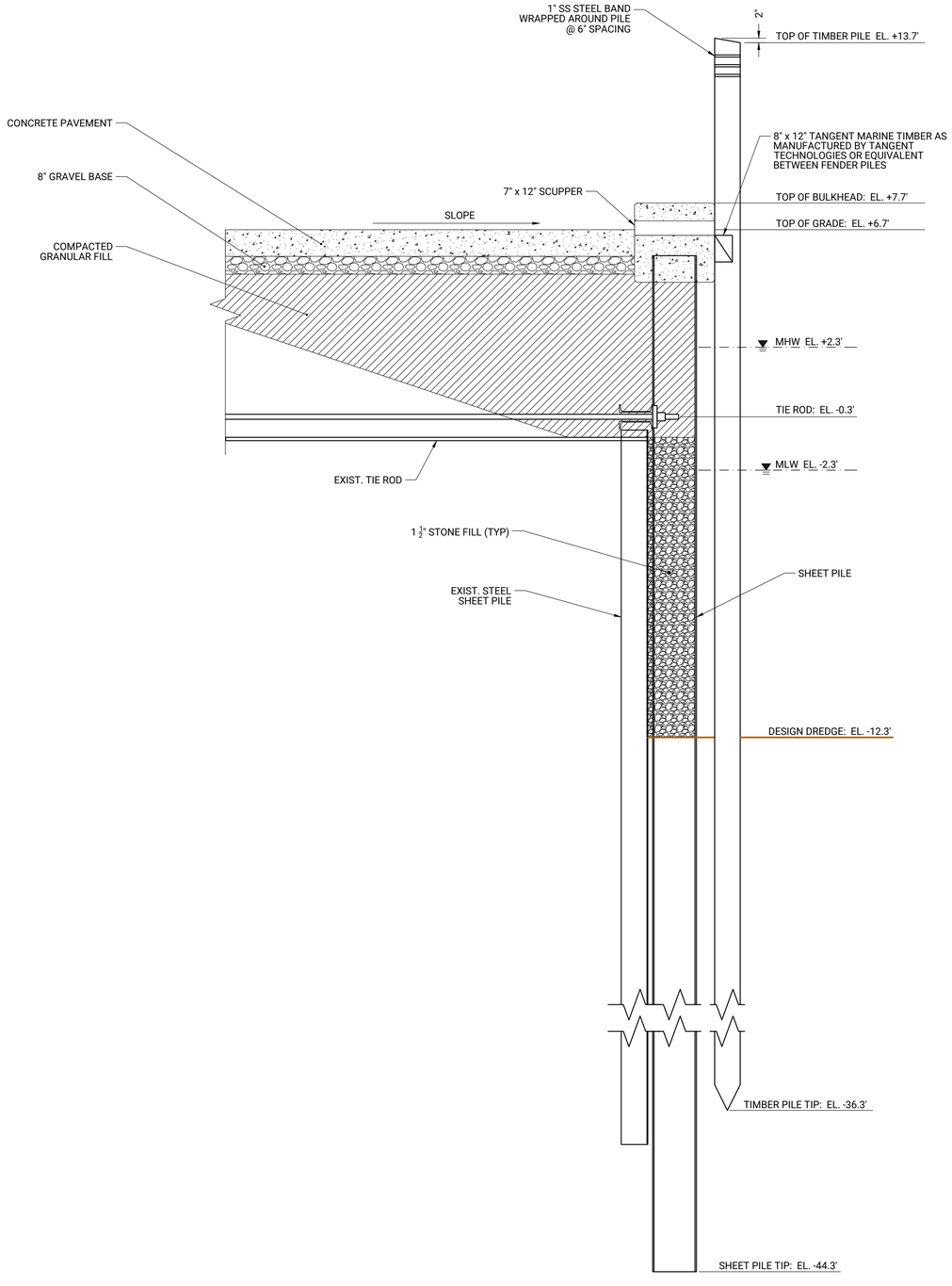
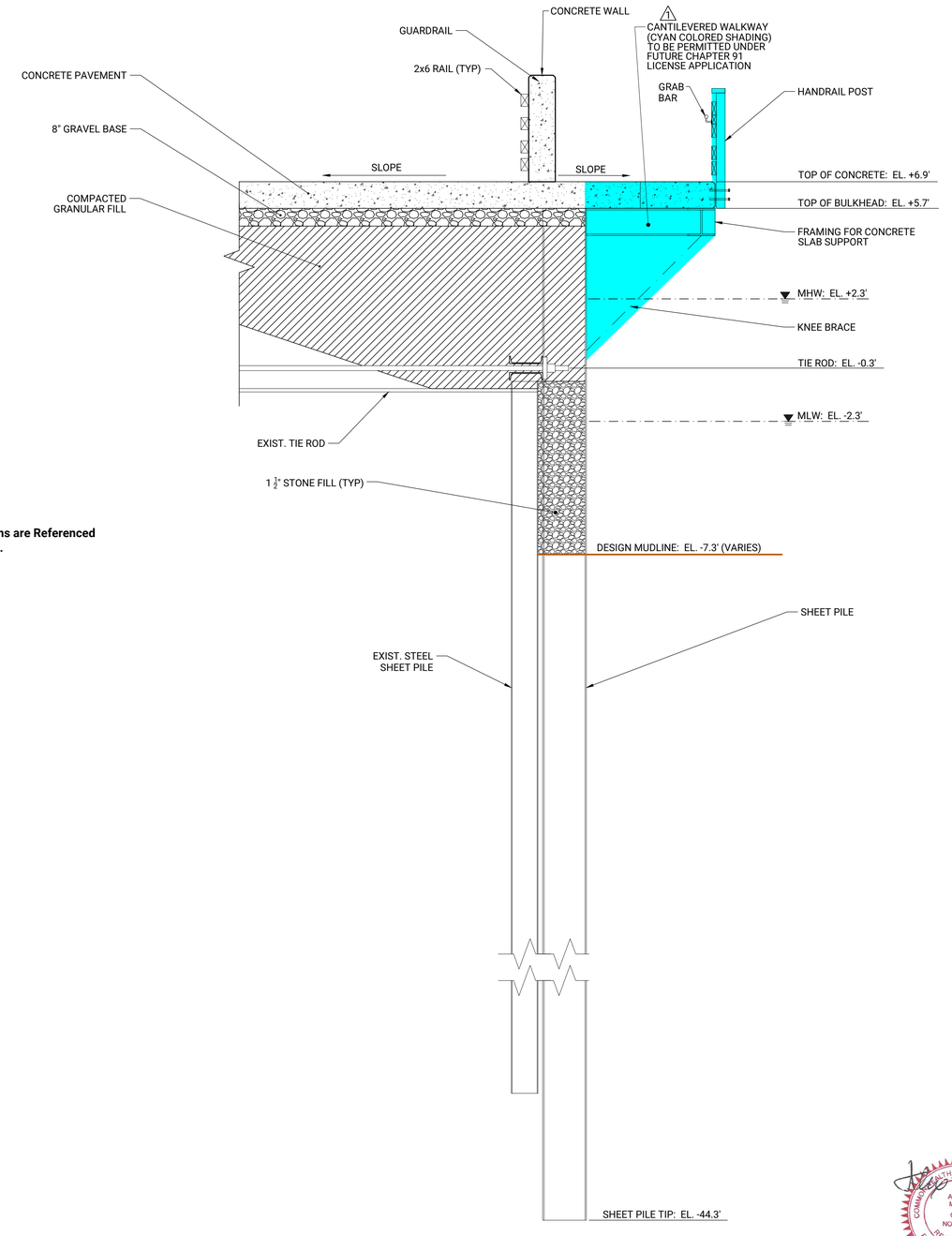
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings



1 / S-102 **SECTION OF BULKHEAD AT SOUTH JOG**

SCALE: 3/8" = 1'

NOTE:
All Elevations are Referenced to NAVD 88.



2 / S-102 **SECTION OF BULKHEAD AT SOUTH JOG**

SCALE: 3/8" = 1'

ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

DATE SIGNED: 08/04/2022

GRAPHIC SCALE
0 3/16" 3/8" 3/4"
(IN INCHES)
3/8 INCH = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Cantilever Work on Pier moved to Future Work.

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/10/2022
DESIGNED	AIM	5/10/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

BULKHEAD SECTIONS

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER
S-104

Thursday, August 4, 2022 8:26:36 AM Layout: s-104 - bulkhead sections
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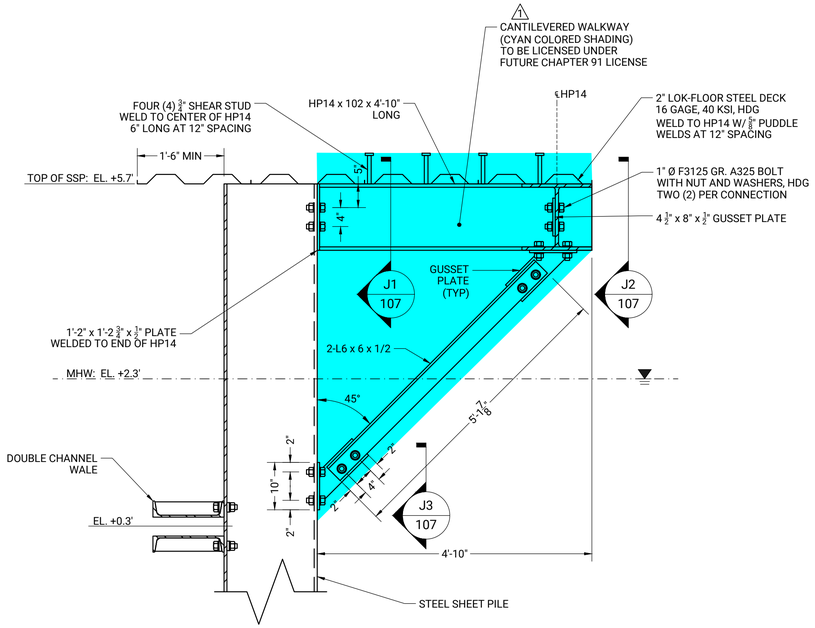
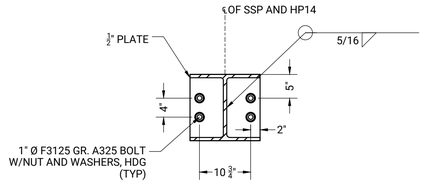


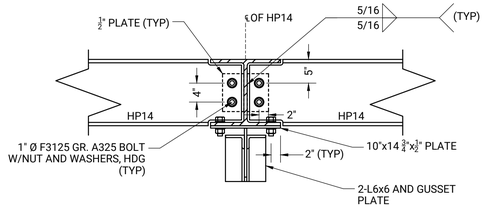
J S-107 KNEE BRACE FRAMING DETAIL

SCALE: ¾" = 1'-0"



J1 S-107 HP14 CONNECTION TO SHEET PILE

SCALE: ¾" = 1'-0"



J2 S-107 HP14 FRAMING CONNECTION

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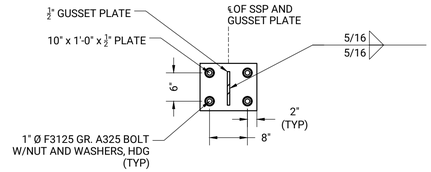
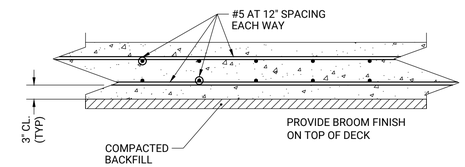


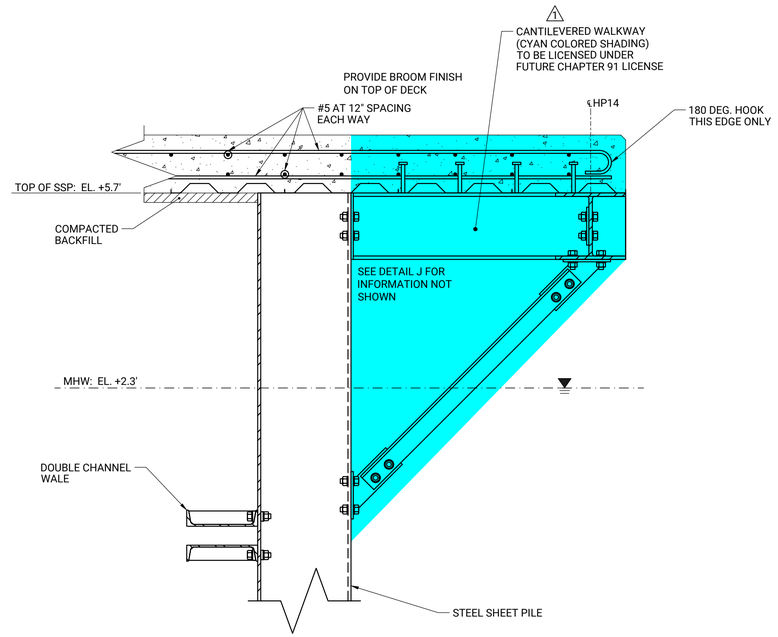
J3 S-107 KNEE BRACE CONNECTION TO SHEET PILE

SCALE: ¾" = 1'-0"



K S-107 REINFORCED CONCRETE SLAB DETAIL

SCALE: ¾" = 1'-0"



L S-107 SLAB REINFORCED OVER FRAMING DETAIL

SCALE: ¾" = 1'-0"

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Camillever Work on Pier Moved to Future Permit.

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/20/2022
DESIGNED	AIM	5/01/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

BULKHEAD AND PIER DETAILS

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER

S-107

COMMONWEALTH OF MASSACHUSETTS
ALEX L MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

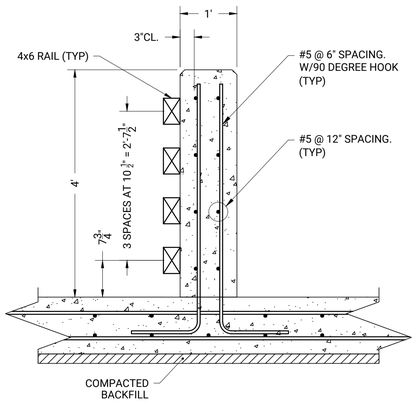
DATE SIGNED: 08/04/2022

GRAPHIC SCALES

0 3/16" 3/8" 3/4"
(IN INCHES)
3/8" = 1 FOOT

0 3/8" 3/4" 1-1/2"
(IN INCHES)
3/4" = 1 FOOT

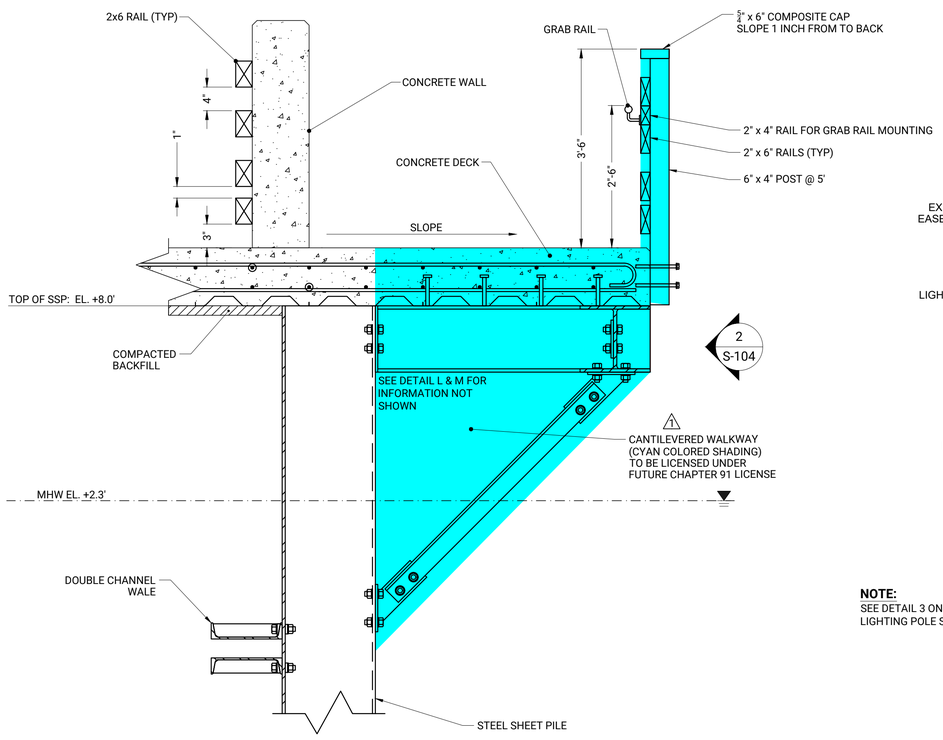
Wednesday, August 03, 2022 12:32:02
DWG Filename: bulkhead sections and details.dwg Layout: s-107 - bulkhead and pier details
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings



M S-108 **CONCRETE WALL DETAIL**

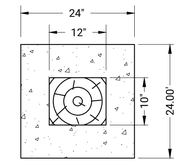
SCALE: $\frac{3}{4}$" = 1'-0"

GRAB RAIL NOTES:
- 1 $\frac{1}{2}$" DIA. SCH.40 MARINE GRADE ALUMINUM.
- ALL GRAB RAILS NEED TO EXTEND 1 FOOT PAST THE HANDRAIL POST, AT HANDRAIL ENDS.

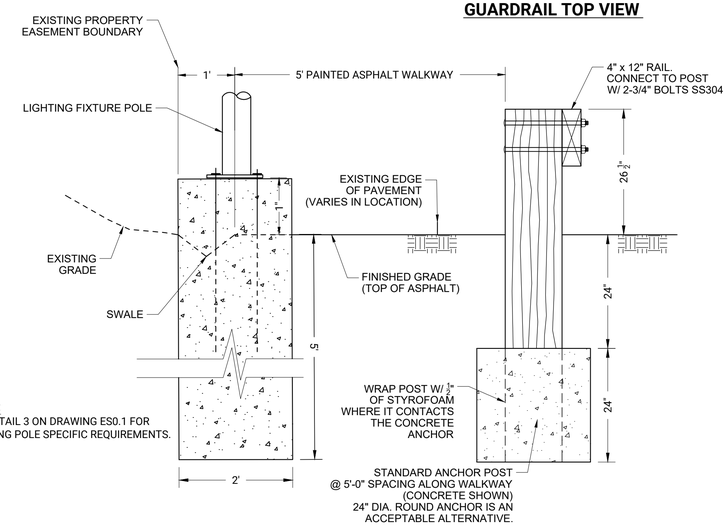


N S-108 **HANDRAIL DETAIL**

SCALE: $\frac{3}{4}$" = 1'-0"



GUARDRAIL TOP VIEW



NOTE:
SEE DETAIL 3 ON DRAWING ES0.1 FOR LIGHTING POLE SPECIFIC REQUIREMENTS.

O S-108 **SECTION OF PARKING LOT WALKWAY**

SCALE: $\frac{3}{4}$" = 1'-0"

ALEX L MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

DATE SIGNED: 08/04/2022

0 3/16" 3/8" 3/4"

(IN INCHES)
3/8" = 1 FOOT
GRAPHIC SCALE

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Cantaliever Work on Pier moved to Future Work.

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/20/2022
DESIGNED	AIM	5/10/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

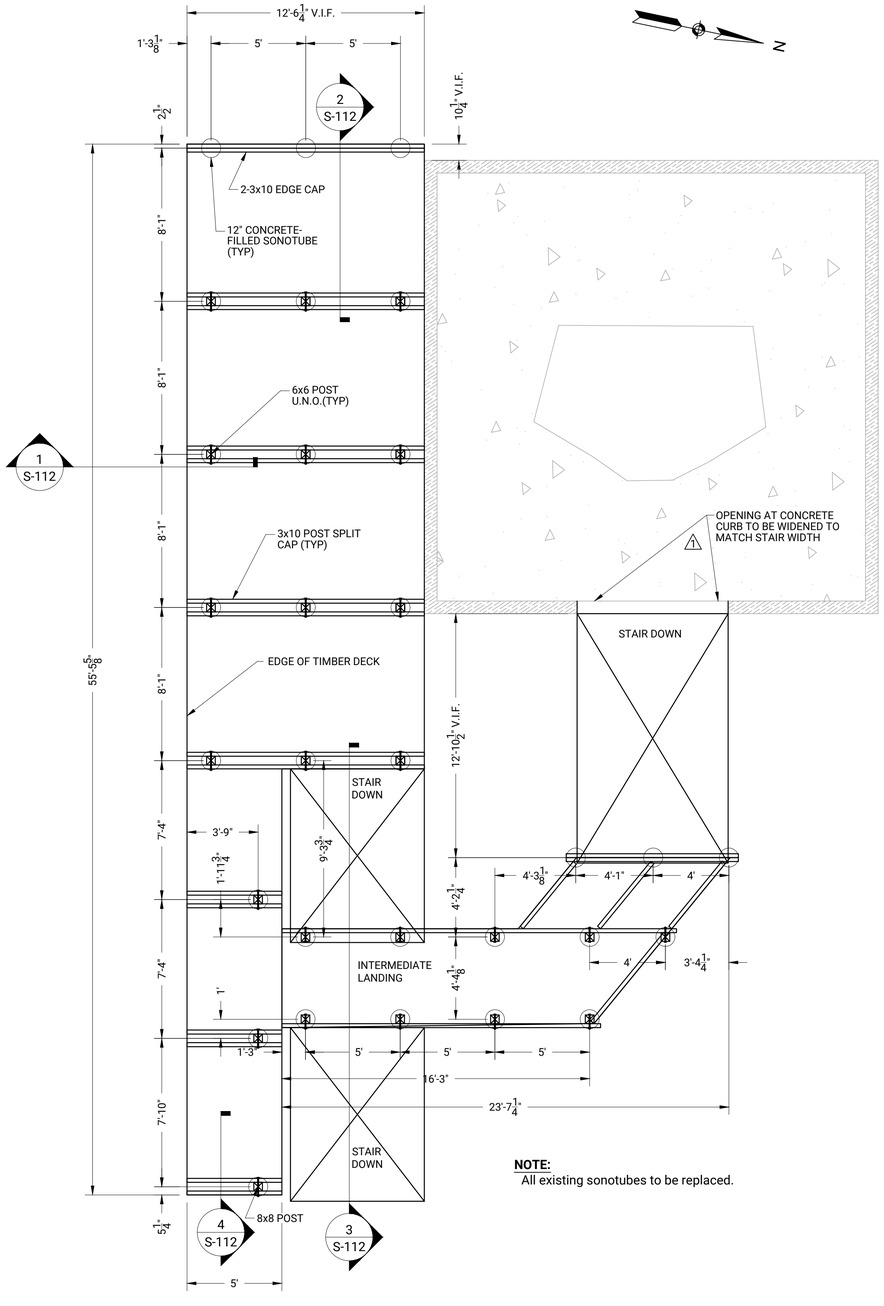
GUARDRAIL AND HANDRAIL DETAILS

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER
S-108

Wednesday, August 03, 2022 12:32:46
DWG Filename: bulkhead sections and details.dwg Layout: s-108 - guardrail and handrail details
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings

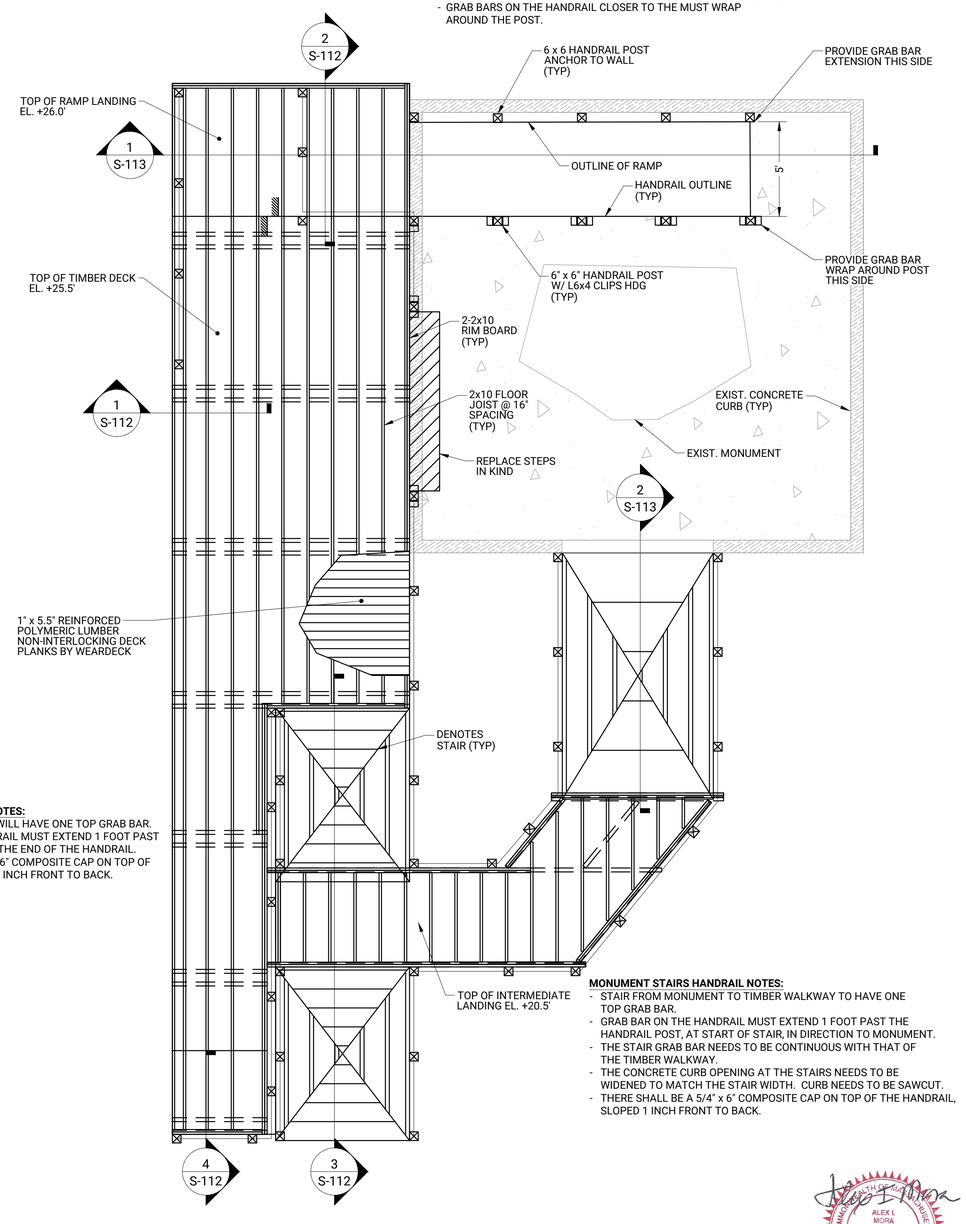


NOTE:
All existing sonotubes to be replaced.

A S-110 SONOTUBE, TIMBER POST AND TIMBER CAP PLAN

SCALE: 1/4" = 1'-0"

MONUMENT RAMP HANDRAIL NOTES:
- TOP GRAB BAR FOR THE HANDRAIL TO BE AT 36 INCHES FROM WALKING SURFACE.
- BOTTOM GRAB BAR FOR THE HANDRAIL TO BE AT 18 INCHES FROM WALKING SURFACE.
- GRAB BARS ON THE HANDRAIL AWAY FROM THE MONUMENT MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT HANDRAIL END.
- GRAB BARS ON THE HANDRAIL CLOSER TO THE MUST WRAP AROUND THE POST.



TIMBER DECK HANDRAIL NOTES:
- HANDRAIL AT THE DECK WILL HAVE ONE TOP GRAB BAR.
- GRAB BAR ON THE HANDRAIL MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT THE END OF THE HANDRAIL.
- THERE SHALL BE A 5/4" x 6" COMPOSITE CAP ON TOP OF THE HANDRAIL, SLOPED 1 INCH FRONT TO BACK.

MONUMENT STAIRS HANDRAIL NOTES:
- STAIR FROM MONUMENT TO TIMBER WALKWAY TO HAVE ONE TOP GRAB BAR.
- GRAB BAR ON THE HANDRAIL MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT START OF STAIR, IN DIRECTION TO MONUMENT.
- THE STAIR GRAB BAR NEEDS TO BE CONTINUOUS WITH THAT OF THE TIMBER WALKWAY.
- THE CONCRETE CURB OPENING AT THE STAIRS NEEDS TO BE WIDENED TO MATCH THE STAIR WIDTH. CURB NEEDS TO BE SAWCUT.
- THERE SHALL BE A 5/4" x 6" COMPOSITE CAP ON TOP OF THE HANDRAIL, SLOPED 1 INCH FRONT TO BACK.

B S-110 MAIN DECK FRAMING PLAN

SCALE: 1/4" = 1'-0"

ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

DATE SIGNED: 08/04/2022

GRAPHIC SCALE

0 1/8 1/4 1/2

(IN INCHES)
1/4 INCH = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Removed Hatching for Curb Opening

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	6/24/2022
DESIGNED	AIM	6/20/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

TIMBER DECK PLAN DESIGN

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER
S-110

Thursday, August 4, 2022 12:30:09 PM
DWG Filename: timber deck sections and details.dwg Layout: s-110 - timber deck plan design
DWG Folder Location: Chatham MA T\0021c036.00\CAD\Drawings

WHARFINGER HARBOR MASTER BLDG.

CHATHAM FISH PACKING BUILDING

AUNT LYDIA COVE

APPROXIMATE PROPERTY LINE (TYP)

GUARDRAIL TO HAVE 6' OPENING

1' SWALE BETWEEN WALKWAY AND EASEMENT LINE. SEE PROJECT NOTES ON SHEET G-002 FOR SEEDING REQUIREMENTS

NEW LIGHTPOLE LOCATION BETWEEN WALKWAY AND EASEMENT LINE

TRAFFIC FLOW ARROWS - TO BE PAINTED (TYP)

S-108

4' OPENING IN GUARDRAIL

GUARDRAIL LOCATION

EDGE OF EXISTING PAVEMENT

RELOCATE STORM STRUCTURE OFF WALKWAY LOCATION

2 NEW LIGHT POLE LOCATION BETWEEN WALKWAY AND EASEMENT LINE

CONCRETE PAD

SOUTH JOG PIER

GUARDRAIL END

RELOCATE LIGHT POLE OFF PATHWAY

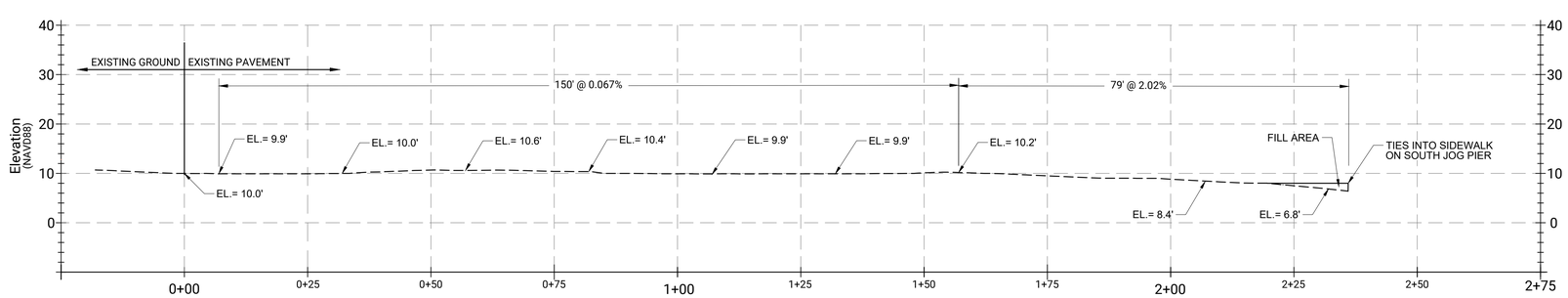
PROPERTY EASEMENT LINE

WALKWAY TO MAINTAIN 1' SEPARATION FROM PROPERTY EASEMENT LINE

1 CANTILEVERED WALKWAY (CYAN COLORED SHADING) TO BE PERMITTED UNDER FUTURE CHAPTER 91 LICENSE APPLICATION

2 PEDESTRIAN ZONE (YELLOW COLORED SHADING)

GRAPHIC SCALE
0 7.5 15 30
(IN FEET)
1 INCH =15FEET



WALKWAY PROFILE

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH =20FEET

DATE SIGNED: 08/04/2022

Foth

CHATHAM FISH PIER BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM

54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS NO.	BY	DATE	DESCRIPTION
1	JRB2	8/2/2022	Cantaliver Work Moved to Future Permit.
2	JRB2	8/2/2022	Moved Proposed New Light Pole Location.
3	JRB2	8/2/2022	Added Pedestrian Zone on South Jog Pier.

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	5/10/2022
DESIGNED	AIM	5/10/2022
CHECKED	AIM	7/19/2022

SHEET TITLE:

PARKING LOT LAYOUT AND WALKWAY PLAN AND PROFILE

(ISSUED FOR BID)

PROJECT NO: 021C036.00

SHEET NUMBER

S-114

Wednesday, August 03, 2022 12:49:30 PM
DWG Filename: walkway plan and profile.dwg Layout: s-114 - walkway plan and profile
DWG Folder Location: Clients\Chatham Ma T\0021C036.00\CAD\Drawings

Attachment 2

Boring Logs and Related Geotechnical Information

Nucci-Vine 253 Low Street Newburyport, MA	**B & J DRILLING** 25 WINSOR ROAD SUDBURY, MA 01776	HOLE NO. L-1 sheet 1 of 2 LINE & STA. OFFSET

JOB LOCATION	Chatham, MA
PROJECT NAME	Fish Pier
DATE STARTED	6/13/97
DATE FINISHED	6/13/97
SURFACE ELEV.	
WATER LEVEL	1' 3:30 PM 6/13/97 tidal
BORING FOREMAN	R. Boyle
INSPECTOR	

SCALE IN FEET	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	30" BLOWS PER 6" ON SAMPLER	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	0	2'	4-6		Medium dense fine to coarse brown Sand
			6-8		
5	5'	7'	10-10		
			14-14	7.5'	
					Hard silty brown Sand, trace of Clay
10	10'	11'	15-20	11.0'	
	11'	12'	10-7		Medium dense fine to coarse brown Sand
15	15'	16.5'	5-8		
			9		
20				20.0'	
	20'	21.5'	5-6		Medium dense fine to coarse gray Sand
			7		
25	25'	26.5'	5-6		
			7		
30	30'	31.5'	5-7		
			12		
35					

REMARKS: _____

BLOW COUNT TAKEN WITH 140 LB. WEIGHT FALLING 30" ON 2" O.D. SPLIT SPOON UNLESS OTHERWISE SPECIFIED

PROPORTIONS USED: TRACE = 0 - 10%, SOME = 10 - 35%, AND = 35 - 50%

Nucci-Vine	**B & J DRILLING** 25 WINDSOR ROAD SUDBURY, MASS. 01776	HOLE NO. L-1 Sheet 2 of 2
		LINE & STA.
		OFFSET
JOB LOCATION Chatham, MA		SURFACE ELEV.
PROJECT NAME Fish Pier		WATER LEVEL
DATE STARTED		BORING FOREMAN
DATE FINISHED		INSPECTOR

SCALE IN FEET	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	30" BLOWS PER 6" ON SAMPLER	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	40'	41.5'	10-14 24	41.5'	Dense fine to medium brown Sand trace of fine Gravel
					Bottom of Hole 41.5'
45					

REMARKS:

BLOW COUNT TAKEN WITH 140 LB. WEIGHT FALLING 30" ON 2" O.D. SPLIT SPOON UNLESS OTHERWISE SPECIFIED

PROPORTIONS USED: TRACE = 0 - 10%, SOME = 10 - 35%, AND = 35 - 50%

Nucci-Vine 253 Low Street Newburyport, MA	**B & J DRILLING** 25 WINSOR ROAD SUDBURY, MA 01776	HOLE NO. L-2 LINE & STA. OFFSET
JOB LOCATION: Chatham, MA		SURFACE ELEV.
PROJECT NAME: Fish Pier		WATER LEVEL: 8'0" 1:30 PM 6/12/97 tidal
DATE STARTED: 6/12/97		BORING FOREMAN: R. Boyle
DATE FINISHED: 6/12/97		INSPECTOR

SCALE IN FEET	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	30" BLOWS PER 6" ON SAMPLER	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	1'	2.5'	3-4 5		5" concrete deck Very loose Sand and Gravel fill
5	5'	6.5'	2-2 2	9.0'	
10	10'	11.5'	9-6 9		Medium dense fine brown Sand
15	15'	16.5'	10-13 13		
	no recovery			19.0'	
20	20'	21.5'	12-13 22		Dense silty brown Sand
25	25'	21.5'	4-9 12	25.0'	
					Medium dense fine to coarse brown Sand
30	30'	31.5'	8-8 8		
35	35'	36.5'	8-8 12	36.5'	
					Bottom of Hole 36.5'

REMARKS: _____

BLOW COUNT TAKEN WITH 140 LB. WEIGHT FALLING 30" ON 2" O.D. SPLIT SPOON UNLESS OTHERWISE SPECIFIED

PROPORTIONS USED: TRACE = 0 - 10%, SOME = 10 - 35%, AND = 35 - 50%

Nucci-Vine 253 Low Street Newburyport, MA	**B & J DRILLING** 25 WINSOR ROAD SUDBURY, MA 01776	HOLE NO. L-3 sheet 1 of 2 LINE & STA. OFFSET
JOB LOCATION: Chatham, MA		SURFACE ELEV.
PROJECT NAME: Fish Pier		WATER LEVEL: 5'10" 11:00 AM 6/13/97 tidal
DATE STARTED: 6/12/97		BORING FOREMAN: R. Boyle
DATE FINISHED: 6/13/97		INSPECTOR

SCALE IN FEET	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	30" BLOWS PER 6" ON SAMPLER	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
					5" concrete deck
	1'	2.5'	16-20		Mixed fill Sand, Gravel, Wood, Concrete, etc. made about 10 attempts to get down before we did
			22		
5	5'	6.5'	21-18		
			18		
				9.0'	
10	10'	11.5'	7-8		Medium dense fine to coarse brown Sand
			9		
15	15'	16.5'	5-5		
			5		
20	20'	21.5'	6-7		
			8		
25	25'	26.5'	6-12		
			14		
30	30'	31.5'	11-13		
			15		
35					

REMARKS: _____

BLOW COUNT TAKEN WITH 140 LB. WEIGHT FALLING 30" ON 2" O.D. SPLIT SPOON UNLESS OTHERWISE SPECIFIED

PROPORTIONS USED: TRACE = 0 - 10%, SOME = 10 - 35%, AND = 35 - 50%

Nucci-Vine

B & J DRILLING

25 WINDSOR ROAD

SUDBURY, MASS. 01776

HOLE NO. L-3 Sheet 2 of 2

LINE & STA.

OFFSET

JOB LOCATION Chatham, MA

SURFACE ELEV

PROJECT NAME Fish Pier

WATER LEVEL

DATE STARTED

BORING FOREMAN

DATE FINISHED

INSPECTOR

SCALE IN FEET	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	30" BLOWS PER 6" ON SAMPLER	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	40'	41.5'	8-16 26	41.5'	Dense fine to coarse gray Sand, some fine to coarse Gravel
					Bottom of Hole 41.5'
45					

REMARKS:

BLOW COUNT TAKEN WITH 140 LB. WEIGHT FALLING 30" ON 2" O.D. SPLIT SPOON UNLESS OTHERWISE SPECIFIED

PROPORTIONS USED: TRACE = 0 - 10%, SOME = 10 - 35%, AND = 35 - 50%

cle engineering

Groundwater Depth	±5	feet	
Total Depth of Hole	57	feet	
Depth to Cored Rock	N/A	feet	

Boring	B1
Page	1 of 1
Date	6-Jul-17
Weather	Sunny, 70 degrees, wind sw 5-10
Project Name	Chatham Fish Pier, South Pier
Job No	17115.1
Driller	Hardiman, Tom, Matt
Logged By	M.Campagnone, P.E. CLE Engineering

Elev. 5 NAVD88 feet	Depth feet	Sample Type & No.	Blows per 6"	Uncorr (Corr) Blows	Pen. inch	Rec. inch	Graphic Log	Soil & Rock Descriptions
4' to	1' to	S-1	5	12	24"	10		S1 = Medium dense, black, dry, medium to coarse sand, trace gravel (SW)
2'	3'		6					Cut through ±12" concrete deck
			6					
			3					*Drilled 5' of 4" auger casing, Tip to 5'*
' to	5' to	S-2	6	10	24"	13		
-2'	7'		4					S2 = Loose, brown, wet, medium sand, trace gravel (SP)
			6					
			7					*Drilled 5' of 3" auger casing, Tip to 10'*
-5' to	10' to	S-3	2	8	24"	20		
-7'	12'		5					S3 = Loose, brown, wet, fine to coarse sand, trace gravel (SW)
			3					
			2					*Drilled 5' of 3" auger casing, Tip to 15'*
-10' to	15' to	S-4	3	6	24"	0		
-12'	17'		3					S4 = No recovery, traces of sand in spoon.
			3					
			4					*Drilled 5' of 3" auger casing, Tip to 20'*
-15' to	20' to	S-5	1	11	24"	11		
-17'	22'		4					S5 = Medium dense, brown/red, wet, fine to medium sand (SW)
			7					*Stratified sands*
			9					*Drilled 5' of 3" auger casing, Tip to 25'*
-20' to	25' to	S-6	2	16	24"	10		
-22'	27'		6					S6 = Medium dense, brown, wet, fine sand, trace silt (SP)
			10					
			14					*Drilled 5' of 3" auger casing, Tip to 30'*
-25' to	30' to	S-7	3	20	24"	12		
-27'	32'		7					S7 = Medium dense, brown, wet, fine sand, trace silt and gravel (SP)
			13					
			15					*Drilled 5' of 3" auger casing, Tip to 35'*
-30' to	35' to	S-8	6	28	24"	18		
-32'	37'		12					S8 = Medium dense, brown, wet, medium to fine sand (SW)
			16					
			14					*Drilled 5' of 3" auger casing, Tip to 40'*
-35' to	40' to	S-9	6	18	24"	0		
-37'	42'		8					S9 = No recovery
			10					
			11					*Drilled 5' of 3" auger casing, Tip to 45'*
-40' to	45' to	S-10	8	27	24"	20		
-42'	47'		11					S10 = Medium dense, brown, wet, fine sand (SP)
			16					
			19					*Drilled 5' of 3" auger casing, Tip to 50'*
-45' to	50' to	S-11	14	59	24"	20		
	52'		22					S11 = Very dense dense, brown, wet, fine sand, trace silt (SP)
			37					
			37					*Drilled 5' of 3" auger casing, Tip to 55'*
-50' to	55' to	S-12	9	38	24"	15		
	57'		12					S12 = Hard, grey, wet, clay, some silt, little sand (CL)
			1					
			26					

Notes:
Boring taken on south pier through concrete deck. All SPT taken with safety hammer dropped from a cathead
Drilled auger casing (4") w/SPT and sampling 5' intervals. Blow counts shown in (xx) are corrected to N70
SPT done with 2" split spoon sampler and safety hammer, dropped by cathead (2 wraps)

Name (Density, Color, Classification), Moisture, Plasticity, Secondary grain Size, (USC Group Symbol)

Key:
Fines Content: trace (tr) = <5%, little (lt) = 6-15%, few = 16-30%, some (sm) = 31-49%
Cohesionaless Soil Density (blows/ft): very loose (vl) = 0-4, loose (l) = 5-10, medium dense (md) = 11-29, dense (d) = 30-49 , very dense (vd) = 50+
Cohesive Soil Consistency (bows/ft): very soft (vs) <2, soft (s) = 3 - 4 , medium (f) = 5-8 , stiff (st) = 9-15, very stiff (vs) = 16-30, hard (h) >30
Color: br = brown, gy = grey, gn = green, yl = yellow, ol = olive, og = orange, bl = black
Plasticity: np = non plastic, sp = slightly plastic, mp = moderately plastic, hp = highly plastic, vhp = very highly plastic

AUNT LYDIA'S COVE

FLOOD
EBB

13:14:52 constance sea

13:14:17 jack tar

Mooring hex

13:17:04 miss fitz

13:18:06 persever

50' RADIUS AROUND MOORINGS (TYP.)

50' RADIUS AROUND MOORINGS (TYP.)

8' ANCHORAGE DREDGE LINE BY ACOE 2016

8' CHANNEL DREDGE BY ACOE 2016

PROPOSED DE-AUTHORIZED FEDERAL CHANNEL

~4,000 SF TO DE-AUTHORIZE

EX. SOUTH FLOATS RELOCATED

8'x80'± CONCRETE FLOAT

24' PROPOSED DE-AUTHORIZED FEDERAL CHANNEL OFFSET

17'

22'-6"

24' EX. FEDERAL CHANNEL OFFSET

23'-50"±

GANGWAY

30' RADIUS AROUND BEACHCOMBER MOORING

3 FLOATS 8'x20'±

NORTH FLOATS AREA

EX. TIMBER WAVE BREAK

USCG SPC-NLB
LOA=44'
BEAM=±12'
APPROX. DOCKED LOCATIONS

EX. TIMBER WAVE BREAK

FLOAT 12'x40'

±30'

±20'

±76'

FLOAT 8'x60'±

PIER 5'x50'±

FLOAT 8'x50'±

FLOAT 6'x50'±

FLOAT 8'x50'±

PIER 4'-6"x50'±

±50'

EX. LADDER (TYP.)

EX. RAMP (TYP.)

EX. STEPS TO BEACH

EX. LIGHT (TYP.)

EX. 3' WIDE RAMP

EX. ELECTRICAL BOX

PARCEL ID: 16F-15C-A10
OWNER: N/F CYNTHIA L LEAHY

EX. TIMBER LANDING

LAND BORING L1 BY B&J DRILLING 1997

EX. FENCE LINE

LIMITS OF EX. TIMBER DECK

EX. LIGHTS MOUNTED TO DECK

EX. FENDER PILE (DIMENSIONS/SPACING TO BE CONFIRMED) (TYP.)

±132'

UPPER LEVEL DECK
LOWEST STRUCTURAL MEMBER AT ELEV. = 15.8'

±40'

FIRE SPRINKLER WATER PIPE

EX. LIGHT (TYP.)

EX. STEEL BULKHEAD W/ CONT. CIP CONC. CAP

LAND BORING L2 BY B&J DRILLING 1997

EX. ACCESS LADDER

EX. GAS METER (TYP.)

APPROX. LOCATION OF EX. FUEL LINES

EX. GASOLINE PUMPS

LAND BORING L3 BY B&J DRILLING 1997

BENCHMARK:
DHSET EL: 7.37

THRESHOLD AT OVERHEAD DOOR EL. +8.62'±

EX. STAIRS ENTERING BUILDING

EX. MANHOLE (TYP.)

APPROX. LOCATION OF EX. PUMP VAULT

EX. OVERHEAD DOORS AT LOADING DOCK (TYP.)

APPROX. LOCATION OF EX. 1½"Ø COPPER WATER SERVICE

55'-0"

EX. CONC. RETAINING WALL
TOP OF WALL EL. +8.1'±

EX. PAINTED CROSSWALK

EX. BOLLARD (TYP.)

APPROX. LOCATION OF EX. 3" SCHED 80 PVC

APPROX. LOCATION OF EX. 24"Ø DRAINAGE PIPE

PARCEL ID: 16F-19-N1
OWNER: N/F BALER MARKET LLC

APPROX. LOCATION OF EX. 1¼" C

APPROX. LOCATION OF EX. 6"Ø WATER SERVICE

EX. CATCH BASIN (TYP.)

APPROX. LOCATION OF EX. 4"C 4-500 MCM THW

APPROX. LOCATION OF EX. 1¼" C 3-#2 THW

EX. WATER VALVE (TYP.)

EX. HYDRANT (TYP.)

EX. SEPTIC MANHOLE (TYP.)

PARCEL ID: 16F-PIER-5
OWNER: N/F TOWN OF CHATHAM
DRAINAGE PIPE

BENCHMARK:
DISK FOUND EL: 12.56

BENCHMARK:
NOAA TIDAL BENCHMARK 7435-B
BRONZE DISK FOUND IN TRANSFORMER CONCRETE PAD
ELEV. +12.56' NAVD88

EX. GAS VALVE (TYP.)

APPROX. LOCATION OF EX. 18"Ø DRAINAGE PIPE

APPROX. LOCATION OF EX. 18"Ø DRAINAGE PIPE

PARCEL ID: 16F-18-6
OWNER: N/F GREGORY Q BROWN

FIXED PIER
12" TH. CONC DECK; CROSS BRACING & (28) 12"Ø WRAPPED TIMBER GREENHEART PILES

31'-6"±

6" CONC. CURB

EX. PZ 27 STEEL SHEETING; ABANDONED STEEL SHEET PILE BULKHEAD, CUT/REMOVE AS REQUIRED

LAND BORING B1 BY CLE 2017

79'-10" ±

25'-4" CLEAR

SOUTH JOG

SOUTH JOG PIER

6'-0" WIDE STEEL. PEDESTRIAN WALKWAY

76'-0"±

PROPOSED ANCHORED SHEET PILE WALL

63'-8"

EX. LIMITS OF SOUTH JOG

PROPOSED STEEL AZ 24-700 STEEL SHEET BULKHEAD

EX. TIMBER BULKHEAD

PARCEL ID: 16F-PIER-7
OWNER: N/F TOWN OF CHATHAM

EX. TIE RODS TO TIMBER DEADMAN (TYP.)

87'-0"±

PROPOSED #14 DYWIDAG TIE ROD (TYP.)

APPROXIMATE PROPERTY LINE AS GIVEN BY TOWN OF CHATHAM EASEMENT TAKING PLAN. DATED JULY 7, 2014 (TYP.)

PROPOSED SHEET PILE ANCHOR WALL

PARCEL ID: 16F-21E9
OWNER: N/F CBI OWNER LLC
CAPITAL PROPERTIES

HYDROGRAPHIC SURVEY NOTES:
SURVEY DATE: 7/25/17
SURVEYOR: M. CAMP; E. REMMES
VESSEL: OLAF
TRANS/FATH; ODOM CVM 200 KHZ, KEYNET VRS CORRECTIONS
WEATHER: OVERCAST 65 DEGREES, SLIGHT CHOP
PROJECT DATUM; MLLW CHATHAM STATION
COOR. SYSTEM; NAD-83 MASS MAINLAND
DATA REDUCTION; HYPACK MINIMUM VALUE SORT 5' RADIUS
BENCHMARK; NOAA TIDAL BENCHMARK 7435-F, 2009
ELEVATION 9.93 MLLW

NOTES:
1. SITE FEATURE AND TOPOGRAPHY INFORMATION BASED ON SURVEY FROM CLE SURVEY ON JULY, 6 2017, PLANS FROM HORSLEY WITTEN GROUP DECEMBER DATED 20, 2016 AND FROM PLANS TITLED, "2002 FISH PIER PACKING BUILDING IMPROVEMENTS" BY VINE ASSOCIATES DATED OCTOBER 2002.
2. COORDINATES ARE BASED ON MASSACHUSETTS (MAINLAND) STATE PLAN COORDINATE SYSTEM (NAD83) AND ARE EXPRESSED IN FEET.
3. ELEVATIONS ARE SHOWN IN FEET AND ARE BASED ON MLLW DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.
4. PROPERTY LINES AND RIGHTS OF WAY DEPICTED ARE APPROXIMATELY ONLY.
5. THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON VARIOUS UTILITY COMPOSITES, AND WHEREVER POSSIBLE MEASUREMENTS TAKEN IN THE FIELD AND MAY BE APPROXIMATE.
6. POSSESSION AND USE OF THE MATERIAL CONTAINED ON THESE DRAWINGS IS GRANTED ONLY IN CONNECTION WITH ITS USE AS IT RELATES TO THE TITLED PROJECT, ANY OTHER USE, REPRODUCTION OR DISCLOSURE OF THE INFORMATION CONTAINED HEREON IS EXPRESSLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF CLE ENGINEERING INC.

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GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20FEET

PRELIMINARY

TIDAL DATUM

MLLW		NAVD 88
5.51	MHHW	2.69
5.13	MHW	2.32
2.81	NAVD88	0.00
0.19	MLW	-2.63
0.00	MLLW	-2.81

NOAA TIDE STATION
CHATHAM, MA 8447435

It is a violation of law for any person unless he is acting under the direction of a licensed professional engineer to alter this document

This drawing was prepared at the scale indicated in the title block. Inaccuracies in the stated scale may be introduced when drawings are reproduced by any means. (Use the graphic scale bar to determine the actual scale of this drawing)

CONSULTANT

Foth
cleengineering

SOUTH JOG BULKHEAD REPLACEMENT AND FLOAT IMPROVEMENTS

TOWN OF CHATHAM
549 MAIN ST. CHATHAM, MA 02633

OBSERVATION DECK RECONSTRUCTION

SEAL AND SIGNATURE

REVISIONS

SHEET TITLE

PROPOSED SITE PLAN

ISSUANCE

SCALE
AS NOTED

DRAWN BY
CFF/JG

CHECKED BY

PROJECT NO
0017C115.100

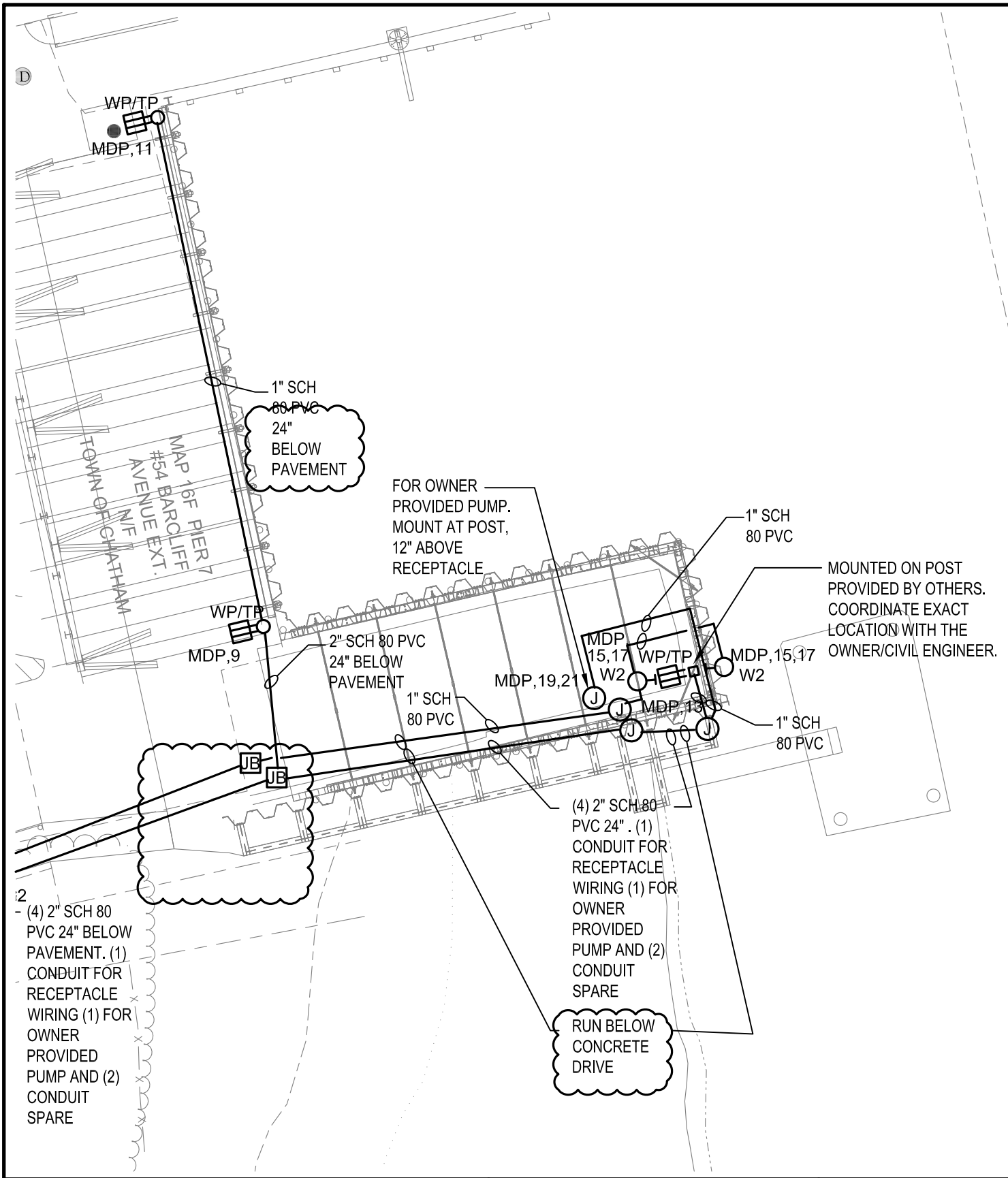
DATE
07/25/18

SHEET NUMBER
S1

SHEET 1 OF 3

Attachment 3

Sketch to Clarify Drawing E-3



G&V CONSULTING ENGINEERS
GRIFFITH AND VARY, INC.
12 KENDRICK ROAD
WAREHAM, MA 02571
Tel: 508-295-0050
Fax: 508-295-0003
www.griffithandvary.com

PROJECT NAME AND ADDRESS:

CHATHAM FISH PIER

BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE., CHATHAM MA 02633

ADD 3

REF: E-3	
DRAWN: SD	CHECKED: RCB
DATE: 4 AUG. 22	SCALE: 1"=20'

DRAWING NUMBER:

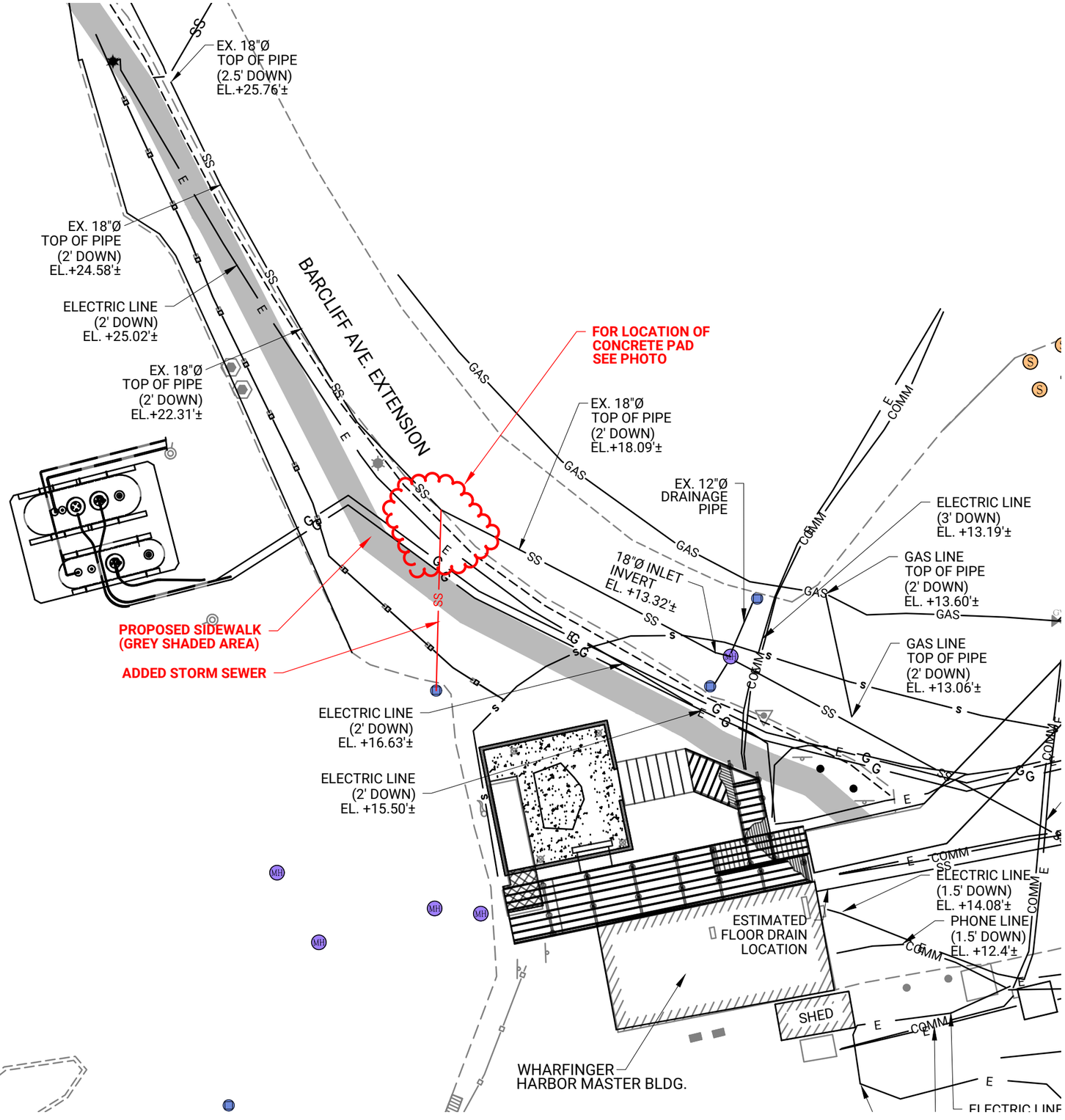
SKE-1

DRAWING TITLE:

ELECTRICAL SITE PLAN REVISIONS

Attachment 4

Sketch to Clarify Drawing S-115 Underground Interferences


EX. 18"Ø
TOP OF PIPE
(2.5' DOWN)
EL.+25.76'±
EX. 18"Ø
TOP OF PIPE
(2' DOWN)
EL.+24.58'±
ELECTRIC LINE
(2' DOWN)
EL. +25.02'±
EX. 18"Ø
TOP OF PIPE
(2' DOWN)
EL.+22.31'±
BARCLIFF AVE. EXTENSION
FOR LOCATION OF
CONCRETE PAD
SEE PHOTO
EX. 18"Ø
TOP OF PIPE
(2' DOWN)
EL.+18.09'±
EX. 12"Ø
DRAINAGE
PIPE
18"Ø INLET
INVERT
EL. +13.32'±
ELECTRIC LINE
(3' DOWN)
EL. +13.19'±
GAS LINE
TOP OF PIPE
(2' DOWN)
EL. +13.60'±
GAS LINE
TOP OF PIPE
(2' DOWN)
EL. +13.06'±
PROPOSED SIDEWALK
(GREY SHADED AREA)
ADDED STORM SEWER
ELECTRIC LINE
(2' DOWN)
EL. +16.63'±
ELECTRIC LINE
(2' DOWN)
EL. +15.50'±
ELECTRIC LINE
(1.5' DOWN)
EL. +14.08'±
PHONE LINE
(1.5' DOWN)
EL. +12.4'±
ESTIMATED
FLOOR DRAIN
LOCATION
SHED
WHARFINGER
HARBOR MASTER BLDG.
SS
GAS
COMM
E
G
S
MH

LIGHTPOLE BASE
EXISTING TREE
EDGE OF ROAD

SECTION 00 91 13

ADDENDUM

August 5, 2022

ADDENDUM NO. 2

TO: Prospective Bidders

FROM: Foth Infrastructure & Environment, LLC
15 Creek Road
Marion MA 02738

RE: Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project
Town of Chatham, Massachusetts
Project I.D.: 21C036

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents published on July 20, 2022.

Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This addendum consists of 15 pages.

CHANGES TO PRIOR ADDENDA

1. The response provided to Question #10 in Addendum No. 1 should be: The Request for Information date is August 1, 2022.

CHANGES TO DRAWINGS

1. Revised drawings will be issued with Addendum No. 3.

QUESTIONS AND RESPONSES FROM PROSPECTIVE BIDDERS FOLLOWING THE PRE-BID CONFERENCE and ADDENDUM NO. 1

1. Q: The lighting schedule mentions that the light pole luminaires be mounted at 30', however, the specified light poles are only 12' high.

   A: Light poles shall be 12 feet mounted on appropriate base.

2. Q: The electrical plan refers to fire alarm work where there is none.

   A: There is no fire alarm work associated with this project.

3. Q: There is a ground grid one line diagram presented on the plans grounding a building water system and fire alarm system without any specific details.

   A: The grounding detail is for the new service going into the Wharfinger Building.

4. Q: There are four lights on the Harbormaster's building slated to be removed but it appears to be incorrect.

   A: Those lights would be part of the deck reconstruction work and only take off and put back on if required.

5. Q: The specified luminaire W 1 installation manual shows a back box that only accepts a 3/4" conduit; the plan calls for a 1" PVC conduit for Alternate No. 1. Also it shows that a cord is to be used in the wiring installation not 2# 8 & 1# 10 ground conductors.

   A: First part comment – The 3/4" conduit would be acceptable.
   Second part comment – Lighting Fixture Type W1 connection is hard wired per the manufacturer. See **Attachment 1.**

6. Q: How is the conduit at the pier to be mounted where the cantilevered walkway has been deleted?

   A: The revised drawing will be provided in Addendum No. 3.

7. Q: Is new parking lot walkway asphalt or concrete? referred to as asphalt walkway on S-108 and concrete on C-101, if asphalt please provide asphalt paving detail for new parking lot walkway?

   A: The pedestrian walkway would be asphalt, not painted. The asphalt should be for heavy duty parking. As a guide plan on using 8 inch dense aggregate base layer, 2 inch binder layer, and 3 inch hot mix asphalt layer.

8. Q: Is walkway around parking lot perimeter 6' wide as shown on sheet S-114 or 5' wide as shown on detail O on sheet S-108?

   A: Please use detail O on Drawing S-108 for walkway width.

9. Q: Is the parking lot replaced in terms of asphalt or just new striping/marking on existing asphalt parking lot?

A: Only those areas with excavation will have the asphalt replaced. Striping/marking will be applied to all parking area.

10. Q: Detail B on Sheet S-106 states 'Ground Anchors' (By Others). Please clarify this statement, are the ground anchors installed under this contract?

A: Ground anchor design and details by Contractor. Ground anchors are part of this contract.

11. Q: Drawing S-101 calls for a 6ft wide walkway, is this asphalt walkway? Is this a painted walkway? Please provide detail for this walkway.

A: The pedestrian walkway would be asphalt, not painted.

12. Q: Can you Contractor use the parking lot adjacent to the existing bulkhead as a staging area? Or can Owner provide a staging area for Contractor to use (at no extra cost to Contractor)?

A: A response to this question will be provided in Addendum No. 3.

13. Q: Drawing S-103 section 1 shows asphalt pavement behind the concrete pad, what is the thickness of the asphalt pavement?

A: The asphalt should be for heavy duty parking. As a guide plan on using 8 inch dense aggregate base layer, 2 inch binder layer, and 3 inch hot mix asphalt layer.

14. Q: From the prebid, the riprap to haul to a Town designated area. Please provide location and who is responsible for off-loading material at the designated area.

A: The Town of Chatham has not yet determined a storage site, however, the site will be within the limits of the Town. The Contractor is responsible for loading and unloading material.

15. Q: Detail J & L on drawing S-107, show HP14 steel wales above MHW elevation and also show double channel wale at elevation 0.3. Is this a typo? Should it be just double channel wale at this location?

A: Yes, please do not consider top wale at sections J & L.

16. Q: Please confirm HP14x102 wale is only at the steel sheeting near the parking area. No HP14x102 wale at the Jug area.

A: Yes, top wale HP14x102 is for the parking area bulkhead only.

17. Q: Detail B on drawing S-106 show HP14 steel wale at elevation 4.7 and ground anchor at elevation 2.7.

    a. Is it the design intent for anchor at one elevation and wale at other elevation?
    b. Detail B also states ground anchor (by other). Is the ground anchor by other or included in this contract?

    A: a.: Yes, the wale and the anchor are not at the same elevation.
    A: b.: The ground anchor is part of this contract. All details related to the ground anchor is by Contractor.

18. Q: Please confirm there is no file sub bid for this project.

    A: There is no need to file sub bid for this project.

19. Q: There are two pages for "Form for Sub-Bid" (after bid form 00310-16). Please confirm that "Form for sub-bid is not required part of bid submission.

    A: The "Form for Sub-Bid" has been omitted from the bid package, as these are not part of this submission.

20. Q: Excess excavated soil disposed cost can be varies depend on the soil test result (i.e. hauling and disposed at RCS < 1 landfill facility, at in-state unlined landfill facility, at in-state lined landfill facility, and etc..), which facility the Contractor to disposed the excess soil is depend on the soil test result. Since there are no soil test result provided in the bid document. Can unit price items for hauling and disposed excess excavated soil at each disposal facility?

    A: Bids should assume that all fill is clean and is suitable for backfill. The project is adding elevation to the pier area, and therefore should not create a significant amount of excavated fill to haul and remove. If soil test results dictate that special process and landfill sites become necessary, this will be handled via a change in work.

21. Q: Detail 1 drawing S-109, step 2- remove rubber fender, step 8 – install rubber fender. Is the Contractor to provide new rubber fender? Or is it remove and re-install rubber fence? If re-install, is the Contractor required to do anything to rubber fender prior to re-install?

    A: No, the rubber fender will be reused, unless it is found damaged. The rubber fender will be reinstalled. Refer to the response to Question #38 for more information.

22. Q: Drawing S-114 call for 1ft swale between walkway and easement line. Are there any detail for this swale? Please provide detail for the 1' swale.

A: Swale detail provided on S-108. Width of swale is 12 inches. Depth of swale is 4 inches.

23. Q: Please provide existing sheet pile dimension information at North Job Wall, East Wall of Main Pier, North Wall of Main Pier, South Wall of Main Pier locations, (or anode schedule with quantities for these areas).

A: Approximate counts for anodes based off of Google Earth measurements and width of those piles:

North Jog Wall: 27 anodes
East wall of main pier: 19 anodes
North wall of main pier: 8 anodes
South wall of main pier: 11 anodes
South Jog Wall: 27 anodes; as many as 8 will be shallow water anodes
(The entire south side, but likely, the last couple, the water is deep enough to accommodate the standard vertical mount anode.)
Total 5x5x48" anodes for sheet pile walls: 92

24. Q: Is the 120LB anode 4x4x48" dimensionally or 4.5"x4.5"x60' as shown on shallow water detail?

A: The 120-pound anodes are 5x5x48".

25. Q: Please advise if this project has a buy American clause.

A: Yes, this is a Buy American project.

26. Q: Can the Town provide As Builts of the existing Bulkhead and South Jog?

A: The Town of Chatham does not have As-Built plans. However, Vine drawings that show the bulkhead and tie rod layout in addition to the helical anchor locations, are provided in **Attachment 2**.

27. Q: Please reference Bid Form attachment for Form For Sub Bids and confirm that there are no filed sub bidders required for this job and this form is not to be included with the Bid?

A: The Form for Sub-Bid, which is the last attachment to Section 00310, Bid Form, has been removed from the specification. Filed sub bids for the project are not required.

28. Q: Please reference Spec Section 01610 (Health & Safety) and confirm that Full Time Health and Safety Officer can be dual hatted and have other duties such as Superintendent?

A: Yes, it is acceptable to have a Health and Safety Officer perform other duties.

29. Q: Please reference Spec Section 02361 (Timber Piles) and confirm that Greenheart Piles cannot be driven with a Vibratory Hammer?

A: Greenheart piles will be allowed to be driven with a vibratory hammer to the required tip elevation.

30. Q: Please reference Spec Section 02370 (Ground Anchor Systems) and confirm that ground anchor subs must provide evidence of 5-years of experience with the Bid? Is this to be included in Section 1.03 of the Bid Form requesting projects completed in last 3-years?

A: Ground anchor subs shall have at least five (5) years of experience working on similar projects. Ground anchor subs shall provide list of completed projects installing ground anchors in the past three years.

31. Q: Please reference Drawing C-103, Detail 1 and confirm that the existing sheetpile wall is stable if grade is excavated to Elev -2.3 and the existing 1.5" dia tie rod is removed?

A: Contractor shall evaluate condition of bulkhead and decide if removal of tie rod is acceptable or not.

32. Q: Please reference Drawing C-103 Detail 1 showing a cross section of the existing wall. Please note that waler shown for the soil anchors is shown to be internal. What is the size and material type of this waler? During the site visit, an external waler was observed, is this the only waler holding the soil anchors to the sheetpiling?

A: The wale is called out to be an HSS 12x6x0.375. It is assumed that the wale for the helical anchors is the only waler holding the sheets. The Town of Chatham commented that this is the result of a field change during the installation of the anchors. The design/drawing called for interior wales, however, an approved variation allowed them to be installed externally for constructability reasons.

33. Q: Please reference Drawing S-106 Detail B indicating that the Ground Anchors are by others. Are Bidders to assume that we will be able to re-use existing Ground Anchors?

A: Existing helical anchors will be abandoned.

34. Q: If Bidders are to re-use existing Ground Anchors, please provide a detail as to how these will be extended into the new sheetpile wall?

A: Refer to response to Question #33.

35. Q: Please reference Drawing S-115 showing (2) Gas Mains, (1) Sewer crossing the proposed Barcliff Ave Retaining Wall. The cut at the Ga crossing is aprox 10-ft deep and SOE will be needed. Does the Town know the elevation of these Gas Mains & Sewer Mains crossing of the wall?

    A: A response to this question will be provided in Addendum No. 3.

36. Q: Please reference Drawing S-115 showing portions of the existing Wharfinger Bldg Concrete Slab and Deck in the alignment of the proposed Retaining Wall Footing. Are Bidders to assume underpinning of these structures is required?

    A: The timber deck adjacent to the Wharfinger Building will be fully replaced and need no underpinning. If during excavation for the site retaining wall, underpinning of the monument concrete slab is deemed necessary, this will become a change order.

37. Q: Can work begin on site prior to December 1?

    A: The Town of Chatham would like to review/approve schedules prior to mobilizing for any work. Any work that would interfere with the water access cannot begin prior to December 1. Other work, like the timber deck and stairs, could begin as early as October 11, 2022.

38. Q: Please clarify scope for the bulkhead fenders.

    A: The fender system needs to be removed, refurbished, and reinstalled. Only one bracket is scheduled for replacement. The top bracket needs to be inspected and replaced, if needed.

39. Q: Please clarify the closure detail for tying the new bulkhead material to the existing bulkhead that is to remain.

    A: Contractors will be responsible to generate a closure detail for review and acceptance by Engineer. Contractors will have the option to ask Engineer to provide a closure, if different from what is shown on the drawings.

40. Q: I missed the Mandatory pre bid meeting. Is there going to be another one?

    A: No additional Pre-bid Conference is planned.

Alex I. Mora, PE, D.PE
Engineer of Record
Registered P.E. for the Commonwealth of Massachusetts, License #55309

END OF ADDENDUM

Attachment 1

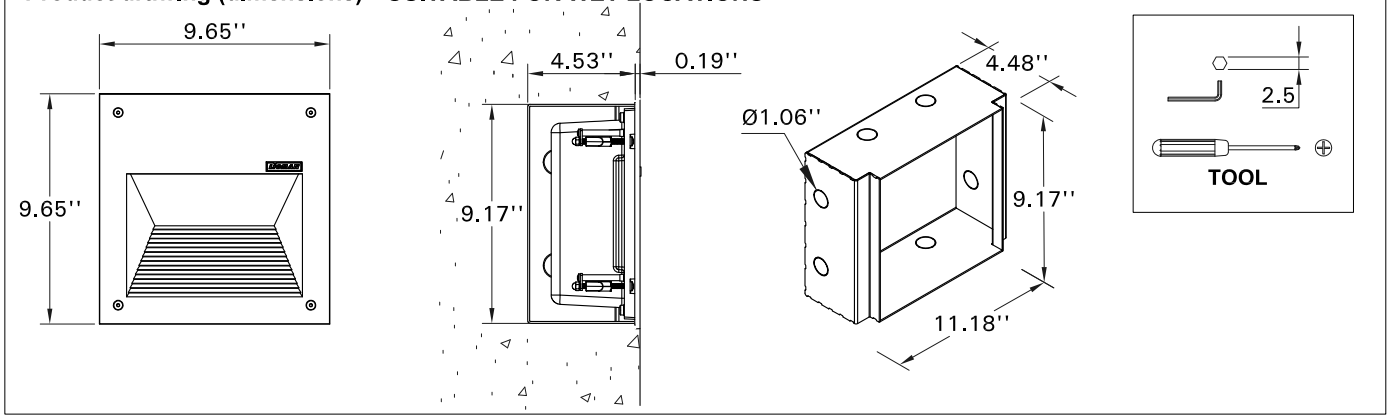
Lighting Fixture Type W1 from Manufacturer

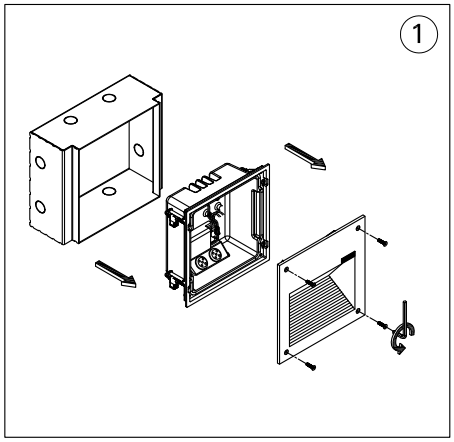
INSTALLATION AND SERVICE MANUAL

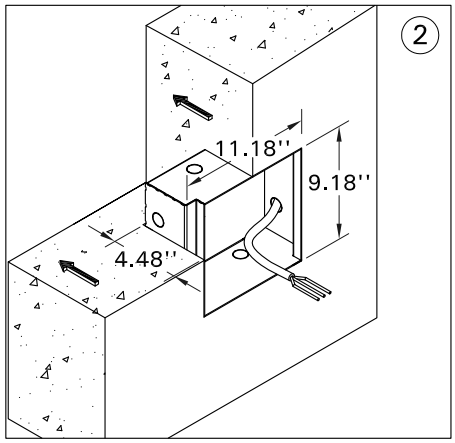
LIGMAN
LIGHTING USA

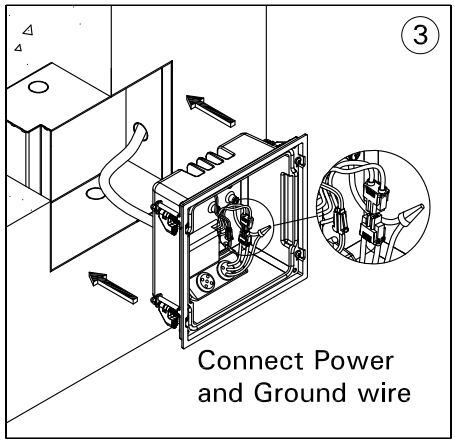
For installation of Rado 7 recessed location light LED.
Model. URA-40701.

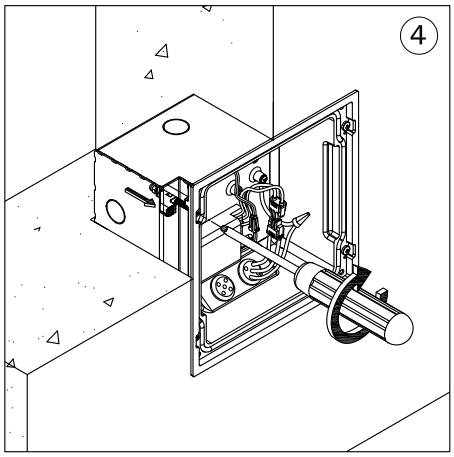
Product drawing (dimensions) **SUITABLE FOR WET LOCATIONS**

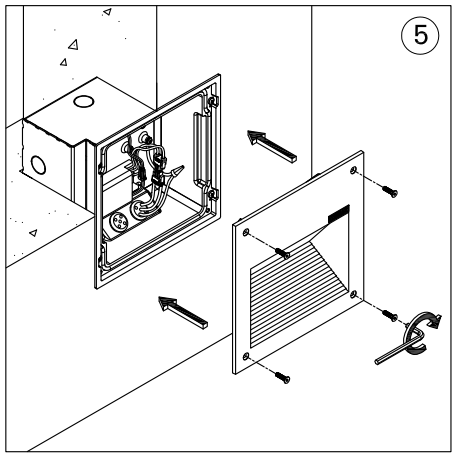


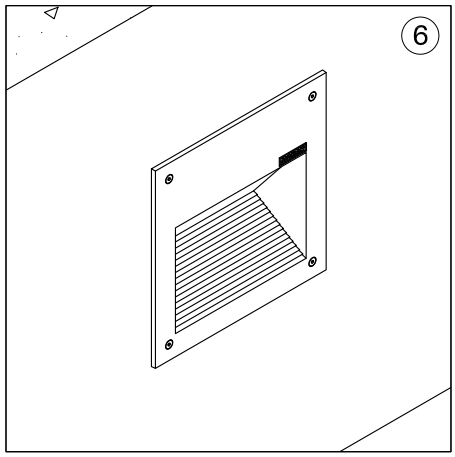












Notice to installer :

1.WIRING INSTRUCTIONS Warning : RISK OF FIRE AND ELECTRICAL SHOCK. : FIXTURE MUST BE INSTALLED BY A QUALIFIED ELECTRICIAN ONLY>FIXTURE IS INTENDED FOR INSTALLATION IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, LOCAL AND FEDERAL CODE SPECIFICATIONS. DISCONNECT POWER BEFORE SERVICING.

2.This fixture has a VOLTAGE SPECIFIC BALLAST,Check that the supply voltage is the same as the installed ballast voltage.

Ligman Lighting USA

7144 NW Progress Court, Hillsboro
Oregon, 97124, USA
Tel : 503 645 0500 | Fax : 503 645 8100

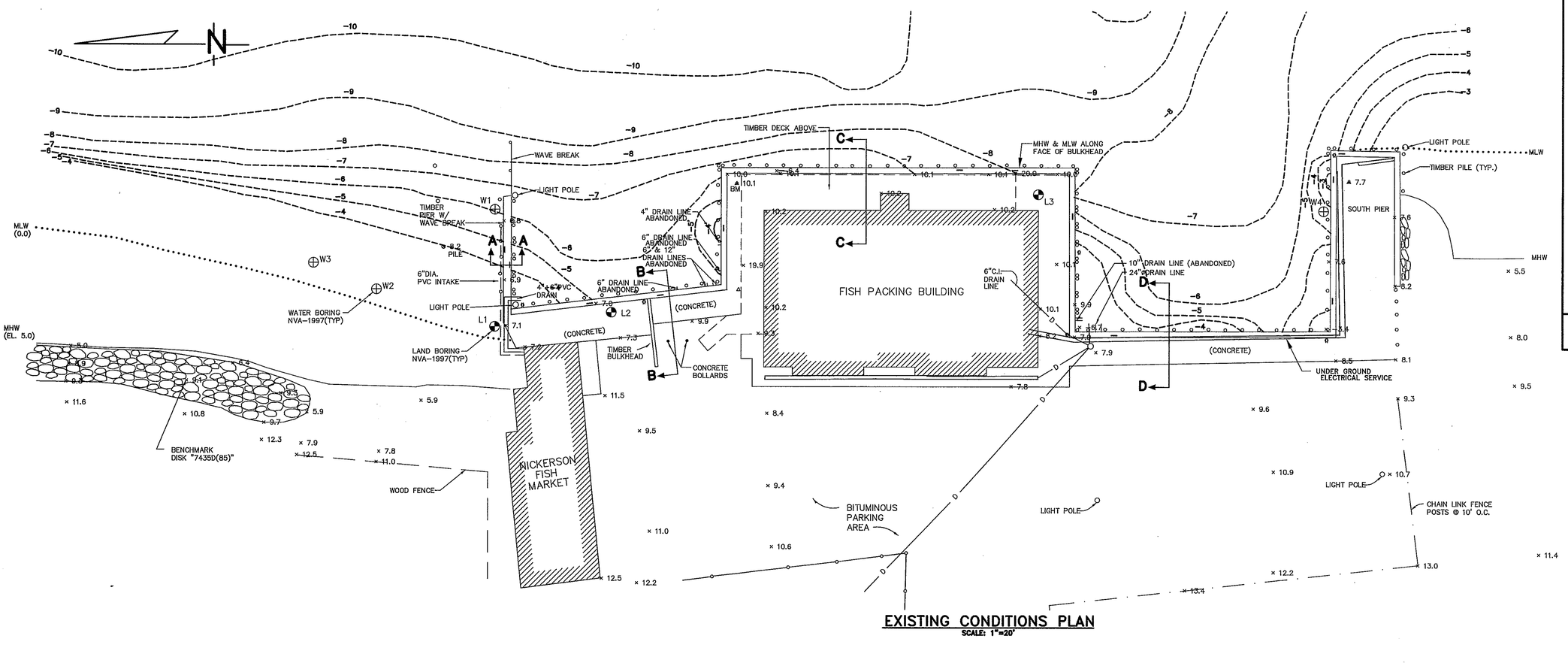
www.ligmanlightingusa.com

ISO 9001
ISO 14001
BUREAU VERITAS Certification

UKAS QUALITY MANAGEMENT 008

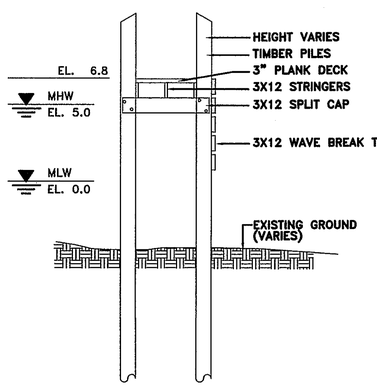
Attachment 2

Vine Drawings

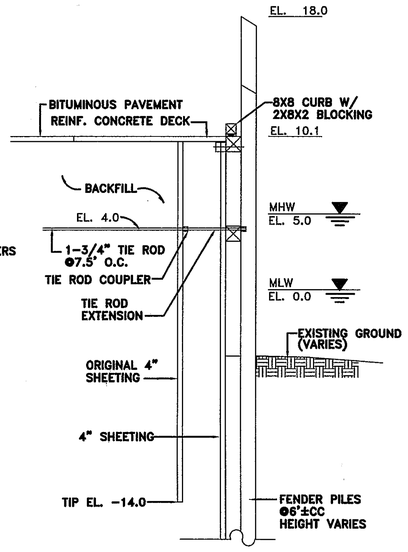


EXISTING CONDITIONS PLAN
SCALE: 1"=20'

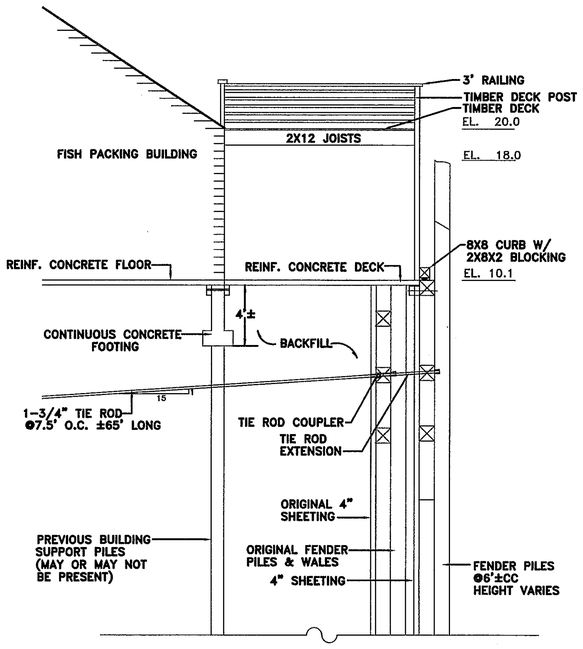
LOCUS PLAN
N.T.S.



SECTION A–A
SCALE: 1"=5'



SECTION B–B
SCALE: 1"=5'



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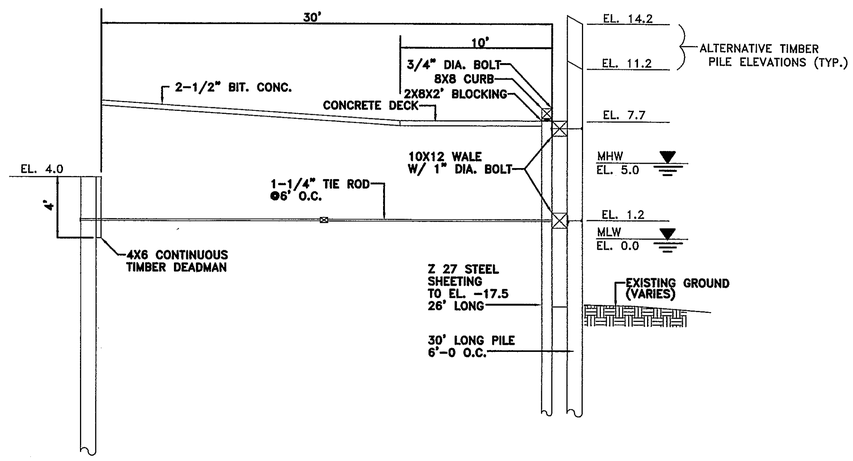


SECTION D–D
SCALE: 1"=5'

5 0 5
SCALE IN FEET

20 0 20
SCALE IN FEET

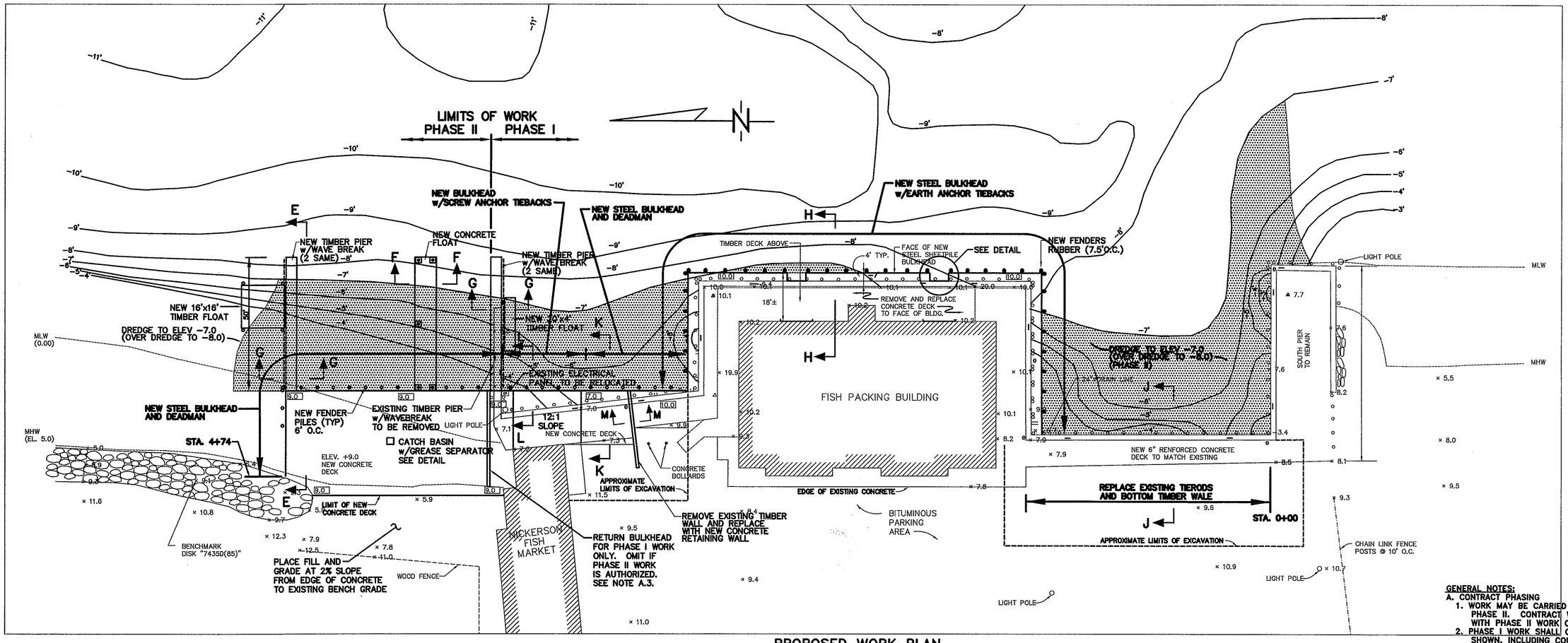
NOTES:
1. DATUM: MLW = 0.0; MHW = 5.0; FEMA 100 YR. EL. = 15.5
2. SURVEY BY NUCCI VINE ASSOCIATES, INC., APRIL 1997.
3. REFER TO SPECIFICATION FOR BOREHOLE INFORMATION.

EXISTING CONDITIONS PLAN AND SECTIONS

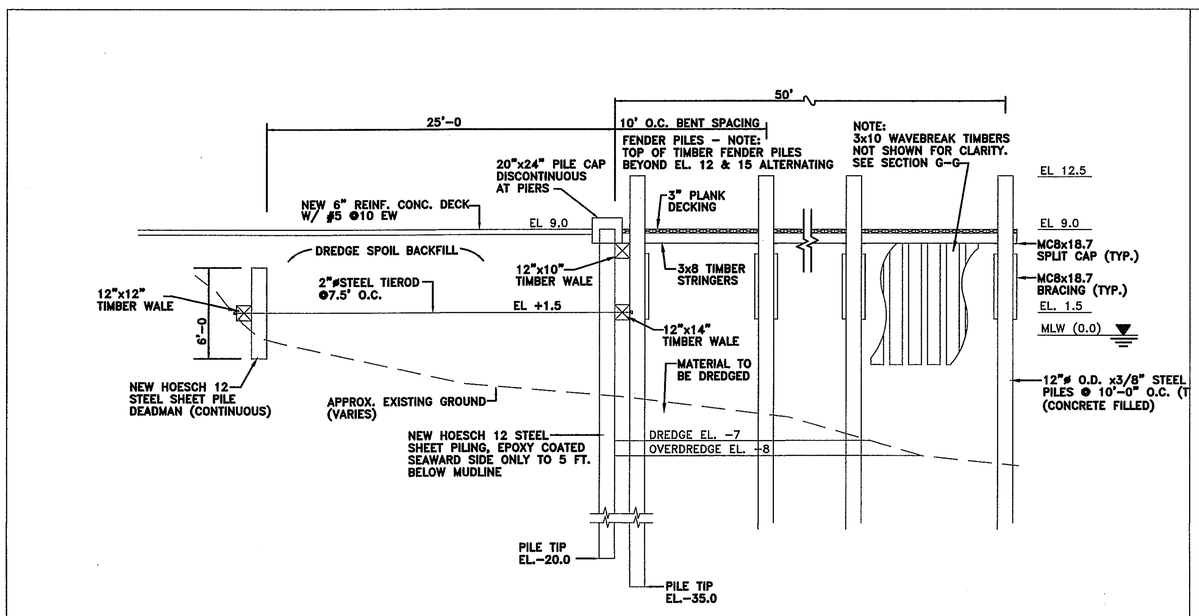
CHATHAM TOWN PIER WHARF IMPROVEMENTS CHATHAM, MASSACHUSETTS

Nucci Vine ASSOCIATES
253 LOW STREET NEWBURYPORT, MA 01950 tel. (508)465-1428 fax (508)465-2640
20801 BISCAYNE BLV MIAMI, FL 33180 tel. (305)932-0309 fax (305)935-9409

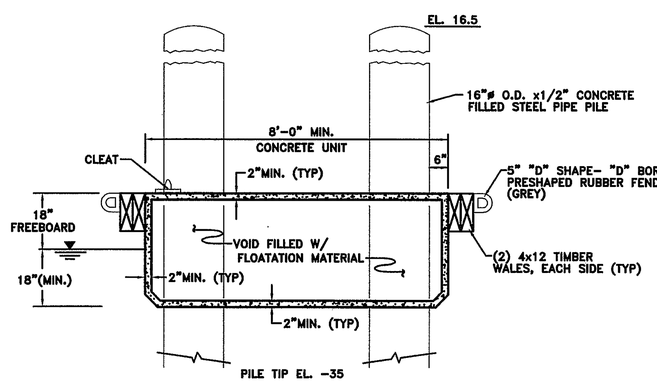
DES.	CHK.	DR.	NVA FILE NO.
KWH	DBV	RSR	523\CONSTR\EXCON
SCALE AS SHOWN	APP'D DBV	DATE OCT. 1997	SHEET 1 OF 5



PROPOSED WORK PLAN
SCALE: 1"=20'



SECTION E–E
TYPICAL SECTION AT U.S.C.G. EXTENSION
SCALE: 1"=5'



SECTION F–F
CONCRETE FLOAT
SCALE: 1"=2'

GENERAL NOTES:

A. CONTRACT PHASING

1. WORK MAY BE CARRIED OUT UNDER 2 SEPARATE PHASES, PHASE I AND PHASE II. CONTRACT WILL CONSIST OF WORK UNDER PHASE I, AS SHOWN WITH PHASE II WORK COMPRISING AN ALTERNATE.
2. PHASE I WORK SHALL CONSIST OF BULKHEAD REPLACEMENT TO LIMITS SHOWN, INCLUDING CONCRETE CAP, ANCHORAGE SYSTEM, AND FENDERING. ALSO INCLUDED IS THE REPLACEMENT OF EXISTING TIE RODS IN THE AREA SOUTH OF THE TOWN PIER, AND THE WAVEBREAK PIER TO THE NORTH OF THE TOWN PIER.
3. SHOULD PHASE II NOT BE INCORPORATED IN THE WORK, PHASE I WILL ALSO INCLUDE A SHEET PILE RETURN AT THE NORTH END OF THE NEW WORK. THIS RETURN SHALL NOT BE PROVIDED WITH CAP, WALE, ANCHORS OR FENDERS. RETURN TO BE OMITTED FOR COMBINED PHASE I AND PHASE II CONTRACT.
4. PHASE II WORK SHALL CONSIST OF ALL REMAINING WORK SHOWN ON THE DRAWINGS NOT INCLUDED IN PHASE I. WORK TO INCLUDE STEEL SHEET PILE BULKHEAD, CAP, ANCHORING SYSTEM, FENDERS, DREDGING, CONCRETE FLOAT DOCK SYSTEM WITH GANGWAY, AND AN ADDITIONAL WAVEBREAK PIER.

B. CONSTRUCTION NOTES:

1. SEE TIEBACK PLAN (SHT. 3) FOR NEW SSP DIMENSIONS.
2. THE PLANS PROVIDE STRUCTURAL INFORMATION ONLY. DRAWING DOES NOT LIMIT OTHER ITEMS OR DETAILS THAT MAY BE CALLED FOR ELSEWHERE IN THESE DOCUMENTS.
3. ALL EXCAVATIONS SHALL BE PERFORMED IN A SAFE MANNER, IN ACCORDANCE TO ALL APPLICABLE FEDERAL AND STATE REGULATIONS AND SO AS TO PROECT THE PUBLIC, CONTRACTOR SHALL SAFEGUARD AND PROTECT ALL EXCAVATIONS.
4. THE CONTRACTOR SHALL EXCAVATE THE AREAS INDICATED FOR TIE ROD REPLACEMENT AND RESTORE THE AREA TO ITS EXISTING CONDITION, INCLUDING ANY APPURTENANCES SUCH AS CLEATS, BOLLARDS, POSTS, ETC.
5. DESIGN LOADS ARE RESTRICTED BY THE COMPLETED STRUCTURE ACTING AS AN INTEGRAL UNIT. PROVIDE ALL TEMPORARY BRACING, SHORING, OR ADDITIONAL REINFORCEMENT NECESSARY TO RESIST LOADS IMPOSED AT ANY TIME ON THE PARTIALLY COMPLETED STRUCTURE.

C. DEMOLITION NOTES:

1. DEBRIS BARRIER/SILT CURTAIN SHALL BE MAINTAINED DURING ALL CONTRACTOR OPERATIONS . DEBRIS CONTAINED BY THE BARRIER SHALL BE REMOVED ON A DAILY BASIS.
2. ALL MATERIAL REMOVED AND NOT SPECIFIED TO BE SALVAGED OR REUSED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND LEGALLY DISPOSED OF OFF–SITE.
3. LOCATE AND INSTALL TEMPORARY CONSRUCTION SIGNS, FENCES, AND BARRIERS, AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
4. ALL EXCAVATION LIMITS ON PAVEMENT AND CONCRETE SHALL BE SAWCUT TO PERMIT STRAIGHT, EVEN INTERFACE WITH NEW WORK.

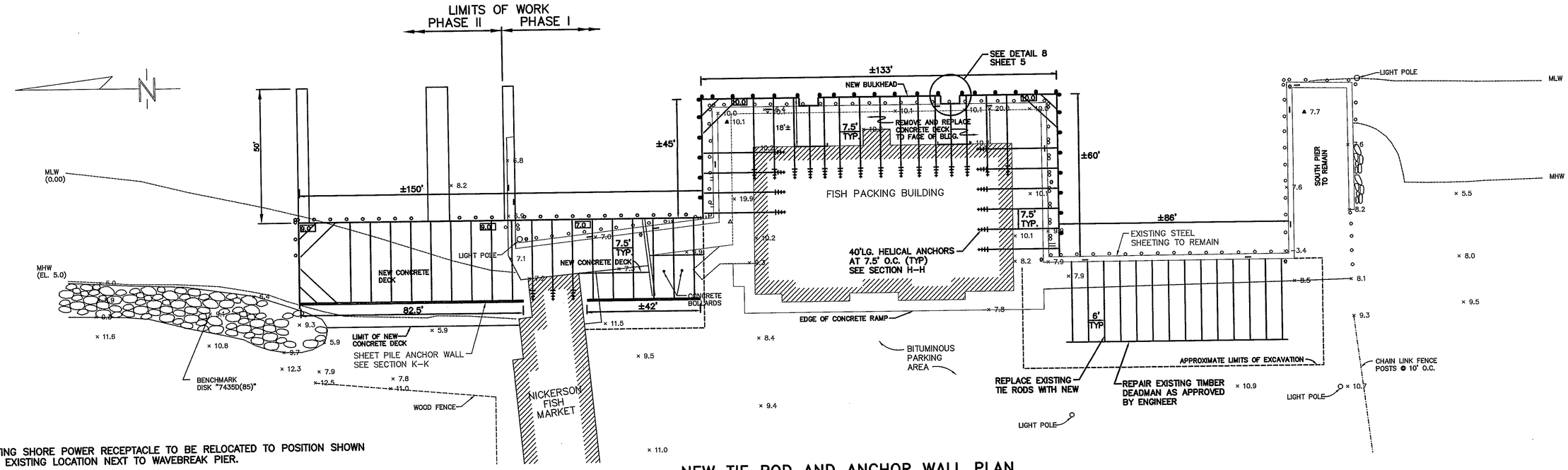
2 0 2 SCALE IN FEET
5 0 5 SCALE IN FEET
20 0 20 SCALE IN FEET

PROPOSED WORK PLAN AND SECTIONS

CHATHAM TOWN PIER WHARF IMPROVEMENTS CHATHAM, MASSACHUSETTS

Nucci Vine ASSOCIATES
253 LOW STREET NEWBURYPORT, MA 01950 tel. (508)465-1428 fax (508)465-2640
20801 BISCAYNE BLVD. MIAMI, FL 33180 tel. (305)932-0309 fax (305)935-9409

DES.	CHK.	DR.	NVA FILE NO.
KWH	DBV	RSR	523\CONSTR\PROP
SCALE AS SHOWN	APP'D DBV	DATE OCT. 1997	SHEET 2 OF 5

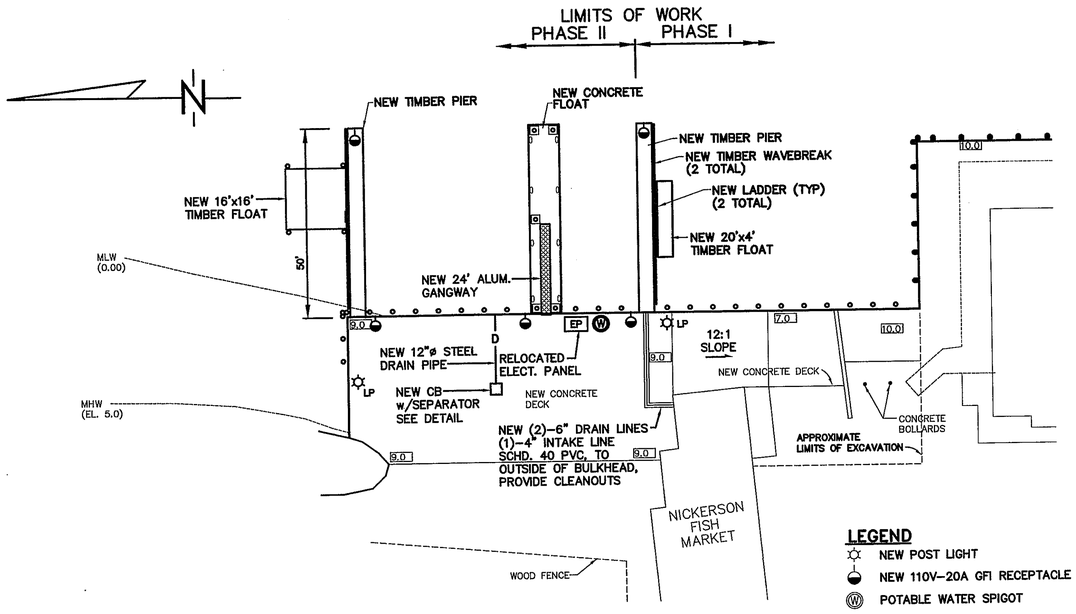


NOTES:

1. EXISTING SHORE POWER RECEPTACLE TO BE RELOCATED TO POSITION SHOWN FROM EXISTING LOCATION NEXT TO WAVEBREAK PIER.

NEW TIE ROD AND ANCHOR WALL PLAN

SCALE: 1"=20'

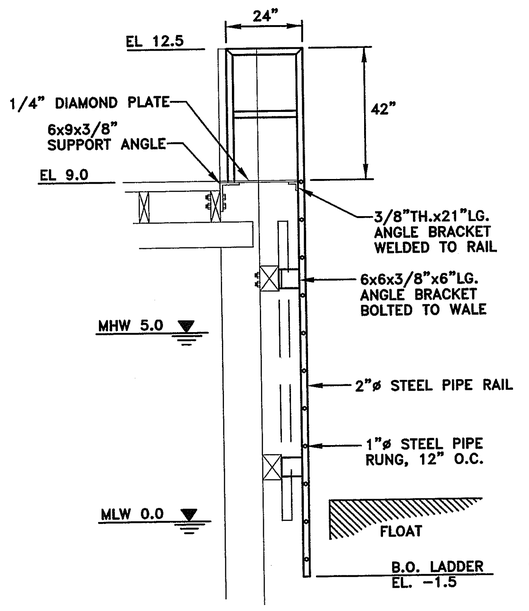


LEGEND

- NEW POST LIGHT
- NEW 110V-20A GFI RECEPTACLE
- POTABLE WATER SPIGOT
- EP SHORE POWER 100A/110V (RELOCATED)

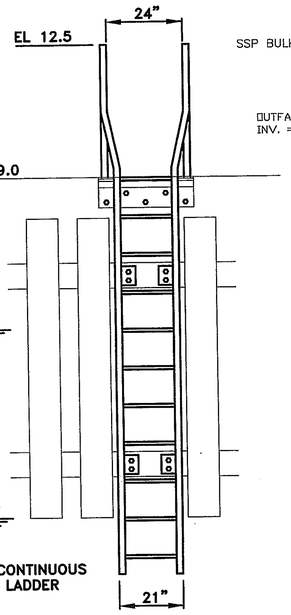
GENERAL LAYOUT AND UTILITY PLAN

SCALE: 1"=20'

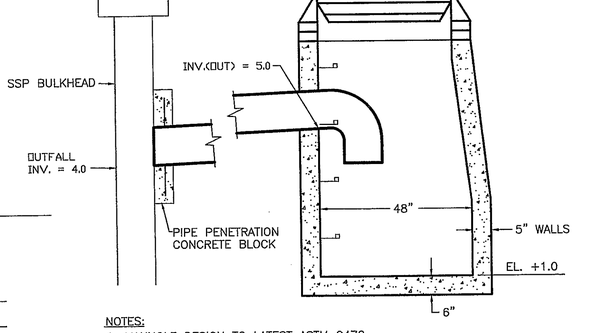


NEW STEEL PIPE ACCESS LADDER

SCALE: 1"=2'



NOTE:
WAVEBREAK DISCONTINUOUS BEHIND ACCESS LADDER



NOTES:

1. MANHOLE DESIGN TO LATEST ASTM C478.
2. REINFORCING CONFORMS TO LATEST A185
3 CONCRETE COMPRESSIVE STRENGTH-4000 PSI AT 28 DAYS
4. ONE POUR MONOLITHIC BASE.
5. BITUMASTIC BUTYL RUBBER FOR JOINTS CONFORM TO LATEST ASTM C443.
6. STEPS-STEEL REINFORCED COPOLYMER POLYPROPYLENE.
7. MANHOLE COVER TO COMPLY WITH REQUIREMENTS FOR H-20 WHEEL LOADING
8. SUFFICIENT WEIGHT THAT CATCH BASIN NOT BUOYANT WHEN EMPTY.

CATCH BASIN WITH OIL/GREASE SEPARATOR

SCALE: 1"=2'

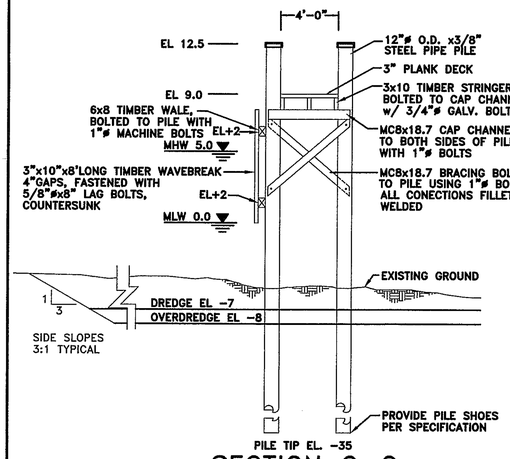
20 0 20
SCALE IN FEET

NEW TIEBACK AND GENERAL LAYOUT PLANS AND DETAILS

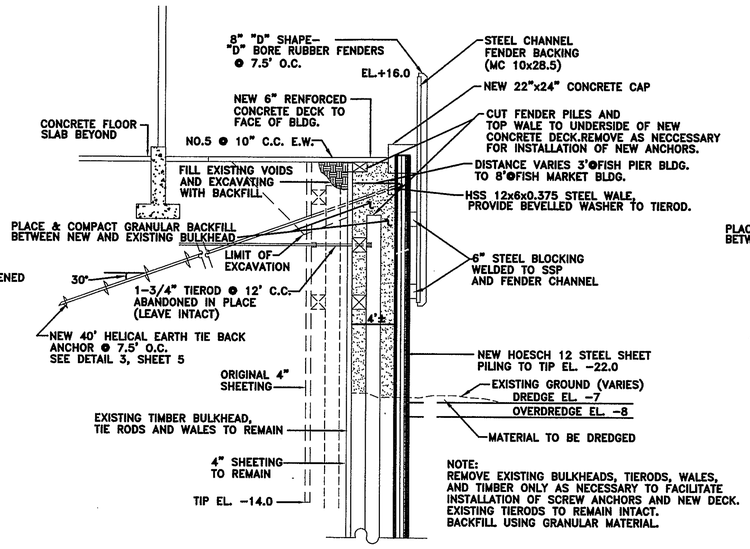
CHATHAM TOWN PIER
WHARF IMPROVEMENTS
CHATHAM, MASSACHUSETTS

Nucci Vine ASSOCIATES
253 LOW STREET
NEWBURYPORT, MA 01950
tel. (508)465-1428
fax (508)465-2640
20801 BISCAYNE BL
MIAMI, FL 33180
tel. (305)932-0305
fax (305)935-9405

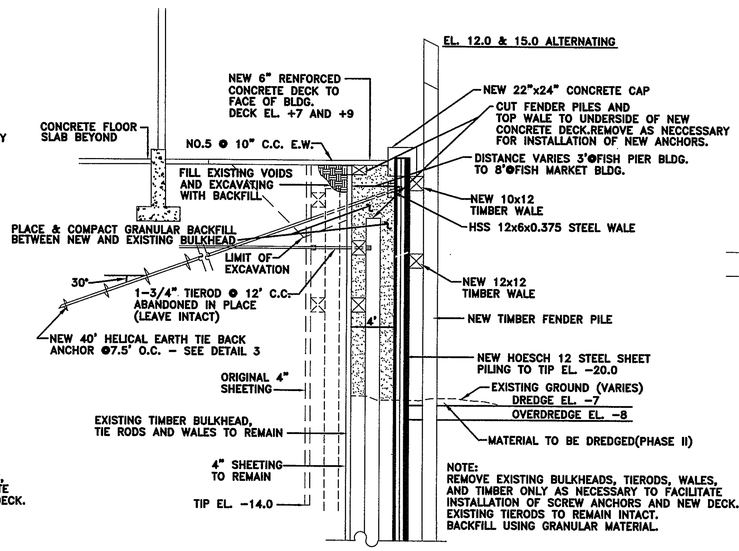
DES. KWH	CHK. DBV	DR. RSR	NVA FILE NO. 523\CONSTR\TIEB
SCALE AS SHOWN	APP'D DBV	DATE OCT. 1997	SHEET 3 OF



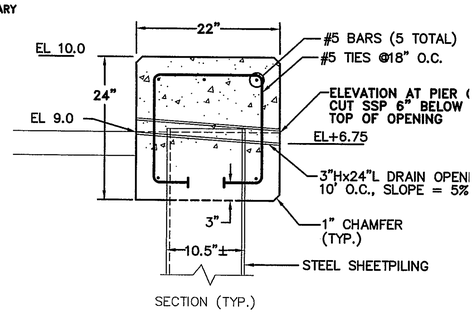
SECTION G–G
TYPICAL SECTION AT TIMBER PIER
SCALE: 1"=5'



SECTION H–H
TYPICAL SECTION ANCHORED BULKHEAD WITH SCREW TYPE ANCHORAGE
SCALE: 1"=5'

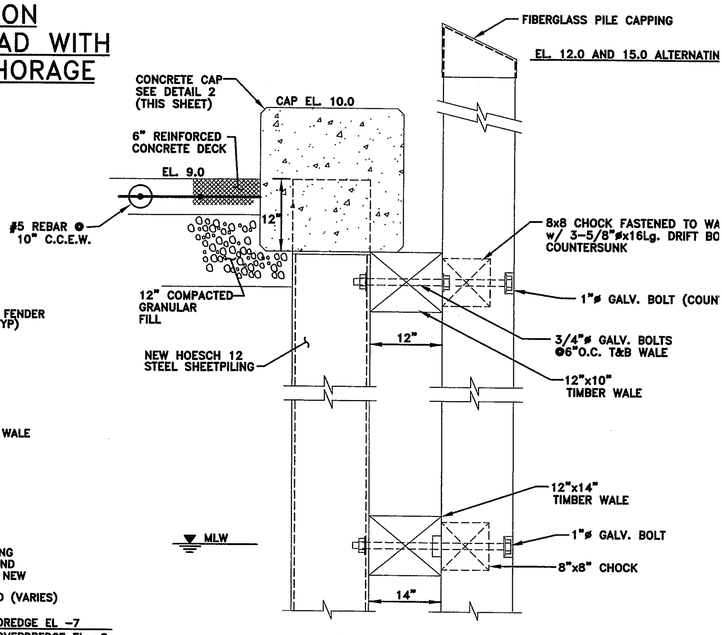


SECTION L–L
TYPICAL SECTION ANCHORED BULKHEAD WITH SCREW TYPE ANCHORAGE
SCALE: 1"=5'

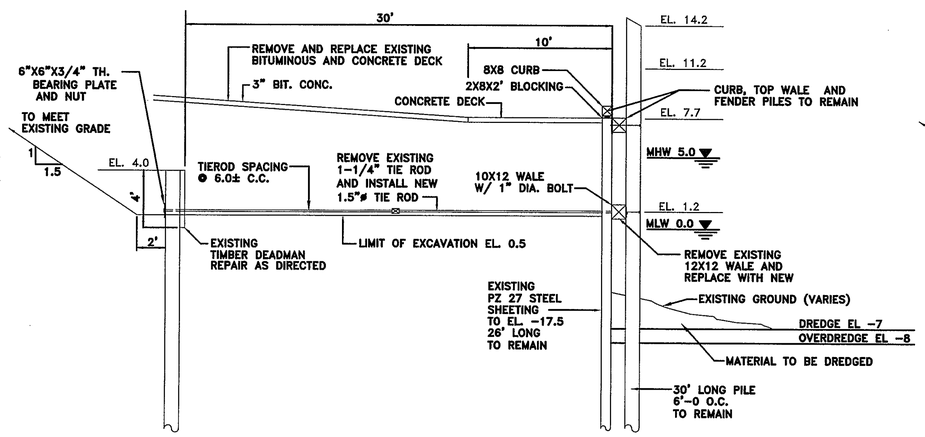


SECTION (TYP.)

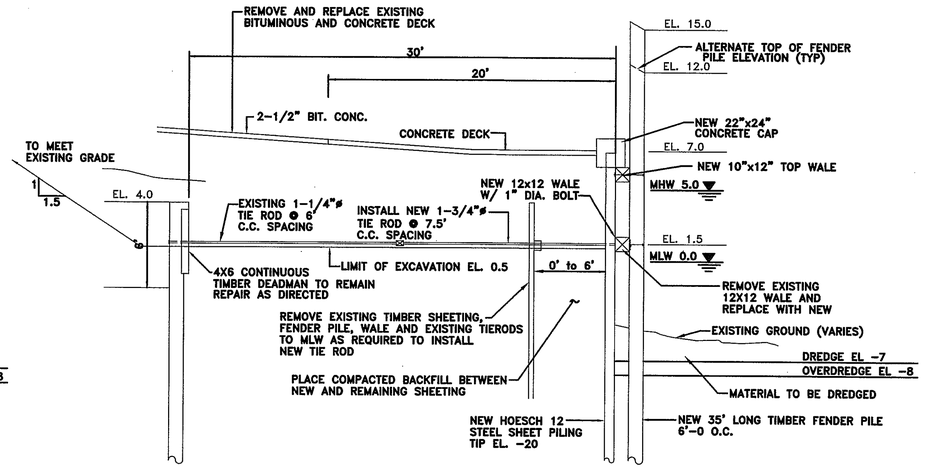
DETAIL 2
CONCRETE CAP REINFORCING DETAIL
SCALE: 1"=1'



DETAIL 1
TYPICAL FENDER PILE DETAIL
SCALE: 1"=1'



SECTION J–J
TYPICAL SECTION REPLACMENT OF EXISTING TIE RODS
SCALE: 1"=5'



NOTE: SECTION WITH DECK AT EL. 10.0 IS SIMILAR.

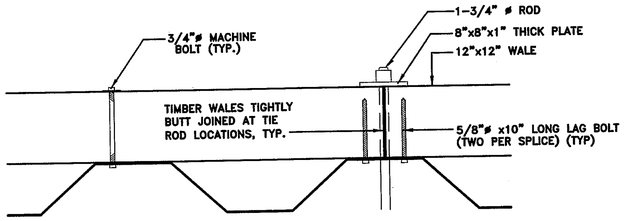
SECTION K–K
TYPICAL SECTION ANCHORED BULKHEAD
SCALE: 1"=5'

PROPOSED WORK SECTIONS AND DETAILS

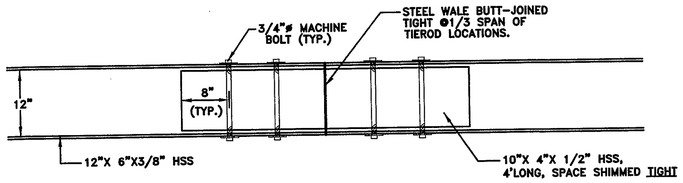
CHATHAM TOWN PIER WARF IMPROVEMENTS CHATHAM,MASSACHUSETTS

Nucci Vine ASSOCIATES
253 LOW STREET
NEWBURYPORT, MA 01950
tel. (508)465–1428
fax (508)465–2640
20801 BIS
MIAMI, F
tel. (305)
fax (305)

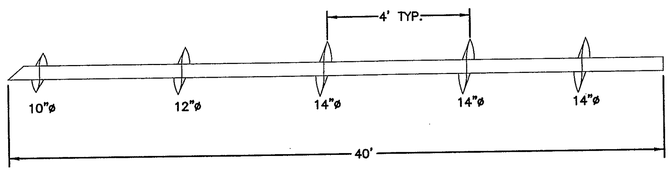
DES. KWH	CHK. DBV	DR. RSR	NVA FILE NO. 523/CC
SCALE AS SHOWN	APP'D DBV	DATE OCT. 1997	SHEET 4



DETAIL 4
TIMBER WALE BOLTING & SPLICE DETAIL
SCALE:1"=1'

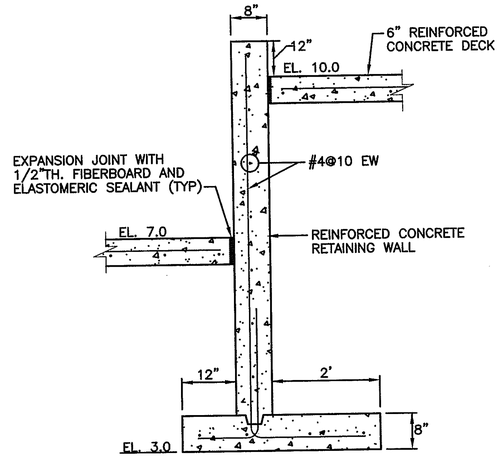


DETAIL 5
STEEL WALE SPLICE DETAIL
SCALE:1"=1'

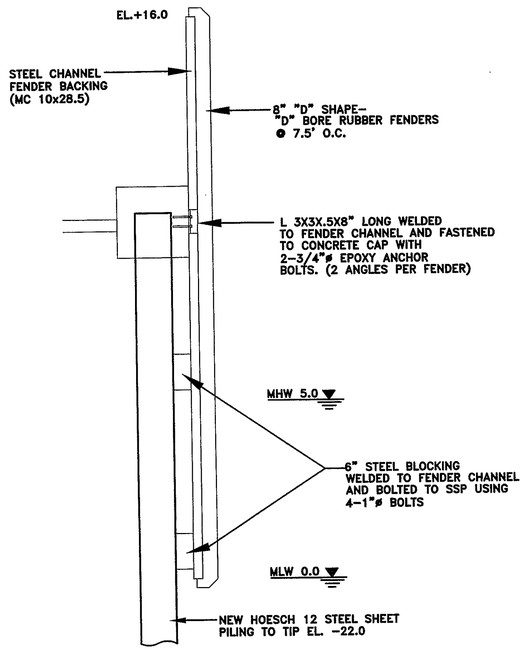


NOTES:
1. EARTH TIE BACK ANCHOR TO HAVE PULL-OUT RESISTANCE OF 52 KIPS
2. ANCHOR TO BE INSTALLED AT 30° ANGLE TO HORIZONTAL.
3. ALL ANCHOR LEADS, RODS AND EXTENSIONS TO BE GALVANIZED STEEL.
4. ANCHOR SHAFT TO BE 1.75"X1.75" MINIMUM, WITH MINIMUM TORQUE CAPABILITY OF 10,000 FT.LBS.

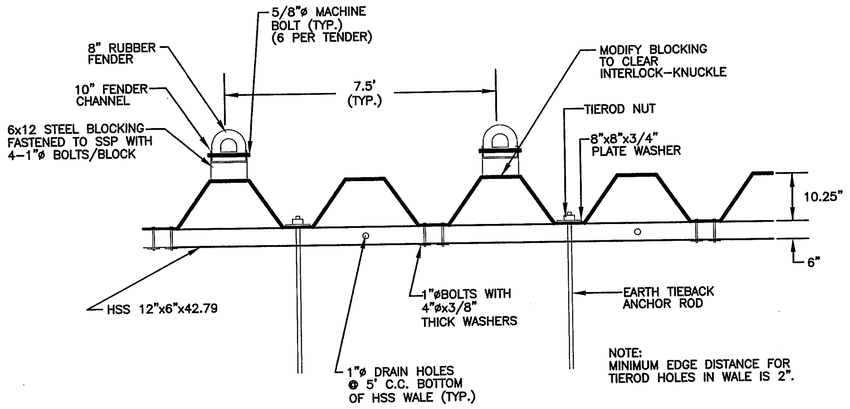
DETAIL 3
TYPICAL HELICAL ANCHOR DETAIL
N.T.S.



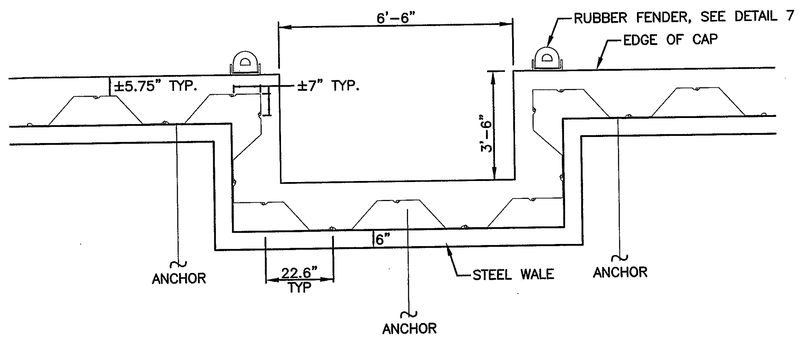
SECTION M-M
TYPICAL SECTION
REINFORCED CONCRETE RETAINING WALL
SCALE:3/4"=1'



DETAIL 7
RUBBER FENDER DETAIL
SCALE:1"=2'



TYPICAL
SECTION THRU FENDERS
BELOW CONCRETE CAP
SCALE:1"=2'



DETAIL 8
TYPICAL FISH HOIST EMBAYMENT
SCALE:1"=2'

DETAIL 9
PILE COLLAR DETAIL
SCALE:1"=1'

PROPOSED WORK SECTIONS AND DETAILS

CHATHAM TOWN PIER WARF IMPROVEMENTS CHATHAM, MASSACHUSETTS

Nucci Vine ASSOCIATES
253 LOW STREET NEWBURYPORT, MA 01950 tel. (508)465-1428 fax (508)465-2640
20801 BISCAYNE BLVD. MIAMI, FL 33180 tel. (305)932-0309 fax (305)935-9409

DES. KWH	CHK. DBV	DR. RSR	NVA FILE NO. 523/CONSTR./SECT2
SCALE AS SHOWN	APP'D DBV	DATE OCT. 1997	SHEET 5 OF 5

SECTION 00 91 13

ADDENDUM

August 2, 2022

ADDENDUM NO. 1

TO: Prospective Bidders

FROM: Foth Infrastructure & Environment, LLC
15 Creek Road
Marion MA 02738

RE: Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project
Town of Chatham, Massachusetts
Project I.D.: 21C036

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents published on July 20, 2022.

Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This addendum consists of 22 pages.

ISSUED FOR INFORMATIONAL REASONS

1. A list of the prospective bidders who attended the mandatory Pre-bid Conference, held on July 27, 2022, is provided as **Attachment 1.**

2. A list of the planholders who have been provided with the Invitation for Bid documents, by the Engineer's office, is provided as **Attachment 2.**

3. With feedback received from the Massachusetts Department of Environmental Protection (MassDEP), Foth will reapply for the MassDEP Minor Mod with revised drawings to eliminate the cantilevered walkway. An approval is anticipated around the end of August 2022.

4. Revised drawings will be issued with the next Addendum.

5. The cantilever scope is NO LONGER part of this current contract. A future Chapter 91 license and construction scope for same will be a future/separate consideration.

CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS

1. The Form for Sub-Bid, which is the last attachment to Section 00310, Bid Form, has been removed from the specification. Filed sub bids for the project are not required.

2. Section 00520, Agreement, Paragraph 1 has been revised (see gray shading) as such: The Substantial Completion date for the Bulkhead work (including Pier, Fendering, and Cathodic Protection) has been changed to April 14, 2023; and the balance of the work (including the lower lot and sidewalk, guardrail, lighting, Harbormaster building deck and stair, and Barcliff walkway, has been changed to May 26, 2023.

   Paragraph 12 has been revised (see gray shading) to provide additional information for liquidated damages.

   A revised specification is provided as **Attachment 3**.

CHANGES TO SPECIFICATIONS

1. Section 15400, Plumbing, PART 1, Paragraph 1.1 has been removed from the specification.

2. Section 16000, Electrical, PART 1, Paragraph 1.1 and the bolded under the document title line (Filed Sub-Bid Required), have been removed from the specification.

3. Section 00050, Notice to Bidders, Paragraph O, has been revised (see gray shading) to reflect the updated Substantial Completion dates:

   O. The Substantial Completion dates for the Project shall be:

APRIL 14, 2023	**Bulkhead**
APRIL 14, 2023	**Cathodic Protection**
MAY 26, 2023	**Lower Lot Sidewalk/Guardrail/Lighting**
MAY 26, 2023	**HM Deck/Barcliff Walk**

QUESTIONS AND RESPONSES FROM PROSPECTIVE BIDDERS FOLLOWING THE PRE-BID CONFERENCE

1. Q: Do you happen to have a cost estimate or range for this project?

   A: The cost estimate range is between $3.1 million – $3.9 million.

2. Q: Is there an estimated value for this project?

   A: Refer to the response for Question #1.

3. Q: Are there any liquidated damages on the fish pier project?

   A: Refer to Item #2 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2 and Article 12 (LIQUIDATED DAMAGES) in the revised Section 00520, Agreement (see **Attachment 3**).

4. Q: After reviewing the plans and specs for the above referenced project I did not see a specific amount for Liquidated damages, and no DBE or M/WBE goals. If you would be so kind to confirm that this information is correct.

   A: For liquidated damages: Refer to the response for Question #3.

   For Disadvantaged/Minority-owned/Women-owned Business Enterprises (DBE/MBE/WBE): Although there are no established participation goals, the awarded Contractor is strongly encouraged to make good faith efforts to solicit active participation by DBE/MBE/WBEs, for example, through normal purchasing of supplies and material, travel services, and/or equipment.

5. Q: Liquidated damages are mentioned but not specified with a dollar amount.

   A: Refer to Item #2 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2.

6. Q: Are there Liquidated damages and retainage for the Chatham Project? I didn't see any reference?

   A: Refer to Item #2 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2.

7. Q: Are there Liquidated damages and retainage for the Chatham Project? I didn't see any reference?

   A: Refer to Item #2 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2.

8. Q: Can you please confirm filed sub-bids and the corresponding Form for Sub-Bids in 00310 are not required for this project? There is no separate deadline provided and this is not typical for non-vertical projects.

   A: Refer to Item #1 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2.

9. Q: There is language in the Documents suggesting that there is a Filed Electrical Sub Bid. This appears to be incorrect.

A: Refer to Item #1 in the CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS section on page 2.

10. Q: We were under the impression after the pre-bid conference that the RFI date would be pushed back and there was an addenda coming shortly. Will you please confirm the RFI deadline?

A: The bid due date is unchanged and remains as 10:00 AM on August 12, 2022.

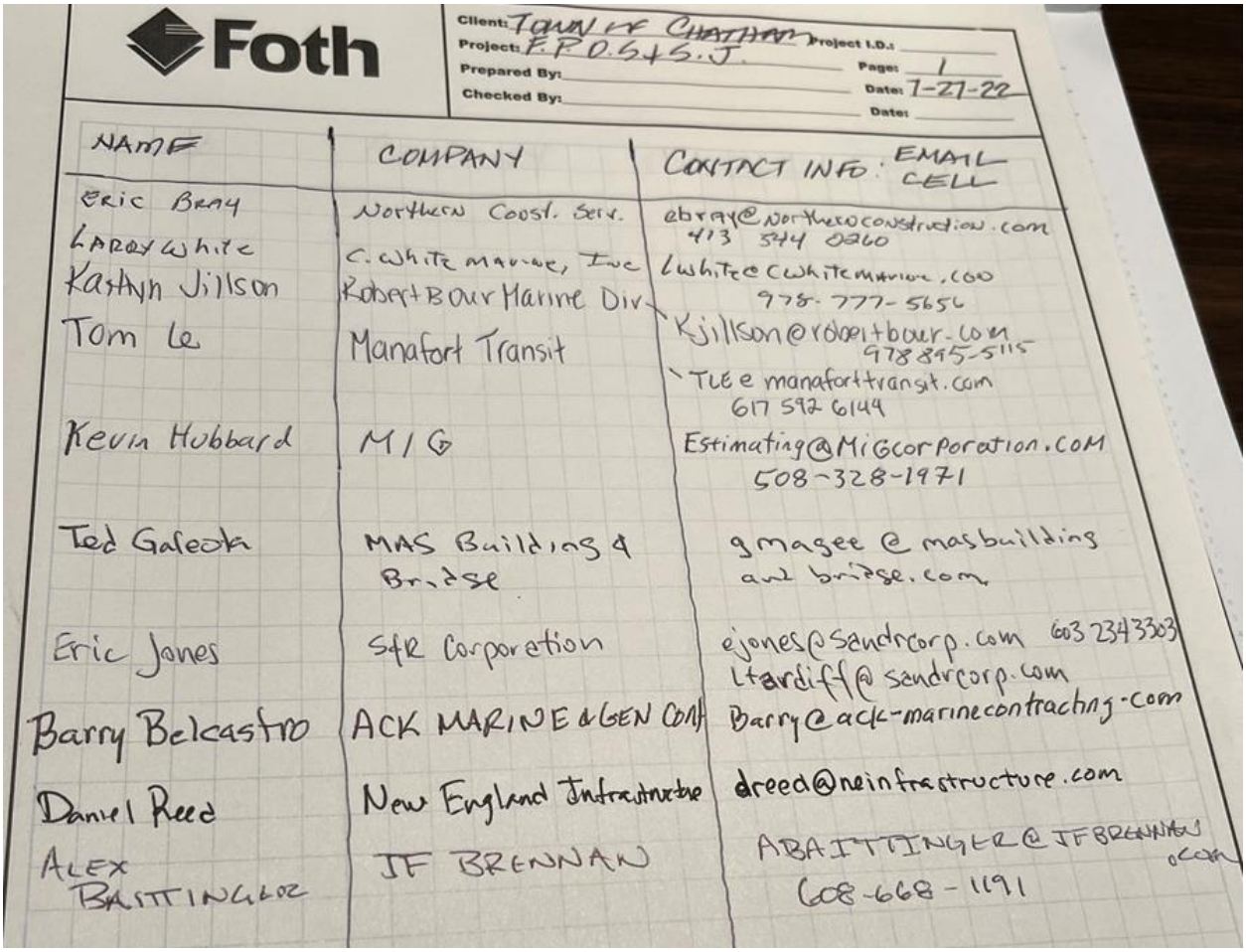
Alex I. Mora, PE, D.PE
Engineer of Record
Registered P.E. for the Commonwealth of Massachusetts, License #55309

END OF ADDENDUM

Attachment 1

Sign-in Sheet from Pre-bid Conference

Sign-in Sheet from Pre-bid Conference and Site Tour – July 27, 2022



Foth

Client: TOWN OF CHATHAM Project I.D.:
Project: F.P.O.S+S.J. Page: 1
Prepared By: Date: 7-27-22
Checked By: Date:

NAME	COMPANY	CONTACT INFO: EMAIL CELL
ERIC BRAY	Northern Coast. Serv.	ebray@northernconstruction.com 413 544 0860
LARRY White	C. White Marine, Inc	lwhite@cwhitemarine.com 978-777-5656
Kathyn Jillson	Robert Bour Marine Div	Kjillson@robertbour.com 978 895-5115
Tom Le	Manafort Transit	Tle manafforttransit.com 617 592 6149
Kevin Hubbard	M/G	Estimating@MiGcorporation.com 508-328-1971
Ted Galeota	MAS Building & Bridge	gmagee@masbuildingandbridge.com
Eric Jones	SFR Corporation	ejones@sandrcorp.com 603 2343303 Ltardiff@sandrcorp.com
Barry Belcastro	ACK MARINE & GEN CONT	Barry@ack-marinecontracting.com
Daniel Reed	New England Infrastructure	dreed@neinfrastructure.com
ALEX BAITTINGER	JF BRENNAN	ABAITTINGER@JFBRENNAN.COM 608-668-1191

Attachment 2

Planholders List

Planholders List

	Date of Request	Company	Contact Name	Email	Telephone No.	PDF of Bid Package Sent
1	7/20/2022	AGM Marine Contractors, Inc.	Jonah Mikutowicz	Jonah.mikutowicz@agmmarine.com	508-477-8801	X
2	7/20/2022	Northern Construction Service, LLC	Dolce Montana	dmontana@northernconstruction.com	413-289-1230, ext. 206	X
3	7/20/2022	Construct Connect	Jonathan Ditter	Jonathan.ditter@constructconnect.com	513-458-5951	X
4	7/20/2022	Construct Connect	Sarah Torres	Sarah.Torres@ConstructConnect.com	323-602-5079 x75305	X
5	7/20/2022	Robert B. Our Co., Inc. – Robert B. Our Marine Division	Abby Our Rose Tracy Post	ajour@robertbour.com tpost@robertour.com	508-432-0530 508-432-0530	X
6	7/20/2022	MAS Building & Bridge, Inc.	Maggee Gaelen	gmagee@masbuildingandbridge.com	508-520-2277 x105	X
7	7/20/2022	Nova Technologies Group	Sandy Jenkins	sjenkins@novatechnologiesgrp.com	315-813-7887	X
8	7/20/2022	Prime Vendor Inc.	Kim Jones	Primevendor123@gmail.com	910-805-9630	X
9	7/20/2022	Manafort Transit	Courtney Baro	cbaro@manaforttransit.com	781-328-2366	X
10	7/20/2022	S&R Corporation	Linda Tardiff Eric Jones	ltardiff@sandrcorp.com ejones@sandrcorp.com	978-441-2000	X
11	7/21/2022	Beacon Marine Construction	Jon Hagenstein	jon@beaconmarineco.com	508-477-7880	X
12	7/21/2022	Projectdog, Inc.	Project Leads Team	addenda@projectdog.com	978-499-9014	X
13	7/21/2022	J.F. White Contracting Co.	Bob Lee	estimating@jfwhite.com	617-558-0435	X
14	7/21/2022	MIG Corporation, Inc.	Katheryn Guartasaca-Jara	kguartasaca@migcorporation.com	978-264-4800	X
15	7/21/2022	Dodge Reports	Mark Reymund Concha	dodge.docs@construction.com	844-326-3826, x9254	X
16	7/22/2022	ACK Marine & General Contracting	Barry Belcastro	barry@ack-marinecontracting.com	781-983-0989	X
17	7/22/2022	C. White Marine Inc.	Jenelle Palladino	jpalladino@cwhitemarine.com	978-777-5656 x10	X
18	7/25/2022	J.F. Brennan Company, Inc.	Lucas McCoy Monica Placek Quentin Thorson Danny Maggio	lmccoy@jfbrennan.com mplacek@jfbrennan.com qthorson@jfbrennan.com dmaggio@jfbrennan.com	608-519-5284	X
19	7/25/2022	Capone Iron Corporation	Sarah Furnari	s.furnari@caponeiron.com	978-948-8000	X
20	7/25/2022	Bay State Shoring Inc.	Scott Desrosiers	scott@bsrci.com	508-737-7134	X
21	7/25/2022	New England Infrastructure, Inc.	Daniel Reed	dreed@neinfrastructure.com	978-293-3535 x21	X
22	7/27/2022	CorrTech	Pat Meskill	pmeskill@corrtech-inc.com	860-526-2610	X
23	8/1/2022	Cullen Electrical Contractors Inc.	Renee Lyons	rlyons@cullenelectric.com	781-837-1844 ext 3	X
24	8/1/2022	Northern Construction Service, LLC	Pattie Sullivan	psullivan@northernconstruction.com	413-289-1230 x204	X
25	8/1/2022	Vigil Electric	Jerome Vigil	jeromevigil@gmail.com	617-212-6828	X

	Date of Request	Company	Contact Name	Email	Telephone No.	PDF of Bid Package Sent
26	8/1/2022	Fall River Electrical Associates Co., Inc.	Cassie Johnston	cassiejohnston@frea.biz	508-675-0523 x12	X
27	8/2/2022	MD&B	Pete Marcotte	pmarcotte@mdandb.com	207-203-1614	X
28	8/2/2022	Solid Earth Technologies	Kim Terrio	kterrio solidearthtech.com kterrio@solidearthtech.com	603-882-5319	X

Attachment 3

Specifications – Revised

Section 00520 Agreement

SECTION 00520

AGREEMENT

Town of Chatham (the "Owner") and _____, hereinafter referred to as "Contractor," for the consideration hereinafter stated, hereby agree as follows:

1. PROJECT. Contractor shall perform everything required to be performed, shall provide and furnish all of the labor, equipment, materials, and tools to perform, within two hundred and seventeen (217) calendar days for the Bulkhead work and **two hundred and fifty nine (259)** calendar days for the balance of the work, after the NOTICE TO PROCEED, which is anticipated to be given no later than **SEPTEMBER 9, 2022** for the following work:

CHATHAM FISH PIER – BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT TOWN OF CHATHAM, MA

in strict accordance with the Contract Documents pertaining thereto and signed by the Engineer for the Owner, which Documents are incorporated herein and made a part of this Agreement as if herein fully set forth. Subject to all authorized modifications, completion of construction activities must be achieved no later than **MAY 26, 2023**.

CONTRACT AMOUNT. Owner shall pay to Contractor, as full consideration for the faithful performance by Contractor of the aforementioned work, the amount of _____ Dollars ($_____) computed in accordance with Contractor's accepted Bid dated _____, which accepted Bid is incorporated herein by reference thereto as if herein fully set forth.

2. SUPERVISION. All of the work to be done shall be done under the direction and supervision of, and to the approval of, Owner or its authorized representative, and the work shall be done in the best workmanlike manner, conforming strictly to the provisions of the specifications and plans made thereof.

3. COMPLIANCE WITH LAWS. (a) Contractor shall comply with all applicable provisions of the Massachusetts General Laws inclusionary of any and all Labor and Labor Relations Statutes.

Before the Agreement between Owner and Contractor is entered into, Contractor shall submit written evidence that it and any subcontractors have obtained for the period of the Contract, full Workers' Compensation insurance coverage for all persons whom they employ or may employ in carrying out the work under this Contract. This insurance shall be in accordance with the requirements of the most current and applicable state Workers' Compensation insurance laws. The Contractor in signing this Agreement certifies to Owner as true the following statement:

I am aware of the provisions of Massachusetts General Laws, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

5. PERFORMANCE STANDARDS. The Work must be performed and completed in accordance with all requirements of law and no Work shall be undertaken until Contractor has been issued all required permits from all applicable municipal, state and federal governmental bodies. "Completion" of the Work includes obtaining all certificates, or amendments of existing certificates, as the case may be, which relate to the performance of the Work. Unless otherwise specified in this Agreement, the Work must be performed in a good and workmanlike manner and in accordance with the best modern practice and with materials and workmanship of the highest quality. Contractor shall check and verify all dimensions, grades, and levels before commencement of performance and whenever necessary during the progress thereof.

6. PAYMENTS. Owner shall pay the Contractor for complete and accepted performance of the Work, subject to additions and deductions by Change Orders. The Contractor agrees to provide with each payment application (invoice), lien waivers sufficient to discharge any liability from the Owner to Contractor. Partial payments shall cover work completed through the 25th calendar day of each month for contracts where the number of working days exceeds twenty (20). No partial payments will be made for contracts having a time limit of twenty (20) days or less, unless completion has been significantly delayed by causes which are clearly not the fault of the Contractor. When partial payments are to be made, the Contractor shall submit to the Owner, on Owner' forms, an estimate of the total amount of work accomplished, which will show the computed amount due less a retention which shall be 10% of the value of the work accomplished. No partial payments will be made for materials stored on the job but not yet installed, unless otherwise provided in the Contract Documents. Each request for payment application must be approved by the Project Engineer and will not be considered as submitted until the Owner, Contractor and Project Engineer agree to unit qualities covered by the payment application. Once Owner has received the approved request for payment application, Owner shall process the Contractor's invoice and pay Contractor any undisputed amount within thirty (30) calendar days from the date of receipt of a complete application for payment from Contractor.

7. JOB SITE. The Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the assigned task. The Contractor at all times shall keep the job site free from accumulation of waste materials or rubbish caused by its operations. At the completion of the Work, it shall remove all its waste materials and rubbish from and about the job site as well as its tools, construction equipment, machinery and surplus materials. The Contractor shall comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the Work, the safety of persons and property and their protection from damage, injury, or loss. Contractor shall provide repair response within twenty-four (24) hours of request by Owner during the course of performance of the Work under this Agreement for any repair work that has been poorly constructed and or performed or any work that results in either consequential or actual damage to any property associated with the Contractor's operations.

8. STORAGE OF MATERIALS. Materials and equipment shall be stored in a neat and orderly manner at locations designated by the Owner, taking all necessary precautions to prevent fire hazards and spontaneous combustion and to conform to the requirements of all applicable regulatory agencies and insurance policies.

9. EQUIPMENT AND MATERIALS. Contractor shall furnish all labor, tools, scaffolding, ladders, equipment, supplies and materials required in performing all Work under this Agreement. Owner assumes no liability or responsibility for the care, safety, or preservation of any tools, machinery, equipment, material or supplies and all risks thereof are assumed by Contractor.

10. SAFETY PROCEDURES. Contractor shall at all times take all necessary and customary precautions in introducing and maintaining safety measures to protect the persons and property of others on or adjacent to the Work site against all damage, loss, or injury resulting from the Work involved under this Agreement. Contractor shall comply with any site-specific safety plans for the individual project properties. Protective arrangements will be taken in all instances to prevent Work operations from in any way damaging the premises or any personal property or any other work or operations, and from causing or allowing any pollution to leak, flow, or escape into any waterway or sewer. Contractor's obligation to protect shall include the duty to provide, place, and adequately maintain at or about the Worksite suitable and sufficient guards, lights, barricades, and enclosures. Contractor shall dispose of all hazardous materials used or produced in connection with this Agreement in the manner required by law.

11. PERMITS AND TAXES. The Contractor shall pay any and all federal, state, and municipal taxes for which the Contractor may be liable in carrying out this Agreement.

12. LIQUIDATED DAMAGES. Subject to all authorized modifications, It is hereby agreed by the parties to the Agreement that in case all work called for under the Agreement is not finished or completed on or before the time set forth in this Agreement, damage will be sustained by Owner, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the Owner will sustain in event of and by reason of such delay; Liquidated damages have been read, negotiated and agreed to by both parties and are stated as ~~set forth in the project specifications~~ follows:

    a. If Contractor shall neglect, refuse, or fail to substantially complete the **Bulkhead work (including Pier, Fendering, and Cathodic Protection) by April 14, 2023** (as duly adjusted pursuant to the Contract), Contractor shall pay the Owner $500 for each day that expires after such time until this phase of the Work is completed as determined by a pay request submitted by the Contractor and approved by the Construction Manager. The number of calendar days between Notice to Proceed (assumed September 9, 2022) and Substantial Completion is two hundred and seventeen (217) days.

    b. If Contractor shall neglect, refuse, or fail to substantially complete the **balance of the work (including the lower lot and sidewalk, guardrail, lighting, Harbor Master building deck and stair, and Barcliff walkway, by May 26, 2023** (as duly adjusted pursuant to the Contract), Contractor shall pay the Owner $250 for each day that expires after such time until this phase of the Work is completed as determined by a pay request submitted by the Contractor and approved by the Construction Manager. The number of calendar days between Notice to Proceed (assumed September 9, 2022) and Substantial Completion is two hundred and fifty nine (259) days.

APRIL 14, 2023	**Bulkhead**
APRIL 14, 2023	**Cathodic Protection**
MAY 26, 2023	**Lower Lot Sidewalk/Guardrail/Lighting**
MAY 26, 2023	**HM Deck/Barcliff Walk**

Time is of the essence in all respects on this Contract. Contractor shall accordingly prosecute all Work diligently, using such means and methods of construction as will assure Substantial ~~full~~ Completion not later than the respective dates set forth above, ~~respectively,~~ as such dates may for good cause (as set forth in the Construction Documents) be extended by the Owner. Nothing in this Article, however, grants the Contractor the privilege to use means or methods that do not accord with sound and accepted practices.

In the event that the Contractor fails, refuses, or neglects to fully and finally complete the Work to the satisfaction of the Owner (Final Completion) as required in the Contract for each of the aforementioned categories of Work within thirty (30) days of the respective Substantial Completion dates for each such category, the Owner may, in its sole discretion, assess additional liquidated damages in the amount of $250 for each day that expires after the date of Substantial Completion of each phase of the Work up through the date of Final Completion thereof.

The amounts of liquidated damages imposed hereunder shall be cumulative and may, at Owner's option, be deducted and retained in whole or in part as a credit from any Contract Sum amounts then owed Contractor or which may have been paid to the Contractor. If no amounts are then owed to Contractor, Contractor shall pay to Owner the amount of liquidated damages upon written demand therefor. The liquidated damages shall cease once the Contractor has fully and completely any breach as set forth hereunder.

13. ABANDONMENT; INCREASE. All Work shall be performed according to a mutually agreed upon schedule. The suspension of work by the Contractor for any reason (other than the sole fault of the Owner), which exceeds four hundred and eighty hours (480) hours, shall be deemed abandonment of the project by the Contractor, and the Owner shall have available any and all remedies, including but not limited to surety participation pursuant to the terms of the faithful Performance Bond.

    It is further agreed that in case the work called for under this Agreement is not completed in all of its parts and requirements within the number of calendar days specified, Owner shall have the right to increase the number of calendar days or not, as may seem best to serve the interest of Owner; and if it is decided to increase the said number of calendar days, Owner shall further have the right to charge to Contractor, and deduct from the final payment for the work, all or any part, as Owner may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses of Owner which are directly chargeable to this Agreement, except that the cost of final surveys and the preparation of the final estimate shall not be included in such charges to be paid by Contractor.

14. GUARANTY. Except as otherwise may be provided herein, Contractor hereby expressly guarantees for two (2) full years from the date of the final completion of the work under this Agreement and acceptance thereof by Owner, to repair or replace any part of the work performed hereunder which constitutes a defect resulting from the use of inferior or

defective materials, equipment or workmanship. If, within said period, any repairs or replacements in connection with the work are, in the opinion of the Project Engineer, rendered necessary as a result of the use of inferior or defective materials, equipment or workmanship, Contractor agrees, upon receipt of notice from Owner, and without expense to Owner, to promptly repair or replace such material or workmanship and/or correct any and all defects therein. If Contractor, after such notice, fails to proceed promptly to comply with the terms of this guarantee, Owner may perform the work necessary to effectuate such correction and recover the cost thereof from Contractor or his sureties.

Any and all other special guarantees which may be applicable to definite parts of the work under this Agreement shall be considered as an additional guarantee and shall not reduce or limit the guarantee as provided by Contractor pursuant to this paragraph during the first year of the life of such guarantee.

As security for the faithful performance by the Contractor for maintenance for the period herein required, the Contractor shall, upon acceptance of the work performed under the Contract, in addition to the faithful Performance Bond and labor and material Payment Bond required.

15. INDEMNIFICATION. The Contractor hereby indemnifies and shall at all times save and hold harmless the Town of Chatham, and its officers, attorneys, employees, and agents from and against any and all claims (including workers' compensation and wage claims), demands, suits, actions, liabilities, damages, penalties, judgments, and costs and expenses, including without limitation additional engineering costs and attorney's fees and the costs and expenses of litigation, of or by anyone that in any way is caused by, arises out of, or is occasioned by the performance, activities, operations, conducts, negligence, or omissions of the Contractor, or any of its agents or employees, including subcontractors.

16. INSURANCE.Contractor, at its sole cost and expense, shall acquire and maintain in full force and effect throughout the term of this Agreement Workers' Compensation, employer's liability, commercial general liability, and owned, non-owned and hired automobile liability insurance coverage relating to Contractor's Work to be performed hereunder covering Owner' and Department's respective risks, as their interest may appear, in form subject to the approval of the Owner. The minimum amounts of coverage corresponding to the aforesaid categories of insurance per insurable event shall be as follows:

Insurance Category	Minimum Limits
Workers' Compensation	Statutory minimum and endorsement for United States Longshoremen's & Harbor Workers Act, the Jones Act Coverages
Employer's Liability	$1,000,000.00 per accident for bodily injury or disease.

Commercial General Liability	$3,000,000.00 per occurrence for bodily injury, personal injury and property damage.
Excess Liability (Umbrella)	$3,000,000.00 per occurrence for bodily injury, personal injury and property damage.
Automobile Liability	$1,000,000.00 per accident for bodily injury and property damage (coverage required to the extent applicable to Contractor's vehicle usage in performing work hereunder).

Any deductibles or self-insured retentions must be declared to and approved by Owner. At the option of Owner either Contractor's insurer shall reduce or eliminate the deductibles or self-insured retentions with respect to Owner, it's Board, commissions, boards, committees, officers, agents and employees, or Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Concurrently with the execution of this Agreement, Contractor shall furnish Owner with certificates of the insurance required hereunder and, with respect to evidence of commercial general liability automobile liability and fire insurance coverage, original endorsements:

a. Precluding cancellation or reduction in coverage before the expiration of thirty (30) days after Owner shall have received written notification of cancellation or reduction in coverage first class mail;

b. Providing that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability (cross liability endorsements);

c. Naming Owner, its Board, commissions, boards, committees, officers, employees and agents as additional insureds; and

d. Providing that Contractor's insurance shall be primary insurance relating to Contractor's work hereunder with respect to Owner, and further providing that any insurance or self-insurance maintained by Owner shall not be excess of Contractor's insurance and shall not be contributory with it.

17. PERFORMANCE BOND. Contractor shall provide, on the execution of this Agreement, a good and sufficient corporate surety bond in the penal sum of one hundred percent (100%) of amount bid, which bond shall be conditioned upon the faithful performance of all work required to be performed by Contractor under this Agreement. Said bond shall be liable for any and all penalties and obligations which may be incurred by Contractor under this Agreement. Acceptance of the bond by the Owner is subject to the review and approval of the bond by the Owner Counsel's office.

18. PAYMENT BOND. In addition to the faithful Performance Bond required herein, Contractor shall furnish a good and sufficient corporate surety bond in the penal sum of fifty percent (50%) of amount of bid. Acceptance of the bond by the Owner is subject to the review and approval of the bond by the Owner Counsel's office.

19. TIME DELAYS. If the Contractor is delayed in the performance of the Work due to changes ordered in the Work by the Owner or, by labor disputes, fire, unusual delay in transportation, unavoidable casualties, certified natural disasters, then the contract time may be extended by a Change Order for such reasonable time as both parties have mutually agreed upon**. Winter weather conditions are not a reason for a delay in the performance of work.** Contractor agrees, as a special inducement to the Owner, to make no claim for damages for delay in the performance of this Contract occasioned by the Owner's act, or omission to act, or anyone acting on the Owner' behalf; and Contractor agrees that any claim for delays by the Owner shall be exclusively and fully compensated for by an extension of time to complete performance of the Contract Work.

20. PAYMENT OF MATERIALMAN AND LABORERS. The Contractor shall make prompt payment of all claims for labor performed and materials furnished, used or consumed in the Work, including without limitation fuel, lumber, building materials, machinery, vehicles, tractors, equipment, fixtures, apparatus, tools, appliances, supplies, electric energy, gasoline and other motor oil, lubricating oil and greases, and the premiums for Worker's Compensation insurance. Contractor shall indemnify and hold Owner harmless for any and all losses or expenses from any and all mechanic's or material man's liens from being filed on any Owner' Property. Should any mechanic's liens or materials man's liens be filed by Contractor agrees to have any and all releases cleared and satisfied prior to any payments being released. The Owner shall, in its discretion notify Contractor and or Contractor's representative of any lien and require Contractor to release liens as a condition precedent to further monthly progress payments.

21. FINAL PAYMENT. Upon completion of all the Work included under the Contract, the Contractor shall submit its final invoice. The Owner will, at the expiration of thirty (30) days after delivery of the approved payment application and acceptance, pay, and hereby binds itself to pay the Contractor for accepted work, except such sum or sums of money as may have been already paid, and as may be lawfully retained under any of the provisions of the Agreement herein set forth. Prior to the final payment, Contractor will deliver to the Owner waivers of lien from all those who supplied labor, material, or services in completion of the Contract, together with satisfactory proof of full payment to such suppliers.

22. PAYMENTS AND COMPLETION. Any payment not made when duly due and owing to the Contractor shall bear interest at the rate of seven percent (7%) per annum from the date on which said amount is found to be due and payable until the date, which it is paid. Payments may be withheld on account of (1) Work defects not remedied, (2) claims filed, (3) failure of the Contractor to make payments properly to sub-Contractor's or for labor, materials or equipment, (4) damage of the Owner' property or neighboring property, or (5) failure to carry out the Work in accordance with this Agreement or any other breach of this Agreement.

23. CHANGE ORDERS. (a) Contractor understands that the Owner may modify or change the details of the Project so as to require the performance of extra Work. All change orders or modifications to the Agreement shall be in writing, signed by the Contractor and the Owner. If any changes are made, Contractor will perform the same but only after receiving a written order for such performance from the Owner, it being understood by Contractor that under no circumstances shall any extra Work be performed unless and until such written order is given to Contractor by the Owner. For any such extra Work performed, Contractor shall be compensated by the Owner at the unit prices set forth in the Contract Documents, or for unspecified items shall be negotiated by the Owner and Contractor in a commercially reasonable amount at the time the Change Order is signed. The Owner may at its election omit items from the Contract Work whenever the Owner deems it advisable to do so. And if the Owner shall notify Contractor of such omission, the omitted Work shall not be performed and there shall be deducted from the Contract price at the stated amounts set forth in the Contract Documents or for unspecified items, a commercially reasonable amount at the time the Change Order is signed to compensate for the omission.

    If any dispute shall arise at any time on a claim by Contractor that an item of Work is not Contract Work but extra Work, Contractor shall nevertheless perform the same if directed to do so by the Owner. However, to preserve Contractor's right to claim extra compensation for the disputed Work, Contractor must, prior to the commencement of the disputed Work, notify the Owner in writing that Contractor is performing the same under protest. The same procedure shall prevail as to any dispute as to a deduction for omitted Work (or as the case may be, to sustain Contractor's contention as to the appropriate compensation for extra Work that is not disputed to be an "extra" as long as the Contractor so notifies the Owner prior to commencement of the "extra") the notice in that circumstance to be given no later than ten (10) days after the tender of payment by the Owner to Contractor of the reduced amount (failing such written protest, it shall be deemed that Contractor has acquiesced to the Owner' contention that the Work is not extra but Contract Work or that the reduction (or amount of compensation for a non-disputed "extra" is correct, as the case may be). The giving of the protest provided for above, and giving it timely, are express conditions precedent to maintaining any remedial procedure, whether arbitration or otherwise, pertaining to Contractor's claim.

24. WARRANTIES AND CORRECTION OF WORK. Contractor warrants materials and workmanship to be in compliance with all applicable codes, ordinances and laws, constructed according to sound engineering and construction standards, in a workmanlike manner, and to be free from defects and liens at the time of installation and performance and as of the Completion Date. Contractor shall promptly perform such work and supply such materials necessary to correct, at its own expense, defects in materials and workmanship, and any Work failing to conform to the Agreement. In the event that Contractor fails to perform any Warranty Work within thirty (30) days of written notice by the Owner, or in the event that performance is not possible within such time period because of weather or other unavoidable delays and if the Contractor fails to provide a written undertaking to the Owner to perform such Warranty Work within a specific time period after notice, then the Owner shall be entitled to contract for the repairs or replacement of the defective work with a third party and Contractor agrees to reimburse the Owner for the costs of such Warranty Work promptly upon demand, together with interest at the rate provided herein on any sums unpaid under the Agreement and all costs of collection,

including reasonable attorney's fees, if such reimbursement is not made within thirty (30) days of written demand therefore by the Owner.

25. COOPERATION WITH CONSULTANT. Contractor understands and agrees that the Owner has hired Foth Infrastructure & Environment, LLC (Foth) as Construction Manager, Project Engineer, and Project Consultant. Contractor agrees to fully cooperate with the Licensed Site Professional (LSP), Foth, or any other such person or organization with regard to such oversight.

26. DEFAULT AND TERMINATION. The following shall be considered to be Events of Default under the Contract:

    a. Contractor's failure to achieve Substantial Completion or Final Completion of the respective categories of the ~~complete all~~ Work in accordance with the schedule provided for in the Agreement;

    b. Contractor's failure to perform the Work described in the Agreement in accordance with the scope of services and specifications provided;

    c. The dissolution, termination of existence, insolvency, or business failure of the Contractor;

    d. The appointment of a receiver for any property belonging to Contractor;

    e. Contractor's making of an assignment for the benefit of creditors, or the commencement of proceedings under a bankruptcy or insolvency law by or against the Contractor;

    f. The failure of the Contractor to obtain or maintain any insurance coverage required under the contract; and

    g. Contractor's failure to comply with any of the Agreement terms as set forth in the specifications plans and permits required.

    If an Event of Default is not corrected or remedied within five (5) working days of written notice of such default, then the Owner shall be entitled to terminate this Agreement without further notice. In such event, the Owner shall be entitled to contract for the completion of the Work to be performed under the Agreement by a third party and Contractor shall be responsible for all extra costs and damages, including liquidated damages, incurred by the Owner.

27. NOTICES. Notices to be given under this Agreement shall be in writing and may be personally delivered or sent by United States mail, first class postage prepaid, addressed to the respective party at the address set forth above, or to such other addresses that the parties shall designate in writing from time to time. Notices shall be deemed given when personally delivered or three (3) business days after mailing.

28. CAPTIONS. Any captions to or headings of the sections, paragraphs or subparagraphs of this Agreement are solely for the convenience of the parties, are not a part of this Agreement and shall not be used for the interpretation or determination of the validity of this Agreement or any provision hereof.

29. INCONSISTENCIES. To the extent that any term or provision of the Contractor's Bid is inconsistent with any term or provision contained in this document, the terms and

provisions contained in this document shall supersede and control this Agreement. To the extent that any term or provision in this agreement is found to be void or unenforceable, nevertheless any and all remaining terms shall remain in full force.

30. DEFINITIONS. Terms and phrases, which are defined in any part of this Agreement, shall have the defined meanings wherever used throughout this Agreement. The terms "hereunder" and "herein" and similar terms used in this Agreement shall refer to this Agreement in its entirety and not merely the article, section, sub-section, paragraph or sub-paragraph in which they are used.

31. STATE LAW. This Agreement and its application shall be governed by the laws of the Commonwealth of Massachusetts. Any and all disputes shall be brought in the trial court for **Barnstable County**, Massachusetts

32. ENTIRE AGREEMENT; INTEGRATION. This Agreement supersedes any and all other Agreements, either oral or in writing, and contains all of the covenants and agreements between the parties. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by either party or anyone acting on behalf of any party to this Agreement, which are not embodied herein, and that no other agreement, statement or promise not contained in this Agreement shall be valid or binding. Any modification of this Agreement will be effective only if it is in writing, signed by the party to be charged. If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way. Failure of any party hereto at any time to require performance by the other party of any provision of this Agreement shall not affect the right of such party to require performance of that provision, and any waiver by any party of any breach of any provision of this Agreement shall not be construed as a waiver of any continuing or succeeding breach of such provision, a waiver of the provision itself, or a waiver of any right under this Agreement. This Agreement may be executed in any number of counterparts by different parties hereto in separate counterparts, each of which when so executed and delivered shall be deemed to an original and all of which counterparts of this Agreement, taken together, shall constitute but one and the same instrument. Neither Contractor nor Owner shall assign, sublet or transfer any rights under or interest of this Agreement (including, but without limitation, moneys that may become due or moneys that are due) without the prior written consent of the other, except to the extent that any assignment, subletting or transfer is mandated by law or the effect of this limitation may be restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement. Contractor and Owner each is hereby bound, and the partners, successors, approved assigns, executors, administrators, and legal representatives of each are hereby bound to the other party to this Agreement and to the partners, successors, approved assigns, executors, administrators, and legal representatives of such other party, in respect to all covenants, agreements and obligations of this Agreement.

The documents listed below are part of the Contract Documents and are incorporated by this reference as if fully set forth herein. Contractor shall pay particular attention to any and all mitigation measures set forth in the permit documents and shall comply with same.

A. Contract Specifications
B. Contract Plans

C. Addendums
D. Notice to Bidders
E. Bidding Requirements
F. Notice of Award
G. Notice to Proceed
H. Agreement
I. Faithful Performance and Payment Bonds
J. General and Special Conditions
K. Submittals and Substitutions
L. Temporary Facilities and Controls
M. Environmental Protection
N. Health and Safety

33. UNDISPUTED PAYMENTS. The acceptance by Contractor of an undisputed payment made under the terms of the Contract shall operate as, and shall be, a release to Owner, and their duly authorized agents, from all claim of and/or liability to Contractor arising by virtue of the Contract related to those amounts. Disputed contract claims in stated amounts may be, specifically excluded by Contractor from the operation of the release.

34. SUBSTITUTION OF SECURITIES. The Contractor may substitute securities for the amounts retained by the Owner to ensure performance of the Contract in a form acceptable to the Owner(s).

35. STATEMENT UNDER PENALTY OF PERJURY. The representations made herein, including the Bidder's licensing information hereinafter furnished, are made under penalty of perjury. The undersigned understands that any bid not containing said licensing information, or containing any information, which is subsequently proven false, shall be considered non-responsive, and shall be rejected by Owner.

36. UNENFORCEABILITY. In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.

37. FINAL PAYMENT SUBJECT TO ACCEPTANCE. Final Payment is subject to acceptance of the Project by Owner.

38. FORCE MAJEURE. Either party's performance under this agreement is subject to acts of God, war (declared or undeclared), government regulation, terrorism, disaster, strikes, civil disorder, curtailment of transportation facilities, or similar occurrence beyond the party's control, making it impossible, illegal or commercially impracticable for one or both parties to perform its obligations under this agreement, in whole or in part. Either party may terminate this agreement without liability for any one or more of such reasons upon written notice to the other party within ten (10) days of such occurrence or receipt of notice of any of the above occurrences.

39. AUTHORIZATION. Each party by signing below hereby warrants that they are fully and duly authorized to enter into this agreement, do so freely and have read and understand the conditions and terms set forth herein along with any and all other documents forming the Contract Documents.

IN WITNESS WHEREOF, the respective parties hereto have hereinto set their hands and seals the day_____ of _____, 20____.

OWNER (TOWN OF CHATHAM)

ATTEST:

BY: _____ _____
(Name) (Title)

CONTRACTOR

ATTEST:

BY: _____ _____
(Name) (Title)

END OF SECTION

REQUEST FOR WRITTEN BIDS

The Town of Chatham is soliciting written bids pursuant to the provisions of G.L. c. 30, §39M(b) for the Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project, located at the Chatham Fish Pier, 45 Barcliff Avenue Ext, Chatham, MA 02633. The project generally consists of the installation of an anchored steel sheet pile bulkhead along the existing parking lot, south of the Fish Buildings and around the south jog. The steel sheet pile bulkhead will have a reinforced concrete cap with scuppers and a timber pile fender system. The project includes site work that includes, but is not limited to, parking area striping, site concrete retaining wall and sidewalk, ADA-compliant pedestrian walkway, installation of lamp posts, complete with post foundation, electrical scope, cathodic protection scope, MEP scope, refurbishing of existing rubber fender steel assemblies, and replacement of an existing timber deck and stairs adjacent to the Wharfinger Building.

Invitation for Bid documents are available electronically by contacting **Beth Schuh, via email at: beth.schuh@foth.com**, with the subject: "CHATHAM FISH PIER: IFB REQUEST" on or after **JULY 20, 2022**. Contract documents may also be examined at, but not removed or taken from the office of the Engineer, Foth Infrastructure & Environment, LLC, (Foth) located at 15 Creek Road, Marion, MA 02738 (tel: 508-748-0937) between the hours of 10:00 A.M. and 4:00 P.M., Monday through Friday.

The Town will receive bids at the Office of the Town Manager, 549 Main Street, Chatham, MA 02633, no later than **10:00 A.M., on AUGUST 12, 2022**, at which time all bids will be publicly opened and read aloud.

The Town reserves the right to waive any informalities and to reject any or all bids if it be in the public interest to do so in accordance with G.L. c. 30, §39M(b). A Faithful Performance Bond in the sum of 100% of the Contract Price and a Labor and Materials Payment Bond in an amount equal to at least 50% of the contract price, each of a surety company qualified to do business under the laws of the Commonwealth of MA, satisfactory to the Owner, will be required of the successful general bidder.

Every bid shall be accompanied by a bid deposit in the form of: 1) a bid bond, 2) cash, or 3) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of the bid deposit shall be 5% of the value of the bid.

The award of a contract is subject to the Owner's receipt of all regulatory approvals from local, state, or federal agencies. The award is also subject to availability of sufficient funding.

A **mandatory** Pre-bid Conference/Site Inspection will be held at **10:00 A.M., on JULY 27, 2022,** at project site, 45 Barcliff Avenue Ext, Chatham, MA.

SECTION 00050

NOTICE TO BIDDERS

Notice is hereby given that the Town of Chatham (Owner) will receive bids for furnishing all labor, materials, transportation, and services for the project known as:

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

The project is located on 45 Barcliff Avenue Ext. in Chatham, Massachusetts. Each bid to be in accordance with the plans, specifications, and other Contract Documents, now on file at the office of the Engineer, Foth Infrastructure & Environment, LLC (Foth), located at 15 Creek Road, Marion, MA 02738, where they may be examined.

A. Notice is also hereby given that all Bidders may be required to furnish a sworn statement of their financial responsibility, technical ability and experience before award is made to any particular Bidder.

B. The project generally consists of consists of installation of steel sheet pile bulkhead with reinforced concrete cap and timber fender piles, and replacement of the timber deck adjacent to the Wharfinger Building.

C. A **mandatory Pre-bid Conference and On Site Walk Through** will be performed by the Engineer on **JULY 27, 2022, at 10:00 A.M.** (local time) which will overview and acquaint the Bidder with the work set forth hereunder. All prospective bidders are highly encouraged to attend. If the bidder chooses not to attend this meeting, they shall waive any information provided at this meeting.

D. Invitation for Bid documents are available electronically by contacting **Beth Schuh**, via email at: **beth.schuh@foth.com**, with subject: "CHATHAM FISH PIER: IFB REQUEST" on or after **JULY 20, 2022**.

E. Each bid shall be submitted using Section 00310, Bid Form, and submitted to the Town of Chatham at the Office of the Town Manager, 549 Main Street, Chatham, MA 02633, on or before **AUGUST ~~12~~19, 2022, by 10:00 A.M** (local time). CASH WILL NOT BE ACCEPTED. Each bid shall be in a separate sealed envelope, addressed to the Town of Chatham.

F. Bids will be awarded based on the Base Bid only.

G. The Owner reserves the right to reject any or all bids or waive any informality in a bid.

H. No bidder may withdraw his/her bid for a period of 60 days after the date set for the opening thereof.

I. Bidders should be aware that all Contractors performing work for the Owners are required to present evidence of Workers' Compensation and Employers' Liability Insurance coverages; a certificate of insurance and copies of the information or declaration page(s) for Broad Form Comprehensive General Liability or Commercial General Liability, and Business Automobile Liability Insurance policies of not less than $1,000,000 for bodily injury or death arising out of any one occurrence and property damage limits of not less than $3,000,000 arising out of any occurrence for each type of coverage; as well as excess liability coverage in an amount to be no less than $3,000,000; as well as copies for said General Liability and Business Auto Liability Insurance Policies or an endorsement naming the Owners, its Board, and its officers, agents and employees as additional insureds, a standard cross-liability endorsement, an endorsement precluding cancellation or reduction in coverage before the expiration of 30 days after Owner has received written notification by first class mail from the insurance carrier of such cancellation or reduction, and an endorsement stating that the insurance afforded thereby to Owners and its officers, agents and employees shall be primary insurance to the full limits of the policy, and that if Owners and its officers and employees have other insurance against a loss covered by such a policy, such other insurance shall be excess insurance only. Contractor shall further procure for the Owner's benefit, course of construction insurance coverage for all risks of loss in an amount equal to the completed value of the project. The certificates of insurance and copies of information or declaration page(s) and of endorsements are to be reviewed and approved as to form by the Owners before work commences. The award of a contract is subject to the Owner's receipt of all regulatory approvals from local, state, and federal agencies.

J. The "Contract Documents" consist of this Notice to Bidders, Bid Form, List of Subcontractors, Non-Collision Affidavit, Bidding Requirements, Form for Sub Bid, Agreement, Performance Bond, Payment Bond, General Conditions, Special Conditions, plans and specifications, and any and all Attachments provided with any of the above listed documents. Contract Documents may also be examined at, but not removed or taken from, the office of the Engineer, Foth Infrastructure & Environment, LLC, (Foth) located at 15 Creek Road, Marion, MA 02738 (tel: 508-748-0937) between the hours of 10 a.m. and 4 p.m., Monday through Friday. Copies of Addenda will be provided to registered bidders.

K. Any questions pertaining to the plans, specifications, or any of the Contract Documents shall be submitted in writing to **Beth Schuh** at: **beth.schuh@foth.com.** To be given consideration, every question must be received by **AUGUST 1, 2022, at 5:00 P.M**. (local time). Any and all interpretations and any supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be provided to all persons on record as having received a complete set of Contract Documents at the respective addresses furnished for such purposes. Failure of any Bidder to receive any Addendum or interpretation shall not relieve such bidder from any obligation under his Bid as submitted.

L. A successful bidder shall provide proof of a current business license issued by the jurisdiction where the work of improvement is to be conducted upon award of the Contract.

M. The Contract will be awarded to the responsible contractor offering to perform the work at the lowest price. Under G.L. c, 30, §39M, "lowest responsible and eligible bidder" shall mean the bidder: 1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; 2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; 3) who shall certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; 4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and 5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149.

N. A successful bidder shall, within 10 days from the date of a request by the Owners, enter into a contract with the Owners, which contract shall be accompanied by a Performance Bond in a sum equal to at least 100% of the Contract price, a labor and materials Payment Bond in a sum equal to at least 50% of the Contract price, and all documents evidencing insurance coverage requested by the Owners - each of a surety company qualified to do business under the laws of the Commonwealth of MA, satisfactory to the Owner, will be required of the successful general bidder.

O. The Substantial Completion dates for the Project shall be:

APRIL 14, 2023	**Bulkhead**
APRIL 14, 2023	**Cathodic Protection**
MAY 26, 2023	**Lower Lot Sidewalk/Guardrail/Lighting**
MAY 26, 2023	**HM Deck/Barcliff Walk**

If the Owner accepts a bid, it anticipates issuing a “Notice to Proceed” on or about **SEPTEMBER 9, 2022**. After the “Notice to Proceed” is issued, the Contractor may begin procuring materials. Construction to begin on or about **DECEMBER 1, 2022.** The Final Completion for the overall Project shall be **JUNE 30, 2023.**

P. The prevailing wages to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers on the Project shall be established by the Prevailing Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provisions of M.G.L. Chapter 149, Section 26 to 27D, inclusive, as amended, which schedule is included as an attachment to the Invitation for Bids.

Q. All procurement procedures will be in accordance with the Massachusetts General Laws Chapter 149, sections 26-27D and General Laws Chapter 30, sections 39M, which are incorporated herein by reference.

SECTION 00100

BIDDING REQUIREMENTS

1.1 SECURING DOCUMENTS

Invitation for Bid documents are available electronically by contacting **Beth Schuh, via email at: beth.schuh@foth.com**, with subject: "CHATHAM FISH PIER: IFB REQUEST" on or after **JULY 20, 2022**. Contract documents may also be examined at, but not removed or taken from the office of the Engineer, Foth Infrastructure & Environment, LLC, (Foth) located at 15 Creek Road, Marion, MA 02738 (tel: 508-748-0937) between the hours of 10 a.m. and 4 p.m., Monday through Friday.

1.2 BID REQUIREMENTS

In order to receive consideration, bids shall be prepared and submitted in conformance with these requirements and instructions:

1. Bidders shall carefully examine the site of the proposed work and the Contract Documents. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, and as to the character, quality and quantities of work to be performed, materials to be furnished, and as to the requirements of these Contract Documents.
2. Specific data required in regard to the location of existing public utility companies' pipes, conduits and structures as required to perform the work shall be obtained by the Contractor from the respective public utility companies.
3. Bids shall be prepared and submitted only on the forms supplied by the Owner and shall be signed by the bidder. Contractors must complete all bid items; no incomplete bids will be accepted. Written amounts shall prevail over numbers. If the unit price and the total amount named by the bidder for any item do not agree, the unit price shall govern. The Bidder Certification, fully completed and executed by the bidder, shall accompany the bid.
4. If the bid is by an individual, his/her name and address shall be shown; if by a firm, the firm or partnership name shall be shown; or if by a corporation, the bid shall show the name and the State under the laws of which the corporation is chartered and addresses of the President and of the Secretary and/or Treasurer. All bids shall be signed in long-hand and executed by a principal duly authorized to make contracts. Verbal or telephonic bids or modifications will not be considered. Bidders shall include with their bid a completed Certificate of Vote of Authorization. Such forms are included with the bid documents. Electronic bids will not be accepted.
5. Bids shall not contain any recapitulation of the work to be done. Alternative bids will not be considered, unless called for. The completed form shall be without interlineations or alterations.
6. All bids shall be presented to the Owner under sealed cover, and plainly marked on the outside with the title of the work being proposed and the name of the bidder. It is the sole responsibility of the bidder to ensure that his/her bid is

received by the Owner prior to the time specified for receipt of bids. Any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened and will be deemed unresponsive and thus rejected by the Owner(s).

7. Every bid shall be accompanied by a bid deposit in the form of: 1) a bid bond, 2) cash, or 3) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of the bid deposit shall be 5% of the value of the bid.

1.3 BID QUANTITIES

Refer to Section 00310, Bid Form.

1.4 CONTRACTOR'S LICENSE

Prior to submitting bids, bidders shall be licensed (if applicable) as contractors under the laws of the Commonwealth of Massachusetts to perform the type and class of work contemplated by the Contract Documents.

Subcontractors of bidding general contractors shall be licensed under the laws of the Commonwealth of Massachusetts to perform the type and class of work contemplated by the Contract Documents.

1.5 WITHDRAWAL OF BID

Any bid may be withdrawn by the bidder prior to, but not after, the time fixed for the opening of bids, either personally or by telegraphic or written request. The withdrawal of a bid shall not prejudice the right of a bidder to file a new bid. No bid may be withdrawn for a period of 60 calendar days after the bid opening. Any withdrawal after that time shall be in writing and shall not be effective until received by Owner.

1.6 INTERPRETATION OF DOCUMENTS AND PLANS

If any person contemplating submitting a bid for the proposed contract is in doubt as the true meaning of any part of the plans, specifications, or other Contract Documents, or finds discrepancies in, or omissions from the plans or specifications, he/she may submit a written request for an interpretation or corrections thereof to **Beth Schuh, via email at: beth.schuh@foth.com**, by **5:00 P.M. (local time), on AUGUST 1, 2022**. The person submitting the request will be responsible for its prompt delivery. Any interpretation or corrections of the proposed documents will be made only by addendum duly issued and a copy of such addendum will be mailed, emailed, or delivered to all persons known by the Project Engineer to have received a set of Contract Documents. Neither the Owner nor the Project Engineer will be responsible for any other explanations or interpretations of the proposed Contract Documents.

1.7 ADDENDA

The Contract Documents are subject to revision prior to the time fixed for opening bids by submitting the revision, in writing, to all persons who are known by Owner to have secured such documents for purposes of submitting bids. All addenda issued shall become an integral and integrated part of the contract documents and shall be included in any bid submitted. Bidders are responsible for verifying that they have received all addenda.

1.8 OPENING OF BIDS

Written Bids for the Contract will be received by the Town of Chatham's Office of the Town Manager, 549 Main Street, Chatham, MA 02633, on or before **10:00 A.M. (local time), on AUGUST 12, 2022,** and at that time and place will be publicly opened and read aloud.

1.9 AWARD OF CONTRACT OR REJECTION OF BIDS

Bids will be awarded based on the Base Bid only.

Bids may be rejected if they show any alterations of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. The Owner reserves the right to waive any irregularities in the bids as received.

The Owner reserves the right to reject any or all bids. More than one bid from an individual, firm or partnership, corporation, or association, under the same or different name, will not be considered. Reasonable grounds for believing that a bidder is interested in more than one bid for work contemplated, will cause the rejection of all bids in which said bidder is interested. Bids in which prices are obviously unbalanced may be rejected by the Owner.

1.10 COMPETENCY OF BIDDERS

Bidders shall furnish evidence of financial competency, organizational ability, and experience to enable him/her to undertake and successfully complete the work to be performed, including past performance which shall include past performance on projects performed for the Owner.

1.11 BONDS AND INSURANCE

Bidder's attention is directed to the provisions of the Contract Documents relating to the requirements of contract bonds. The successful bidder, simultaneously with execution of the Agreement, will be required to furnish a faithful Performance Bond in an amount equal to at least 100% of the contract price, and a labor and material Payment Bond in an amount equal to at least 50% of the contract price; both said bonds to be secured from a corporate surety admitted in the Commonwealth of Massachusetts and shall be satisfactory to the Owner.

Bidder's attention is further directed to the provisions relating to the Contractor's insurance requirements, and the prescribed form of Bidder's Bond, Agreement, Contract Bonds, and insurance documentation.

1.12 CONTRACT PROGRESS SCHEDULE

Bidder's attention is directed to the provisions of the Contract Documents relating to the requirement for the submission of a contract progress schedule after the receipt of the Notice to Proceed.

1.13 LEGAL RELATIONS AND RESPONSIBILITIES

Bidder's attention is specifically directed to the provisions of the General Conditions concerning laws to be observed, hours of labor, minimum wages, employment of labor, safety codes, patents, taxes, and other matters of concern to the bidder.

The prevailing wages to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers on the Project shall be established by the Prevailing Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provisions of M.G.L. Chapter 149, Section 26 to 27D, inclusive, as amended, which schedule is included as an attachment to the Invitation for Bids.

1.14 SUBCONTRACTORS

Each bidder must state in his/her bid the subcontractors he/she intends to employ to perform any work or labor or render service to the Contractor for the construction of the work or improvement in an amount in excess of one half of one percent of the Contractor's bid. This statement shall include the name of each subcontractor, the location of his/her place of business, and the nature of the work to be performed by him/her.

END OF SECTION

Bond No. 107631836

SECTION 00201

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that, WHEREAS, Town of Chatham ("Owner"), Commonwealth of Massachusetts, has awarded to MAS Building & Bridge, Inc., hereinafter designated as the "Principal", a contract (the "Contract"), the terms and provisions of which Contract are incorporated herein by reference, for constructing the following project:

CHATHAM FISH PIER – BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM, MA

WHEREAS, said Principal is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract;

NOW, THEREFORE, we, the Principal, and Travelers Casualty and Surety Company of America, as surety, are held and firmly bound unto Owner, in the penal sum of Three Million Six Hundred Forty Five Thousand Two Hundred Forty Seven and 00/100 Dollars ($ 3,645,247.00), lawful money of the United States, being one hundred percent (100%) of the Contract amount, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and will truly keep and faithfully perform the covenants, conditions, and agreements in the said Contract and any alterations made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless, Owner, its Board, officers, employees and agents, as therein stipulated, then this obligation shall be null and void; otherwise it shall be and remain in full force and virtue.

As a condition precedent to the satisfactory completion of the said Contract, the above obligation shall hold good for a period of one (1) year after the completion and acceptance of the said work, during which time if the above bounded Principal, his or its heirs, executors, administrators, successors or assigns shall fail to make full, complete and satisfactory repair and replacements or totally protect the said Owner from loss or damage made evident during said period of one (1) year from the date of acceptance of said work, and resulting from or caused by defective materials or faulty workmanship, in the prosecution of the work done, the above obligation shall be and remain in full force and virtue.

And the said Surety, for value received, hereby stipulates and agrees to waive any consent to change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this bond; and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work, or to the Specifications.

In the event Owner, or its successors or assigns, shall be the prevailing party in an action brought upon this bond, then, in addition to the penal sum hereinabove specified, we agree to pay to the said Owner, or its successors or assigns, a reasonable sum on account of attorney's fees in such action, which sum shall be fixed by the court.

IN WITNESS THEREOF, the above bounden parties have executed this instrument under their seals this day of 15 September, 20 22, the name and corporate seal of each corporate party being hereto affixed, and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Principal
MAS Building & Bridge, Inc.
By: Michael Socci
Michael Socci

18 Sharon Avenue, Norfolk, MA 02056
Address

Witness as to Principal
M Magee

Travelers Casualty and Surety Company of America
Surety

ATTEST:
G C
Witness to Surety

Laurie Rothwell
Attorney-in-Fact Laurie Rothwell

(Seal)
If **Contractor** is partnership, all partners must execute **BOND**.

END OF SECTION

Bond No. 107631836

SECTION 00202

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that we, MAS Building & Bridge, Inc.

as Principal, and, Travelers Casualty and Surety Company of America organized and existing under the laws of the Commonwealth of Massachusetts, and authorized to execute bonds and undertaking as sole surety, as Surety, are held and firmly bound unto any and all persons named whose claim has not been paid by the Contractor, company or corporation in the aggregate total of One Million Eight Hundred Twenty Two Thousand Six Hundred Twenty Three and 50 /100 Dollars ($ 1,822,623.50) (being 50% of the Contract amount) for the payment whereof, well and truly to be made, said Principal and Surety bond themselves, their heirs, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH that, whereas the above with Town of Chatham ("Owner") to do the following work, to-wit:

CHATHAM FISH PIER – BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM, MA

NOW, THEREFORE, if the above-bounden Principal or his subcontractors fail to pay any of the persons named or unnamed , or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and his subcontractor pursuant to the Unemployment Insurance Code of the Commonwealth of Massachusetts, with respect to such work and labor, the surety will pay for the same, in the amount not exceeding the sum specified in this bond, and also, in case suit is brought upon this bond, a reasonable attorney's fee, to be fixed by the Court.

This bond shall inure to the benefit of any person named or who has provided goods or services so as to give a right of action to them or their assignees in suit brought upon this bond.

And the said Surety, for value received, hereby stipulates and agrees to waive the provisions regarding consent to change, extension of time alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this bond; and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract, or to the work, or to the Specifications.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this 15 day of September 20 22 the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Principal
MAS Building & Bridge, Inc.
By: Michael Socci

Witness as to Principal
M Mungar

18 Sharon Avenue, Norfolk, MA 02056
Address

Travelers Casualty and Surety Company of America
Surety

ATTEST:
G C
Witness to Surety

Laurie Rothwell
Attorney-in-Fact Laurie Rothwell

(Seal)
If **Contractor** is partnership, all partners must execute **BOND**.

END OF SECTION

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **LAURIE ROTHWELL** of **BOSTON**, **Massachusetts**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 15 day of September 2022

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

SECTION 00310

BID FORM

Dear Owner:

The undersigned, as a bidder, declares that he/she has carefully examined the location of the proposed work, the bid form of Agreement, and Contract Documents, and he/she proposes and agrees that, if this bid is accepted, he/she will contract with the Owner to provide all necessary machinery, tools and apparatus, to perform all the work and furnish all the materials specified in the Contract Documents in the manner and time therein set forth required to complete the following project:

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT
TOWN OF CHATHAM, MA

The work to be performed pursuant to this bid shall be in strict conformity with the Contract Documents prepared therefore by the Owner, copies of which are on file in the office of the Engineer, which Contract Documents are hereby made a part thereof, and incorporated by this reference as if fully set forth herein.

The bidder proposes and agrees to contract with the Owner to furnish and perform all of the above-described work, for the following price: $3,645,247.00

three million six hundred forty five thousand two hundred forty seven and zero cents U.S. Dollars

A breakdown of the Contract price is attached hereto marked Exhibit "A" and incorporated by this reference.

Owner reserves the right to add or delete items from this list. The price of the contract shall be adjusted accordingly. The price set forth herein includes any and all costs and expenses of whatever source or nature for the work to be performed pursuant to the terms and conditions of the Contract Documents.

If awarded the contract, the undersigned hereby agrees to sign said contract and to furnish the necessary bonds within ten (10) days after being requested to do so by the Owner.

The undersigned has examined the location of the proposed work and is familiar with the Contract Documents and the local conditions at the place where the work is to be done.

The undersigned has carefully checked all of the above figures and understands that the Owner will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

The undersigned hereby certifies that this bid is genuine, and not sham or collusive, or made in the interest or in behalf of any person not herein named, and that the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid or any other person, firm or corporation to refrain from bidding and that the undersigned has not in any manner sought by collusion to secure for himself or herself an advantage over any other bidder.

The undersigned has satisfied him/herself by personal examination of the location of proposed work, and by such other measures as they may prefer, as to the actual conditions and requirements of the work, and shall not, after submission of the bid, dispute, complain or assert that there was any misunderstanding in regard to the nature or amount of the work to be done.

Contractor acknowledges receipt of Addenda Nos. 1 **through** 3 **.**

Contractor : MAS Building & Bridge, Inc.
Signature : Michael Socci
Signed by : Michael Socci
Title : President
Address: 18 Sharon Avenue
Norfolk, MA 02056

Telephone : 508-520-2277
Facsimile : 508-520-2276

Dated this 19th day of August , 20 22
License No. CS-081265 Class(es) Const. Supervisor
Exp. Date: 10/12/2023

See attached copy.

NOTE: Bidders must hold current licenses as required under the laws of the Commonwealth of Massachusetts and all Federal Statutes.

EXHIBIT "A"

Bidder's Name: MAS Building & Bridge, Inc.

Date: 8/19/2022

BASE BID

ITEM NO.	WORK ITEM DESCRIPTION	BID PRICE (LUMP SUM)
1	Mobilization	$ 125,000.00
2	Selective demolition and disposal	$ 140,000.00
3	Excavation and backfilling	$ 120,000.00
4	Furnish and install steel sheet pile and steel wale	$ 1,511,247.00
5	Furnish and install sheet pile anchor system (ground anchors and tie rods)	$ 250,000.00
6	Furnish and install steel framing for concrete deck	$ — PER ADDENDA
7	Furnish and install reinforced concrete cap	$ 115,000.00
8	Furnish and install reinforced concrete deck	$ 150,000.00
9	Furnish and install bituminous pavement	$ 40,000.00
10	Furnish and install timber fender	$ 205,000.00
11	Furnish and install 6 access steel ladders	$ 25,000.00
12	Reinstall gangway	$ 20,000.00
13	Furnish and install timber deck adjacent to Wharfinger Building, complete with concrete foundation	$ 170,000.00
14	Furnish and install vehicular guard along the west and south side of the parking lot pedestrian walkway, with swale.	$ 35,000.00

EXHIBIT "A" (continued)

Bidder's Name: MAS Building & Bridge, Inc.

Date: 8/19/2022

BASE BID (continued)

ITEM NO.	WORK ITEM DESCRIPTION	BID PRICE (LUMP SUM)
16	Electrical Scope (not limited to) Furnish and install junction boxes Remove/relocate pole bases Furnish and install light posts and fixtures Furnish and install electric service equipment Furnish and install lighting along site retaining wall Furnish and install miscellaneous electrical conduits	$ 250,000.00
17	Cathodic Protection System Scope (not limited to) Furnish and install aluminum anodes	$ 175,000.00
18	Plumbing Scope (not limited to) Furnish and install transition from copper to CPVC Furnish and install CPVC piping run Furnish and install valve box	$ 45,000.00
19	Furnish and install parking lot striping	$ 4,000.00
20	Remove, re-furbish, and reinstall 31 rubber fender system. • Assume one of the two connecting brackets will be replaced. (Engineer to confirm) Assembly shall be cleaned, and a galvanizing compound applied after welding bracket	$ 265,000.00
	TOTAL BASE BID	$ 3,645,247.00

EXHIBIT "A" (continued)

Bidder's Name: MAS Building & Bridge, Inc.

Date: 8/19/2022

ALTERNATES

ITEM NO.	WORK ITEM DESCRIPTION	BID PRICE (LUMP SUM)
ALT-1	Furnish and install concrete site retaining wall with sidewalk along Barcliff Avenue Extension. Furnish and install low level lighting and associated wiring within the retaining wall. Alternative installation for the light pole assembly located at the top of the Barcliff Avenue Extension (northwest end of retaining wall), including alternative light pole base and any alternative wiring requirements.	$ 724,000.00

Seven hundred twenty four thousand and zero cents

EXHIBIT "A" (continued)

Bidder's Name: MAS Building & Bridge, Inc.

Date: 8/19/2022

UNIT PRICES

ITEM NO.	WORK ITEM DESCRIPTION	BID PRICE (EACH)
UP-1	Furnish and install second bracket to rubber fender system as indicated by Engineer	$5,000.00

five thousand dollars and zero cents

LIST OF SUBCONTRACTORS

Any person making a bid or offer to perform the work, shall in his or her bid or offer, set forth: (a) The name and location of the place of business of each subcontractor who will perform work or labor or render service to the prime Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the Commonwealth of Massachusetts who, under subcontract to the primary Contractor specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime Contractor's total bid; (b) The portion of the work which will be done by each such subcontractor under this act. The prime Contractor shall list only one subcontractor for each such portion as defined by the prime Contractor in his or her bid.

Any item of work, which does not set forth a designated Sub-Contractor will be done by the Prime Contractor.

Name & Address	**Portion of Work**
PLEASE SEE ATTACHED LIST.	

Michael Socci

(Prime Contractor)

MAS Building & Bridge, Inc.

Signed by: Michael Socci

Title: President

List subject to change, pending execution of issued subcontracts.

LIST OF SUBCONTRACTORS - *Attachment*

Name & Address	**Portion of Work**
Semper Diving & Marine 100 Terminal St, Charlestown, MA 02129	Diving/Anodes
Hub Foundation 139 Billerica Road, Chelmsford, MA 01824	Drilling
Dagle Electrical Construction Corp. 68 Industrial Way, Wilmington, MA 01887	Electrical
Premier Fence LLC 1010 Turnpike St, Canton, MA 02021	Guardrail
R J Forbes Painting Contractors Inc. 228 Oneil Blvd #4216, Attleboro, MA 02703	Painting
Don Martin Corporation 475 School St # 6, Marshfield, MA 02050	Paving

List is subject to change, pending execution of issued subcontracts.

NON-COLLUSION AFFIDAVIT

(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Commonwealth of Massachusetts

County of Norfolk

Michael Socci, being first duly sworn, deposes and says that he or she is President of MAS Building & Bridge, Inc., the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation, that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the Owner awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Michael Socci ‹Signature

(NOTARY) I, Dina Bagley as a notary public certify under the pains and penalties of perjury that I witnessed the signature of the aforementioned signatory on behalf of the Bidder, and the individual's identity was verified, on this date: August 19, 20 22. My commission expires on:

OR

(CORPORATE CLERK) I, _____ as corporate clerk of the Bidder/Contractor certify under the pains and penalties of perjury that I witnessed the signature of the aforementioned signatory and the signatory is authorized to execute contracts and other instruments and legally bind the Bidder/Contractor. This date: _____, 20 _____.

AFFIX NOTARY SEAL OR CORPORATE SEAL HERE:

DINA M BAGLEY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires On
November 11, 2027

BIDDER CERTIFICATIONS

1.01 GENERAL

A. The undersigned Bidder certifies to the Owner, as set forth in sections 1 through 12 below.

1. **Certificate of Non-Discrimination**
   By my signature hereunder, on behalf of the Bidder making this Bid, the undersigned certifies that there will be no discrimination in employment with regard to race, color, religion, gender, sexual orientation, or national origin; that all federal, state, and local directives and executive orders regarding non-discrimination in employment will be complied with; and that the principle of equal opportunity in employment will be demonstrated positively and aggressively.

2. **State of Convictions**
   By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, unappealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

3. **Previous Disqualifications**
   By my signature hereunder, I hereby swear, under penalty of perjury, that the below-indicated Bidder, any officer of such Bidder, or any employee of such Bidder who has a proprietary interest in such Bidder, has never been disqualified, removed or otherwise prevented from bidding on, or completing a Federal, State, or local government project because of a violation of law or a safety regulation except as indicated on the separate sheet attached hereto entitled "Previous Disqualifications." If such exceptions are attached, please explain the circumstances.

4. **Certification of Workers Compensation Insurance**
   By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of **Title 28-29 Labor and Labor Relations of the General Laws of Massachusetts** which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that law, and I will comply with such provisions before commencing the performance of the Work of this Contract.

5. **Certificate of Non-Collusion:**
   In accordance with Massachusetts General Law Chapter 30, Section 39M: Undersigned certifies under penalties of perjury that this bid or bid is in all respects bona fide and fair and has been made and submitted in good faith without collusion or fraud with any other person. As used in this certification, the work "person" shall mean any natural person, joint venture, business, partnership, corporation, union, committee, club, organization, group of individuals, or other business or legal entity.

6. **Conflict of Interest:**
   The bidder must certify that no official or employee of the Town of Chatham has a financial interest in the bidder's bid or executed Contract, or in the expected profit to arise therefrom, unless there has been compliance with the provisions of MGL C 43,

Section 27 (Interest in Public Contracts by Public Employees) and of provisions of MGL C 268A, Section 20 (Conflict of Interest Law).

7. **Indemnification Agreement:**
The contracted Bidder hereby indemnifies and shall at all times save and hold harmless the Town of Chatham, and its officers, attorneys, employees, and agents from and against any and all claims (including workers' compensation and wage claims), demands, suits, actions, liabilities, damages, penalties, judgments, and costs and expenses, including without limitation the costs and expenses of litigation, of or by anyone that in any way is caused by, arises out of, or is occasioned by the performance, activities, operations, conducts, negligence, or omissions of the contracted Bidder, or any of its agents or employees.

8. **Taxes Paid:**
Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A, the undersigned certifies under the penalties of perjury that, to the best of my knowledge and belief, all Massachusetts State Tax returns and all Massachusetts State Taxes required under law have been paid, and I have complied with the reporting of employees and contractors, and withholding and remitting of child support.

9. **Right to Know Law:**
Bidder agrees to submit a Safety Data Sheet (SDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to MGL Chapter 111F, Sections 8, 9, 10 and the regulations contained in 454 CMR 21.06 when deliveries are made; and agrees to deliver all containers properly labeled pursuant to MGL Chapter 111F, Section 7 and 454 CMR 21.05. Failure to submit an SDS and/or label on each container will place the vendor in non-compliance with the Purchase Order and/or Contract. Failure to furnish SDS and/or labels on each container may result in civil or criminal penalties. All vendors furnishing substances or mixtures subject to MGL Chapter 111F or 454 CMR are cautioned to obtain and read the Law and Rules and Regulations. Failure to comply with these requirements could result in cancellation of Contract.

10. **Foreign Corporation:**
In Accordance with Massachusetts General Laws Chapter 30, Section 39L, any foreign contractor or subcontractor is required to provide a certificate from the Secretary of State stating that such corporation has complied with Massachusetts General Laws Chapter 181, Section 3 and 5, including the date of compliance. Further, bidder's attention is called to Massachusetts General Laws Chapter 268A, in connection with which the bidder is requested to submit the information requested in the signature section of this document.

11. **Compliance:**
The undersigned is in compliance with all of the provisions and shall remain in full compliance with the provisions for the life of any Contract resulting from this solicitation. Bidder is qualified to perform any such Contract and possesses, or shall obtain, all requisite licenses and/or permits to complete performance; shall maintain all unemployment, workers' compensation, and personal liability insurance policies sufficient to cover its performance under any such Contract; and shall comply with relevant prevailing wage rates and employment laws. To the best of its knowledge

and belief has paid all local taxes, tax titles, utilities, motor vehicle excise taxes, water and wastewater bills in Massachusetts as required by Law.

12. **Affirmative Action Plan:**
In witness whereof, the bidder certifies under the pains and penalties of perjury, that as an employer, it is committed to non-discrimination in employment and if selected to execute contracts with the Commonwealth of Massachusetts and/or the Town of Chatham shall also be committed to procure commodities, services and supplies from certified minority and women-owned business enterprises, businesses owned by individuals with disabilities and businesses owned and controlled by socially or economically disadvantaged individuals, both in the performance of contracts with the Commonwealth of Massachusetts and/or the Town of Chatham and in the performance of its business generally, as certified by the execution of this certification by an authorized signatory of the bidder as of the last date indicated below.

13. **Bidder Qualifications**
Bidders must be pre-qualified by the Massachusetts Dept. of Transportation (MassDOT) Highway Division in MARINE CONSTRUCTION to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by MassDOT prior to the opening of Proposals.

1.02 INSURANCE AND BOND VERIFICATION

A. The undersigned Bidder Certifies that he has the following insurance coverage:

1. **Workers' Compensation:**
Carrier: New Hampshire Insurance Company

Address: 1271 Ave of the Americas, Floor 41, New York, NY 10020

Phone and Fax: 212-770-7000 866-420-1404

Policy Number: WC 39326840

2. **General Liability:**
Carrier: National Union Fire Insurance

Address: 1271 Ave of the Americas, Floor 35, New York, NY 10020

Phone and Fax: 877-399-6442

Policy Number: GL 9925704

Policy Limits: $ $4M and $2M

A.M. Best Rating: A

3. **Automotive Liability:**
Carrier: National Union Fire Insurance

Address: 1271 Ave of the Americas, Floor 35, New York, NY 10020

Phone and Fax: 877-399-6442

Policy Number: CA 4607361

Policy Limits: $ $2M

A.M. Best Rating: A

4. **All-risk Course of Construction:**
Carrier: TBD

Address: Project Specific - Have Preliminary Indications

Phone and Fax: Will Bind if Awarded

Policy Number:

Policy Limits: $

A.M. Best Rating:

5. **Excess Liability (if applicable):**
Carrier: Allied World National Assurance

Address: 199 Water Street, New York, New York 10038

Phone and Fax: 646-794-0500

Policy Number: 0310-8512

Policy Limits: $ $10M (option to go to $25M)

A.M. Best Rating: A

A. Additional endorsements to insurance are required for the following coverages:

1. **Additional Insured:**
It is hereby understood and agreed that Additional Insured for General Liability and Auto Liability Coverage shall include: The Owner, its Board, commissions,

committees, boards, officers, employees, and agents as additional insured as respects to work done by Named Insured.

2. **Primary Coverage**
With respect to claims arising out of the operations of the Name Insured, such insurance as afforded by the policy is primary, and is not additional to or contributing with any other insurance carried by or for the benefit of the above Additional Insureds.

3. **Cross Liability/Severability of Interest**
The naming of more than one person, firm or corporation as insured under this policy shall not, for that reason alone, extinguish any rights of the insured against another, but this endorsement, and the naming of multiple insureds, shall not increase the total liability of the Company under this policy.

4. **Notice of Cancellation for General Liability and Auto Liability:**
It is understood and agreed that in the event of cancellation of or reduction in the policy for any reason, including non-payment of premium, 30 days' written notice will be sent to the Project Engineer.

B. The name of the Bidder's Bonding Company is as follows:

Carrier/Surety: Travelers Casualty and Surety Company of America

Address: One Tower Square, Hartford, CT 06183

Phone and Fax: 866-336-2077

A.M. Best Rating: A++

1.03 RELEVANT EXPERIENCE

A. List Bidder's comparable projects completed by Bidder in the last three years, with Owner contact information. (Attach separate sheets if necessary). See attached list. Yellow highlighted for similar.

B. List any projects where Bidder has been default terminated by an Owner or has been involved in arbitration/litigation with an Owner on a construction project. Provide Owner contact information:

N/A

1.04 SAFETY & EXPERIENCE RECORD

A. The following statements as to the safety and experience of Bidder are submitted, and Bidder guarantees the truthfulness and accuracy of the information:

1. **Safety**

   a. List Bidder's Interstate Experience Modification Rate for the last three years.

2019:	0.74
2020:	0.75
2021:	0.78
2022:	0.76

   b. State the name of Bidder's safety engineer/manager or Site Safety Officer:

Michael Quinn, ASP (Safety Supervisor), RJ Fournier (Safety Specialist)

1.05 CONTRACTOR EXPLANATION OR NOTES ON ANY OF THE ABOVE:

N/A

1.06 LIST OF ALL EQUIPMENT TO BE USED ON THIS PROJECT (include year, type, size and condition):

Please see attached list.

1.07 CONTRACTOR'S NARRATIVE ON CONSTRUCTION SCHEDULE AND METHODOLOGY:

(Please describe in as much detail as possible how your firm/company will proceed with the work as described within the contract documents. Attach or utilize additional sheets if necessary. The Construction Schedule will be requested upon the award of the Contract).

Please see attached.

BIDDER CERTIFIES, UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE **COMMONWEALTH OF MASSACHUSETTS**, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND AUTHORIZES OWNER AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

BIDDER: MAS Building & Bridge, Inc.
(COMPANY NAME)

BY: Michael Socci
NAME

President
TITLE

BY: Michael Socci
SIGNATURE

8/19/2022
DATE

NOTE: This bid must bear the written signature of the Bidder. If the Bidder is a partnership, the bid must be signed by a partner. If the Bidder is a corporation, the bid must be signed by a duly authorized officer or agent of such corporation.

CERTIFICATE OF VOTE OF AUTHORIZATION

I, Clerk of MAS Building & Bridge, Inc.
(Name of Corporation)

the principal office of which is located at:
18 Sharon Avenue, Norfolk, MA 02056
(Address of Principal Office)

do hereby certify that a duly authorized meeting of the Board of Directors of the above-named corporation held on: 8/16/2022, at which all Directors were
(Date)

present or waived notice, it was VOTED that:

Michael Socci
(Name)

President of this corporation be and hereby is authorized to
(Office)

execute contracts, bonds, and other instruments in the name and behalf of said corporation and affix its corporate seal thereto, and such execution of any contract or other instrument or obligation in this corporation's name on its behalf by the above-named officer shall be valid and binding on this corporation.

I hereby certify that I am the Clerk of this corporation and that the above-named officer was duly elected to the above-stated office and that the above-stated VOTE has not been amended or rescinded and remains in full force and effect as of the date of this contract executed with the Town of Chatham.

A true copy,

Attest: Michael Socci
Michael Socci, Clerk

(Corporate Seal)

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

MAS Building and Bridge, Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

18 Sharon Avenue

Requester's name and address (optional)

6 City, state, and ZIP code

Norfolk MA 02056

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

0	2	–	0	6	0	7	6	8	0

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ Michael Bocci Date ▶ **01/01/2022**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting,* later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,

2. You do not certify your TIN when required (see the instructions for Part II for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code,* later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships,* earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code,* later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester,* later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.SSA.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/Businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. Go to *www.irs.gov/Forms* to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to *www.irs.gov/OrderForms* to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code,* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor[2]
5. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee[1] The actual owner[1]
6. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity[4]
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships,* earlier.

***Note:** The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at *spam@uce.gov* or report them at *www.ftc.gov/complaint*. You can contact the FTC at *www.ftc.gov/idtheft* or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see *www.IdentityTheft.gov* and Pub. 5027.

Visit *www.irs.gov/IdentityTheft* to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

MassDOT
Massachusetts Department of Transportation
Highway Division

MAS BUILDING & BRIDGE INC
18 SHARON AVE
NORFOLK, MA 02056-1530

July 28, 2022
Prequalification Certificate No M189-20

Dear Contractor:

In accordance with the Regulations Governing Prequalification of Contractors, as approved by the Massachusetts Department of Transportation Prequalification Committee, you are hereby notified that the following class(es) of work and Single Contract Limits (if applicable) have been assigned to you as of the date of this letter. If in the opinion of the Committee you failed to submit proper documentation or have not demonstrated the ability to perform all classes of work requested then you were denied Prequalification Status for that class(es) of work.

Qualified Class of Work	Limit Amount	Qualified Class of Work	Limit Amount
Bridge - Construction	$12,600,000.00	Bridge - Culverts	$12,600,000.00
Bridge - Deck Repairs	$12,600,000.00	Bridge - Joints	$12,600,000.00
Dam Construction	$4,000,000.00	Demolition	$1,300,000.00
Drainage	$446,000.00	Highway - Bike Paths	$5,400,000.00
Highway - Construction	$5,100,000.00	Marine Construction	$7,110,000.00
Sewer and Water	$446,000.00	Waterways	$5,400,000.00

Bonding Capacity $100,000,000.00 **Bond Single Limit** $60,000,000.00 **Expiration Date** 7/31/2023

The class(es) of work, Single Contract Limits and Aggregate Bonding Capacity set forth will continue in effect until July 31, 2023 unless previously modified or rescinded in accordance with the Regulations, or by law. In order to be continuously eligible to bid on projects to be undertaken for this Department, your next Prequalification Statement should be submitted at least 30 days prior to expiration of this Certificate. If there are any questions or concerns, contact the Prequalification Department at (857) 368-8660 or email to prequal.r109@state.ma.us.

Very truly yours,
THE PREQUALIFICATION COMMITTEE

Theressa Ward Digitally signed by Theressa Ward
Date: 2022.07.28 15:42:32 -04'00'

For:
Isidoro DeJesus Perez
Director - Office of Construction
Prequalification / Records & Procedures

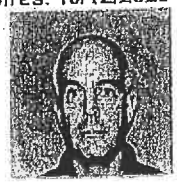
Commonwealth of Massachusetts
Division of Occupational Licensure
Board of Building Regulations and Standards

Construction Supervisor

CS-081265

Expires: 10/12/2023

MICHAEL A SOCCI
46 OPAL CIRCLE
FRANKLIN MA 02038



Commissioner Layla R. D'Emilia

Construction Supervisor
Unrestricted - Buildings of any use group which contain less than 35,000 cubic feet (991 cubic meters) of enclosed space.

Failure to possess a current edition of the Massachusetts State Building Code is cause for revocation of this license.
For information about this license
Call (617) 727-3200 or visit www.mass.gov/dpl

Alliant

July 12, 2022

MAS Building and Bridge, Inc.
Contracts Administration Department
18 Sharon Ave
Norfolk, MA 02056

RE: MAS Building and Bridge, Inc.
Worker's Compensation Experience Modification
Five-year rate history

To Whom This May Concern:

This letter is to verify the most recent 5 years Worker's Compensation Experience Modification Rates for MAS Building and Bridge, Inc. as on file with the NCCI.

Effective Date	Experience Modification Factor
6/01/2022	0.76
6/01/2021	0.78
6/01/2020	0.75
8/01/2019	0.74
8/01/2018	0.72

Please contact us if you have any questions.

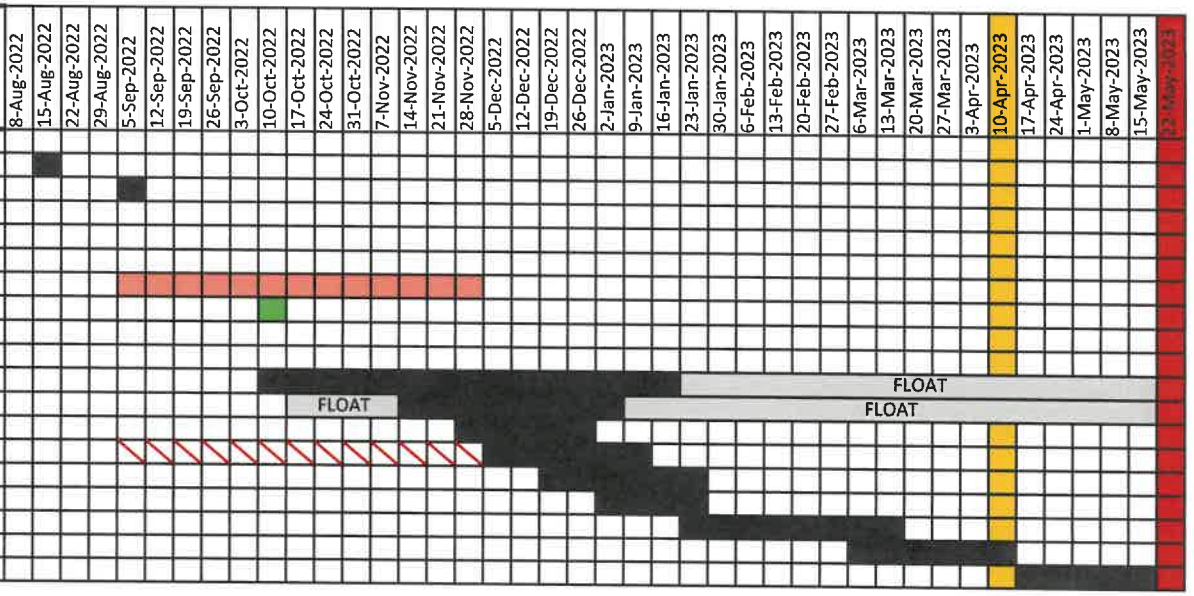
Sincerely,

Mitch Ross

Mitch Ross
Account Executive
mitchell.ross@alliant.com

1.07

MAS Building & Bridge, Inc. Chatham Fish Pier - Preliminary Schedule*	
Milestones	
Bid Date	8/19/2022
NTP	9/9/2022
Substantial Completion: Bulkhead & Cathodic Protection (217d)	4/14/2023
Substantial Completion: Lower Lot/GR/Lighting/Deck/Barcliff (259d)	5/26/2023
Other Schedule Notes	
No Water Access Prior to 12/1/2022	
Timber Deck/Stairs - Start 10/11/2022	
Construction	**Duration (Weeks)**
ALT- 1 - Construct Retaining Wall	*15*
Construct Timber Deck	8
Install Cathodic Protection	5
Procure then Drive Bulkhead Sheet Piles	6
Demo Existing Sheet Piles & Bulkhead	6
Install Wales, Tie Rods, Tie Backs	2
Construct Cap, Deck, Walls	8
Fender Piles, Chocks, Ladders	6
Sidewalks/Swale/Lot/Guardrail, Paving, Striping	5



MAS Building & Bridge, Inc.

Owned Equipment - Sample List

Make, Model & Year	Type of Equipment	Serial No. /Vin No.	Class of Work?	Owned	Leased
CAT 420D IT 2003	BACKHOE LOADER	CAT0420DPBLN08181	Bridge, Dam, Hwy, Marine	X	
CAT 420E 2009	BACKHOE LOADER	CAT0420EKPHC00788	Bridge, Dam, Hwy, Marine	X	
Komatsu PC2002010	EXCAVATOR	A89440	Bridge, Dam, Hwy, Marine	X	
LinkBelt 330 2008	EXCAVATOR	K6J4-8174	Bridge, Dam, Hwy, Marine	X	
CAT 305CCR2006	MINI-EXCAVATOR	CAT0305CCHWJ03885	Bridge, Dam, Hwy, Marine	X	
CAT D4G 2005	CRAWLER TRACTOR	CAT00D4GPHYD01509	Bridge, Dam, Hwy, Marine	X	
Komatsu PC228 2015	EXCAVATOR	S/11 - 1444	Bridge, Dam, Hwy, Marine	X	
Ingersol Rand 185	185 COMPRESSOR	4FVCABAA14U345861	Bridge, Dam, Hwy, Marine	X	
Atlas Copco SBU340 2013	HYDRAULIC HAMMER	BES011090	Bridge, Dam, Hwy, Marine	X	
AA H55DS 2005	HYDRAULIC HAMMER	0FTF00114	Bridge, Dam, Hwy, Marine	X	
Ingersol Rand SD45 2013	ROLLER	178533	Bridge, Dam, Hwy, Marine	X	
Honda EB5000 2003	GENERATOR	EA3141065	Bridge, Dam, Hwy, Marine	X	
Honda EB5000 2005	GENERATOR	N/A	Bridge, Dam, Hwy, Marine	X	
WYCO 903 2004	CONCRETE VIBRATOR	903403145	Bridge, Dam, Hwy, Marine	X	
Bunce RL-H3B	SURVEY LASER	XB2532	Bridge, Dam, Hwy, Marine	X	
Nikon NE- 20H	THEODOLITE	177575	Bridge, Dam, Hwy, Marine	X	
19' TRACKER/25HP	SAFETY/WORK BOAT	N/A	Bridge, Dam, Hwy, Marine	X	
12' Row Boat	SAFETY/WORK BOAT	N/A	Bridge, Dam, Hwy, Marine	X	
10 WOOD/10 PLASTIC	FLOATS/BARGES (8X10/12)	N/A	Bridge, Dam, Hwy, Marine	X	
Komatsu WA 270-7 2015	LOADER	A27352	Bridge, Dam, Hwy, Marine	X	
CAT257B/2006	LOADER	CAT0257BPSLK05400	Bridge, Dam, Hwy, Marine	X	
Komatsu PC88MR-10 2017	EXCAVATOR	7805	Bridge, Dam, Hwy, Marine	X	
Liebherr LTM1090-4.1	CRANE	62009	Bridge, Dam, Hwy, Marine	X	
HPSI H411-758391	VIBRATORY HAMMER	2842	Bridge, Dam, Hwy, Marine	X	
2017 TRACKER/ 15HP	SAFETY/WORK BOAT	N/A	Bridge, Dam, Hwy, Marine	X	
2017 Peterbuilt NBT 30H-Z	BOOM TRUCK	1NPSL70X2HD350426	Bridge, Dam, Hwy, Marine	X	
2017 Gomaco C-450	BRIDGE PAVER	N/A	Bridge, Dam, Hwy, Marine	X	
2004 Transcraft 48'	DROP DECK TRAILOR	345861UE0221	Bridge, Dam, Hwy, Marine	X	
2017 Steel Push Boat 150HP	PUSH BOAT	N/A	Bridge, Dam, Hwy, Marine	X	
2017 F0550 16'	RACK TRUCK	1FDUF5GT2HEB30787	Bridge, Dam, Hwy, Marine	X	
2017 3500 RACK	RACK TRUCK	1GD52VCY6HZ270366	Bridge, Dam, Hwy, Marine	X	
2013 19'Trailer	LANDSCAPE TRAILER	5RSFU202XDT000400	Bridge, Dam, Hwy, Marine	X	
Atlas Copco Air Compressor	AIR COMPRESSOR	HOPO51139	Bridge, Dam, Hwy, Marine	X	
2020 Roto Dump Truck	DUMP TRUCK	3ALHG5FEXLDLG6218	Bridge, Dam, Hwy, Marine	X	
Volvo EW210D	EXCAVATOR	VCEW210DE00220067	Bridge, Dam, Hwy, Marine	X	
Komatsu WA320-8	LOADER	A39302	Bridge, Dam, Hwy, Marine	X	
2019 Volvo Excavator	EXCAVATOR	310358	Bridge, Dam, Hwy, Marine	X	
2020 Volvo EW180E	EXCAVATOR	323166	Bridge, Dam, Hwy, Marine	X	
CAT 297D	LOADER	DX204519	Bridge, Dam, Hwy, Marine	X	
CAT TH514C	SKID	MWC00236	Bridge, Dam, Hwy, Marine	X	
Yale GLP060	FORKLIFT		Bridge, Dam, Hwy, Marine	X	

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Inventoried Items – Small Equipment

Water Pumps

2" Tsurumi model # B106634) Equip # 0032
2" Tsurumi model # LB-800) S/N B-10663404) Equip # 0033
2" Tsurumi model LB-800) S/N B-10681016 Equip # 0034
3" Blancur model # S54-200 Equip # 0035
3" Tsurumi Equip # 0036
3" MMD Trash Pump model # NPH-2) Equip # 0038
3" Electric Gorman - Rupp Pump Equip # 0040
3" Electric Gorman - Rupp 230 volt Pump Equip # 0039
3" Electric Gorman - Rupp 240 Volt Pump Equip #0072
3" Wacker Electric Pump model # P53-1500) S/N 536-4085) Equip # 0037
3" Multiquip Diaphram Pump Model #MOD306 H) S/N #PO25010) Equip# 0050

Concrete Curing Boxes

1 – Construction Innovations) Equip # 0028
1 – Construction Innovations) Equip # 0029
1 – Construction Innovations) Equip # 0030
1 – Construction Innovations) Equip # 0031
1 – Forney model # La1302) Equip # 0042

Air Meters

1 – Air Meter Model # AR-B) S/N MB&B#2) Equip # 0046
1 – Air Meter Model # AR—B) S/N MB&B#3) Equip # 0047
1 – Air Meter S/N # MB&B#4) Equip # 0048

Core Drill Model # CB-748) S/N 13058 Equip# 0051
Core Drill Bits) 2-2") 2 – 2 1/2") 2 – 1/3/4"
Torque Wrench S/N # 041222307) Calibration Due Date: 26-Sept-15) Equip# 0052
Atlas Copco Rivet Buster S/N 001179) S/N # 0057
Atlas Copco Rivet Buster S/N # N/A) Equip # 0058
Mag Drill Model #0150101 S/N 1310051) Equip # 0072

Troy Bilt Weed Wacker) Model # TB32EC) S/N 1F113DC3245) Equip# 0060
Shindaiwa Sweeper Model # P5344) S/N # T15312003700 Equip# 0061
Shindaiwa Sweeper Model # P5344) S/N #T15312003642 Equip# 0062
Shindaiwa Sweeper Model N/A Equip# 0063

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Inventoried Items – Small Equipment Cont'd

Stihl Sweeper Model N/A Equip# 0064
Honda Pressure Washer Model # GCV Equip# 0065
Stihl Pole Saw Model # HT-101 S/N 4182-011-0613 Equip # 0070

Electrical Spider Box Model # 8706GU Equip# 0066
Electrical Spider Box Model # 6506GU Equip # 0067
Electrical Spider Box Model # 8706GU Equip # 0068
Electrical Spider Box Model # 8706GU Equip # 0069
Honda Generator 5kw Model # EM5000SXK3 S/N EBMC-1018152) Equip#0073
Wacker Generator Model#GP5600 S/N #5623318 Equip #0074
Kenco Barrier Clamp Model # L12000 Equip# 0071
Schmidt Sandblaster Equip #0075

Wyco Concrete Vibrators 2" Head S/N 302179 Equip# 0053
Wyco Concrete Vibrators 2 1//2" Head Equip# 0054
Wyco Concrete Vibrator 1 ¾" Head Equip# 0055
Wyco Sure Speed Concrete Vibrator 1 3/8" Head Equip# 0056
1 – CP Jack Hammer 60#
4 – Kenrick Grout Pumps
4 – Sala) Beam Clamps
12 – Propane Heaters
3 – Kerosene Heaters

Debris Nets

Size. Qty.
20 x 30 – 6ea
20 x 24 – 5ea
20 x 22 – 1ea
20 x 20 – 5ea

Compactors

Multiquip Rammer model # MTX-70 Equip # 0045
Stone Plate Compactor Model# S38) S/N 042001059 Equip#0049
Dynapac Rammer model # LT5000 Equip # 0044
Multiquip Plate compactor model # MVH406VH) S/N # P-1432 Equip # 0043

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Chatham-Harwich, MA

Muddy Creek Restoration Bridge – Route 28 over Muddy Creek

Owner: Town of Harwich
Contract Value: $4,982,000.00
Completed: May 20, 2016

The purpose of this investment for the Towns of Chatham and Harwich was to restore flow to a portion of marsh/wetland in serious decline. The chosen method was to remove the existing culverts under Route 28 at Muddy Creek and replace the opening by constructing a 94-foot clear span, steel girder and composite concrete deck bridge. The deck was provided in the form of prefabricated bridge units (PBU) and set on integral concrete abutment supported by H-piles. Excavation of approximately 5,000 CY of material to construct a new 22-foot-wide by 200-foot-long riprap lined channel for Muddy Creek. All work was completed within a **16-week closure** of Route 28 between January to May 2016. The resulting revival of the Muddy Creek marsh/wetland was outstanding.

MAS
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Boston, MA

United States Coast Guard Pier 2 and Wharf 4 Pile and Electrical Repairs

Owner: United States Coast Guard
Contract Value: $5,307,937.00
Completed: February 14, 2020

The Project included: Wharf 4 and Pier 3 Concrete Pile Repairs: Remove deteriorated concrete and prepare surface of existing concrete piles. Provide cathodic protection pile jackets to encapsulate the existing concrete piles. Pier 3 Electrical Improvements: Remove abandoned cable, conduits, shore ties, panels, and boxes. Provide four shore ties including all associated cables, conduits, panel boards, and boxes. Replace existing lighting system cables and conduits. Floating Dock Repair: Replace 12 floating dock guide piles. Install cathodic protection anodes. Replace UHMW wear pads and connection hardware. Provide gangway wear plate.

MAS
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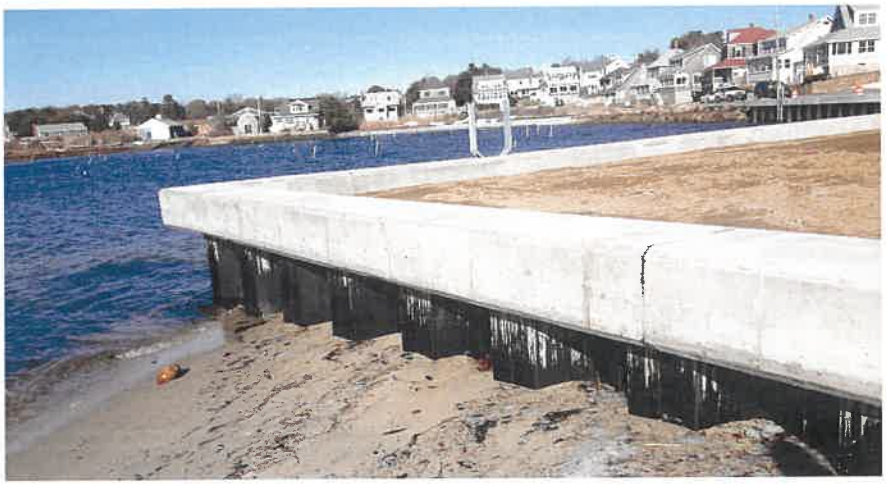
Falmouth, MA

Wild Harbor Bulkhead Repairs

Owner: Town of Falmouth
Contract Value: $669,000.00
Completed: March 15, 2015

The focus of this investment for the Town of Falmouth was the partial demo of the existing timber bulkhead, replacement of outfalls with adapters and check valves, installation of a new coated steel sheetpile bulkhead and concrete cap. Work also included traffic controls, ladder and cleat installation, paving and resurfacing of existing gravel parking lots. This work was performed in a tidal zone and had to be completed outside time-of-year restrictions for certain spawning species.



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Bourne, MA

MONUMENT BEACH BOAT LAUNCH
Owner: Town of Bourne
Contract Value: $639,00.00
Completed: January 15, 2018

The purpose of this investment for the Town of Bourne was the construction of a two-lane boat ramp with floats and pilings. The project required the removal and stockpiling of dredged material within project limits for future re-use as local beach nourishment. A steel sheetpile cofferdam and extensive dewatering was necessary for construction. The cast-in-place concrete ramp has an integral steel sheetpile toe and special V-groove notching. Amor rip-rap slope protection was also installed.

MAS
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Falmouth, MA

Davis Marine Park Bulkhead Repair and Site Improvements

Owner: Town of Falmouth Completed: March 15, 2017
Contract Value: $724,323.00

This project for the Town of Falmouth involved the installation of new vinyl sheeting directly behind the existing timber bulkhead. Associated work also included the removal of existing timber sheeting and timber piles, removal and replacement of tie-backs, timber wale beams and associated hardware, drainage channel installation, new electrical conduits, and surface restoration improvements (boardwalk, paving, landscaping, etc.).

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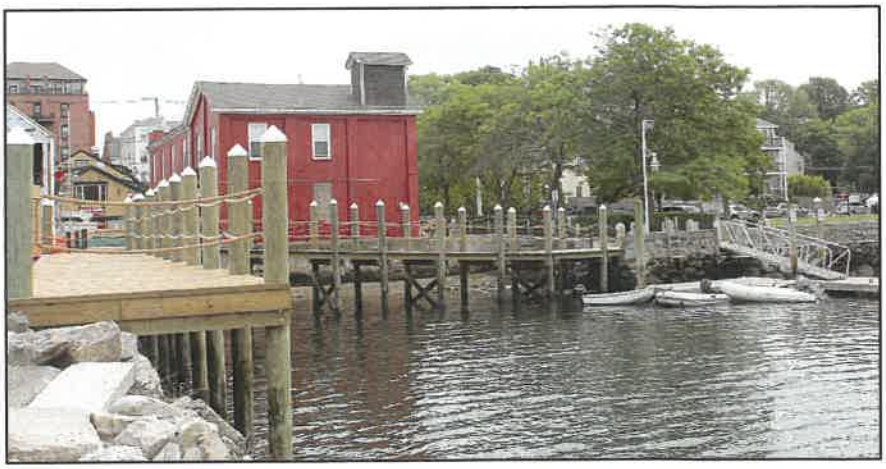
Bristol, RI

Bristol Harbor Boardwalk Extension

Owner: Town of Bristol Completed: August, 2018
Contract Value: $352,539.73

This project for the Town of Bristol involved elective demolition and removal of a portion of the stone masonry wall at the location of the existing timber boardwalk in Rockwell Park to facilitate construction of a new concrete headwall for the timber boardwalk. Also included was the removal of any rocks or cobbles within the water to allow for the installation of timber piles, the repair and repointing of the deteriorated stone masonry walls, and the installation of concrete footing foundations. A reinforced concrete walkway, new timber piles, pile caps, stringers and decking for the new timber boardwalk were installed. The boardwalk is provided with rope handrails between the timber piles. A clam shell path connects the new timber boardwalk to a new concrete walkway at the State Street Dock.



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Boston, MA

Commonwealth Pier, Fish Pier & Hoosac Pier Structural Rehabilitation - MPA Project No. M417-C1
Owner: Massachusetts Port Authority
Contract Value: $2,269,000.00
Completed: November 1, 2016

Work for this project consisted of structural repairs to three piers within South Boston and Charlestown, MA for the Massachusetts Port Authority. Work began on the Fish Pier in South Boston and consisted of the demolition and replacement of 711 LF of concrete pads, installation of new geotextile fabric and gravel borrow underneath to replace voided areas, installation of two new seaside ladder assemblies, and various crack and spall repairs around the pier. The second phase of this project took place at Hoosac Pier in Charlestown. This consisted of full replacement of 246 LF of concrete cap, partial replacement of 32 LF of concrete cap, demolition and replacement of 18 concrete and H-Pile battered piles, the addition of a new 3'X3' concrete beam to lock in the battered piles, and the cleaning of weep drains around the pier. Final phase of this project took place on Commonwealth Pier in South Boston. Work on this pier consisted of the full depth replacement of 2,400 SF of concrete apron suspended over steel I-beams, 365 SF of partial depth concrete apron replacement, and the demolition and replacement of five steel expansion joints around the pier.

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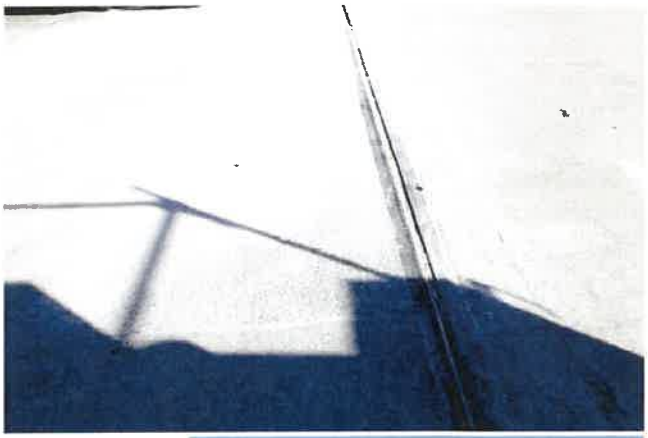
Boston, MA



United States Coast Guard Pier and Bulkhead Rehabilitation

Owner: United States Coast Guard
Contract Value: $1,313,855.00
Completed: May 15, 2014

Work included the demolition and construction of a new cast-in-place concrete cap on top of an existing sheetpile bulkhead. The scope also involved concrete repairs and utility hanger/conduit replacements at the underside of the pier. This required coordination of the access platforms attached to the piers, work/safety boats/barges, and major tidal swings, daily. This project also included any necessary concrete repairs to portions of the pier deck, paving, striping, and other topside adjustments.

MAS BUILDING AND BRIDGE, INC.

PROJECT LIST

LOCATION	PROJECT DESCRIPTION	PROJECT NAME	CLASS/TYPE OF WORK	CONTRACT AMOUNT	PERCENT COMPLETE	PERCENT SUBLET	START DATE	DATE OF COMPLETION / ANTICIPATED COMPLETION	PROJECT CONTACT INFORMATION, OWNER/CLIENT NAME, ADDRESS AND PHONE # OF OWNER	DESIGN ENGINEER
	CURRENT PROJECTS									
LOWELL, MA	The complete replacement of two bridges: Pawtucket Street over the Pawtucket Canal No. L-15-050, Pawtucket Street over the Northern Canal. No. L-15-049, The rehabilitation and preservation of three bridges: Central Street over the Lower Pawtucket Canal No. L-15-035, Merrimack Street over the Western Canal No. L-15-047, Merrimack Street over the Merrimack Canal. No. L-15-046, Work related to the Pawtucket Street, Central Street and Merrimack Street bridge construction includes modifications such as, earth excavation, full depth roadway construction, reclamation, resurfacing, hot mix asphalt pavement, drainage, utility modifications, private utility connections and utility coordination, granite curb, highway guard, retaining walls, pavement markings, signs, temporary traffic control, landscaping, control of water, and other incidental work.	Lowell Bridge Replacement & Rehabilitation of 5 (ENEL) Canal Bridges of the Merrimack River (Tiger Grant)	BRIDGE/HIGHWAY	$14,892,668.00	92%	30%	4/27/2018	4/30/2024	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800	Kleinfelder
MONSON-PALMER, MA	Removal and disposal of the existing superstructure existing substructures , new concrete cantilever abutments and wingwalls, welded steel plate girders, concrete deck slabs and sidewalks, S3-TL4 bridge rails, concrete approach slabs, and precast concrete guardrail transitions, Installation of cofferdam, and water control system. Construction of a stormwater drainage swale, New stormwater drainage systems along the bridge approaches. MSE reinforced stone gabion walls. New approach guardrail, sidewalks, and shoulder improvements. Full depth roadway construction. Landscape including loam, seed, and other plantings. Placement of riprap slope protection infilled with composted mulch. Temporary traffic controls including sidewalk, concrete barriers, and traffic signs. The roadway work including excavation, full depth roadway reconstruction, highway guardrail, erosion controls, signs, riprap, loam and seed, wetland replication and restoration, and other incidental work listed in the proposal.	Bridge Replacement and Related Work Br. No. M-27-022=P-01-033 (Steel) Route 20 (Park Street) over the Quaboag River	BRIDGE	$7,589,230.00	12%	40%	8/1/2021	8/24/2024	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 Area Eng: Steve Giard	Pare Corporation
SHUTESBURY, MA	The purpose of the Locks Pond Road Bridge Replacement Project is to repair the deficient bridge (BR S-15-009) over the Sawmill River to permit vehicular traffic on Locks Pond Road. The proposed improvements consist of replacing the existing large, corrugated steel pipe culvert and stone wingwalls with a new culvert including new wing walls. Roadway improvements include installation of guardrail, full depth pavement, pavement markings, and other miscellaneous work.	Locks Pond Road Bridge Replacement	BRIDGE	$674,788.00	0%	15%	9/8/2021	5/1/2023	Town of Shutesbury, MA 1 Cooleyville Road Shutesbury, MA 01072 Becky Torres (413) 259-1214	Nitsch Engineering
ESSEX, MA	Superstructure replacement of existing bridge structure using precast adjacent box beams on the rehabilitated existing abutments. Including demolition of the existing bridge and end posts, partial demo of the existing backwalls, temporary relocation of utilities, construct new bridge superstructure, utility supports and end posts, rehab existing abutments, reconstruct. and reconfig. bridge joints, a S3-TL4 bridge railing, a temporary bypass roadway and bridge, temporary relocation and restoration of existing utilities. Reconst. approx 400 feet of Main Street, including roadway excav. and profile modifications, pavement fine milling of existing bituminous roadway pavement, full-depth roadway reconstruction at the approaches, sidewalk reconstruction, hot mix asphalt paving, installation of curbing, guard rail, pavement markings, temporary and permanent utility relocations. The work shall also include the construction of a temporary by-pass road and bridge. Utility work shall include temporary reloc/replac water main, temp. and perm replacement of the existing sanitary sewer force main.	Bridge Superstructure Replacement Br. No. E-11-001	BRIDGE	$4,822,979.00	37%	29%	10/1/2021	6/14/2024	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 Area Eng: Chris Leahy	Steere Engineering
WOODS HOLE, MA	Fender System: (1) Replace timber members and associated hardware on 10 fender panels; (2) Replace restraint chains and associated hardware on four floating camels; (3) Recoat 20 steel fender support piles from Elevation +6' to 0' MLLW* Utilities:(1) Removal of three existing shore tie stations; (2) Provide three new shore tie stations: (i) Cutter Utilities, Water Supply Connection Point in Heated Enclosure, Sewage Discharge Connection Point, Power and IT Connection Points, (ii)Small Boat Utilities, Power and IT Connection Points, Electrical Distribution Equipment, iii Light Repairs and Replacement	Repair Waterfront at CG Sector Southeastern New England 70Z0G121BPRV15600	MARINE	$2,252,000.00	0%	55%	4/1/2021	1/20/2023	United States Coast Guard 475 Kilvert Street, Suite 100 Warwick, RI 02886 Daniel Walker 401-736-1764	Appledore Marine Engineering, LLC
PORTSMOUTH, NH	The project is broken up into a Base Bid, Deductive Alternate and Unit Prices. The Base Bid includes repairs to the existing Main Wharf, removal of the existing North Access Bridge, installation of a steel/concrete wharf infill and shore side improvements. The Bid Deductive Alternate includes additional installation of a steel/concrete wharf infill.	Market Street Marine Terminal Main Wharf Rehab 2021	BRIDGE/MARINE	$11,726,450.00	10%	56%	1/3/2022	10/23/2023	Pease Development Authority 55 International Dr, Portsmouth, NH 03801 Geno Marconi 603-433-6088	Appledore Marine Engineering, LLC
CLINTON, MA	Replacement of the top 3-feet of the Bastion walls, providing a new roof and drainage system, and rebuilding the entryway arch, north wall, and exterior stairway of the Bastion	Wachusett Dam Bastion Improvements MWRA Contract 7697	BUILDING	$3,927,000.00	10%	25%	4/4/2022	4/26/2023	Massachusetts Water Resources Authority 100 First Avenue Boston, MA 02129 Rita Mercado 617-242-6000	Kleinfelder

MAS BUILDING AND BRIDGE, INC.

PROJECT LIST

LOCATION	PROJECT DESCRIPTION	PROJECT NAME	CLASS/TYPE OF WORK	CONTRACT AMOUNT	PERCENT COMPLETE	PERCENT SUBLET	START DATE	DATE OF COMPLETION / ANTICIPATED COMPLETION	PROJECT CONTACT INFORMATION, OWNER/CLIENT NAME, ADDRESS AND PHONE # OF OWNER	DESIGN ENGINEER
	COMPLETED PROJECTS									
LOWELL, MA	This project includes the improvement of an existing concrete structure and installation of thousands of feet of handrail to create a walkway along that structure. There is also a 150' long pedestrian bridge being installed at one end of the project.	Merrimack Riverwalk - Phase II	BRIDGE	$4,749,113.15	100%	24%	3/31/2020	8/1/2022	City of Lowell Department of Planning and Development 50 Arcand Drive Lowell, MA 01852 Christopher Glenn Hayes 978-970-4252	IBI Placemaking Formerly CRJA-IBI Group.
BOSTON, MA	Work consists of the construction of two new Green Line Stations on the B Line along Commonwealth Avenue, adjacent to Boston University, between Babcock Street and Amory Street. The proposed stations will include but are not limited to, construction of four new 225' long low level platforms, 150' of canopies at each platform, accessible walkways, communications and safety/security systems, lighting, signage, benches and other miscellaneous station elements.	MBTA Green Line B Branch Station Consolidation - Boston	HEAVY CIVIL - STATION/RAIL	$17,768,400.00	100.0%	42%	6/8/2020	7/1/2022	Massachusetts Bay Transportation Authority Contract No. A25CN01 101 Arch Street, Suite 310 Boston, MA 02110 Leo Murphy (857) 283-9705	Jacobs Engineering Group
LOWELL, MA	The work includes construction of a 825+/- foot-long, 8 to 10-foot wide hot mix asphalt greenway, with 2-foot wide soft surface shoulders. Demolition and reconstruction of an existing 210+/- foot long portion of 10-foot wide hot mix asphalt greenway, including 2-foot wide soft surface shoulders. Construction of "Bridge 1": The proposed prefabricated pedestrian bridge will span 75 feet over the Concord River and will be supported by two cast-in-place concrete stub abutments with approach wingwalls. Construction of "Bridge 2": The proposed prefabricated pedestrian bridge will have curved geometry and span 155 feet over the confluence of the Wamesit Canal and Concord River and will be supported by two cast-in-place concrete stub abutments with approach wingwalls.	Concord River Greenway Phase I	BRIDGE	$1,914,335.90	100%	26%	9/1/2020	6/30/2022	City of Lowell Department of Planning and Development 50 Arcand Drive Lowell, MA 01852 Yovani Baez-Rose 978-674-4252	Stantec Associates
FALL RIVER, MA	The work in this Contract includes, but is not limited to furnishing and installing: Concrete walkways, Hot Mix Asphalt pavement, Granite curb along entry drive, drop off and Davol Street, Landscape improvements including landscaped plant bed areas and lawn areas, Installation of an automatic underground irrigation system, Perimeter pedestrian railing system affixed to the existing concrete bulkhead wall, Primary electric service, park load center and related park power panels, conduit, light pole foundations and Site lighting, Modifications to the existing drainage system, Water Service connection and related waterline terminations, Site Furnishings and other incidental items necessary to complete the work.	City Pier Site Improvements Fall River Redevelopment Association IFB# 21-30	SITE WORK	$2,429,141.00	100%	45%	8/25/2021	6/25/2022	City of Fall River, MA One Government Center Fall River, MA 02722 Sarah Page 508-324-2662	BETA Group, Inc.
NATICK, MA	The project consists of furnishing all necessary labor, materials, equipment, and services for the construction of a new steel and wood observation deck, reconstruction of a 4 bay concrete boat ramp, new ADA compliant lift and dock, site accessibility improvements, pathways, parking lot improvements and resurfacing at Lake Cochituate State park.	Cochituate Park Boat Ramp & Pier - DCR Natick, MA - Bonded	BRIDGE/HIGHWAY	$2,432,000.00	100%	16%	7/2/2021	6/15/2022	Department of Conservation and Recreation 251 Causeway Street, Suite 600 Boston, MA 02114 Cathleen Paine 857-294-0050	Comprehensive Environmental, Inc.
WINCHESTER, MA	Work under this contract consists of installation of temporary shoring and water control to support the full replacement of the bridge superstructure and substructure. The work will be installed during a full 3-month road closure and will primarily be constructed of precast concrete elements. The Contract also includes roadway drainage and utility improvements, placement of riprap along the riverbank, and stream restoration.	Aberjona River Flood Mitigation Program Project 8-Swanton Street Bridge Replacement over the Aberjona River	BRIDGE/HIGHWAY	$2,307,425.00	100%	20%	6/15/2021	6/3/2022	Town of Winchester 71 Mt. Vernon Street Winchester, MA 01890 Margarate White 781-721-7165	VHB
PHILLIPSTON, MA	The work of this Contract consists of superstructure repair to the bridge carrying Queen Lake Road over the Burnshirt River. The existing structure is a single span steel stringer bridge with a noncomposite concrete deck spanning approximately 25'. The rehabilitation work includes demolition and replacement of girders G1 and G8, construction of portion of new concrete deck, installation of bridge rail S3-TL4, and concrete repairs to existing abutments. Superstructure repair, Demo and Replace girders, New Deck, Install Bridge Rail	Queen Lake Road Bridge Rehabilitation Project	BRIDGE	$788,679.00	100%	35%	7/15/2021	6/3/2022	Town of Phillipston 50 The Common Phillipston, MA 01331 Kevin Flynn 978-249-6828	Tighe & Bond
LOWELL, MA	The work will include general cleaning of the structural components and repainting, repairing concrete piers and pier caps, in-kind replacement of decking and hand railings, limited lifting operation of the bridge section for concrete and bearing pad repairs, and removal of vegetation growing from structural elements. The work will be performed above the canal water line. A barge or floating dock (8'x10') may be used as a temporary work platform by the construction contractor	LOWE - Repair Northern Canal Pedestrian Bridge	BRIDGE	$647,000.00	100%	33%	12/7/2021	3/25/2022	Boston National Historical Park Charlestown Navy Yard, Building I-1 Boston, MA 02129 Wendy Deleon 617-242-5681	Jacobs Engineering Group
NEW BEDFORD, MA	This project has the following major components: Remove 23 fenders and remnants located above and below Mean Low Water. Remove Gate Guide G-4 and one support strut. Fabricate and install new Gate Guide G-4 and strut. Install new composite fenders to replace the 23 fenders. Insert a de-watering stop gate in slots between Gate Guides G3-G4 and G4-G5. Transport one lifting beam and one Type IA stop gate to the Fairhaven-side sector gate with placement of the stop gate into slots to demonstrate that the stop gate travels freely from the top of the gate guides to the sill.	Fairhaven Sector Gate Allison Repairs USACE W912WJ21B0004	MARINE	$410,000.00	100%	22%	8/1/2021	1/21/2022	US Army Corps of Engineers, NE 696 Virigina Road Concord, MA 01742 Heather Skorik 978-318-8040	USACE
WOODS HOLE, MA	Remove and replace 200' of existing fendering system along the west face of the bulkhead at the Woods Hole Laboratory.	NEFSC/Woods Hole Fendering Replacement	MARINE	$246,836.00	100%	0%	11/1/2021	12/31/2021	Northeast Fisheries Science Center NEFSC 166 Water Street Woods Hole, MA 02543 Roberta Smith 757-441-6528	Department of Fisheries

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BARNSTABLE, MA	Includes the removal and replacement of existing steel stringers, diaphragms, bracing elements and connections; removal and replacement of portions of the reinforced concrete deck slab and steel curb elements; removal and replacement of the machinery access platform railing and installation of an additional railing; replacement of abutment joints and a portion of the approach slabs; and steel repairs to the bottom of the Bridge Operator's House support columns. The project is to be completed in two (2) phases.	Oyster Harbor Bridge Rehabiliation	BRIDGE	$870,178.00	100%	16%	1/19/2021	11/17/2021	Griffin Beaudoin, P.E. Town Engineer Barnstable Department of Public Works 382 Falmouth Road - Hyannis, MA 02601 P: 508-790-6400 griffin.beaudoin@town.barnstable.ma.us	STV Inc.
LOWELL, MA	The track work shall include:• Ballast replacement (existing ballast shall be removed and disposed of) • Cross tie replacement (Approximately 30 ties) • Repair or replace any damaged or missing existing electrical rail bonding straps per American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual Chapter 33, Part 8.1.30. • Repair broken/cracked trolley track in the Wye.	Trolley Track - Repair and Maintenance Lowell Historical National Park Krawczyk Corner	RAIL	$116,989.00	100%	0%	10/18/2021	11/5/2021	Volpe National Transportation Sys Center 55 Broadway Cambridge, MA 02142 Karen Marino 617-494-2437	Volpe National Transportation
FRAMINGHAM-NATICK, MA	The project includes the construction of a hot mix asphalt (HMA) share-use path, approximately 2.4 miles long, in addition to, new bridges to convey the path over Route 30 and Route 9. The work includes a section of path to connect the main path to Speen Street and four at-grade roadway crossings are proposed along with two driveway crossings. Other improvements include sidewalk and wheelchair ramp improvements to Route 30, including full depth pavement widening between Speen Street and TJX Driveway. Pavement resurfacing on Route 9, including median barrier reconstruction and sidewalk improvements along Route 9 Westbound.	Construction of Shared Used Path (Cochituate Trail) including Signals and Br. Nos. N-03--14 & F-07-033=N03-029 over Route 9 and 30	BRIDGE	$10,102,252.66	100%	30%	3/8/2019	9/30/2021	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Neil Ahearn 617-593-6299	BETA Group, Inc.
WORCESTER, MA	The Contract includes the replacement of Bridge W-44-030 Superstructure over the MBTA and CSX railroads using PBUs and safety improvements to the roadway including an 11-foot northbound and southbound travel lane. Five foot shoulders are being provided on the bridge to accommodate cyclists. At the intersection with Aitchison Street, Plantation Street will consist of one 11-foot northbound left-turn lane with approximately 120 feet of storage, one 11-foot northbound through lane, and one 12-foot southbound through lane. North of Aitchison Street, Plantation Street would maintain one lane in each direction with 1-foot shoulders and shared lane markings. Phase II requires accelerated bridge techniques to keep the single-lane traffic setup at only 12-weeks long.	Plantations Street over MBTA & CSX Railroads	BRIDGE	$5,207,345.31	100%	25%	7/18/2019	6/15/2021	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Jean-Pierre Telemaque 774-286-6373 Jean-Pierre.telemaque@state.ma.us	Gill Engineering
LOWELL, MA	Structural Repairs to the Boott Cotton Mills Bridge - Phase II Bridge Repair Steel Repair and Replacment, Timber Deck Replacment	Boott Mills Rull Repair (ABD21075)	BRIDGE/HIGHWAY	$355,000.00	100%	0%		5/4/2021	Winn Companies One Washington Mall Boston, MA 02108 617-742-4500	
LOWELL, MA	Removal of Human Construction Sculpture Demolition of Granite Blocks and Concrete Foundation	Lowell National Historic Park (ABD20069)	DEMOLITION	$290,700.00	100%	0%		2/28/2021	Boston National Historical Park Charlestown Navy Yard, Building I-1 Boston, MA 02129 George W. Little 617-242-5601	
MARSHFIELD, MA	Beach Street Bridge (Bridge M-07-007) crossing the Cut River. The area itself is considered a coastal community. The existing structure was a three span continuous reinforced concrete slab with a bituminous wearing surface with concrete abutments and piers founded on timber piles. The proposed replacement consisted of constructing pre-stressed butted deck beams with a composite deck superstructure supported on concrete abutments and concrete filled steel piles. The existing concrete retaining wall in the southwest quadrant were removed and replaced. New retaining walls were also be constructed in the other three quadrants to minimize environmental impacts to the Cut River channel. The existing rip rap protection was removed and reset and supplemented with new rip rap. Originally, this project was to be phased. MAS worked with the State to repair a deficient bridge along a potential detour route and were able to eliminate the phasing completely.	Marshfield Bridge Replacement Beach Street over Cut River (ABD18095)	BRIDGE/HIGHWAY	$3,375,660.57	100%	30%		9/9/2020	Massachusetts Depart of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 5 Phone: (508) 824-6633 Michael McGrath	
LITTLETON, MA	The work includes but is not limited to earth excavation, full depth hot mix asphalt pavement reconstruction, and pre-cast concrete bridge construction, pavement markings, and other miscellaneous work as shown on the plans.	IME Patriot Siding	SITE WORK	$364,000.00	100%	33%	4/22/2020	7/1/2020	Injection Molding Enterprises, LLC & Patriot Beverages, LLC 20 Harvard Road Littleton, MA 01460 (978) 339-4535 Jon Finley, Plant Manager 706-676-6659	HNTB Corporation
BLACKSTONE, MA	The work to be done under this contract involves the rehabilitation of an abandoned railroad bridge over blackstone canal and cancal st. Remove and dispose of the existing chain link fence, wood posts, and wood deckplanks. Dispose of exisiting preservative treated wood as hazardous waste. We will be constructing a new wood deck and new wood railings on new wood ties. Repointing the face of existing East Abutment. As well as removing all debris surrounding the bearings.	Rehabilitation of Bridge 8-13-008 (DCR No. RT02) Over Blackstone Canal and Canal St.	BRIDGE	$2,282,491.00	100%	32%	5/16/2019	9/1/2020	Jason Santos Department of Conservation and Recreation 251 Causeway St Boston, MA 02114 Phone: 617-626-1250	Simpson Gumpertz & Heger, Inc.
BOSTON, MA	The Project included: Wharf 4 and Pier 3 Concrete Pile Repairs: Remove deteriorated concrete and prepare surface of existing concrete piles. Provide cathodic protection pile jackets to encapsulate the existing concrete piles. Pier 3 Electrical Improvements: Remove abandoned cable, conduits, shore ties, panels, and boxes. Provide four shore ties including all associated cables, conduits, panel boards, and boxes. Replace existing lighting system cables and conduits. Floating Dock Repair: Replace 12 floating dock guide piles. Install cathodic protection anodes. Replace UHMW wear pads and connection hardware. Provide gangway wear plate.	Pier 3 and Wharf 4 Pile and Electrica Repairs	MARINE	$5,307,937.00	100%	45%	10/4/2018	2/14/2020	United States Coast Guard 427 Commercial St, Boston MA 02109 Stan Wilczynski 617-850-2704	Appledore Marine Engineering, LLC

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ANDOVER, MA	This project is located along North Main Street (Route 28) in the Town of Andover and includes the bridge over the MBTA Railroad tracks (Bridge Number A-09-011). The project involves the replacement of the existing superstructure and reconstructing the approach roadway. In order to maintain the existing vertical clearance under the bridge, the profile of North Main Street will be raised significantly. This will require the limits of full depth construction to extend from approximately 260 feet north of the bridge to approximately 175 feet south of the bridge. The work under this Contract includes excavation, full depth hot mix asphalt pavement construction, micro-milling with hot mix asphalt overlay, constructing driveways, cement concrete sidewalks and wheelchair ramps, removing and resetting existing granite curb and installing new curbing, installing highway guardrail, drainage improvements, waterworks, sewer construction, providing and spreading compost top soil, traffic signing and pavement markings, temporary traffic control, and other street improvements.	Bridge Superstructure Replacement Br. No. A-09-011 (Steel) North Main Street (Route 28) over the MBTA and Pan Am Railroads	BRIDGE/HIGHWAY	$8,529,786.53	100%	29%	11/9/2015	11/9/2019	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 4 Phone:(781) 641-8300 Robert Bosey	Greenman-Pedersen, Inc.
AUBURN, MA	Repair of Existing Bridge Steel Repairs, Clean/Paint Structural Steel, Place New Concrete Deck, Parapet Walls, and Pave	Auburn - Repairs of Existing Bridge (ABD18250)	BRIDGE/HIGHWAY	$378,000.00	100%	32%		8/5/2019	Seaboard Solar Inc. 143 West Street, Suite C201 New Milford, CT 06776 860-717-2104	
NORFOLK, MA	Work included the demolition of the Lawrence Street bridge superstructure, and replacement with new precast abutment stems and a 15" thick cast in place deck. A 500' sheet pile wall was driven along the northern bank of the causeway and was then capped with concrete. This wall cap was the main support for a new elevated overhanging boardwalk along the northern bank. Vast utility improvements along Lawrence Street were also installed which included new drainage, Eversource, Verizon, and Comcast infrastructure. Work also included roadway pavement reclamation, repairs to concrete abutments, HMA sidewalks, and installation of steel backed timber guardrail along the road.	Lawrence Street Improvement Project	BRIDGE/HIGHWAY	$2,314,962.00	100%	35.00%	8/30/2018	5/24/2019	Town of Norfolk DPW 33 Medway Road Norfolk, MA 02056 Bob McGhee 508-528-4990	Green International
FOXBORO-WALPOLE, MA	The scope of work includes furnishing, installation, mainainence and removal of erosion control measures. Clearing, grubbing, brush cutting, tree trimming and wayside ditching. Realigning a portion of the Main Line. Removal and salvaging of an existing 107lb No. 10 Main Line turnout. Relocating an existing 107lb No. 10 Foxboro Terminal Side Track Turnout. Installation of four new turnouts (three mainline & one siding). Preparation and construction of new subgrade and track bed for freight siding track. Construction of approximately 4,600 Track Feet (TF) of new track. Construction of a crash wall at MP 5.29. Rehabilitation of an existing steel deck girder railroad bridge on the Main Line at MP 5.19. Install a new bridge at MP 5.19 for the proposed freight siding track. Loam and Seed Flood Storage Restoration Areas. Installation of signal and electrical pull boxes and conduit.	Foxboro Freight Siding, at M.P 5.19 and Crash Wall at M.P 5.29 Project	RAILROAD/BRIDGE	$6,385,740.00	100%	12.00%	9/18/2018	1/28/2019	Massachusetts Coastal Rail Road Chris Podgurski. 3065 Cranberry Highway, Suite 5 East Wareham, MA 02538 cpodgurski@masscoastal.com 508-291-2116	Jacobs Engineering Group
DENNIS- YARMOUTH, MA	The proposed project will complete a gap in the CCRT Extension between North Main Street and the Bass River. The work under this Contract consists of constructing an extension to the Cape Cod Rail Trail (CCRT) multi-use path in the Towns of Yarmouth and Dennis. Work also includes one 165' span bridge structure carrying the CCRT over the Bass River. Widening and dredging of the Bass River, constructing a deck structure adjacent to the bridge, to provide an overlook at the river. Installing a rectangular rapid flashing beacon (RRFB) at North Main Street roadway crossing in Warmouth. Additional work in includes unclassified excavation, pavement milling, full depth hot mix asphalt pavement, hot mix asphalt sidewalks, granite curb, pavement markings, signs, fencing, landscaping, salt marsh restoration and other incidental work.	Construction of Cape Cod Rail Trail (CCRT) Extension Phase II Including Prefabricated Pedestrian Truss Bridge over the Bass River	BRIDGE/HIGHWAY	$3,497,962.80	100%	30%	2/10/2017	10/5/2018	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Malcolm LaValley (617) 973-7800	VHB
BOSTON & MILTON, MA	Work consists of repairs and modification to existing concrete masonry and stone masonry abutments and wingwalls; the collection of and resetting of displaced riprap along the east abutment; excavation for the repairs to the southeast wingwall, along with and grubbing of adjacent area to allow for the repairs; revegetation of the areas cleared and grubbed per requirements of DRC permitting; installation and monitoring of silt curtains for all in water work.	Rehabilitation of MBTA High Speed Red Line Bridge over Neponset River	BRIDGE/HIGHWAY	$2,559,266.00	100%	15%	6/30/2017	9/26/2018	Massachusetts Bay Transportation Authority 100 Summer Street, Boston, MA 02110 Ken Lim 617-222-4487 KLim@MBTA.com	HNTB Corporation
ATTLEBORO, MA	Replacement of an existing structurally deficient vehicular bridge with a new prefabricated vehicular bridge with a cantilevered sidewalk. Other components of work include installation of drilled micropiles, tree cutting, clearing and grubbing, excavation for abutments, forming & pouring of reinforced concrete abutments, backwalls & curtain walls, site assembly, erection and setting of pre built vehicular bridge, full depth parking lot reconstruction, bollards, curbing, sidewalks, paving, fencing	Hebron Village Apartments Emergency Bridge Replacement	BRIDGE/HIGHWAY	$712,743.00	100%	26%	4/12/2018	9/15/2018	Wingate Properties. 100 Wells Avenue Newton, MA 02459 Joseph Moscariello 781-707-9195 jmoscariello@wingatecompanies.com	Pare Corporation
BRISTOL, RI	Selective demolition and removal of a portion of the stone masonry wall at the location of the existing timber boardwalk in Rockwell Park to facilitate a new concrete headwall for the timber boardwalk; the removal of any rocks or cobbles within the water to facilitate the installation of timber piles; the repair and repointing of the deteriorated stone masonry walls; the installation of concrete footing foundations; the installation of a reinforced concrete walkway; the installation of new timber piles, pile caps, stringers and decking for the new timber boardwalk; regrading and landscaping including selective invasive vegetation removal, loam and seed, and installation of benches. Boardwalk will be provided with rope handrails between the timber piles. A clam shell path will connect the new timber boardwalk to a new concrete walkway at the State Street Dock.	Bristol Harbor Boardwalk Extension	MARINE	$342,180.00	100%	2%	5/14/2018	9/1/2018	Town of Bristol 10 Court Street Bristol, RI 02809 Ed Tanner 401-253-7000	Pare Corporation
LOWELL, MA	The existing bridge has noted deficiencies such as severe cracking and spalling of the deck, exposed deck rebar, substandard bridge railings, and a partially undermined beam at one of the abutments. The work will correct the deficiencies and remove the weight restrictions on the bridge. Plans call for a complete deck replacement with localized beam and substructure repairs, construction of interior vehicular barriers, new sidewalks, and a lighter pedestrian rail.	Proposed Bridge Rehabilitation Lawrence Street over Concord River	BRIDGE/HIGHWAY	$2,806,283.00	100%	29%	9/15/2016	9/1/2018	City of Lowell Purchasing Department City Hall, Room 60 375 Merrimack Street, Lowell, MA 01852 P. Lisa DeMeo 978-674-4070 DSleeper@lowellma.gov	TEC, Inc.

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NATICK, MA	The work under this contract consists of the replacement of the superstructure and abutment caps of an existing truss bridge over the MBTA and CSX railroads on Marion Street in Natick, MA. The work includes the demolition of existing bridge deck, floor beams, and trusses and the installation of a grouted tieback system, structural steel beams and cast in place bridge deck.	Bridge Replacement - Marion Street over the MBTA Railroad	BRIDGE/HIGHWAY	$3,415,554.00	100%	24%	8/1/2015	9/1/2018	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 3 Phone:(508) 929-3800	Massachusetts Department of Transportation
MANSFIELD, TAUNTON, ATTLEBORO, FOXBORO, MA	Removal and replacement of bridge bearing timber ties with new including installation of new tie spacers, anchorage, walkway grating, handrails, structural steel repairs, removal and reinstallation of existing running rail, removal and replacement of new running rail and bridge guardrail.	Framingham Secondary & Middleboro Subdivision Timber Bridge Repairs	BRIDGE/RAIL	$478,500.00	100%	21%	4/11/2018	7/31/2018	Mass Coastal Rail Road. 3065 Cranberry Highway #5 East Wareham, MA 02538 Jamie Conlon 508-291-2116	Jacobs Engineering Group
QUINCY, MA	Emergency Repairs to Quincy Seawalls Concrete and Grouting Repairs, Revetment Repair/Replacement	Quincy Emergency Seawall Work (ABD18059)	Concrete and Revetment Repairs	$368,943.00	100%	0%		5/2/2018	City of Quincy Purchasing Department 1305 Hancock Street Quincy, MA 02169 (617) 376-1000	
WOONSOCKET, RI	Steel Repairs to Privilege St Bridge	Woonsocket Repairs to Privilege Street Bridge (ABD18121)	BRIDGE/HIGHWAY	$47,900.00	100%	0%		7/30/2018	City of Woonsocket - Public Works Dept 169 Main Street Woonsocket, RI 02895	
BRAINTREE, MA	Services, material and equipment to install a new coated steel sheetpile bulkhead at the Braintree Terminal and demolish the existing bulkhead. This also requires site work, minor utilities, demo and replacement of an existing timber structure, installation of a deadman sheet and tie-back system, coordination with offloading vessels and tidal swings. This work needs to be completed by November 2017.	Bulkhead Demolition and Replacement at the CITGO Terminal in Braintree	MARINE	$2,181,000.00	100%	22%	4/19/2017	5/31/2018	CITGO Petroleum Corporation 1293 Eldridge Parkway Houston, TX 77077-1670 Dennis Blythe 832-486-4864	GEI Consultants - Bourne Consulting Engineering
BOURNE, MA	The project consists of the construction of a two lane boat ramp with floats and pilings. The project required full sheet pile, cofferdam, extensive water control, dredge and installation of permanent integral sheet pile at ramp toe.	Monument Beach Boat Launch	MARINE	$639,000.00	100%	15%	9/12/2017	1/15/2018	Town of Bourne Department of Natural Resources Town Hall Room 102 24 Perry Avenue - Buzzards Bay, MA 02532 Tim Mullen 508-759-0600	Child's Engineering Corporation
WEST BRIDGEWATER, MA	Work under this contract includes the removal of an existing concrete and fieldstone arch bridge on Route 106 in West Bridgewater over the Hockomock River. The bridge will be replaced with a single span precast superstructure supported by grouted micro piles. The existing bridge demolition and the new construction of the new superstructure will take place within a 21-day road closure. The bridge will be open to through traffic at the end of the closure period.	Bridge Replacement Br. No. W-18-012 Route 106 (West Center Street) over Hockomock River (ABP)	BRIDGE/HIGHWAY	$4,059,452.45	100%	20%	4/7/2016	10/19/2017	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 5 Phone:(508) 824-6633 MassDOT Resident Engineer: Kenneth Belgrave	Stantec
DEDHAM, MA	The project consisted of the demolition and replacement of a bridge structure over Motherbrook River. This project was split into 5 phases, 3 of which contain the replacement of the bridge. Demolition includes the removal of the 3-span bridge deck and asbestos-coated piers, as well as a section of the existing abutment. Construction of the bridge consists of steel H-piles, new substructure, and single span beams to support the new deck. The work will expand hydraulic flow for the river thanks to the removal of the piers.	Dedham Providence Highway over Motherbrook Bridge Replacement	BRIDGE/HIGHWAY	$4,835,110.30	100%	30%	4/8/2016	9/6/2017	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 6 Phone: (857) 368-6100 Edward Moschella	BETA Group, Inc.
FRANKLIN, MA	The project includes the demolition and removal of the existing timber bridge and substructure, the construction of a new concrete substructure, and the installation of a prefabricated truss bridge. It also includes replacement and rerouting of water and gas lines to the bridge support, and a new concrete deck. The new bridge structure will raise clearance over the tracks below. This project is currently still ongoing.	Bridge Replacement Br. No. F-08-005 (Pre-Fab Steel Truss) West Central Street over the MBTA and CSX Railroads	BRIDGE/HIGHWAY	$1,355,492.75	100%	14%	2/15/2016	9/4/2017	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 3 Phone:(508) 929-3800 Anthony Tavalone	Dewberry Engineering
TAUNTON, MA	This project consists of the replacement of Bridge No. T-01-015 (BHK) Washington Street over the Mill River in Taunton. The work includes the removal of the existing two span bridge and construction of a single span replacement bridge with the widening of Washington Street to four lanes of traffic. The work also includes installing highway guardrail transitions, installation of guardrails, excavation, full depth roadway construction, milling and resurfacing, sidewalk construction, granite curb, wheelchair ramp reconstruction, drainage and utility modifications/reconstruction, landscaping, signing, pavement markings and the provision of safety controls and signing for construction operations and other incidental items included in the contract documents. The project also includes the reconstruction and signalization of the intersection at Washington Street and Frederick R. Martin Sr. Parkway.	Bridge Replacement - (Route 140) Washington Street over the Mill River	BRIDGE/HIGHWAY	$4,776,719.18	100%	30%	11/20/2013	6/12/2017	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 5 Phone:(508) 824-6633 Eric Borman	BETA Group, Inc.
FALMOUTH, MA	This is a project for the town of Falmouth. The main focus is the installation of new vinyl sheeting directly behind the existing timber bulkhead. Assocated work also includes the removal of existing timber sheething & timber piles from a previously abandoned bulkhead, removal & replacement of timber wale beams and associated hardware, drainage channel installation, new electrical conduits, and surface restoration improvements (boardwalk, paving, landscaping...).	Davis Marine Park Bulkhead Repair and Site Improvements	MARINE	$724,232.00	100%	12%	12/27/2016	3/15/2017	Town of Falmouth 180 Scranton Avenue Falmouth, MA 02540 Gregg Fraser 508-457-2550	Holmes & Mcgrath & Philbrook Engineering

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CHATHAM, MA	Work for this Project Consisted of Constructing New 3500 SF Reinforced Concrete boatwash Pad, Concrete Gangway landing pad for the new gangway landing and 70 LFT of Reinforced Concrete Deadmans as part of the Old Mill Boatyard Improvements projects as a Subcontractor for BTT Marine Construction at the Old Mill Boatyard, Chatham, MA.	Old Mill Boatyard	MARINE	$130,800.00	100%	0%	11/28/2016	2/20/2017	BTT Marine Construction 338 Border Street East Boston, MA 02128 Ceasar C. Duarte Jr. 617-567-9100	GZA GeoEnvironmental, Inc.
NORTON, MA	This is a project for the town of Norton. It includes the repair and refacing of the concrete structures around the site, such as the secondary spillway and the gate house structure, the replacement of the stop log and slidegate systems within the gatehouse itself, and the installation of Articulated Concrete Blocks (ACB) for the Dam. This work will help preserve the life of the dam and help with potential erosion and flooding concerns in the area.	Norton Reservoir Dam Phase II	DAM/MARINE	$686,159.00	100%	18%	7/14/2015	12/18/2016	Town of Norton Conservation Commission 70 East Main Street Norton, MA 02766 508-285-0275	Pare Corporation
BOSTON, MA	Work for this projected consisted of structural repairs to three piers within South Boston and Charlestown, MA for the Mass Port Authority. Work began on the Fish Pier in South Boston and consisted of the demolition and replacement of 711 LF of concrete pads, installation of new geotextile fabric and gravel borrow underneath to replace voided areas, installation of two new seaside ladder assemblies, and various crack and spall repairs around the pier. The second phase of this project took place at Hoosac Pier in Charlestown. This consisted of full replacement of 246 LF of concrete cap, partial replacement of 32 LF of concrete cap, demolition and replacement of 18 concrete and H-Pile battered piles, the addition of a new 3'X3' Concrete beam to lock in the battered piles, and the cleaning of weep drains around the pier. Final phase of this project took on Commonwealth Pier in South Boston. Work on this pier consisted of the full depth replacement of 2,400 SF of concrete apron suspended over steel I Beams, 365 SF of partial depth concrete apron replacement, and the demolition and replacement of five steel expansion joints around the pier.	Commonwealth Pier, Fish Pier & Hoosac Pier Structural Rehabilitation Boston, MA MPA Project No. M417-C1	MARINE	$2,269,197.42	100%	5%	9/1/2015	11/1/2016	Massachusetts Port Authority 1 Harborside Drive, Suite2095 Boston, MA 02128	Bourne Consulting Engineering
FRAMINGHAM, MA	The work under this contract involved the rehabilitation/replacement of the Central Street Bridge over the Sudbury River in Framingham MA. The existing 91' single span 2-lane box beam Superstructure was replaced with New England Bulb Tee Girders and a Cast-in-Place concrete deck. The contract also included the rehabilitation of the existing concrete abutments, most notably the replacement of the concrete hammerhead pier, as well new concrete caps along the abutments and wingwalls, approach roadwork and drainage improvements, utility upgrades, new sidewalks, guardrail, and driveway aprons.	Bridge Replacement - Central Street over the Sudbury River	BRIDGE/HIGHWAY	$3,313,190.12	100%	20%	10/30/2014	9/19/2016	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 3 Phone:(508) 929-3800 Scott Kallin	BETA Group, Inc.
BLACKSTONE, MA	The work for this project involves construction of a new bridge superstructure and modification of the pair of existing railroad bridge abutments over Main Street (Route 122), construction of the new pedestrian underpass under Church Street, and trail approach work.	Main Street Bridge (No. B-13-015) & Church Street Underpass	BRIDGE/HIGHWAY	$2,078,359.80	100%	30%	7/9/2014	7/7/2016	Commonwealth of Massachusetts Department of Conservation 251 Causeway Street, Suite 600 Boston, MA 02114 (617) 626-1250	Fay, Spofford & Thorndike, LLC
HOLDEN, MA	Demolition of the existing bridge (Bridge No. H-18-008) and partial removal and disposal of the existing abutments and wing walls. The installed superstructure consists of pre-stressed pre-cast concrete NEXT-D beams with composite reinforced concrete deck and cast-in-place sidewalks, S3-TL4 rail system, and a Superpave asphalt wearing surface. The proposed substructure consists of integral abutments founded on driven steel piles. Highway approach work included new bituminous pavement, highway guard rail, granite curb, cement concrete sidewalk, wheelchair ramps, and slope treatment. The adjacent intersection of Wachusett Street and Quinapoxet Street was widened along the southern side of Quinapoxet Street to accommodate a dedicated left turn lane.	Bridge Replacement (Precast NEXT D Beams) Route 31 (Wachusett Street) over the Quinapoxet River	BRIDGE/HIGHWAY	$2,194,862.61	100%	25%	1/29/2016	6/8/2016	Massachusetts Department of Transportation 10 Park Plaza, Boston, MA 02116 Main Phone: (617) 973-7800 District 3 Phone:(508) 929-3800 Resident Engineer: Byron Beauregard	Lenard Enginnering, Inc.
CHATHAM/HARWICH, MA	Removal of existing culverts under Route 28 at Muddy Creek in the Towns of Harwich and Chatham. Construction of a 94 foot clear span steel girder with composite concrete deck bridge in the form of prefabricated bridge units (PBU), and integral concrete abutment supported by H-piles. Excavation of approximately 5,000 CY of material to construct a new 22 foot wide by 200 foot long riprap lined channel for Muddy Creek. All work was completed within a 16 week closure of Route 28 between Jaunary to May 2016.	Muddy Creek Restoration Bridge Route 28 over Muddy Creek	BRIDGE/HIGHWAY	$4,981,732.66	100%	15%	8/24/2015	5/20/2016	Town of Harwich 732 Main Street Harwich, MA 02645 Robert Cafarelli 508-430-7516	CDR Maguire

HUB FOUNDATION
TIE BACK/GROUND ANCHOR JOBS COMPLETED IN THE LAST 3 YEARS

Emmanuel Michaelidis

From: Frank Khatib <frank.khatib@hubfoundation.com>
Sent: Thursday, August 18, 2022 12:44 PM
To: Emmanuel Michaelidis
Cc: Alan Watka
Subject: RE: Chatham Fish Pier Proposal

Mano,

Below is a list of the jobs with ground anchors/tiebacks that Hub has completed in the last 3 years:

1. Conley Terminal Berth 10 – Boston, MA
2. George Washington Highway – Lincoln, RI
3. Boston Garden Expansion – Boston, MA
4. Cooper Street Replacement – Meriden, CT
5. Meriden WPCF – Meriden, CT
6. NGRID Allens Ave – Providence, RI
7. Silverline Gate – Chelsea, MA
8. Route 8 Rehabilitation – Bridgeport, CT
9. UMASS MED NERB – Worcester, MA

HUB FOUNDATION

FRANK KHATIB

M 765.409.8723 O 978.456.2387
frank.khatib@hubfoundation.com
OUR NEW WEBSITE hubfoundation.com
139 Billerica Road, Chelmsford, MA 01824

From: Emmanuel Michaelidis <EMichaelidis@masbuildingandbridge.com>
Sent: Thursday, August 18, 2022 7:43 AM
To: Frank Khatib <frank.khatib@hubfoundation.com>
Cc: Alan Watka <alan.watka@hubfoundation.com>
Subject: RE: Chatham Fish Pier Proposal

Thanks, can you guys please email me today a list of all your ground anchors jobs completed in the last 3 years per Addendum #2.

Ground anchor subs shall have at least five (5) years of experience working on similar projects. Ground anchor subs shall provide list of completed projects installing ground anchors in the past three years.

Thank you,
-Mano

Emmanuel Michaelidis

NorthStar Rental.com

SECTION 00510

NOTICE OF AWARD

Dated: September 09, 2022

TO: Michael Socci, MAS Building and Bridge, Inc

ADDRESS: 18 Sharon Avenue, Norfolk, MA 02056

RE: Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project
Town of Chatham, MA

The Contract Sum of your contract is three million, six hundred fifty thousand, two hundred forty-seven dollars ($3,650,247.00). This is based on the sum of your base bid of three million, six hundred forty-five thousand, two hundred forty-seven dollars ($3,645,247.00) and your unit price #1lump sum of five thousand dollars ($5,000.00).

Two copies of each of the Contract Documents accompanying will be delivered separately or otherwise made available to you.

You must comply with the following conditions precedent within ten (10) calendar days after the date of this Notice of Award, that is by September 09, 2022.

1. You must deliver to the Owner four (4) fully executed counterparts of the Agreement. Each of the Contract Documents must bear your signature.
2. You must deliver to the Owner the Performance Bond, executed by you and your surety.
3. You must deliver to the Owner the construction labor and material Payment Bond, executed by you and your surety.
4. Provide all certificates of insurance and endorsement pages required hereunder to the Owner.

Further, you may deliver any requests for substitution within thirty-five (35) days of the date of this Notice of Award, that is by October 14, 2022.

Failure to comply with these conditions within the time specified will entitle the Owner to consider your Bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited.

Within ten (10) days after you comply with those conditions, the Owner will return to you one fully signed counterpart of the Agreement Owner, Town of Chatham.

BY: Jill R. Goldsmith Town Manager
(Name and Title)

END OF SECTION

SECTION 00520

AGREEMENT

Town of Chatham (the "Owner") and MAS Building & Bridge, Inc., hereinafter referred to as "Contractor," for the consideration hereinafter stated, hereby agree as follows:

1. PROJECT. Contractor shall perform everything required to be performed, shall provide and furnish all of the labor, equipment, materials, and tools to perform, within two hundred and seventeen (217) calendar days for the Bulkhead work and **two hundred and fifty nine (259)** calendar days for the balance of the work, after the NOTICE TO PROCEED, which is anticipated to be given no later than **SEPTEMBER 9, 2022** for the following work:

CHATHAM FISH PIER – BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT TOWN OF CHATHAM, MA

in strict accordance with the Contract Documents pertaining thereto and signed by the Engineer for the Owner, which Documents are incorporated herein and made a part of this Agreement as if herein fully set forth. Subject to all authorized modifications, completion of construction activities must be achieved no later than **MAY 26, 2023**.

CONTRACT AMOUNT. Owner shall pay to Contractor, as full consideration for the faithful performance by Contractor of the aforementioned work, the amount of Three Million Six Hundred Forty Five Thousand Two Hundred Forty Seven Dollars ($3,645,247.00) computed in accordance with Contractor's accepted Bid dated August 22, 2022, which accepted Bid is incorporated herein by reference thereto as if herein fully set forth.

2. SUPERVISION. All of the work to be done shall be done under the direction and supervision of, and to the approval of, Owner or its authorized representative, and the work shall be done in the best workmanlike manner, conforming strictly to the provisions of the specifications and plans made thereof.

3. COMPLIANCE WITH LAWS. (a) Contractor shall comply with all applicable provisions of the Massachusetts General Laws inclusionary of any and all Labor and Labor Relations Statutes.

Before the Agreement between Owner and Contractor is entered into, Contractor shall submit written evidence that it and any subcontractors have obtained for the period of the Contract, full Workers' Compensation insurance coverage for all persons whom they employ or may employ in carrying out the work under this Contract. This insurance shall be in accordance with the requirements of the most current and applicable state Workers' Compensation insurance laws. The Contractor in signing this Agreement certifies to Owner as true the following statement:

I am aware of the provisions of Massachusetts General Laws, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

5. PERFORMANCE STANDARDS. The Work must be performed and completed in accordance with all requirements of law and no Work shall be undertaken until Contractor has been issued all required permits from all applicable municipal, state and federal governmental bodies. "Completion" of the Work includes obtaining all certificates, or amendments of existing certificates, as the case may be, which relate to the performance of the Work. Unless otherwise specified in this Agreement, the Work must be performed in a good and workmanlike manner and in accordance with the best modern practice and with materials and workmanship of the highest quality. Contractor shall check and verify all dimensions, grades, and levels before commencement of performance and whenever necessary during the progress thereof.

6. PAYMENTS. Owner shall pay the Contractor for complete and accepted performance of the Work, subject to additions and deductions by Change Orders. The Contractor agrees to provide with each payment application (invoice), lien waivers sufficient to discharge any liability from the Owner to Contractor. Partial payments shall cover work completed through the 25th calendar day of each month for contracts where the number of working days exceeds twenty (20). No partial payments will be made for contracts having a time limit of twenty (20) days or less, unless completion has been significantly delayed by causes which are clearly not the fault of the Contractor. When partial payments are to be made, the Contractor shall submit to the Owner, on Owner' forms, an estimate of the total amount of work accomplished, which will show the computed amount due less a retention which shall be 10% of the value of the work accomplished. No partial payments will be made for materials stored on the job but not yet installed, unless otherwise provided in the Contract Documents. Each request for payment application must be approved by the Project Engineer and will not be considered as submitted until the Owner, Contractor and Project Engineer agree to unit qualities covered by the payment application. Once Owner has received the approved request for payment application, Owner shall process the Contractor's invoice and pay Contractor any undisputed amount within thirty (30) calendar days from the date of receipt of a complete application for payment from Contractor.

7. JOB SITE. The Contractor shall at all times enforce strict discipline and good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the assigned task. The Contractor at all times shall keep the job site free from accumulation of waste materials or rubbish caused by its operations. At the completion of the Work, it shall remove all its waste materials and rubbish from and about the job site as well as its tools, construction equipment, machinery and surplus materials. The Contractor shall comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the Work, the safety of persons and property and their protection from damage, injury, or loss. Contractor shall provide repair response within twenty-four (24) hours of request by Owner during the course of performance of the Work under this Agreement for any repair work that has been poorly constructed and or performed or any work that results in either consequential or actual damage to any property associated with the Contractor's operations.

8. STORAGE OF MATERIALS. Materials and equipment shall be stored in a neat and orderly manner at locations designated by the Owner, taking all necessary precautions to prevent fire hazards and spontaneous combustion and to conform to the requirements of all applicable regulatory agencies and insurance policies.

9. EQUIPMENT AND MATERIALS. Contractor shall furnish all labor, tools, scaffolding, ladders, equipment, supplies and materials required in performing all Work under this Agreement. Owner assumes no liability or responsibility for the care, safety, or preservation of any tools, machinery, equipment, material or supplies and all risks thereof are assumed by Contractor.

10. SAFETY PROCEDURES. Contractor shall at all times take all necessary and customary precautions in introducing and maintaining safety measures to protect the persons and property of others on or adjacent to the Work site against all damage, loss, or injury resulting from the Work involved under this Agreement. Contractor shall comply with any site-specific safety plans for the individual project properties. Protective arrangements will be taken in all instances to prevent Work operations from in any way damaging the premises or any personal property or any other work or operations, and from causing or allowing any pollution to leak, flow, or escape into any waterway or sewer. Contractor's obligation to protect shall include the duty to provide, place, and adequately maintain at or about the Worksite suitable and sufficient guards, lights, barricades, and enclosures. Contractor shall dispose of all hazardous materials used or produced in connection with this Agreement in the manner required by law.

11. PERMITS AND TAXES. The Contractor shall pay any and all federal, state, and municipal taxes for which the Contractor may be liable in carrying out this Agreement.

12. LIQUIDATED DAMAGES. Subject to all authorized modifications, It is hereby agreed by the parties to the Agreement that in case all work called for under the Agreement is not finished or completed on or before the time set forth in this Agreement, damage will be sustained by Owner, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the Owner will sustain in event of and by reason of such delay; Liquidated damages have been read, negotiated and agreed to by both parties and are stated as ~~set forth in the project specifications~~ follows:

    a. If Contractor shall neglect, refuse, or fail to substantially complete the **Bulkhead work (including Pier, Fendering, and Cathodic Protection) by April 14, 2023** (as duly adjusted pursuant to the Contract), Contractor shall pay the Owner $500 for each day that expires after such time until this phase of the Work is completed as determined by a pay request submitted by the Contractor and approved by the Construction Manager. The number of calendar days between Notice to Proceed (assumed September 9, 2022) and Substantial Completion is two hundred and seventeen (217) days.

    b. If Contractor shall neglect, refuse, or fail to substantially complete the **balance of the work (including the lower lot and sidewalk, guardrail, lighting, Harbor Master building deck and stair, and Barcliff walkway, by May 26, 2023** (as duly adjusted pursuant to the Contract), Contractor shall pay the Owner $250 for each day that expires after such time until this phase of the Work is completed as determined by a pay request submitted by the Contractor and approved by the Construction Manager. The number of calendar days between Notice to Proceed (assumed September 9, 2022) and Substantial Completion is two hundred and fifty nine (259) days.

APRIL 14, 2023	**Bulkhead**
APRIL 14, 2023	**Cathodic Protection**
MAY 26, 2023	**Lower Lot Sidewalk/Guardrail/Lighting**
MAY 26, 2023	**HM Deck/Barcliff Walk**

Time is of the essence in all respects on this Contract. Contractor shall accordingly prosecute all Work diligently, using such means and methods of construction as will assure Substantial ~~full~~ Completion not later than the respective dates set forth above, ~~respectively,~~ as such dates may for good cause (as set forth in the Construction Documents) be extended by the Owner. Nothing in this Article, however, grants the Contractor the privilege to use means or methods that do not accord with sound and accepted practices.

In the event that the Contractor fails, refuses, or neglects to fully and finally complete the Work to the satisfaction of the Owner (Final Completion) as required in the Contract for each of the aforementioned categories of Work within thirty (30) days of the respective Substantial Completion dates for each such category, the Owner may, in its sole discretion, assess additional liquidated damages in the amount of $250 for each day that expires after the date of Substantial Completion of each phase of the Work up through the date of Final Completion thereof.

The amounts of liquidated damages imposed hereunder shall be cumulative and may, at Owner's option, be deducted and retained in whole or in part as a credit from any Contract Sum amounts then owed Contractor or which may have been paid to the Contractor. If no amounts are then owed to Contractor, Contractor shall pay to Owner the amount of liquidated damages upon written demand therefor. The liquidated damages shall cease once the Contractor has fully and completely any breach as set forth hereunder.

13. ABANDONMENT; INCREASE. All Work shall be performed according to a mutually agreed upon schedule. The suspension of work by the Contractor for any reason (other than the sole fault of the Owner), which exceeds four hundred and eighty hours (480) hours, shall be deemed abandonment of the project by the Contractor, and the Owner shall have available any and all remedies, including but not limited to surety participation pursuant to the terms of the faithful Performance Bond.

    It is further agreed that in case the work called for under this Agreement is not completed in all of its parts and requirements within the number of calendar days specified, Owner shall have the right to increase the number of calendar days or not, as may seem best to serve the interest of Owner; and if it is decided to increase the said number of calendar days, Owner shall further have the right to charge to Contractor, and deduct from the final payment for the work, all or any part, as Owner may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses of Owner which are directly chargeable to this Agreement, except that the cost of final surveys and the preparation of the final estimate shall not be included in such charges to be paid by Contractor.

14. GUARANTY. Except as otherwise may be provided herein, Contractor hereby expressly guarantees for two (2) full years from the date of the final completion of the work under this Agreement and acceptance thereof by Owner, to repair or replace any part of the work performed hereunder which constitutes a defect resulting from the use of inferior or

defective materials, equipment or workmanship. If, within said period, any repairs or replacements in connection with the work are, in the opinion of the Project Engineer, rendered necessary as a result of the use of inferior or defective materials, equipment or workmanship, Contractor agrees, upon receipt of notice from Owner, and without expense to Owner, to promptly repair or replace such material or workmanship and/or correct any and all defects therein. If Contractor, after such notice, fails to proceed promptly to comply with the terms of this guarantee, Owner may perform the work necessary to effectuate such correction and recover the cost thereof from Contractor or his sureties.

Any and all other special guarantees which may be applicable to definite parts of the work under this Agreement shall be considered as an additional guarantee and shall not reduce or limit the guarantee as provided by Contractor pursuant to this paragraph during the first year of the life of such guarantee.

As security for the faithful performance by the Contractor for maintenance for the period herein required, the Contractor shall, upon acceptance of the work performed under the Contract, in addition to the faithful Performance Bond and labor and material Payment Bond required.

15. INDEMNIFICATION. The Contractor hereby indemnifies and shall at all times save and hold harmless the Town of Chatham, and its officers, attorneys, employees, and agents from and against any and all claims (including workers' compensation and wage claims), demands, suits, actions, liabilities, damages, penalties, judgments, and costs and expenses, including without limitation additional engineering costs and attorney's fees and the costs and expenses of litigation, of or by anyone that in any way is caused by, arises out of, or is occasioned by the performance, activities, operations, conducts, negligence, or omissions of the Contractor, or any of its agents or employees, including subcontractors.

16. INSURANCE.Contractor, at its sole cost and expense, shall acquire and maintain in full force and effect throughout the term of this Agreement Workers' Compensation, employer's liability, commercial general liability, and owned, non-owned and hired automobile liability insurance coverage relating to Contractor's Work to be performed hereunder covering Owner' and Department's respective risks, as their interest may appear, in form subject to the approval of the Owner. The minimum amounts of coverage corresponding to the aforesaid categories of insurance per insurable event shall be as follows:

Insurance Category	Minimum Limits
Workers' Compensation	Statutory minimum and endorsement for United States Longshoremen's & Harbor Workers Act, the Jones Act Coverages
Employer's Liability	$1,000,000.00 per accident for bodily injury or disease.

Commercial General Liability	$3,000,000.00 per occurrence for bodily injury, personal injury and property damage.
Excess Liability (Umbrella)	$3,000,000.00 per occurrence for bodily injury, personal injury and property damage.
Automobile Liability	$1,000,000.00 per accident for bodily injury and property damage (coverage required to the extent applicable to Contractor's vehicle usage in performing work hereunder).

Any deductibles or self-insured retentions must be declared to and approved by Owner. At the option of Owner either Contractor's insurer shall reduce or eliminate the deductibles or self-insured retentions with respect to Owner, it's Board, commissions, boards, committees, officers, agents and employees, or Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Concurrently with the execution of this Agreement, Contractor shall furnish Owner with certificates of the insurance required hereunder and, with respect to evidence of commercial general liability automobile liability and fire insurance coverage, original endorsements:

a. Precluding cancellation or reduction in coverage before the expiration of thirty (30) days after Owner shall have received written notification of cancellation or reduction in coverage first class mail;

b. Providing that Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability (cross liability endorsements);

c. Naming Owner, its Board, commissions, boards, committees, officers, employees and agents as additional insureds; and

d. Providing that Contractor's insurance shall be primary insurance relating to Contractor's work hereunder with respect to Owner, and further providing that any insurance or self-insurance maintained by Owner shall not be excess of Contractor's insurance and shall not be contributory with it.

17. PERFORMANCE BOND. Contractor shall provide, on the execution of this Agreement, a good and sufficient corporate surety bond in the penal sum of one hundred percent (100%) of amount bid, which bond shall be conditioned upon the faithful performance of all work required to be performed by Contractor under this Agreement. Said bond shall be liable for any and all penalties and obligations which may be incurred by Contractor under this Agreement. Acceptance of the bond by the Owner is subject to the review and approval of the bond by the Owner Counsel's office.

18. PAYMENT BOND. In addition to the faithful Performance Bond required herein, Contractor shall furnish a good and sufficient corporate surety bond in the penal sum of fifty percent (50%) of amount of bid. Acceptance of the bond by the Owner is subject to the review and approval of the bond by the Owner Counsel's office.

19. TIME DELAYS. If the Contractor is delayed in the performance of the Work due to changes ordered in the Work by the Owner or, by labor disputes, fire, unusual delay in transportation, unavoidable casualties, certified natural disasters, then the contract time may be extended by a Change Order for such reasonable time as both parties have mutually agreed upon. **Winter weather conditions are not a reason for a delay in the performance of work.** Contractor agrees, as a special inducement to the Owner, to make no claim for damages for delay in the performance of this Contract occasioned by the Owner's act, or omission to act, or anyone acting on the Owner' behalf; and Contractor agrees that any claim for delays by the Owner shall be exclusively and fully compensated for by an extension of time to complete performance of the Contract Work.

20. PAYMENT OF MATERIALMAN AND LABORERS. The Contractor shall make prompt payment of all claims for labor performed and materials furnished, used or consumed in the Work, including without limitation fuel, lumber, building materials, machinery, vehicles, tractors, equipment, fixtures, apparatus, tools, appliances, supplies, electric energy, gasoline and other motor oil, lubricating oil and greases, and the premiums for Worker's Compensation insurance. Contractor shall indemnify and hold Owner harmless for any and all losses or expenses from any and all mechanic's or material man's liens from being filed on any Owner' Property. Should any mechanic's liens or materials man's liens be filed by Contractor agrees to have any and all releases cleared and satisfied prior to any payments being released. The Owner shall, in its discretion notify Contractor and or Contractor's representative of any lien and require Contractor to release liens as a condition precedent to further monthly progress payments.

21. FINAL PAYMENT. Upon completion of all the Work included under the Contract, the Contractor shall submit its final invoice. The Owner will, at the expiration of thirty (30) days after delivery of the approved payment application and acceptance, pay, and hereby binds itself to pay the Contractor for accepted work, except such sum or sums of money as may have been already paid, and as may be lawfully retained under any of the provisions of the Agreement herein set forth. Prior to the final payment, Contractor will deliver to the Owner waivers of lien from all those who supplied labor, material, or services in completion of the Contract, together with satisfactory proof of full payment to such suppliers.

22. PAYMENTS AND COMPLETION. Any payment not made when duly due and owing to the Contractor shall bear interest at the rate of seven percent (7%) per annum from the date on which said amount is found to be due and payable until the date, which it is paid. Payments may be withheld on account of (1) Work defects not remedied, (2) claims filed, (3) failure of the Contractor to make payments properly to sub-Contractor's or for labor, materials or equipment, (4) damage of the Owner' property or neighboring property, or (5) failure to carry out the Work in accordance with this Agreement or any other breach of this Agreement.

23. CHANGE ORDERS. (a) Contractor understands that the Owner may modify or change the details of the Project so as to require the performance of extra Work. All change orders or modifications to the Agreement shall be in writing, signed by the Contractor and the Owner. If any changes are made, Contractor will perform the same but only after receiving a written order for such performance from the Owner, it being understood by Contractor that under no circumstances shall any extra Work be performed unless and until such written order is given to Contractor by the Owner. For any such extra Work performed, Contractor shall be compensated by the Owner at the unit prices set forth in the Contract Documents, or for unspecified items shall be negotiated by the Owner and Contractor in a commercially reasonable amount at the time the Change Order is signed. The Owner may at its election omit items from the Contract Work whenever the Owner deems it advisable to do so. And if the Owner shall notify Contractor of such omission, the omitted Work shall not be performed and there shall be deducted from the Contract price at the stated amounts set forth in the Contract Documents or for unspecified items, a commercially reasonable amount at the time the Change Order is signed to compensate for the omission.

    If any dispute shall arise at any time on a claim by Contractor that an item of Work is not Contract Work but extra Work, Contractor shall nevertheless perform the same if directed to do so by the Owner. However, to preserve Contractor's right to claim extra compensation for the disputed Work, Contractor must, prior to the commencement of the disputed Work, notify the Owner in writing that Contractor is performing the same under protest. The same procedure shall prevail as to any dispute as to a deduction for omitted Work (or as the case may be, to sustain Contractor's contention as to the appropriate compensation for extra Work that is not disputed to be an "extra" as long as the Contractor so notifies the Owner prior to commencement of the "extra") the notice in that circumstance to be given no later than ten (10) days after the tender of payment by the Owner to Contractor of the reduced amount (failing such written protest, it shall be deemed that Contractor has acquiesced to the Owner' contention that the Work is not extra but Contract Work or that the reduction (or amount of compensation for a non-disputed "extra" is correct, as the case may be). The giving of the protest provided for above, and giving it timely, are express conditions precedent to maintaining any remedial procedure, whether arbitration or otherwise, pertaining to Contractor's claim.

24. WARRANTIES AND CORRECTION OF WORK. Contractor warrants materials and workmanship to be in compliance with all applicable codes, ordinances and laws, constructed according to sound engineering and construction standards, in a workmanlike manner, and to be free from defects and liens at the time of installation and performance and as of the Completion Date. Contractor shall promptly perform such work and supply such materials necessary to correct, at its own expense, defects in materials and workmanship, and any Work failing to conform to the Agreement. In the event that Contractor fails to perform any Warranty Work within thirty (30) days of written notice by the Owner, or in the event that performance is not possible within such time period because of weather or other unavoidable delays and if the Contractor fails to provide a written undertaking to the Owner to perform such Warranty Work within a specific time period after notice, then the Owner shall be entitled to contract for the repairs or replacement of the defective work with a third party and Contractor agrees to reimburse the Owner for the costs of such Warranty Work promptly upon demand, together with interest at the rate provided herein on any sums unpaid under the Agreement and all costs of collection,

including reasonable attorney's fees, if such reimbursement is not made within thirty (30) days of written demand therefore by the Owner.

25. COOPERATION WITH CONSULTANT. Contractor understands and agrees that the Owner has hired Foth Infrastructure & Environment, LLC (Foth) as Construction Manager, Project Engineer, and Project Consultant. Contractor agrees to fully cooperate with the Licensed Site Professional (LSP), Foth, or any other such person or organization with regard to such oversight.

26. DEFAULT AND TERMINATION. The following shall be considered to be Events of Default under the Contract:

    a. Contractor's failure to achieve Substantial Completion or Final Completion of the respective categories of the ~~complete all~~ Work in accordance with the schedule provided for in the Agreement;

    b. Contractor's failure to perform the Work described in the Agreement in accordance with the scope of services and specifications provided;

    c. The dissolution, termination of existence, insolvency, or business failure of the Contractor;

    d. The appointment of a receiver for any property belonging to Contractor;

    e. Contractor's making of an assignment for the benefit of creditors, or the commencement of proceedings under a bankruptcy or insolvency law by or against the Contractor;

    f. The failure of the Contractor to obtain or maintain any insurance coverage required under the contract; and

    g. Contractor's failure to comply with any of the Agreement terms as set forth in the specifications plans and permits required.

    If an Event of Default is not corrected or remedied within five (5) working days of written notice of such default, then the Owner shall be entitled to terminate this Agreement without further notice. In such event, the Owner shall be entitled to contract for the completion of the Work to be performed under the Agreement by a third party and Contractor shall be responsible for all extra costs and damages, including liquidated damages, incurred by the Owner.

27. NOTICES. Notices to be given under this Agreement shall be in writing and may be personally delivered or sent by United States mail, first class postage prepaid, addressed to the respective party at the address set forth above, or to such other addresses that the parties shall designate in writing from time to time. Notices shall be deemed given when personally delivered or three (3) business days after mailing.

28. CAPTIONS. Any captions to or headings of the sections, paragraphs or subparagraphs of this Agreement are solely for the convenience of the parties, are not a part of this Agreement and shall not be used for the interpretation or determination of the validity of this Agreement or any provision hereof.

29. INCONSISTENCIES. To the extent that any term or provision of the Contractor's Bid is inconsistent with any term or provision contained in this document, the terms and

provisions contained in this document shall supersede and control this Agreement. To the extent that any term or provision in this agreement is found to be void or unenforceable, nevertheless any and all remaining terms shall remain in full force.

30. DEFINITIONS. Terms and phrases, which are defined in any part of this Agreement, shall have the defined meanings wherever used throughout this Agreement. The terms "hereunder" and "herein" and similar terms used in this Agreement shall refer to this Agreement in its entirety and not merely the article, section, sub-section, paragraph or sub-paragraph in which they are used.

31. STATE LAW. This Agreement and its application shall be governed by the laws of the Commonwealth of Massachusetts. Any and all disputes shall be brought in the trial court for **Barnstable County**, Massachusetts

32. ENTIRE AGREEMENT; INTEGRATION. This Agreement supersedes any and all other Agreements, either oral or in writing, and contains all of the covenants and agreements between the parties. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by either party or anyone acting on behalf of any party to this Agreement, which are not embodied herein, and that no other agreement, statement or promise not contained in this Agreement shall be valid or binding. Any modification of this Agreement will be effective only if it is in writing, signed by the party to be charged. If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will nevertheless continue in full force without being impaired or invalidated in any way. Failure of any party hereto at any time to require performance by the other party of any provision of this Agreement shall not affect the right of such party to require performance of that provision, and any waiver by any party of any breach of any provision of this Agreement shall not be construed as a waiver of any continuing or succeeding breach of such provision, a waiver of the provision itself, or a waiver of any right under this Agreement. This Agreement may be executed in any number of counterparts by different parties hereto in separate counterparts, each of which when so executed and delivered shall be deemed to an original and all of which counterparts of this Agreement, taken together, shall constitute but one and the same instrument. Neither Contractor nor Owner shall assign, sublet or transfer any rights under or interest of this Agreement (including, but without limitation, moneys that may become due or moneys that are due) without the prior written consent of the other, except to the extent that any assignment, subletting or transfer is mandated by law or the effect of this limitation may be restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement. Contractor and Owner each is hereby bound, and the partners, successors, approved assigns, executors, administrators, and legal representatives of each are hereby bound to the other party to this Agreement and to the partners, successors, approved assigns, executors, administrators, and legal representatives of such other party, in respect to all covenants, agreements and obligations of this Agreement.

The documents listed below are part of the Contract Documents and are incorporated by this reference as if fully set forth herein. Contractor shall pay particular attention to any and all mitigation measures set forth in the permit documents and shall comply with same.

A. Contract Specifications

B. Contract Plans

C. Addendums
D. Notice to Bidders
E. Bidding Requirements
F. Notice of Award
G. Notice to Proceed
H. Agreement
I. Faithful Performance and Payment Bonds
J. General and Special Conditions
K. Submittals and Substitutions
L. Temporary Facilities and Controls
M. Environmental Protection
N. Health and Safety

33. UNDISPUTED PAYMENTS. The acceptance by Contractor of an undisputed payment made under the terms of the Contract shall operate as, and shall be, a release to Owner, and their duly authorized agents, from all claim of and/or liability to Contractor arising by virtue of the Contract related to those amounts. Disputed contract claims in stated amounts may be, specifically excluded by Contractor from the operation of the release.

34. SUBSTITUTION OF SECURITIES. The Contractor may substitute securities for the amounts retained by the Owner to ensure performance of the Contract in a form acceptable to the Owner(s).

35. STATEMENT UNDER PENALTY OF PERJURY. The representations made herein, including the Bidder's licensing information hereinafter furnished, are made under penalty of perjury. The undersigned understands that any bid not containing said licensing information, or containing any information, which is subsequently proven false, shall be considered non-responsive, and shall be rejected by Owner.

36. UNENFORCEABILITY. In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.

37. FINAL PAYMENT SUBJECT TO ACCEPTANCE. Final Payment is subject to acceptance of the Project by Owner.

38. FORCE MAJEURE. Either party's performance under this agreement is subject to acts of God, war (declared or undeclared), government regulation, terrorism, disaster, strikes, civil disorder, curtailment of transportation facilities, or similar occurrence beyond the party's control, making it impossible, illegal or commercially impracticable for one or both parties to perform its obligations under this agreement, in whole or in part. Either party may terminate this agreement without liability for any one or more of such reasons upon written notice to the other party within ten (10) days of such occurrence or receipt of notice of any of the above occurrences.

39. AUTHORIZATION. Each party by signing below hereby warrants that they are fully and duly authorized to enter into this agreement, do so freely and have read and understand the conditions and terms set forth herein along with any and all other documents forming the Contract Documents.

IN WITNESS WHEREOF, the respective parties hereto have hereinto set their hands and seals the day 15 of September, 2022.

OWNER (TOWN OF CHATHAM)

ATTEST:

BY: _____ Town Manager
(Name) (Title)

CONTRACTOR

ATTEST:

BY: _____ President
(Name) Michael Socci (Title)

END OF SECTION

SECTION 00550
NOTICE TO PROCEED

Owner:	Town of Chatham, MA	Execution Date.:	Sept 22, 2022
Contractor:	MAS Building and Bridge, Inc	Engineer's Project No.:	21C036
Engineer:	Foth Environmental Solutions, LLC		

Project: Chatham Fish Pier – Bulkhead Resheeting and South Jog Improvements Project

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence on **SEPTEMBER 23, 2022** pursuant to the General and Special Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the schedule of Substantial Completion is:

APRIL 14, 2023	Bulkhead
APRIL 14, 2023	Cathodic Protection
MAY 26, 2023	Lower Lot Sidewalk/Guardrail/Lighting
MAY 26, 2023	HM Deck/Barcliff Walk

and the date of readiness for final payment must be achieved is **JUNE 30, 2023**.

Before starting any Work at the Site, Contractor must comply with the following:
Any and all submittals as required by the Contract Documents

Owner: Town of Chatham, MA Date Issued: September 23, 2022

Jill M. Goldsmith
Authorized Signature

By: Jill Goldsmith Title: Town Manager

Copy: Engineer

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SECTION 00700

GENERAL AND SPECIAL CONDITIONS (WATERFRONT WORK)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Specifications sections, apply to work of this section.

1.2 INTRODUCTION

A. If, during the performance of the Work, the Contractor finds a conflict, error, or discrepancy in the Contract Documents, the Contractor shall so report to the Engineer in writing at once. Before proceeding with the Work affected thereby, the Contractor shall obtain a written interpretation or clarification from the Engineer. Any work done before the Engineer renders his decision is at the Contractor's sole risk.

B. In case of an inconsistency between Drawings and Specifications, or within either document not clarified by Addendum, the better quality or greater quantity of work shall be provided in accordance with the Engineer's interpretation.

C. The Contractor guarantees that in the performance of work, he and every person in his direct or indirect employment (i.e., subcontractors) shall abide by and comply with all Federal, State, and local laws including the Occupational Safety and Health Act.

D. The term Owner, as used throughout the Contract Documents, designates the Owner, or its duly authorized representative.

E. The term Owner's Representative, as used throughout these Specifications, indicates the Owner's authorized representative for a particular activity.

F. The term Engineer or Engineer-of-Record, as used throughout the Contract Documents, designates Ocean and Coastal Consultants, Inc., or its duly authorized representative.

G. The Work shall be substantially complete no later than **MAY 26, 2023**. If, in the opinion of the Owner, the Contractor has not mobilized sufficient plant or material and/or if the Contractor does not demonstrate that sufficient work is underway within 30 days after Award of Contract, the Owner reserves the right to terminate the Contract.

H. In the event of termination of the Contract pursuant to the conditions set forth herein, such termination shall not act so as to relieve the Contractor from liability for any

damages sustained by the Owner as a result of any breach by the Contractor of the terms of the Contract.

I. Definitions

1. Work: Material, equipment and labor required for the project, or the part of the project considered.
2. Provide: Furnish and install; provide in place.
3. Furnish: Furnish only, not including installation.
4. Install: Install in place materials or structures furnished by others.
5. Shall: Mandatory requirement (understood to be applicable whether or not "shall" is used in the sentence structure): omission of "shall" does not make the Specification or Contract Drawing non-mandatory.
6. Contract Sum: This shall be read as the Total Base Bid amount including any Owner accepted Alternates as included in the Form of Bid.
7. Day: For the purposes of this Contract a "day" shall equal a "calendar day" including weekends, holidays, and any other non-work periods.

1.3 DESCRIPTION OF WORK

The Work shall include, but not be limited to

A. Mobilization to and demobilization from the site.

B. Selective demolition of items scheduled for removal and/or reuse.

C. Installation of steel sheet pile bulkhead with ground anchors or tie rods and steel framing.

D. Installation of suitable clean backfill.

E. Installation of reinforced concrete cap and deck.

F. Installation of timber fender piles and other miscellaneous steel.

G. Remove, refurbish, and re-install rubber fender system.

1.4 SCOPE OF WORK

A. Schedule

The following submittal schedule of all shop drawings, etc., for review by the Engineer, shall be as follows:

1. Contractor's Submittal

Certain critical items are to be submitted by the Contractor within time frames listed in these Specifications. Unless specifically noted as such, the Contractor shall be

responsible for the timely submittal of all required items, taking into account the Engineer's review period as outlined herein, in order to maintain satisfactory progress of the Work

2. Engineer Review and Comments

Within fourteen (14) days after receipt of Contractor's submittal.

B. The Work shall be performed in a general sequence developed by the Contractor and submitted to the Engineer for review, in accordance with the requirements of the Contract. The Contractor is solely responsible for the means and methods of construction and for the sequences and procedures to be used.

C. The Contractor shall furnish and coordinate all plant, labor, supervision, materials, or shall furnish and coordinate all plant, labor, supervision, materials, equipment and appliances for all demolition and/or construction work in connection with the demolition and/or construction of the marine facilities.

D. It is the responsibility of the Contractor to coordinate work with other activities at the site to complete all work in a timely and cost-effective manner.

1.5 EXAMINATION OF EXISTING CONDITIONS

Before submitting a bid, it is a requirement of this Contract that each bidder visit the site to determine the conditions under which the Work is to be done. Such examination shall include, but not be limited to:

A. Structural detail of the existing structures and related facilities.

B. Various onsite utilities and structures not within the Scope of this Contract, but that may impact the execution of the Work. These will remain fully operational throughout the construction period.

C. The layout and structural condition of the existing structures and water depths.

D. Access space and possible work areas.

1.6 LIST OF CONTRACT DRAWINGS

The Contract Drawings which form part of these Specifications.

1.7 PERMITS

The Owner has secured certain permits required by Federal, and State authorities for the proposed activities. Copies of these permits are attached in Schedule C. It is the responsibility of the Contractor to perform the Work in accordance with the terms and conditions of the permits. The Contractor shall post copies of the permits at the site

throughout the course of the Work. The Contractor is responsible to obtain all permits associated with the legal disposal of construction debris. The Contractor shall secure all required local authorizations and permits.

1.8 CONTRACTOR FURNISHED MATERIALS

A. The Contractor shall furnish all materials for installation in the completed Work as specified hereinafter.

B. The Contractor shall handle these materials as they are delivered to the site or off-site work areas and shall store them in a designated storage area.

C. The Contractor furnished material is subject to review by the Owner or Engineer at the plant of manufacture at the Owner's option. Review by the Owner or Engineer is not to be construed as technical in nature and in no way shall be deemed to relieve the Contractor from its obligation herein to ensure the quality and integrity of the materials supplied by the Contractor for this project.

D. Project material furnished by the Contractor shall conform to the requirements of the Specifications stated hereinafter. The Contractor shall, as part of the Contract fee, also furnish all consumable materials necessary to complete the Work, such as, but not limited to, welding electrodes, safety equipment, etc.

1.9 INDEMNITY BY CONTRACTOR

The Contractor will indemnify and save harmless the Owner and Engineer from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against the Owner and Engineer by reason of any act or omission of the Contractor, or of any subcontractor to the Contractor, or of any person directly or indirectly employed by the Contractor or any such subcontractor, in the performance of any work for, or the rendering of any services to, the Owner.

1.10 INSURANCES

Contractor agrees that, at its own cost and expense, it shall procure and continue in force, insurance coverage. Such insurance shall be written by a company or companies authorized to engage in the business of general liability insurance in the state in which the demised premises are located, and there shall be delivered to the Owner with the bid customary certificates evidencing such paid-up insurance, which certificates are to be issued by the insurance companies. Such insurance shall be written by good and responsible companies reasonably acceptable to the Owner.

1.11 LAYOUT

A. The Contractor shall be solely responsible for the accuracy of all locations, dimensions, and levels and no plea as to instructions or order received from any other sources other

than information contained on Contract Drawings, Specifications or in written orders of the Owner or Engineer shall justify departure from the dimensions and elevations required by the Contract Drawings.

B. The Contractor shall take his own measurements at the site, verifying same with the Contract Drawings and existing facilities, and will be held responsible for the proper fit and alignment of completed work in position.

1.12 GUARANTEE

A. The Contractor shall guarantee to the Owner all materials and workmanship against original defects, or against injury from proper and usual wear when used for the purpose intended, for eighteen (18) months after date of final payment certifications and shall maintain all items in perfect condition during the period of guarantee.

B. Defects appearing during the period of guarantee shall be made good by the Contractor at his expense upon demand of the Owner, it being required that all work shall be in perfect condition when the period of guarantee shall have elapsed. In the event of default by the Contractor, the Company shall have the right to make good any and all defects and bill the Contractor cost plus 15% for administration fees.

1.13 PARKING, STORAGE, AND ACCESS TO WORK AREA

The Contractor shall coordinate with the Owner available parking, storage, and access to the work area. In no event shall theses area interrupt or disturb the Owner's operations. The Contractor shall protect the stored equipment and material from the elements in such a manner as to be satisfactory to the manufacturer of the equipment or material and the Owner.

1.14 SUBCONTRACTORS

A. A list of Subcontractors, pre-qualified by the Contractor, shall be submitted to the Owner by the Contractor with his bid. The Owner has the ultimate right to accept or reject any one or more of the subcontractors and must do so in writing after receipt of said list from the Contractor. No deviations shall be allowed from this list without approval of the Owner. Valid insurance certificates for subcontractors shall be submitted by the Contractor to the Owner with his bid.

B. The Owner shall receive, upon completion of this Contract in full from the Contractor, any reduction in the Subcontractor's price, which may result from a reduced scope of the Contractor's work.

1.15 NEATNESS OF THE SITE

At the Contractor's expense, the Contractor's working areas shall be cleaned by him on a day-to-day basis, with all rubbish removed from the site and all work areas cleaned at the end of each day. At final completion of all work the Contractor shall leave the entire

premises, within the site of his operations, clean and free from the rubbish resulting from his construction operations.

1.16 COMPENSATION

Compensation shall be based upon the Owner-accepted Schedule of Values.

1.17 UTILITIES

The Contractor is responsible to provide and maintain any and all utilities he deems necessary to affect the Work. It is the responsibility of the Bidder to verify the suitability of existing site utilities for their needs.

1.18 FIRE PROTECTION

The Contractor shall provide and maintain at his expense all required fire protection systems and devices as necessary to safely perform the Work in accord with the applicable regulations. It shall be operational throughout the period of construction.

1.19 COMPLIANCE WITH CONTRACT

The Owner shall have the right to withhold without penalty any payment described above, or sections referenced herein, for completed work should the Contractor fail to meet any obligations or requirements of the Contract. Any withheld payment shall be promptly made upon the Contractor's full compliance with the Contract.

1.20 ENVIRONMENTAL PROTECTION

Comply with all Local, State, and Federal requirements for protection of the environment during the Work. No later than 21 days following award of contract, submit a comprehensive plan describing the means and methods to be employed for protection, containment, and clean up. Ensure that personnel are properly trained and that sufficient equipment and materials are readily available for use if required. Abide by State and Federal spill reporting requirements.

1.21 EROSION AND SEDIMENTATION CONTROL

During execution of the Work, the Contractor is required to install and maintain any and all required sedimentation and erosion control measures to protect adjacent waterways, streets, and properties. Measures include but are not limited to temporary berms, hay bales, silt fences, containment booms, and turbidity curtains. In accordance with State regulatory authorizations, the Contractor shall furnish, install, and maintain temporary turbidity curtains during construction. Temporary materials and equipment shall conform to requirements for Temporary Work.

1.22 TEMPORARY WORK

Labor, equipment, and materials required to perform the Work that, upon completion, are not a part of the Work, shall be furnished, installed, and subsequently removed from the site by the Contractor.

1.23 SAFETY PLAN

No later than 21 days following award of contract, submit two (2) copies of the Contractor's project-specific Safety Plan.

1.24 MATERIAL SAFETY DATA SHEETS

No later than 21 days following award of contract, submit two three-ring bound sets of all Material Safety Data Sheets (MSDS) for materials anticipated for use in execution of the Work. As the Work progresses and new materials are used on the project, submit two (2) copies of the corresponding MSDS's for these new materials no later than the time of arrival of the materials on site.

1.25 WORK SCHEDULE REQUIREMENTS

Access to the site and acceptable working hours are limited to those agreed with the Client.

1.26 ENGINEERING SERVICES CHARGEABLE TO THE CONTRACTOR

The Owner reserves the right to charge the Contractor for additional engineering services if required due to the Contractor's actions or inactions.

1.27 CONTRACTOR'S REPRESENTATIVE

The Contractor shall assign an individual to be the single point of contact for all job-related correspondence and issues. This individual shall be assigned to the project from start to finish and shall not be replaced without permission from the Owner. This individual shall be responsible to disseminate information to other members of the Contractor's staff and to applicable subcontractors as necessary. This individual shall be the Contractor's designated representative at the site, and shall be authorized to conclude all matters, financial and otherwise, on the Contractor's behalf. The Contractor's Representative shall attend all project meetings and shall be on site at all times while the Contractor or his Subcontractors are present on site.

1.28 MEANS AND METHODS

The structures have been designed to be self-supporting and stable after construction is complete. The stability of the structures prior to completion is solely the responsibility of the Contractor. This responsibility extends to related aspects of the construction activity including, but not limited to, erection methods, erection sequence, connections,

temporary bracing, forms, shoring, use of equipment, and similar construction procedures. Review of construction by the Owner and Engineer is for general conformance with the Contract Documents only. Lack of comment by the Owner and Engineer with regard to construction procedures shall not be interpreted as approval or acceptance of any such procedures.

1.29 PRECEDENCE

It is expressly understood and agreed that failure by the Owner or Engineer to exercise his authority or prerogative to order the Contractor for any duly authorized purpose shall not be considered to set a precedent for any other activities.

1.30 SAFETY OF PERSONS AND PROPERTY

The Contractor is solely responsible for the safety of his operations. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

A. Persons employed by the Contractor in performance of the Work, and persons nearby that may be affected by the Contractor's operations or the Work.

B. The Work, including all equipment and materials which will be incorporated in the Work.

C. Other properties and structures at the site, or on adjacent properties.

1.31 UNCOVERING WORK

If any Work is covered prior to acceptance by the Owner or Engineer, the Work shall, if requested by the Owner, be uncovered for the Owner's observation and then be re-covered at the Contractor's sole cost and expense.

1.32 DAILY CONSTRUCTION REPORTS

For each day that Work is performed at the site, prepare and submit a Daily Construction Report to the Engineer. Include the following information in the report, as a minimum:

A. Project name

B. Contractor's name

C. Date

D. Hours worked

E. Weather condition

F. Subcontractors working on site

G. Materials deliveries (material, quantities, and vendor)

H. Trades working on site (trade and number of workers per trade)

I. Equipment on site (manufacturer and model number, with notation of whether the equipment was idle or was used in the Work)

J. Specific work performed, location and type of work

K. Visitors to the site

L. Materials or Equipment leaving the site (including debris removal)

M. Submit reports no later than 12:00 noon for the previous day's work

1.33 MONITORING OF EXISTING STRUCTURES DURING CONSTRUCTION

The Owner reserves the right to establish an independent monitoring program in order to evaluate the effect of the Work on the existing structures to remain on site. Such monitoring may include, but are not necessarily limited to settlement gauges, tilt plates, and crack gauges.

The Owner reserves the right to suspend the Contractor's operations at any time based upon the monitoring data.

1.34 SUBSURFACE OBSTRUCTIONS

Obstructions are defined as unforeseen objects, which impede progress. Objects that are made known to the Contractor will not be considered to be obstructions. Notify the Engineer immediately upon encountering unforeseen objects. No consideration will be given for additional compensation on this account without this timely notification.

END OF SECTION

SECTION 01010

SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

Description of work:

The Work comprise the Bulkhead Over-sheeting and South Jog Improvements at the Chatham Fish Pier located at 45 Barcliff Avenue Extension in Chatham, MA. The scope of work includes but is not necessarily limited to the following:

1. Carefully demolish and remove from the site those items scheduled to be demolished and removed.
2. Carefully remove and store off or on site those items scheduled to be reused. Replace those items as indicated on the drawings such that they are undamaged and fit for their intended purpose.
3. All utility lines that are altered or relocated during the construction are to be of an equal standard to those now existing and are to be acceptable to the Owner and the appropriate Utility Company. The Contractor is to inform and liaise with the Owner regarding all work that may affect the existing utilities. The Owner will make arrangements with the Utility Company for services to be cut-off if required during construction. The Contractor is responsible for notification of local utilities.
4. Excavate, backfill, compact, and grade the site to the elevations and limits shown on the Drawings, as specified herein, and as needed to meet the requirements of the construction shown on the Contract Documents.
5. Install steel sheet pile continuous bulkhead in strict accordance with the applicable drawings, and subject to the terms and conditions of the Contract.
6. Install ground anchor, tie rod system, and steel framing in strict accordance with the applicable drawings, and subject to the terms and conditions of the Contract.
7. Install reinforced concrete cap and deck in strict accordance with the Contract Documents.
8. Install new timber pile fender system as shown on the Contract Documents.
9. Reinstall existing gangway.
10. Revise lower parking lot as shown on the Contract Documents, including a new Americans for Disabilities Act (ADA) walkway, extension of the edge of pavement to within one (1) foot of the property easement line, installation of a seeded swale between the easement line and the new edge of pavement, new lot

striping, new lot guardrail, relocation of one (1) storm drain and removal of one (1) storm drain, and the installation of a concrete pad to support crane loading requirements.

11. Install a new Deck and Stair for the Harbor Masters Building as shown on the Contract Documents, including all handrail, decking, stairs, sub-structure, and foundations.
12. Install Cathodic Protection as shown on the Contract Documents.
13. Install new Mechanical, Electrical Plumbing (MEP) scope as shown on the Contract Documents, including a new water service to the South Jog, electrical improvements to the Harbormasters Building, and South Jog, and seven (7) new 12-foot poles and lighting fixtures. (See Add Alternate line-item electrical scope.)
14. As an Add Alternate line item, install a new concrete sidewalk, retaining wall and low-level lighting as shown on the Contract Documents.
15. All work shall be accomplished in full compliance with the permit requirements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01015

CONTRACTOR'S USE OF THE PREMISES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to work of this section.

1.2 SUMMARY

This Section applies to situations in which the Contractor or his representatives including, but not necessarily limited to, suppliers, subcontractors, employees, and field engineers, enter upon the Project Location.

1.3 QUALITY ASSURANCE

A. Promptly upon award of the Contract, notify all pertinent personnel regarding requirements of this Section.

B. Require that all personnel who will enter upon the Project Location certify their awareness of and familiarity with the requirements of this Section.

C. Require that all personnel (including subcontractors, visitors, suppliers, etc.) who will enter upon the Project Location abide by the project insurance requirements.

1.4 SUBMITTALS

Submit a detailed Site Utilization Plan containing a drawing depicting, as a minimum, the following:

A. Staging areas for equipment, both upland and waterborne.

B. Parking areas for project personnel.

C. Material storage areas.

D. Location of Contractor's field office(s).

E. Access roads throughout the site.

F. Lay-out of temporary utilities.

G. Location of refuse container(s).

1.5 TRANSPORTATION FACILITIES

A. Truck and equipment access:
   1. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the Project Location.

B. Contractor's vehicles:
   1. Require Contractor's vehicles, vehicles belonging to employees of the Contractor, and all other vehicles entering upon the Project Location in performance of the Work of the Contract, to use only the Owner designated site access way and parking areas.
   2. Do not permit such vehicles to park on any street or other area of the Project Location except in the area or areas designated by the Owner for such use.

1.6 SECURITY

A. Restrict the access of all persons entering upon the Project Location in connection with the Work to the Owner designated areas.

B. Use of existing buildings on site is restricted. Should the Contractor need access to these areas, permission must be requested and granted in advance by the Owner.

1.7 SITE ACCESS

Maintain clear vehicular access to all portions of the site at all times, at no time shall access be restricted. Access ways shall be detailed in the Site Utilization Plan described in Paragraph 1.4 above.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work required to:

A. Make the several parts fit properly.

B. Uncover work to provide for installing, review, or both, of ill-timed work.

C. Remove and replace work not conforming to requirements of the Contract Documents.

D. Remove and replace defective work.

1.3 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 SUBMITTALS

A. Request for Engineer's consent:
   1. Prior to cutting which affects structural safety, submit written request to the Engineer and secure written authorization to proceed cutting.
   2. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Engineer and secure his written authorization and the required Change Order prior to proceeding.

B. Notices to the Engineer:
   1. Prior to cutting and patching performed pursuant to the Engineer's instructions, submit cost estimate to the Engineer. Secure the Engineer's written authorization before proceeding with cutting and patching.

2. Submit written notice to the Engineer designating the time the Work will be uncovered, to provide for the Engineer's observation.

PART 2 - PRODUCTS

2.1 MATERIALS

For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

2.2 PAYMENT FOR COSTS

The Owner will reimburse the Contractor for cutting and patching performed pursuant to the written Change Order, after claim for such reimbursement is submitted by the Contractor. Perform other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection by the Contractor:
   1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling.
   2. After uncovering the work, inspect conditions affecting the installation of new work.

B. Discrepancies:
   1. If uncovered conditions are not as anticipated, immediately notify the Engineer in writing and secure the Engineer's written directions.
   2. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain the structural integrity of the Work.

B. Prior to cutting new or existing elements, carefully lay out the work required. Verify that the layout is correct and accurate as necessary to perform the construction safely and within the tolerances required.

3.3 PERFORMANCE

A. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.

B. Perform cutting and demolition by methods that will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new work.

C. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

D. Prevent migration of soils into waterways. Do not affect water quality of waterways.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to work of this section.

1.2 SUMMARY

A. Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:

B. Establishing and maintaining lines and levels.

C. Structural design of shores, forms, and similar items provided by the Contractor as part of his means and methods of construction.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 SUBMITTALS

A. Upon request of the Engineer, submit:
   1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
   2. Documentation verifying accuracy of field engineering work.
   3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or non-conformance with requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

Provide materials, not specifically described but required for a complete and proper execution of the Work, as selected by the Contractor subject to the review of the Engineer.

PART 3 - EXECUTION

3.1 PROCEDURES

In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:

A. Locate and protect control points before starting work on the site.

B. Preserve permanent reference points during progress of the Work.

C. Do not change or relocate reference points or items of the Work without specific direction from the Engineer.

D. Promptly advise the Engineer when a reference point is lost or destroyed or requires relocation because of other changes in the Work.
   1. Upon direction of the Engineer, require the field engineer to replace reference stakes or markers.
   2. Locate such replacements according to the original survey control.

END OF SECTION

SECTION 01340

SUBMITTALS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

A. Work included:
   1. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Work not included:
   1. Non-required submittals will not be reviewed by the Engineer.
   2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Engineer.

C. Definitions:
   1. "Or equivalent":
      a. Where the phrase "or equivalent," or "or equivalent as accepted by the Engineer," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equivalent unless the item has been specifically so accepted for this Work by the Engineer.
      b. The decision of the Engineer shall be final.

1.3 QUALITY ASSURANCE

A. Coordination of submittals:
   1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
   2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
   3. The Contractor shall procure a rubber stamp with identical wording to the sample Contractor's submittal stamp shown below.
      Contractor: _____

      This submittal is required per section _____ of the Specifications. The submitted items have been reviewed in detail and are correct and in strict conformance with the contract documents. The submitted items have been

coordinated with other work of this contract, existing structures, and work of other contracts.
By: _____

Date: _____

4. By affixing the Contractor's submittal stamp to each submittal, certify that this coordination has been performed. Submittals that do not bear the requisite stamp will be returned to the Contractor non-reviewed.

B. Substitutions
1. The Contract is based on the standards of quality established in the Contract Documents. Substitutions will be considered only when listed at time of bidding, on the form provided therefore in the bidding documents, and when substantiated by the Contractor's submittal of required data.
2. Do not substitute materials, equipment, or methods unless such substitution has been specifically accepted in writing for this Work by the Engineer.

1.4 SUBMITTALS

Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

A. Scale and measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Types of prints required:
1. Submit Shop Drawings in the form of four (4) blue line or black line prints of each sheet. Electronic submittals (PDF format) are acceptable.
2. Blueprints will not be acceptable.

C. One (1) print or electronic file with the Engineer's review comments will be returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

2.2 MANUFACTURER'S LITERATURE

A. Where contents of submitted literature from manufacturers include data not pertinent to the submittal, clearly show which portions of the contents is being submitted for review.

B. Submit four (4) copies or one (1) electronic submittal (PDF format) of manufacturers' data for review. One (1) copy with the Engineer's review comments will be returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes

2.3 SAMPLES

A. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of submittals" below.

B. Number of Samples required:
1. Unless otherwise specified, submit Samples in the quantity, which is required to be returned, plus one, which will be retained by the Engineer.
2. By prearrangement in specific cases, a single Sample may be submitted for review and, when accepted, be installed in the Work at a location agreed upon by the Engineer.

2.4 COLORS AND PATTERNS

Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Engineer for selection.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.
1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
2. On re-submittals, cite the original submittal number for reference.

B. Clearly label each submittal with a reference to the appropriate Specification Section for which the submittal is made.

C. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

D. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

E. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. Make the submittal log available to the Engineer for his review upon request.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.

B. Partial submittals may be rejected as not complying with the provisions of the Contract.

C. The Contractor may be held liable for delays so occasioned.

3.3 TIMING OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.

B. In scheduling, allow at least fourteen (14) days for review by the Engineer following his receipt of the submittal.

3.4 ENGINEER'S REVIEW

A. Review by the Engineer does not relieve the Contractor from responsibility for errors or omissions that may exist in the submitted data.

B. Revisions:
1. Make revisions required by the Engineer.
2. If the Contractor considers any required revision to be a change, he shall so notify the Engineer.
3. Make only those revisions directed or accepted by the Engineer.

C. Reimbursement of Engineer's Costs:
1. In the event substitutions are proposed to the Engineer after the Contract has been awarded, the Engineer will record all time used by him and by his consultants in the evaluation of each such proposed substitution.
2. Whether or not the Engineer accepts a proposed substitution, the Contractor shall be responsible for the costs of the Engineer and his consultants for all time spent by them in evaluating the proposed substitution, plus administrative fees. The costs will be deducted from outstanding pay requests due to the Contractor by way of a Change Order.

D. Engineer's Review Stamp: The Engineer's review stamp will indicate the status of the submittal, and corresponding action to be taken by the Contractor as follows:
1. No Exceptions Taken: When the Engineer marks the submittal "No Exceptions Taken", the Work covered by the submittal may proceed, provided it complies with the requirements of the Contract Documents. The final payment depends on that compliance.

2. Revise, Re-submittal Not Required: When the Engineer marks the submittal "Revise, Re-submittal Not Required", the Work covered by the submittal may proceed provided it complies with the notations on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
3. Revise, Resubmit for Record: When the Engineer marks the submittal "Revise, Resubmit For Record", the Work covered by the submittal may proceed provided it complies with the notations on the submittal and requirements of the Contract Documents. The submittal must be revised to comply with the notations on the submittal and requirements of the Contract Documents and must then be resubmitted to the Engineer. Final payment depends on that compliance.
4. Resubmit: When the Engineer marks the submittal "Resubmit", do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise and prepare a new submittal according to the notations, resubmit without delay. Repeat if necessary to obtain a different action mark.
    a. Do not use or allow others to use submittals marked "Resubmit" at the Project Site or elsewhere where Work is in progress.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

B. Provide temporary facilities and controls needed for the Work including, but not necessarily limited to:
   1. Temporary utilities such as heat, water, electricity, and telephone.
   2. Field office for the Contractor's personnel.
   3. Sanitary facilities.
   4. Enclosures such as tarpaulins, barricades, and canopies.
   5. Temporary fencing of the construction site.

B. Definitions
   1. Temporary: Labor, equipment, and materials required for the installation of facilities and controls which, upon completion of the Work, are not a part of the completed Work, shall be furnished, installed, and subsequently removed from the site by the Contractor.

1.3 PRODUCT HANDLING

Maintain temporary facilities and controls in proper and safe condition throughout the progress of the Work.

PART 2 - PRODUCTS

2.1 UTILITIES

A. Water
   1. Limited fresh water supply is available at the site.
   2. Provide necessary temporary service and piping.

B. Electricity
   1. Provide and pay for temporary electrical service and electricity used in construction.
   2. Provide necessary temporary wiring.

3. Provide temporary area distribution boxes so located that the individual trades may furnish and use extension cords to obtain power and lighting at points where needed for work, inspection, and safety.

C. Heating
1. Provide and maintain temporary heat necessary for the proper conduct of operations needed in the Work.

D. Telephone
1. Provide and maintain temporary telephone service to the Contractor's office at the site.

2.2 FIELD OFFICES AND SHEDS

A. Contractor's facilities
1. Provide a temporary field office building and sheds adequate in size and accommodation for the Contractor's offices, supply, and storage. As a minimum, equip the Contractor's field office with a telephone, telephone answering machine, facsimile machine, and photocopier which shall remain in operation throughout the Work.

B. Sanitary facilities
1. Provide temporary sanitary facilities in the quantity required by applicable health regulations for use by all personnel.
2. Maintain in a sanitary condition at all times.

2.3 ENCLOSURES

Provide and maintain for the duration of construction all temporary scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

2.4 CONTAINERS FOR DEBRIS & REFUSE REMOVAL

Provide and maintain suitable containers for the collection and disposal of trash and debris generated from demolition and construction. Do not use containers that are the property of the Owner, or the property of others that may be present on site.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Engineer.

END OF SECTION

SECTION 01610

HEALTH AND SAFETY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

A. This Section describes health and safety requirements, as well as personnel protection requirements for activities on the project. Direct contact with soil, groundwater, surface water or sediment contaminated with oil and/or hazardous materials is not anticipated during the course of the work.

1.3 HEALTH AND SAFETY REQUIREMENTS

A. Construction site safety is the sole responsibility of the Contractor.

B. Contractor to supply a Health and Safety Plan (HASP) for each discipline or trade under their contract (or sub-contract).

C. Employees who will be in direct contact with hazardous materials, or soil, groundwater, surface water or sediment contaminated with oil and/or hazardous materials must conduct the work in accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120, as implemented through the Contractor's HASP.

D. It is anticipated that work will be performed in Personnel Protection Level D. This includes hard hat, safety glasses, hearing protection, gloves, and work boots. In the event that the Contractor determines that a level of protection higher than Level D is required, the Contractor's personnel will take the necessary steps outlined in the Contractor's HASP. Notify the Owner and Engineer immediately of the need to upgrade levels of protection.

E. Immediately correct violations of the health and safety requirements contained in the Specifications or standards referenced above. Notification of violations noted by the Owner may be verbal or written. Failure of the Owner to provide notification of health and safety violations does not relieve the Contractor from responsibility for conformance with the regulations and the safety of personnel and property.

F. If the Contractor fails to promptly correct violations of the health and safety standards and requirements noted by the Owner, the Owner will issue an order to stop all or part

of the Work. When satisfactory corrective action is taken, an order to resume work will be issued. The Contractor shall not be entitled to any extension of time, or to any claim for damage or additional compensation by reason of either the notification of a violation or the stop-work order.

G. Maintain an accurate record of, and report to the Owner immediately, all cases of death and, within 24 hours, all cases of occupational diseases or traumatic injury to employees or the public involved, and property damage incident to the performance of work under this Contract. Report using OSHA Form 300, Log of Work-Related Injuries and Illnesses. The rights and remedies of the Owner provided in the Specifications are in addition to any other rights and remedies proved by law or under this Contract.

H. In the event there is a conflict between the requirements contained in the OSHA Health and Safety Codes and Standards, the U.S. Department of Labor Construction Health and Safety Codes and Standards, promulgated under Section 108 of the Contract Work Hours and Safety Act (40 U.S.C. 327 et seq.), as amended, the more stringent requirement will prevail.

I. Examine all Drawings and Sections of the Specifications for requirements and provisions of the work that this Section affects.

1.4 SUBMITTALS

A. Upon request of the Engineer, submit:
1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
2. Documentation verifying the accuracy of field engineering work.
3. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or non-conformance with requirements of the Contract Documents.

1.5 APPLICABLE REGULATIONS

A. Comply with all applicable health and safety regulations, including but not limited to:
1. "United States OSHA Code of Federal Regulations 29 CFR 1910.120 for Hazardous Waste Operations (HAZWOPER).
2. U.S. Environmental Protection Agency (EPA) Executive orders 1440.2 and 1440.3.
3. OSHA Guidance Manual for Hazardous Waste Site Activities, DHHS/NIOSH Pub. No.85-115, 10/85.
4. 29 CFR 1926: Safety and Health Requirements for Construction, OSHA.
5. EPA/625/9-85/006, Protection of Health and Safety at Hazardous Waste Sites: An Overview.
6. 40 CFR 761: TSCA.
7. 454 CMR 10, Massachusetts Division of Labor and Industry.
8. 105 CMR 670.0000 and 441 CMR 21.00 (Right to Know).

9. 310 CMR 40.0000 (Massachusetts Contingency Plan; MCP).

B. Conduct the work in compliance with the above regulations and policies as well as any changes or addenda to the same as set forth prior to the completion of work.

C. Comply with all applicable regulations, this Specification, and recognized standards and regulatory practices. The Owner and the Engineer will not be responsible at any time for the Contractor's violation of any applicable local, state, or federal regulations, or endangerment of laborers or others.

1.6 INFORMATIONAL SUBMITTALS

A. If oil or hazardous materials are discovered on site, submit a Contractor's HASP for encountering oil and hazardous materials (OHM) including exposure monitoring and prevention methods, and emergency response procedures. Include the name, title, and affiliation of the Contractor's designated Health and Safety Officer. The HASP will be prepared by a qualified professional and comply with the requirements of 29 CFR 1910.120 and all other applicable regulations, including, but not limited to those listed in Paragraph 1.5-A (above).

B. Prior to beginning work submit one completed Safety Data Sheet (SDS) for each material as required by Federal Standards No. 313 (Preparation and Submission of Material Safety Data Sheet), as amended. Department of Labor Form OSHA-174, or GSA-approved Alternate Form A will be submitted. Follow the information on the MSDS to assure safe use, handling, storage, and environmentally acceptable disposal of hazardous materials. A complete set of SDSs will be maintained on site.

C. Accident Reporting: Submit a copy of each accident report that the Contractor or Subcontractors submits to their insurance carriers within 7 calendar days of date of the accident.

PART 2 - PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT

Provide Personal Protective Equipment (PPE) for all Contractor and Subcontractor personnel in accordance with the Contractor's HASP. Delays in the Work due to inability to provide PPE as site conditions require shall be at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 GENERAL

A. Designate an on-site, full-time Health and Safety Officer who will be responsible for implementing and enforcing the HASP. Perform air quality monitoring as required by the HASP, and as conditions warrant.

B. Conduct work to prevent any on-site employee or others who may be in the general vicinity from exposure to conditions that are unsanitary, hazardous, or dangerous to health and safety, as determined under Construction Safety and Health Standards promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327 et seq.) as amended. Construction Safety and Health Standards promulgated by the Secretary of Labor may be obtained from the regional or area office of the OSHA of the U.S. Department of Labor.

C. Immediately correct violations of the health and safety requirements contained in the Specifications or Standards referenced above. Notification of violations noted by the Owner may be verbal or written. Failure of the Owner to provide notification of health and safety violations does not relieve the Contractor from responsibility for conformance with the regulations and the safety of personnel and property.

D. If the Contractor fails to promptly correct violations of the health and safety standards and requirements noted by the Owner, the Owner will issue an order to stop all or part of the Work. When satisfactory corrective action is taken, an order to resume work will be issued. The Contractor shall not be entitled to any extension of time, or to any claim for damage or additional compensation by reason of either the notification of a violation or the stop-work order.

E. Maintain an accurate record of, and report to the Owner immediately, all cases of death and, within 2 hours, all cases of occupational diseases or traumatic injury to employees or the public involved, and property damage incident to performance of work under this Contract. Report using OSHA Form 300, Log of Work-Related Injuries and Illnesses.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

Provide an orderly and efficient transfer of the completed Work to the Owner.

1.3 QUALITY ASSURANCE

A. Prior to requesting review by the Engineer, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested review.

B. Submit written certification that Contract Documents have been reviewed by the Contractor, the Work has been inspected by the Contractor, and that the Work is complete and in accordance with the Contract Documents.

1.4 PROCEDURES

A. Substantial Completion
   1. Substantial Completion is defined as the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.
   2. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Engineer a comprehensive list of items to be completed or corrected.
   3. Prepare and submit the list required by Paragraph 1.4-A-2 above.
   4. Within a reasonable time after receipt of the list, the Engineer will review to determine the status of completion.
   5. Should the Engineer determine that the Work is not substantially complete:
      a. The Engineer promptly will so notify the Contractor, in writing, giving the reasons, therefore.
      b. Remedy the deficiencies and notify the Engineer when ready for additional review.
      c. The Engineer will review the Work.
   6. When the Engineer concurs that the Work is substantially complete

a. The Engineer will prepare a "Certificate of Substantial Completion", accompanied by the Contractor's list of items to be completed or corrected, as verified by the Engineer.
b. The Engineer will submit the Certificate to the Owner and to the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

B. Final Completion
1. Prepare and submit to the Engineer a notice that the Work is complete and ready for final review and acceptance.
2. Certify that
   a. Contract Documents have been reviewed.
   b. Work has been reviewed for compliance with the Contract Documents.
   c. Work has been completed in accordance with the Contract Documents.
   d. Equipment and systems have been tested as required and are operational.
   e. Work is completed and ready for final review.
3. The Engineer will make a review to verify status of completion.
4. Should the Engineer determine that the Work is incomplete or defective
   a. The Engineer promptly will so notify the Contractor, in writing, listing the incomplete or defective work.
   b. Remedy the deficiencies promptly and notify the Engineer when ready for additional review.
5. When the Engineer determines that the Work is acceptable under the Contract Documents, he will request the Contractor to make closeout submittals.

C. Closeout submittals include, but are not necessarily limited to
1. Operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by the Engineer.
2. Warranties and bonds.
3. Spare parts and materials extra stock.
4. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to
   a. Certificates of Inspection.
   b. Certificates of Occupancy.
5. Certificates of Insurance for products and completed operations.
6. Evidence of payment and release of liens.
7. List of subcontractors, service organizations, and principal vendors, including names, address, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.
8. As built drawings and surveys.

D. Final adjustment of accounts
1. Submit a final statement of accounting to the Engineer, showing all adjustments to the Contract Sum.
2. If so required, the Engineer will prepare a final Change Order showing adjustments to the Contract Sum that were not made previously by Change Orders.

1.5 INSTRUCTION

Instruct the Owner's personnel in proper operation and maintenance of systems, equipment, and similar items which were provided as part of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

1.3 QUALITY ASSURANCE

A. Conduct daily inspection, and more often, if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY

A. Use only the cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General
   1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
   2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.

3. At least twice each month, and more often, if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site
1. Daily, more often, if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
2. Weekly, and more often, if necessary, inspect all arrangements of materials stored on the site. Re-stack, tidy, or otherwise service arrangements to meet the requirements of Subparagraph 3.1-A-1 above.
3. Maintain the site in a neat and orderly condition at all times.

C. Structures
1. Weekly, and more often, if necessary, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
2. As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

3.2 FINAL CLEANING

A. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.

B. Site
1. Unless otherwise specifically directed by the Engineer, broom clean paved areas on the site and public paved areas adjacent to the site.
2. Completely remove resultant debris.

C. Structures
1. Exteriors
   a. Visually inspect exterior surfaces and remove all traces of soil, cement-based materials, waste materials, smudges, and other foreign matter.
   b. Remove all traces of splashed materials from adjacent surfaces.
   c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
   d. In the event of stubborn stains not removable with water, the Engineer may require light sandblasting or other cleanings at no additional cost to the Owner.

D. Schedule final cleaning as approved by the Engineer to enable the Owner to accept completely clean Work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Engineer in accordance with the General Conditions of the Contract.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

B. Throughout the progress of the Work, maintain an accurate record of changes in the Contract Documents.

C. Upon completion of the Work, transfer the recorded changes to a set of Record Documents.

1.3 QUALITY ASSURANCE

A. Accuracy of Records
   1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
   2. Accuracy of records shall be such that future searches for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.

B. Make entries within 24 hours after receipt of information that the change has occurred.

1.4 SUBMITTALS

A. The Engineer’s review of the current status of Project Record Documents may be a prerequisite to the Engineer’s review of requests for progress payment and request for final payment under the Contract.

B. Prior to submitting each request for progress payment, secure the Engineer’s review of the current status of the Project Record Documents.

C. Prior to submitting request for final payment, submit the final Project Record Documents to the Engineer and secure his review.

1.5 PRODUCT HANDLING

A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents.

B. In the event of loss of recorded data, use the means necessary to again secure the data for the Engineer's review.
   1. Such means shall include, if necessary, in the opinion of the Engineer, removal and replacement of concealing materials.
   2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.1 RECORD DOCUMENTS

A. Job set: Promptly following receipt of the Contract, secure from the Engineer at no charge to the Contractor one complete set of all Documents comprising the Contract.

B. Final Record Documents: At a time nearing the completion of the Work, secure from the Engineer at no charge to the Contractor one complete set of Drawings in the Contract.

PART 3 - EXECUTION

3.1 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.1-A above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET".

B. Preservation
   1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the job set.
   2. Do not use the job set for any purpose except entry of new data and for review by the Engineer, until start of transfer of data to final Project Record Documents.
   3. Maintain the job set at the site of Work as designated by the Engineer.

C. Making entries on the drawings
   1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
   2. Date all entries.
   3. Call attention to the entry by a "cloud" drawn around the area or areas affected.

4. In the event of overlapping changes, use different colors for the overlapping changes.

D. Make entries in the pertinent other Documents

E. Conversion of schematic layouts
1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray a precise physical layout.
   a. Final physical arrangement is determined by the Contractor, subject to the Engineer's review.
   b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items that are shown only schematically on the Drawings.
2. Show on the job set of Record Drawings, by dimension accurate to within one inch, the centerline of each run of items such as is described in Sub-paragraph 3.1-E-1 above.
   a. Clearly identify the item by an accurate note such as "cast iron drain," "galv. water," and the like.
   b. Show, by symbol or note, the vertical location of the item ("under slab," "in ceiling plenum," "exposed," and the like).
   c. Make all identification sufficiently descriptive that it may be related reliably to the Specifications.

3. The Engineer may waive the requirements for conversion of schematic layouts where, in the Engineer's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Engineer.

3.2 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Engineer's review of recorded data prior to transfer
1. Following receipt of the Drawings described in Paragraph 2.01-B above, and prior to start of transfer of recorded data thereto, secure the Engineer's review of all recorded data.
2. Make required revisions.

C. Transfer of data to Drawings
1. Carefully transfer change data shown on the job set of Record Drawings to the corresponding final set of Record Drawings, coordinating the changes as required.

2. Clearly indicate at each affected detail and other Drawing a full description of changes made during construction, and the actual location of items described in subparagraph 3.1-E-1 above.
3. Call attention to each entry by drawing a "cloud" around the area or areas affected.
4. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

D. Transfer of data to other Documents
1. If the Documents other than Drawings have been kept clean during progress of the Work, and if entries thereon have been orderly to the acceptance of the Engineer, the job set of those Documents other than Drawings will be accepted as final Record Documents.
2. If any such Document is not so accepted by the Engineer, secure a new copy of that Document from the Engineer at the Engineer's usual charge for reproduction and handling, and carefully transfer the change data to the new copy to the acceptance of the Engineer.

E. Review and submittal
1. Submit the completed set of Project Record Documents to the Engineer as described in Paragraph 1.4-C above.
2. Participate in review meetings as required.
3. Make required changes and promptly deliver the final Project Record Documents to the Engineer.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION

SECTION 02070

DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to work of this section.

1.2 SUMMARY

Description of work:

The project scope as described herein is generally as follows:

1. Carefully demolish and remove from the site those items scheduled to be so demolished and removed.
2. Carefully remove and store off or on-site items scheduled to be reused. Replace these items as indicated on the drawings such that they are undamaged and fit for their intended purpose.
3. All utility lines that are altered or relocated during the construction are to be of an equal standard to those now existing and are to be acceptable to the Owner and the appropriate Utility Company. The Contractor is to inform and liaise with the Owner regarding all work that may affect the existing utilities. The Owner will make arrangements with the Utility Company for services to be cut-off if required during construction. The Contractor is responsible for notification of local utilities.

1.3 DEFINITIONS

A. To Be Removed: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and reinstalled.

B. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed, and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Submit a demolition plan and schedule of selective demolition activities to the Owner's Representative before starting work. Indicate detailed sequence of selective

demolition and removal work, with starting and ending dates for activities at each repair location. Indicate locations of temporary barriers.

B. Pre-demolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations.

C. Temporary Shoring Design and Calculations shall be stamped by a Massachusetts Licensed Professional Engineer experienced in Marine Construction design and be submitted to the Owner's Representative before starting work.

D. Except for items specifically scheduled for reuse, demolished material shall be considered property of the Contractor and shall be completely removed from the job site and disposed of in legal manner. The Contractor shall submit a detailed disposal plan to the Engineer. The disposal plan shall include the name, address, and telephone number of the disposal site. The Contractor shall submit to the Engineer a signed manifest and trip ticket stating that the debris was disposed at the stated site within 24 hours after the material has left the site.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing local, state, and federal regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 Safety and Health Program Requirements for Demolition Operations.

C. Pre-demolition Conference: Conduct conference at the Project site with the Owner and the Owner's Representative.

1.6 PROJECT CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Notify Owner/Owner's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: Handle and dispose of hazardous materials offsite in accordance with State and Federal regulations. Generate all necessary chain-of-custody reports and include special trucking and disposal costs in the bid price. Storage or sale of removed items or materials on-site is not permitted.

D. Existing Utilities to Remain: Support and protect existing adjacent utilities against damage during demolition operations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify location of existing utilities.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be reused.

D. Contractor shall coordinate with the Owner's Representative to verify lengths of repairs and proposed structures required in locations indicated in the Contract Plans prior to start of work.

E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate, and measure the nature and extent of conflict. Promptly submit a written report to the Owner's Representative.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction surveying, photographs and/or videotapes.

3.2 PREPARATION

A. Site Access and Temporary Controls: Sequence and conduct selective demolition and debris-removal operations to ensure minimum interference with operations at the work area and adjacent occupied and used facilities.

1. The Contractor will be responsible for coordinating construction activities with the Owner's Representative's schedules. As this is an active waterway and pedestrian area, the Contractor may be required to move equipment to allow the Owner or the Owner's Representative access to the site for other operations. No additional payment will be made for these moves. Questions regarding the site or to coordinate any access that the Contractor wants to undertake prior to the submission of a proposal may be addressed to the Owner's Representative. This shall include parking of crew vehicles and on-site utility usage.

B. Temporary Facilities: Provide temporary fencing, barricades and other protection as indicated, and as required, to prevent injury to people and damage to adjacent facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, erosion, or collapse

of existing or proposed construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished. Contractor shall provide any and all shoring necessary in order to complete the project in accordance with the Contract Documents.

3.3 DEMOLITION

A. Do not begin demolition until notified to proceed by the Owner or the Owner's Representative.

B. General: Demolish and remove existing construction only to the extent indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools sized to minimize disturbance of adjacent surfaces.
2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
3. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting framing.
4. Dispose of demolished items and materials promptly.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

D. If the Contractor's equipment or methods result in damage to adjacent structures or elements to remain or cause demolition beyond indicated limits or acceptable limits necessary to complete successful repairs, or results in damage to other property of the Owner, then the Owner's Representative will direct the Contractor to modify demolition operations. Such modification shall be performed at no additional expense to the Owner or the Owner’s Representative. Demolition beyond accepted limits shall be repaired by the Contractor at no additional expense to the Owner or the Owner’s Representative.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

General: Except for items or materials indicated to be reused or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them at appropriate disposal faculties.

1. Burning: Do not burn demolished materials.
2. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.5 DAMAGE DURING DEMOLITION

Any damage due to the Contractor's operations to the portions of the existing structures that are to remain in place shall be repaired by the Contractor at no cost to Owner's Representative/Owner.

1. The repair shall be approved by the Owner's Representative.

3.6 CLEANING

Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specifications sections, apply to the work of this section.

1.2 SUMMARY

The work covered under this Section of these Specifications consists of providing all plant, labor, supervision, equipment, appliances, and materials, and in performing all operations in connection with the excavation of unsuitable organic soils, subgrade preparation, and placement and compaction of fill materials.

1.3 SUBMITTALS

A. Earthwork Operation and Sequence Plan

1. Submit an earthwork plan outlining types of equipment, daily volumes, and grading, excavation, subgrade preparation, proof-compacting, backfilling, and compaction sequence to the Owner's Representative for review at least 10 working days prior to commencement of construction.
2. Where excavation to design subgrade elevation results in the generation of suitable granular fill, indicate the proposed location (in plan and elevation) where granular fill will be reused on site.

B. Shoring and Bracing Plan

1. If the Contractor selects to use shoring and bracing, submit the support of the excavation plan to the Owner for review at least 10 working days prior to commencement of construction. The support of the excavation system shall be prepared by a Professional Engineer, registered in the state of Wisconsin.

1.4 DEFINITIONS

A. SOURCE shall mean those areas from which any material brought to the site is derived. All material brought to the site shall be certified in writing as clean and free from environmental contaminants. The sources and test results shall meet with the approval of the Owner's Representative before any material is delivered to the project. The following tests shall be performed on a sample of material from each source from

which the material is derived: Sieve Analysis, VOCs, SVOCs, TPH, PCBs and total and TCLP RCRA 8 metals.

B. SUITABLE MATERIALS, for reuse on-site, shall generally consist of predominantly granular (sand, gravel, silt, and rock) material free of organic material, peat, dredge debris, organic silt, and other objectionable material. Suitable materials shall be reused on-site as compacted or densified fill as designated on the drawings.

C. ORGANIC MATERIAL shall mean fibrous mats of roots, decaying vegetation, organic silt, peat, timber piles, planks, wharf or fendering, garbage and sanitary wastes.

D. UNSTABLE MATERIAL shall mean organic debris, frozen materials, topsoil, and organic silts.

E. SUITABLE CONSTRUCTION DEBRIS shall mean on-site concrete, brick, or asphalt debris, processed to be less than 6 inches in size that is suitable for compaction when mixed with granular material.

F. UNSUITABLE CONSTRUCTION DEBRIS shall mean on-site organic debris such as wood, stumps, organic material, roofing debris, or other miscellaneous debris that is unsuitable for compaction when mixed with granular material.

1.5 PREPARATION

A. Examine the site thoroughly and determine the existing conditions and difficulty of work to be performed.

B. Before commencing earthwork operations, determine that preparatory work has been completed.

C. Perform field surveys required to accomplish the work.

1.6 DEGREE OF COMPACTION

A. Expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D1557 Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft^3 (2700 kN-m/m^3)).

B. Abbreviated in this Specification as a percent of laboratory maximum dry density.

1.7 FIELD QUALITY CONTROL

A. Quality control compaction testing of material placed in the dry during construction will be provided by the Owner's Representative. The Owner's Representative shall be notified 48 hours prior to any excavation, fill, backfill, or compaction operations.

1. Permit the Owner's Representative to observe all subgrades for each layer of fill

or backfill. Additional fill or backfill should not be placed unless the Owner's Representative has approved the subgrade and/or the previous layer of fill.
2. When required or requested by the Owner's Representative, the Contractor shall provide field elevations of the compacted subgrade or fill layer.

B. Compacted materials that are below specified density shall be re-compacted at no additional expense to the Owner.

C. The Contractor shall bear the cost of removal of all unsuitable material placed without approval by the Owner's Representative that fails to conform to the specifications.

1.8 RESPONSIBILITY OF THE CONTRACTOR

A. The Contractor is responsible for adhering to regulations, Specifications, and recognized standard practices related to the management of contaminated and potentially contaminated material during excavation and removal activities. The Owner and Owner's Representative will not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers, passers-by, or any others.

B. The Owner will not be held negligent or liable for any inadequacies or deficiencies in the Contractor's site-specific worker health and safety plan or for any oversight or inadequacies in the Contractor's implementation of the safety plan.

C. Provide labor, materials, and equipment necessary to complete the work including:

1. Excavation, backfilling, on-site transportation, stockpiling, and maintenance of excavated material.
2. The Contractor is responsible for all construction, protection, and maintenance of soil stockpiles from excavation through chemical testing and on-site re-use or off-site disposal (if required). The Contractor shall stockpile material only in areas designated by the Owner.
3. The Contractor is responsible for providing all documentation to track potentially contaminated material from the time of excavation until it is accepted by and disposed of at the disposal facility.
4. The Contractor shall backfill excavations with suitable materials in accordance with this section and the limits and elevations shown in the Contract Drawings.

D. The Contractor is responsible for all disposal costs at the disposal facility.

1.9 REGULATORY REQUIREMENTS

A. Permits and Licenses

1. The Contractor shall obtain required federal, state, and local permits for excavation, storage, and disposal of contaminated material. Permits shall be obtained at no additional cost to the Owner.

PART 2 – PRODUCTS

2.1 SAND-GRAVEL FILL

A. SAND-GRAVEL FILL shall consist of hard, durable sand and gravel, and shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. It shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT FINER BY WEIGHT
*	100
1/2-inch	50-85
No. 4	40-75
No. 10	30-60
No. 40	10-35
No. 100	5-20**
No. 200	2-8

* Four inches (4") where placed as base below slab and pavement; elsewhere, two-thirds (2/3) of the loose lift thickness.
** The amount passing the No. 100 sieve should be between 40% and 70% of that amount passing the No. 40 sieve.

2.2 GRANULAR FILL

A. GRANULAR FILL shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. It shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT FINER BY WEIGHT
2/3 of the loose lift thickness	100
No. 10	30-95
No. 40	10-70
No. 200	0-10

Granular Fill if placed four feet below finish grade, at the discretion of the Owner's Representative, provided it is properly moisture controlled and can meet the required compaction. It should be noted, however, that these materials are very sensitive to changes in moisture content and may be difficult to properly compact using ordinary means and equipment.

2.3 DENSE GRADED AGGREGATE

A. DENSE GRADED AGGREGATE shall meet M2.01.7 in the Massachusetts Highway Department, Standard Specifications for Highways and Bridges, and shall conform to the gradation requirements below.

SIEVE SIZE	PERCENT FINER BY WEIGHT
2-inch	100
1 1/2 inch	70-100
3/4 inch	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

2.4 CRUSHED STONE

A. CRUSHED STONE shall consist of one or the other of the following material:

1. Durable crushed rock consists of the granular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated*, or other objectionable pieces.
   a. Thin or elongated pieces are defined as follows: Thin stones shall be considered to be such stones whose average width exceeds four (4) times their average thickness. Elongated stones shall be such stones whose average length is in excess of four (4) times their average width.
2. Durable crushed gravel stone obtained by artificial crushing of cobbles, boulders, or field stone with a minimum diameter before crushing of 8 inches.
3. The crushed stone shall be reasonably free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.
4. Crushed stone shall be uniformly blended according to the following grading requirements:

SIEVE SIZE	PERCENT FINER BY WEIGHT	
	3/4" INCH CRUSHED STONE	1-1/2" CRUSHED STONE
1 ½-Inch	--	100
1 ¼-Inch	--	85-100
1-Inch	100	--
3/4-Inch	90-100	10-40
1/2-Inch	10-50	0-8
3/8-Inch	0-20	--
No. 4	0-5	--
No. 200	<1	<1

5. All crushed stone referred to on the Drawings shall be 3/4-inch crushed stone unless otherwise specified.
6. "1-1/2" crushed rock aggregate" referred to on the Drawings shall be 1-1/2" crushed stone.

2.5 COMMON FILL

A. Common fill shall consist of sand, silt, gravel, or similar materials free from trash, topsoil, organic or compressible material, roots, and vegetation. Stones, rock, brick, and concrete fragments not exceeding 6 inches in their largest dimension are acceptable provided they are not nested when placed for compaction and can be readily spread and compacted during filling. Common fill may be acceptable for use as Granular Fill at the discretion of the Owner's Representative, provided it can be placed and properly compacted.

2.6 SAND FILL

A. Sand Fill shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic material. Sand Fill shall be a well-graded, medium to coarse sand with a maximum diameter of 1/4 inch and less than 10% passing the #200 sieve by weight.

PART 3 - EXECUTION

3.1 PROTECTION

A. Contact all utility companies and property owners who might have installations in the area to determine the location of all utilities and structures.

B. Protect above and below-grade utilities which are to remain.

C. Protect plant life, trees, lawns, and other features remaining as a portion of final landscaping.

D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

E. Implement temporary erosion control measures such as silt fencing, hay bales, sediment traps, etc. as required to minimize the effects of erosion and sedimentation in excavations.

F. Excavation cut shall be sloped sufficiently to prevent material from sliding into the excavation and to comply with local, state and Federal codes and regulations. Sheeting and bracing shall be placed as dictated by conditions.

G. The bottom of excavations shall be protected from frost action and surface drainage. Frozen material shall be removed and replaced with granular fill or concrete. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

H. All rock surfaces shall be level and cleaned of loose materials.

I. Slope Side of excavations to comply with OSHA requirements and local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions, stability of material excavated, or where shoring and bracing is more economical than sloping. Shoring and bracing shall be designed by a Professional Engineer, Registered in the Commonwealth of Massachusetts. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

J. If requested by the Owner's Representative, the Contractor shall place a 12-inch to 18-inch layer of Granular Fill or 6 inch of crushed stone and a layer of non-woven filter fabric over the natural underlying soil to stabilize areas which may become disturbed.

3.2 DISPOSAL

A. Remove all unsuitable and organic materials (as determined by the Owner's Representative) from the property and dispose offsite as required by local, State and Federal codes, rules and regulations. Remove existing foundations, demolition debris, abandoned utility piping, slabs, pavements, and other debris encountered in areas of construction. Dispose of excess or unsuitable material as part of the Contract price.

3.3 DRAINAGE

A. Direct surface water away from excavations, existing buildings, roadways and construction sites to prevent erosion and undermining of foundations.

B. Protect excavated slopes and backfill surfaces to prevent erosion and sloughing.

C. Perform excavation so that the site and the area immediately surrounding the site shall be continually and effectively drained.

3.4 DUST SUPPRESSION

A. Owner's Representative shall determine if dust generated at the site is significant enough to require dust suppression.

B. Dust suppression shall require application of water by Contractor. Contractor shall at all times keep machinery, and a sufficient supply of water onsite to suppress dust generated at the site, as necessary.

C. Contractor shall suppress dust as necessary throughout construction, and until vegetation or other surface treatments have been established, if necessary.

D. Uniformly apply water to surface, subgrade or layer of soil material requiring dust suppression.

3.5 COMPACTION

A. Heavily surface compact subgrade with a minimum of 6 passes of a vibratory roller having a drum weight of at least 10,000 pounds and a dynamic force of at least 20,000 pounds prior to placing fill.

B. Soft areas shall be excavated and filled with compacted granular fill.

C. Subgrade shall be uniform throughout. There shall not be hard spots or soft spots.

D. Prevent free water from appearing on surface during or subsequent to compaction operations.

E. Soil material too wet to permit compaction to specified density shall be removed and replaced or scarified and air dried.

3.6 FILLING AND BACKFILLING IN-THE-DRY OR ABOVE MEAN HIGH WATER

A. Material placement shall begin after approval of the subgrade by the Owner's Representative.

B. Use satisfactory materials to replace unsatisfactory materials.

C. Place satisfactory materials in horizontal layers not exceeding 12 inches in loose thickness where self-propelled or towed mechanical compaction equipment is used, or 9-inch loose lift thickness when hand-operated compactors are used.

D. Do not begin backfilling until construction below finish grade has been approved and the excavation is clean of trash and debris.

E. Place and compact fill and backfill to indicated finish grade within a tolerance of one foot horizontally and 1 inch vertically.

F. Do not place successive layers of earth fill material until the compaction requirements of the previous layer have been satisfied.

G. Maintain positive drainage on the surface of unfinished earth fills. Blade the unfinished surfaces smooth to a crown at the conclusion of each day's work.

H. Uniformly grade the finished earth fill surfaces such that they are smooth, compacted, and free from irregular surface changes.

I. Unless otherwise noted compact fill and backfill material to a minimum of 95 percent of the maximum dry density per ASTM D1557.

J. Moisture control:
   1. Where subgrade or layer of soil material must be moisture-conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material as needed to obtain optimum moisture content.
   2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

K. The Contractor shall use extra care when compacting adjacent to walls. Where walls are buried on both sides, backfill and compaction shall proceed on both sides of the wall so that the difference in top of fill level on either side of the wall shall not exceed 2 feet at any stage of construction. Where backfill of a buried wall is only on one side, only hand-operated roller or plate compactor shall be used within a lateral distance of 5 feet of back of wall.

L. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operations. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks, and compaction equipment.

M. The Contractor shall not place a layer of compacted fill on snow, ice or soil that was permitted to freeze prior to compaction. Removal of these unsatisfactory materials will be required as directed by the Owner.

3.7 DENSE GRADED AGGREGATE PLACEMENT, SPREADING, AND COMPACTION

A. Spread Dense Graded Aggregate over prepared subgrade.

B. Compact to a dry density of not less than 95 percent of the maximum density as determined by the Modified Proctor ASTM D1557, unless otherwise noted. Alternate blading and rolling will be required to obtain a smooth, even, and uniformly compacted course.

C. The final surface compaction shall be with a smooth wheeled power roller to obtain a firm and smooth surface finish.

D. Level and contour surfaces to elevation and gradients indicated.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.8 MAINTENANCE

A. Protect newly graded areas from traffic and erosion and keep free of trash and debris. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, remove to sound material, reshape, and compact to required density prior to further construction.

3.9 EROSION CONTROL

A. Protect disturbed areas from erosion.

3.10 DAMAGE

A. Any damage resulting from excavation, backfill and compaction shall be repaired by the Contractor to the satisfaction of the Owner's Representative and at the Contractor's expense.

END OF SECTION

SECTION 02361

TIMBER PILES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to work of this section.

1.2 SUMMARY

A. The work covered by this section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances, materials, and in performing all operations in connection with the installation of the timber piles, all in strict accordance with this Section of the Specifications.

1.3 SUBMITTALS

A. The Contractor shall submit sufficient technical data on the equipment necessary to accurately measure and record pile penetration and capacity during the entire driving of each pile.

B. No later than the time of delivery of materials to the site, submit certificates as to conformance with the specified species and grade prior to installation of any timber pile.

C. Hardware Certifications, including material specifications, grade, and finish.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All timber shall be stored in stacks such that there is an air space beneath the material and situated to prevent the timber from being exposed to standing water.

B. The material shall be stored on site in an area which will be designated by the Owner.

C. Timber shall be handled in an approved manner such that the material will not be damaged

PART 2 - PRODUCTS

2.1 CERTIFICATION

Greenheart timber piles shall be certified by lumber company stating specification (Guyana Grading Rule No. GR03) and compliance with ASTM D25.

2.2 MATERIALS

A. All piles shall be Greenheart timber.

B. Pile dimensions shall conform to ASTM D25.

2.3 INSPECTION

The Contractor shall notify the Project Engineer within 24 hours of delivery of all piles to be driven on the project site. At the Project Engineer's discretion, these piles are to be available for inspection. The Contractor shall assist the Engineer in maintaining records of the behavior of each pile during driving, the total penetration, and the significant blow counts before acceptance of final penetration. No piles shall be driven except in the presence of the Engineer, who shall be given notice at least 24 hours in advance of all pile driving. The Contractor shall mark the depth intervals on all piles.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

Withdraw piles that encounter underground obstructions sufficient to impede pile driving. Redrive as close as possible to original position, subject to review of Owner. Remove piles that split, broom, break, or drive out of line. Drive another pile in its place. Provide and maintain necessary lighting and barriers to adequately assure public safety. Provide adequate safeguards to protect from damage improvements on the work site and on adjacent properties.

3.2 EQUIPMENT

A. Drive piles with an impact hammer with sufficient energy and energy transfer characteristics to drive the piles to the required capacity and toe elevation without damaging the head. Use care not to injure piles by overdriving as would be indicated by rebound of hammer or staggering of pile. Cut off heads of piles accurately in accordance with the Contract Documents after completion of driving.

B. Rig the pile driver with hanging or fixed leads to guide hammer from highest to lowest points of travel in a manner permitting free vertical movement of the hammer and with the leads laterally braced or cabled to assure firm support of the piles during driving.

3.3 INSTALLATION

A. Drive the piles straight and true at indicated locations with deviation from the longitudinal axis of not more than 1/4 inch per foot.

B. Locate piles within 3 inches of the position indicated on the Drawings.

C. Continuously drive each pile to reach the capacity and/or full embedded length called for on the Drawings.

D. Use suitable cushions or driving heads to avoid damage to the piles, developing proper total driving energy and directing the energy along the longitudinal center of gravity of the pile.

E. Jetting to assist penetration will not be permitted.

F. Pre-drilling will not be permitted unless accepted by the Owner, whereby approved pre-drilling to assist penetration may be used where extreme driving resistance is encountered or where vibrations from driving may be detrimental to adjacent structures.

G. The Contractor shall provide the Owner with a complete driving record with the date of final installation and tip elevations. This record shall be submitted weekly and signed by a representative of the Contractor. The Contractor shall keep an accurate set of pile driving records indicating the pile number, pile type installed, type of hammer and rated energy, date of installation, final tip elevation, blow count, and Contractor's representative name and signature.

H. Install three (3) 1-inch stainless steel banding at top of Greenheart Piles spaced 6 inches.

3.4 HANDLING, CUTTING, AND FRAMING

A. Handle timber piles carefully, without sudden dropping, breaking or outer fibers, bruising, or penetrating the surface with tools.

B. After driving, the heads of piles shall be cut-off at the correct elevation as shown on the Drawings.

END OF SECTION

SECTION 02370

GROUND ANCHOR SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Specifications sections, apply to work of this section.

1.2 SUMMARY

The Work covered by this Section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances, and materials and in performing all operations in connection with the installation and tension test of ground anchors in strict accordance with this Section of the Specifications and the applicable drawings and subject to the terms and conditions of the Contract.

1.3 SUBMITTALS

A. Submit the pre-qualified list of subcontractors to the Engineer for review.

B. Provide, with the Bid, satisfactory evidence of at least five years successful experience in ground anchor construction. Key labor and supervisory personnel shall be thoroughly experienced in this type of Work.

C. Submit shop drawings including layout plan and details of proposed anchor construction with supporting calculations. Submit a description of the drilling and grouting equipment and procedures, the stressing equipment and calibration thereof and mill test results for pre-stressing steel wire, strand or bars, anchorage head materials, bearing plates, trumpets, epoxy coatings, grout, sheathing, and corrosion inhibitors.

D. Submit a Ground Anchor Testing Plan to the Engineer for review. The Ground Anchor Testing Plan shall the sequence of anchors to be tested. The Ground Anchor Testing Plan shall indicate the first two consecutive Performance Tests for ground anchors. Subsequent Performance Tests shall be at locations randomly chosen by the Engineer.

1.4 STRUCTURAL INTEGRITY AND PERFORMANCES

Required design capacity of the ground anchors and mini-piles, center to center spacing is indicated on the Contract Drawings. The Contractor may, at his option, supply the Engineer with an alternate proposal which shall include design drawings

and computations which shall be performed and sealed by an experienced Professional Engineer licensed in the Commonwealth of Massachusetts.

1.5 DESIGN AND CONSTRUCTION REQUIREMENTS

A. The Contractor is responsible for anchor design, construction, installation, testing and stressing, performance testing, and proof tests. All such work shall conform to the requirements of the Recommendations for Prestressed Rock and Soil Anchors latest edition, adopted by the Post-Tensioning Institute.

B. Ground anchors shall be installed through the existing bulkhead.

C. Monitor, maintain, and limit bulkhead movement during ground anchor installation and testing to 3/4 inch maximum, measured at the design top of wall elevation

D. Testing:
1. Proof test each Ground Anchor in accordance with the Recommendations for Prestressed Rock and Soil Anchors latest edition, adopted by the Post-Tensioning Institute.
2. Perform Performance Tests on two (2) Ground Anchors in accordance with the Recommendations for Prestressed Rock and Soil Anchors, adopted by the Post-Tensioning Institute. A Performance Test shall be performed on at least one (1) ground anchor from each of the different design loads.

PART 2 - PRODUCTS

2.1 TENDON SYSTEM

Permanent double corrosion protected, pre-stressed soil anchors, consisting of high-strength steel tendon, fitted with a stressing anchor at one end and an anchor device permitting force transfer to the soils on the other end.

2.2 GROUT

Type II or III Portland Cement shall be used. A minimum compressive strength of 2500 psi must be achieved before stressing. The grout shall contain no more than 300 ppm chlorides or 100 ppm nitrates. The Contractor may submit grout additives for consideration. The Engineer may allow the use of grout additives if the Contractor is able to demonstrate prior and successful use of such additives.

2.3 MIXING WATER

Mixing water shall be potable. Limits on impurities are 2000 ppm of total solids and 250 ppm of chlorides.

2.4 LUBRICANTS

Use anti-corrosive and environmentally safe grease with maximum chemical limits of 10 ppm chlorides, 10 ppm nitrates, 10 ppm sulphides.

2.5 CORROSION PROTECTION

Items to be reviewed for corrosion protection shall include delivery and storage method of tendons or bars, adequate borehole diameter, PVC sheathing in free length, temporary and permanent lubricants, permanent sheathing of tendon, cover box for anchorage head, corrugated PVC pipe for casing, if required, and consolidation grout for anchor zone.

2.6 PROTECTIVE COATING

Steel components of the ground anchor system including but not limited to steel trumpets, bearing plates and anchor head covers shall be epoxy coated.

PART 3 - EXECUTION

3.1 DRILLING

A. Rotary or percussion drilling equipment may be used. Borehole alignment shall be within 3 degrees of the specified angle. Borehole diameter shall be uniform with 1/4-inch variation allowable and shall be drilled 12 inches to 18 inches below the end of the anchor to allow for the collection of heavy "debris" that cannot be flushed. Borehole shall be flushed clean with air or water under pressure. Prevent drill cuttings from entering waterways.

B. Obstructions to drilling: Obstructions are defined as unforeseen objects which impede drilling progress. Objects which are made known to the Contractor will not be considered obstructions. An obstruction is determined to impede progress if no forward drilling progress is achieved after 20 minutes of attempting to drill through the object. Notify the Engineer immediately upon encountering unforeseen objects while drilling. No consideration will be given for additional compensation on this account without this timely notification.

C. Drilling equipment is to include timber cutting, reinforced concrete cutting, and steel cutting attachments.

3.2 GROUTING

Grout mix shall be reviewed by the Engineer. Grout equipment shall be capable of continuous mechanical mixing that will produce uniform and thoroughly mixed grout, free of lumps and undispersed cement. The grout mixer shall include a high-speed mixing drum and low-speed agitating drum arranged such that the agitating drum will

hold approximately twice the volume of the mixing drum. Once grouting has started, it shall be continuous until completed for that anchor. The grout equipment shall be capable of continuously grouting each anchor in less than 20 minutes.

3.3 SUPPORT

Ground anchors are to be adequately protected and supported between the new and existing bulkheads to prevent slacking and damage prior to and during backfilling. Backfilling is to be undertaken in a careful and controlled manner to prevent damage to the ground anchors and is to be coordinated with the removal of supports. Supports are defined herein as any temporary or permanent means the Contractor executes to protect the construction during ground anchor installation and backfill operations.

3.4 ACCESSORY FOR STRESSING

One complete set of stressing equipment shall be available at all times. The set shall include:

1. a hydraulic jack with a capacity of at least 25% above the highest proof load for the project;
2. a hydraulic pump;
3. pressure gauges, and
4. long range dial indicators

The jack shall be capable of stressing equally and simultaneously all the elements of the prestressing steel. The jack and pump shall be calibrated, and the calibration charts shall be submitted to the Engineer at least 24 hours prior to the start of tensioning

3.5 STRESSING PROCEDURE

A. Completed anchors shall be locked-off to 80% of the design service load. Stressing, Performance Testing, and Proof Tests shall conform to the requirements of the Recommendations for Prestressed Rock and Soil Anchors latest edition, adopted by the Post-Tensioning Institute. Acceptance by the Engineer shall be in accordance with Acceptance Criteria for Rock and Soil Anchors as dictated by the Recommendations for Prestressed Rock and Soil Anchors latest edition, adopted by the Post-Tensioning Institute.

B. Stressing, Performance Testing, and Proof Tests shall be performed in conjunction with backfilling operations.

C. Testing shall be performed in such a manner as not to be affected by other construction operations.

D. The Engineer reserves the right to witness all anchor testing. The Contractor is to provide at least 24 hours' notice to the Engineer prior to any testing operations.

END OF SECTION

SECTION 02375

STEEL SHEET PILES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specifications sections, apply to the work of this section.

1.2 SUMMARY

A. The work covered by this section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances, and materials, and in performing all operations in connection with the installation of steel sheet piles, all in strict accordance with this Section of the Specifications and applicable drawings and subject to the terms and conditions of the Contract.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. The Owner, through the Engineer, reserves the right of approval of the subcontractor pre-qualified and selected for this portion of the Work by the Contractor. Approval will be based, in part, on documented successful experience in performing work of a similar nature.

C. Driving of additional piles at the Contractor's own expense may be required by the Engineer in the event tolerances are exceeded. Drive individual piles plumb within 2%, and in a manner that the completed wall appears vertical when viewed from any point.

D. The Engineer may elect to observe the shop fabrication of the steel sheet piling. The Contractor shall provide the fabrication schedule and allow access for the Engineer to perform this task.

E. The Owner reserves the right to take samples from steel sheet pile material at the site for testing in order to verify compliance with the Specifications.

1.4 SUBMITTALS

A. Submit the pre-qualified list of subcontractors to the Engineer for review.

B. Upon receipt of the Engineer's review of the pre-qualified subcontractor, promptly submit sufficient technical data on the equipment necessary to accurately measure and record pile penetration and capacity during the entire driving of each pile.

C. Submit a detailed Work Plan for review by the Engineer that includes the following:
1. Written description of the means and methods necessary to install the steel sheet piles plumb and straight and protect coating.
2. Falsework layout and temporary bracing plan.
3. Layout plan of steel sheet piles including shop drawings and bill of materials. Provide details of all corners and transitions.
4. Shop drawings of all temporary shoring and falsework components including calculations that demonstrate the adequacy of such temporary work.
5. Steel sheet piles shall not be installed until the work plan is reviewed and no exceptions are taken by the Engineer

D. Submit steel certificates for review no later than the time of delivery of materials to the site.

E. Submit three copies of pile driving records including date of final installation, pile top elevation, and pile tip elevation within 24 hours of installation.

F. Submit an As-built survey of pile locations to the Engineer.

G. Submit welder’s certificates certifying welders employed on the Work, verifying AWS qualifications within the previous twelve months.

1.5 PRODUCT DELIVERY AND STORAGE

The Contractor shall notify the Engineer twenty-four hours in advance of delivery of steel sheet piles. Contractor guarantees that steel sheet piles shall be handled in such a manner as to not induce stresses which will damage the materials and shall be stored in a safe manner within designated areas provided on the site.

PART 2 - PRODUCTS

2.1 STEEL SECTIONS

A. Steel Sheet Pile
1. Steel sheet piling shall be as manufactured by Arbed or equivalent as accepted by the Engineer. Sections shall be as indicated on the Contract Drawings. Steel grade shall be in ASTM A690 Grade 50 steel. Pile length to be as shown on the Drawings.

2. Subject to review of the Engineer, the Contractor may substitute higher section modulus piles at its option to facilitate driving at no additional cost to the Owner.
3. Steel sheet pile sections shall be shop fabricated by "hot-rolled" process. Steel sheet piles (referred to as "singles") shall be shop fabricated from a single piece of stock which is formed into the completed unit by the hot rolling process. "Singles" may be shop assembled (into units referred to as "doubles") after coating and prior to shipping to the site.

B. Welding – Special Conditions
1. Welding will be permitted only where specially fabricated pieces are required as shown on the Drawings, where field welds are scheduled, or where acceptable to the Engineer.
2. Welding shall conform to AWS D1.1 – Steel. Electrodes shall be in accordance with AWS A5.1 or A5.5.

2.2 PROTECTIVE COATING

Unless specifically noted on the Drawings, all steel piles shall be shop coated to a minimum of 10 feet below the design dredge depth elevation.

2.3 STEEL SHEET PILE PREPARATION

All holes are to be made in the piling prior to applying the epoxy coating detailed in Section 09905, Protective Coating, with the exception of holes to accommodate pipe sleeves for outlets and ground anchors. Field cut holes shall be carefully performed at the required locations in such a manner as to minimize damage to the coating. On completion of the welding of pipe sleeves, all damage to the coating is to be made good in accordance with these Specifications and to the satisfaction of the Engineer.

PART 3 - EXECUTION

3.1 EQUIPMENT

A. Drive the piles with air, diesel, or vibratory hammers with sufficient energy and energy transfer characteristics to drive the piles to the required toe levels without crippling pile heads.

B. Piles are to be located by temporary frames. The frames shall be rigidly located such as to keep the piles plumb and to line while being driven. Piles may be continuously or incrementally driven or driven singly or in pairs, as required to maintain the line and level of the completed bulkhead.

C. Take precautions to avoid contact of coated pile surfaces with components of leads and/or falsework. Install timber rub strips or similar items at contact areas as may be required to reduce the potential for damage of the coating during driving. All damage to the protective coating shall be repaired at the Contractor's expense.

D. Use suitable cushions or driving heads to avoid damage to the piles, developing proper total driving energy, and directing the energy along the longitudinal center of gravity of the pile.
   1. Drive sheet piles to their full penetration without bending, rupturing, or severely damaging the sheet piles.
   2. If failure in any of the above respects is encountered, pull the sheet pile, and drive a new pile at no additional cost to the Owner.

3.2 PILE DRIVING

A. Drive the piles straight and true at indicated locations, with deviation from the longitudinal axis of not more than ¼ inch per foot.

B. Provide the Engineer a complete driving log with the date of the final installation and tip elevation. This log shall be submitted weekly and signed by a representative of the Contractor.

C. Plug all “lifting eye” holes in steel sheet piling.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification sections, apply to the work of this section.

1.2 SUMMARY

The Work covered under this Section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances, and materials and performing all operations in connection with the installation of reinforced concrete for all aspects of the project, in strict accordance with the Contract Documents.

1.3 SUBMITTALS

A. Shop Drawing and Product Data

Shop drawings and product data showing all fabricated dimensions and locations for placing the reinforcing steel and accessories shall be submitted for review. Shop Drawings shall provide sufficient technical data to demonstrate compliance with the specified requirements. Products, materials, or information submitted for review shall not be used or fabricated until after receipt of the Engineer's review comments. Distribute only reviewed shop drawings to the job site.

B. Mix Design

Submit concrete mix design, with known test results, to the Engineer for review. The concrete mix design submittal shall consist of at least the following:

1. Type of cement.
2. Dry weight of cement.
3. Saturated surface-dry weights of fine and coarse aggregates.
4. Specific gravity of fine and coarse aggregates.
5. Quantities, type, name, and producer of admixtures, as applicable.
6. Total weight of water, including the water that is absorbed by and on the surface of the aggregates.
7. Water to cement ratio.
8. Slump: Maximum slump, taken at the truck, will be determined based on the pump hose length. The mix designs shall include the anticipated loss of slump per 100-foot length of specified hose size.

9. Strength test data of the proposed mix design as specified herein.

   Distribute reviewed mix design to the testing laboratory, batch plant, and job site.

C. Submit concrete batch tickets for each truck delivered to the site. Each ticket shall note at least the following data: design mix strength; batch proportions including actual water and aggregate moisture contents; date and batch time; arrival time at site; discharge time; concrete volume; and any change to concrete made at the site.

D. Construction Joints: Submit proposed construction and control joint details and locations for Engineer's review.

E. Curing and protection procedures: including product data on materials proposed for use.

F. Certifications regarding all iron or steel products.

1.4 QUALITY ASSURANCE

A. General
   1. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for the proper performance of the work of this Section.
   2. The Owner, through the Engineer, reserves the right of approval of any Subcontractor pre-qualified and selected for this portion of the Work by the Contractor. Approval will be based, in part, on a documented successful experience in performing work of a similar nature.
   3. Cast-In-Place Concrete work shall conform to all requirements of ACI 301, "Specifications for Structural Concrete for Buildings."
   4. Detailing, fabrication, and erection of reinforcing steel shall conform to ACI 318, "Building Code Requirements for Structural Concrete and Commentary" and ACI 315, "Details and Detailing of Concrete Reinforcement."
   5. Ready mix plant equipment and facilities shall conform to the "Check List for Certification of Ready Mixed Concrete Production Facilities" of the NRMCA.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete
   1. Portland cement: Type II - low alkali conforming to ASTM C150, "Standard Specification for Portland Cement".

2. Aggregate, general
   a. Shall be normal weight and uniformly graded and clean conforming to ASTMC33, “Standard Specification for Concrete Aggregates.”
   b. Do not use aggregate known to cause excessive shrinkage.
3. Aggregate, coarse
   a. Crushed rock or washed gravel with a maximum size of 3/4 inch.
4. Aggregate, fine
   a. Natural washed sand of hard and durable particles varying from fine to particles passing a 3/8 inch screen, of which at least 12% shall pass a 50-mesh screen.
5. Water
   a. Clean and potable, and free from oils, acids, alkali, organic matter and other deleterious material.
6. Air entraining admixture shall conform to ASTM C260, “Standard Specification for Air Entraining Admixture for Concrete.” The air-entraining agent shall be a nontoxic concentrated solution of neutralized Vinsol resin, such as "Daravair 1000" as manufactured by GCP Applied Technologies Inc. or equivalent accepted by the Engineer.
7. Water reducing admixture shall conform to ASTM C494 “Standard Specification for Chemical Admixtures for Concrete.” Water reducing agent shall be of Type A, B, C, D, E, F, or G (as noted in concrete mix design) such as “Daracem-100" as manufactured by GCP Applied Technologies Inc. or equivalent accepted by the Engineer.

B. Reinforcing Steel
1. All reinforcing steel shall conform to ASTM 615 Grade 60, “Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement” and shall be fusion bond epoxy coated as per ASTM A775.
2. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI "Manual of Standard Practices.”
3. Do not use reinforcement having any of the following defects:
   a. Bar lengths, depths, or bends exceeding the specified fabricating tolerances.
   b. Bends or kinks not indicated on the Drawings or required for this Work.
   c. Bars with cross section reduced due to excessive rust or other causes.

C. Moisture Protection

Curing materials for concrete cast above the tidal zone shall conform to ASTM C309, “Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete”, wet burlap, or plastic membrane.

D. Accessories

All spacers, chairs, bolsters, and other devices necessary for proper reinforcing steel placement shall be epoxy coated with nylon tipped legs. All reinforcing steel shall be adequately tied with nylon, epoxy, or plastic-coated tie wire and supported with epoxy-coated chairs that hold the bars to the specified clearance. One chair sample

shall be submitted to the Engineer for review. No clay or concrete bricks or any other material other than reviewed chairs shall be permitted to support reinforcing steel.

E. Bonding Agent and Fusion Bonded Epoxy Coating Touch-Up

Bonding agent shall be Sika Armatec 110 Epocem, as manufactured by Sika Corporation or an equivalent accepted by the Engineer.

F. Product Delivery, Storage, and Handling

Conform to the recommendations of ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Concrete Mix Proportioning
1. Concrete shall be proportioned by the Contractor in accordance with ACI 301. The proposed design mix, together with all the Test Records, or Trial Mix Data, as required by ACI 301, shall be submitted to the Engineer for review at least two weeks prior to the first intended placement. Submit a separate pump mix if different from concrete mix placed by conventional methods.
2. Concrete shall be normal weight with a minimum compressive strength of 5000 psi at 28 days unless otherwise noted on Contract Documents.
3. Concrete shall have a maximum water to cement ratio of 0.40 unless otherwise noted on Contract Documents.
4. Concrete shall be proportioned to have a slump of 4 inches, $\pm$ 1 inch, at the discharge end of the pump hose. Use a water reducing agent as required to achieve the desired slump range. Addition of water at site will not be permitted.
5. Concrete shall contain 4% to 6% entrained air.

B. Form Construction
1. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads which might be applied until such loads can be supported safely by the concrete structure in accordance with ACI 347.
2. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.
3. Form coating or water shall be applied to all forms. If coating is used, it shall be applied prior to placement of reinforcing steel.
4. Form ties and spreaders shall be of such type as to leave no metal closer than 3 inches from any exposed concrete surface.

C. Reinforcement Placement

1. All epoxy coated reinforcing steel shall be protected from damage to the epoxy during handling and placement. Any epoxy coated reinforcing steel, where the epoxy has been damaged shall be either removed from the site or re-coated, at the Engineer's discretion with strict conformance to the manufacturer's instructions at the Contractors expense.
2. Place reinforcement to obtain the required coverage for concrete protection. Minimum concrete cover for all reinforcing shall be 3 inches except where specifically noted otherwise.
3. Clean reinforcement and remove loose dust, earth, and other materials which reduce bond or destroy bond with concrete other than epoxy coating.
4. Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations.
5. All reinforcing steel shall be continuous unless specifically detailed otherwise on the Contract Drawings. Provide dowels or lap splices of the appropriate class to maintain continuity. Unless otherwise shown on the Contract Drawings lap bars in compliance with ACI 318. Dowels or splices shall be shown on the shop drawings and shall be subject to the field review of the Engineer. No more than 60% of the total number of bars shall be spliced at one location.

D. Embedded Items

1. Install embedded items furnished under this Section and other Sections. All sleeves, inserts, anchors, and embedded items required for adjoining work or for its support shall be placed prior to casting concrete. All embedded items shall be positioned accurately and supported against displacement.
2. Where existing timber pile tops are to be embedded in the concrete, thoroughly clean the embedded portion of the piles of all debris and foreign matter prior to concrete placement. Do not damage the existing piles by cleaning.

E. Concrete Mixing

1. Transit-mix the concrete in accordance with provisions of ASTM C94.
2. Do not use concrete after 90 minutes from time of introduction of water to the mix.

F. Concrete Placement

1. All concrete work shall conform to the requirements of ACI 318, “Building Code Requirements for Structural Concrete”.
2. Preparation
   a. Remove foreign matter accumulated in the forms.
   b. Rigidly close openings left in the formwork.
   c. Wet wood forms immediately prior to concrete placement. Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain the workability of the concrete.
   d. Use only clean tools.

3. Conveying
   a. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
   b. Deposit concrete as nearly as practicable in its final location to avoid separation due to re-handling and flowing.
   c. Do not use concrete which becomes non-plastic and unworkable, or does not meet required quality control limits, or has been contaminated by foreign materials.
   d. Remove rejected and excess concrete from the job site.
4. Placing concrete in forms
   a. Concrete shall be cast to full dimensions in one operation.
   b. Free-fall of concrete during placement greater than 8 feet is prohibited. The Contractor shall place concrete with a tremie tube for drops greater than 8 feet.
   c. Deposit concrete in horizontal layers not deeper than 24 inches and avoid inclined construction joints.
   d. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.
5. Consolidation
   a. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.
   b. Do not use vibrators to transport concrete inside the forms.
6. Construction Joints
   a. Do not use horizontal construction joints.
   b. Secure the Engineer's review of joint design and location prior to the start of concrete placement.

G. Curing and Protection
1. Beginning immediately after placement, concrete shall be protected from premature drying, excessively hot or cold temperatures, and mechanical damage and shall be maintained with minimal moisture loss at a relative constant temperature for the period necessary for hydration of the cement and hardening of the concrete.
2. Concrete surfaces not covered by forms or within the inter-tidal elevations shall be protected from loss of surface moisture for not less than 7 days using moisture protection as specified herein.
3. If cold-weather concreting is anticipated, a preconstruction meeting should be held to define how cold weather concreting methods will be used. When the mean daily ambient temperature is at or below 40 degrees F or 45 degrees F and falling the Contractor shall follow the requirements of ACI 306R-16, “Guide to Cold Weather Concreting”:
   a. Set up proper enclosure and heat to 50 degrees F for at least 2 hours before starting any pour. Set up individual thermometers within enclosure to monitor ambient temperatures near the face of fresh concrete. Thermometers shall be placed at a maximum of 50-foot centers, at major corners or returns, and at

ends of concrete sections. Monitor and record temperatures in a log at early morning, noon, and early evening.

b. Use a water-reducing admixture with an accelerated set, but do not use or rely upon any material as an anti-freeze. Use of calcium chloride is forbidden.
c. Use vented heaters with blowers so placed that they do not produce localized hot spots which may dry out the concrete. Exposure to exhaust gases from combustion heaters is prohibited for the first 24 hours of the curing period.
d. Maintain the temperature of the formwork at not less than 50 degrees F but not greater than 70 degrees F for 48 hours after completion of pour; formwork may be stripped after 72 hours after completion of pour. After 48 hours of maintaining at least 50 degrees F, the temperature may be allowed to drop gradually and shall be kept above 32 degrees F for a period of 7 days after completion of pour. Protection during this period may be provided by existing enclosure or by means indicated in note e below.
e. Protection may be provided by use of insulation methods. Adequate insulation shall consist of at least one of the following:
    - 12" of dry earth; provide moisture cover if over slab concrete.
    - 4" of hay under adequate moisture cover.
    - 1" of insulation blankets with vapor barrier seal.
    - Other insulating material acceptable to the Engineer.

    NOTE: Extreme conditions of temperature or wind may require more protection.

f. Concrete may not be placed on frozen ground.
g. All frozen concrete shall be removed from the job and replaced at a cost to the Contractor.

4. When the mean daily ambient and substrate temperature is above 80 degrees F, the Contractor shall follow the requirements of ACI 305R-20, “Guide to Hot Weather Concreting.” Concrete shall be protected from thermal damage. Provisions for windbreaks, shading, fog spraying, sprinkling, ponding, or wet covering with a light-colored material shall be made in advance of placement and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.
    a. No concrete shall be placed when the air temperature is above 90 degrees F unless the air is still, and relative humidity is above 80%.
    b. Set up proper windbreakers for concrete surfaces whenever the relative humidity is less than 70% for slight air motion or 80% for light breezes.
    c. Provide shade for pours otherwise exposed to the sun.
    d. Concrete is to be at a temperature of 80 degrees F or less when placed. If necessary, the batching plant shall cool aggregates by spraying or by using chilled water or ice. All such water shall be accounted for as part of the mixing water.
    e. Use an admixture with a retarded set.
    f. All forms shall be thoroughly wetted at least daily and more often when the relative humidity is low.

g. For slabs, maintain the required materials for curing on hand, so they may be placed immediately upon finishing. All concrete placed in ambient temperatures over 80 degrees F shall be kept wet for a minimum of 24 hours. Intermittent spraying will not be permitted. No water shall be applied before concrete has acquired its initial set. When the concrete temperature of any slab goes above 100 degrees F, place a layer of sand on it and keep it continuously wet until the temperature is below 80 degrees F.

H. Finishing
1. Remove all fins, blemishes, and defective concrete areas and patch where required with reworked cement mortar of the same proportions as that used in the concrete.
2. Form tie holes shall be plugged solid with reworked cement mortar of the same proportions as that used in the concrete.
3. Exposed surfaces of concrete shall receive a wood float finish.

3.2 CONCRETE TESTING

Concrete testing shall comply with ACI-318. Test reports shall be submitted to the Engineer for review.

END OF SECTION

SECTION 05110

WATERFRONT STRUCTURAL STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Specifications sections, apply to work of this section.

1.2 SUMMARY

The work covered under this Section of these Specifications consists of providing all plant, labor, supervision, equipment, appliances and materials, and in performing all operations in connection with the installation of waterfront structural steel, all in strict accordance with the Contract Documents.

1.3 SUBMITTALS

A. Sufficient technical data to demonstrate compliance with the specified requirements.

B. The Contractor shall submit shop drawings detailing all structural members, profiles, sizes, spacing, proposed cuts, connections, camber, holes, openings, fasteners, and similar data. Erection plans showing the location and field connection of all members. Identify members by piece number that corresponds to the erection numbers. Structural steel connection details not specifically shown in the Contract Documents shall be detailed by the Contractor and included with shop drawing submittal.

C. Submit manufacturer's certifications showing that the products meet or exceed the required standards for the following items:
   1. Bolts, including nuts and washers.
   2. Threaded rods including all hardware.
   3. Filler material and flux for welding.
   4. Expansion bolts.

D. Submit Certified Mill Test Reports indicating structural strength, destructive and non-destructive test analysis, chemical and physical properties of each type of steel and conformance with ASTM A6.

E. Submit welder's certificates certifying welders employed on the Work, verifying AWS qualifications within the previous 12 months.

F. Contractor shall submit shop drawings stamped by a Professional Engineer in the Commonwealth of Massachusetts.

1.4 QUALITY ASSURANCE

A. Use adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section of the Specifications.

B. The Owner reserves the right of approval of any Subcontractor selected for this portion of the Work by the Contractor. Approval will be based, in part, on:
   1. Documented successful experience in performing work of a similar nature.
   2. Acceptable schedule of unit prices for measurement and payment in event of changes in the work of this Section.

C. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.

D. Perform welding with electric arc process and in accordance with "Structural Welding Code – Steel" (ANSI/AWS D1.1). All structural welds shall be performed by American Welding Society (AWS) welders certified for the appropriate welding application.

E. In addition to complying with pertinent codes and regulations, comply with:
   1. The American Institute of Steel Construction, AISC, "Steel Construction Manual", Fifteenth Edition.

F. All connections shall be designed by the steel fabricator except those specifically detailed on the Contract Documents. Submit design calculations for review if requested by the Owner.

G. All references to SSPC shall be interpreted as Steel Structures Painting Council Manual, Systems and Specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ferrous Metals
   1. Structural Steel Shapes shall conform to ASTM A690~~A992, A572 Gr. 50~~
   2. Steel Plates, Diamond Plate, and Bar Stock: ASTM A36.
   3. Cold-Formed Steel Tubing: ASTM A500 Gr. C.
   4. Steel Pipe: ASTM A53, Gr. B, Schedule 40, unless otherwise indicated, or another weight required by structural loads.
   5. Steel Tube: ASTM A500, Gr. C
   6. Threaded Rods shall conform to ASTM F1554 for Grades 36, 55, and 105.

7. Carriage Bolts and Lag Screws shall conform to ASTM A307 Gr. A.
8. High Strength Structural Bolt shall conform to ASTM F3125 Gr. A325, with hexagonal heads.
9. Nuts shall comply with ASTM A563.
10. Washers (except against timber) shall conform with ASTM F436.
11. Threadbar rods and nuts shall comply with ASTM A615 Grades 60, 70, 80, and 100, and with ASTM A722 Grade 150.
12. Adhesive Anchors shall be HILTI HIT RE 500 V3 Injection Adhesive Anchors, as manufactured by Hilti Corporation, or equivalent acceptable to the Engineer.
13. Expansion Anchors shall be stainless steel 316 HILTI KWIK Bolt 3, as manufactured by Hilti Corporation, or equivalent acceptable to the Engineer.
14. Welding Rods and Bare Electrodes: Select according to AWS specifications for the metal alloy to be welded.
15. Non-shrink, non-metallic, high-performance cement-based grout shall conform to ASTM C827, such as Sikagrout 212 as manufactured by Sika Corporation or equivalent acceptable to the Engineer.

B. Protective Coatings:
1. Unless specifically noted otherwise, all items scheduled to receive protective coating shall be fully fabricated with holes, cuts, threads, etc. prior to receiving protective coating and prior to delivering to the worksite.
2. Unless specifically noted otherwise, all steel sections shall be shop coated prior to delivery to the worksite in accordance with these Specifications.
3. All bolts, nuts, and washers shall be hot dipped galvanized in accordance with ASTM A153.
4. Threadbar rods and nuts shall be epoxy coated in accordance with ASTM A775.
5. Field touch-up of epoxy-coated items shall be performed in accordance with manufacturer's written recommendations and these Specifications.
6. Field touch-up of hot-dipped galvanized items shall be performed with Tnemec's series 90-97 Tenemec-Zinc primer or equivalent accepted by Engineer. Surface preparation and coating application shall be in strict accordance with manufacturers written recommendations and ASTM A780.

2.2 FABRICATION, GENERAL

A. Fabricate structural steel items in accordance with AISC specifications and as shown on the accepted shop drawings.

B. Properly mark materials for field assembly and for identification of the structure and location intended.

C. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.

D. Provide bolts, nuts, and washers of all types and sizes required for completion of field erection.

E. Comply with AWS code for procedures, appearance, and quality of welds, and methods used in correcting welded work.

F. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning or reaming. Drill holes in bearing plates. No holes will be allowed unless first shown on the Shop Drawings and accepted by the Engineer.

G. Should holes be required in addition to those provided under this Section, provide all such holes and strengthen the area as required to compensate but only as accepted by the Engineer.

H. Moment connections shall develop the full strength of the jointed members.

I. The cold weather welding requirements of AWS shall be required and enforced.

J. Where finishing is required, complete the assembly, including welding of units, before start of finishing.

K. Provide finish surfaces of members exposed in the final structure free from markings, burrs, and other defects.

L. Assemble and weld build-up sections by methods that will produce true alignment of axes without warp.

PART 3 - EXECUTION

A. Surface Conditions

Examine the areas and verify the conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Erection

1. Surveys:
   a. Establish benchmarks necessary for accurate erection of structural steel.
   b. Check elevations of concrete surfaces, and locations of anchor bolts and similar items, before erection proceeds.
2. Temporary shoring and bracing:
   a. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
   b. Provide temporary guy lines to achieve proper alignment of the structure as erection proceeds.
   c. Remove temporary connections and members when permanent members are in place and final connections are made.
   d. Field touch-up protective coating where damaged.

3. Anchor bolts:
   a. Install anchor bolts and other connectors required for securing structural steel to adjacent work as shown on the Contract Drawings.
   b. Provide templates and other devices as needed for presetting bolts and other anchors to accurate locations.
4. Field Assembly:
   a. Set structural frames accurately to the lines and elevations indicated.
   b. Align and adjust the members forming part of a complete frame or structure before fastening permanently.
   c. Clean the bearing surfaces and other surfaces which will be in permanent contact before assembly.
   d. Adjust as required to compensate for discrepancies in elevation and alignment.
   e. Level and plumb individual members of the structure within specified AISC tolerances.
   f. Establish required leveling and plumbing measurements on the mean operating temperature of the structure, making allowances for the difference between temperature at time of erection and the mean temperature at which the structure will be when completed and in service.
   g. Comply with AISC specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to welds.
5. Gas cutting:
   a. Do not use gas cutting torches for correcting fabricating errors in structural framing, except on secondary members where acceptable to the Engineer.
   b. When gas cutting is permitted, finish the gas cut section to a sheared appearance acceptable to the Engineer.
6. Expansion Bolts and Adhesive Anchors: Install anchors in strict accordance with manufacturers written instructions.
7. Field Welding: Where field welds are scheduled, surfaces to be joined are to be properly prepared, including removal of any existing coatings prior to welding. Following welding, prepare and touch-up all areas requiring coating as set forth in these Specifications.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specifications sections, apply to the work of this section.

1.2 SUMMARY

The work covered under this Section of these Specifications consists of providing all plant, labor, supervision, equipment, appliances and materials, and in performing all operations in connection with the installation of metal fabrications, all in strict accordance with the Contract Documents.

1.3 SUBMITTALS

A. The Contractor shall submit shop drawings detailing fabrication of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchor bolts specified for installation under other Sections.

B. Product data for steel grating, shop paint products, anchor bolt systems, and grout.

C. Contractor shall submit shop drawings stamped by a Professional Engineer in the state of Massachusetts.

1.4 QUALITY ASSURANCE

A. Use adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for the proper performance of the Work of this Section of the Specifications.

B. The Owner reserves the right of approval of any Subcontractor selected for this portion of the Work by the Contractor. Approval will be based, in part, on:
   1. Documented successful experience in performing work of a similar nature.
   2. Acceptable schedule of unit prices for measurement and payment in event of changes in the work of this Section.

C. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and

with sufficient production capacity to produce required units without delaying the Work.

D. Perform welding with electric arc process and in accordance with "Structural Welding Code – Steel" (ANSI/AWS D1.1). All structural welds shall be performed by American Welding Society (AWS) welders certified for the appropriate welding application.

E. In addition to complying with pertinent codes and regulations, comply with:
1. The American Institute of Steel Construction, AISC, "Steel Construction Manual," Fifteenth Edition.

F. All connections shall be designed by the steel fabricator except those specifically detailed on the Contract Documents. Submit design calculations for review if requested by the Owner.

G. All references to SSPC shall be interpreted as Steel Structures Painting Council Manual, Systems and Specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ferrous Metals
1. Steel Plates, Diamond Plate, and Bar Stock: ASTM A36.
2. Cold-Formed Steel Tubing: ASTM A500 Gr. C.
3. Steel Pipe: ASTM A53, Gr. B, Schedule 40, unless otherwise indicated, or another weight required by structural loads.
4. Welding Rods and Bare Electrodes: Select according to AWS specifications for the metal alloy to be welded.

B. Fasteners: Provide plated fasteners complying with ASTM B633, Class Fe/Zn 25 galvanized for exterior use or where built into concrete structures. Select fasteners for the type, grade, and class required.
1. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A, with hex nuts, ASTM A563, and, where indicated, flat washers.
2. Machine Screws: ANSI B18.6.3.
3. Plain Washers: Round, carbon steel, ANSI B18.22.1.
4. Lock Washers: Helical, spring type, carbon steel, ANSI B18.21.1.
5. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E488, conducted by a qualified independent testing agency.
   a. Material: Carbon steel components zinc-plated to comply with ASTM B633, Class Fe/Zn 5.

b. Material: Group 1 alloy 304 or 316 stainless steel bolts and nuts complying with ASTM F593 and ASTM F594.

C. Protective Coatings:
1. Unless specifically noted otherwise, all items scheduled to receive protective coating shall be fully fabricated with holes, cuts, threads, etc. prior to receiving protective coating and prior to delivering to the worksite.
2. Unless specifically noted otherwise, all steel sections shall be shop coated prior to delivery to the worksite in accordance with these Specifications.
3. All bolts, nuts, and washers shall be hot dipped galvanized in accordance with ASTM A153.
4. Field touch-up of epoxy-coated items shall be performed in accordance with the manufacturer's written recommendations and these Specifications.
5. Field touch-up of hot dipped galvanized items shall be performed with Tnemec's series 90-97 Tenemec-Zinc primer or equivalent accepted by Engineer. Surface preparation and coating application shall be in strict accordance with the manufacturer's written recommendations and ASTM A780.

2.2 FABRICATION, GENERAL

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
1. Temperature Change (Range): 100 degrees Fahrenheit.

D. Shear and punch metals cleanly and accurately. Remove burrs.

E. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing work.

F. Remove sharp or rough areas on exposed traffic surfaces.

G. Weld corners and seams continuously to comply with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and the contour of welded surface matches those adjacent.

H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

I. Provide for the anchorage of type indicated and coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain the structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

L. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

2.3 STEEL AND IRON FINISHES

A. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:
1. ASTM A153 for galvanizing iron and steel hardware.
2. ASTM A123 for galvanizing both fabricated and non-fabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299-inch thick or thicker.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

B. Set sleeves in concrete with tops flush with finish surface elevations. Protect sleeves from water and concrete entry.

3.2 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, and other connectors as required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dipped galvanized after fabrication and are intended for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

END OF SECTION

SECTION 06135

TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Specification sections, apply to work of this section.

1.2 SUMMARY

A. The Work covered by this Section of these Specifications consists of furnishing all plant, labor, supervision, equipment, appliances and materials, and in performing all operations in connection with the timber construction, all in strict accordance with this Section of the Specifications and the applicable drawings and subject to the terms and conditions of the Contract.

1.3 Quality Assurance

A. Use adequate number of workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this Section.

B. The Owner reserves the right of approval of any Subcontractor pre-qualified and selected for this portion of the Work by the Contractor. Approval will be based, in part, on:
   1. Documented successful experience in performing work of a similar nature.
   2. Acceptable schedule of unit prices for measurement and payment in event of changes in the Work of this Section.

C. Comply with the requirements of the "Wood Engineering Handbook" by US Forest Products Laboratory, except as may be modified herein.

D. All visually graded structural lumber and wood construction shall conform to the "National Design Specification for Wood Construction", and its Supplement, "Design Values for Wood Construction" by the National Forest Products Association.

1.4 SUBMITTALS

A. No later than the time of delivery of materials to the site, submit certificates as to conformance with the specified species, grade, and treatment prior to installation of any timber or hardware.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All timber shall be stored in stacks such that there is an air space beneath the material and situated to prevent the timber from being exposed to standing water.

B. The Contractor shall notify the Owner twenty-four hours in advance of delivery of timber materials. The Contractor guarantees timber shall be stored in a safe manner within Owner designated area provided on the site.

C. Timber shall be stored off the ground in a manner to prevent damage and to permit easy access for inspection.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Timber shall meet the requirements of the Southern Pine Inspection Bureau Inspection Rule, for Southern Yellow Pine No. 1, Paragraph 508 Marine Grade minimum.

B. Clean-peel and preservative pressure treat timber in accordance with AWPA Standard P5 for Alkaline Copper Quat (ACQ) to the following retentions:
   1. All timber components except as noted below that will be subject to marine use, brackish or saltwater immersion, shall be Greenheart timber.
   2. Any miscellaneous timber 2 inch thick and smaller, subjected to marine use, out of water splash, above ground, and ground contact shall have a minimum retention of 0.6 pound per cubic foot.

C. All material used shall be sound, well-seasoned, and straight grained, free from shakes and large or loose knots, and shall have no decayed wood, worm holes, or any defects which the Owner determines will impair its strength or durability.

D. Pieces of exceptionally lightweight will not be accepted.

E. Lumber shall be surfaced four sides unless otherwise noted.

2.2 HARDWARE

A. All steel hardware used to connect Greenheart timbers, including all bolts, nuts and washers shall be galvanized steel conforming to ASTM A307, Grade A. Galvanizing shall conform to the requirements of ASTM A153.

B. Finish of all hardware and metal fittings shall be hot dipped galvanized after fabrication.

C. Furnish Certificates of Compliance with ASTM Specifications and Standards specified herein. Each certificate to be signed by Contractor and Galvanizer certifying that steel

materials, bolts, nuts, washers and items of iron and steel hardware in conformance to specified requirements, and that the galvanizing is in full conformance with these Specifications.

D. Galvanized materials are to be given passivating treatment to prevent wet storage stain. Treatment shall consist of quenching newly galvanized material in a water quench containing not more than 0.2% sodium dichromate.

E. All steel hardware used to connect ACQ treated timbers, including all bolts, nuts and washers shall be stainless steel 316.

PART 3 - EXECUTION

3.1 HANDLING, CUTTING, AND FRAMING

A. Handle lumber and timber carefully, without sudden dropping, breaking of outer fibers, bruising, or penetrating the surface with tools.

B. Accurately cut and frame lumber to a close fit in such a manner that the joints shall have an even bearing over the entire contact surface.

C. All drilled holes and field cuts shall be treated with a preservative (product to be submitted for review by the Contractor and approved by the Owner) in accordance with AWPA M4 - "Standard for the Care of Preservative Treated Wood Products" prior to erection of timber member or installation of bolt.

3.2 HARDWARE

A. A washer of the size and type specified shall be used under all bolt heads and nuts which would otherwise come in contact with timber. The nuts of all bolts shall be effectively locked after they have been finally tightened.

B. Field touch-up of hot-dipped galvanizing shall be 90-97 Tneme-Zinc zinc-rich coating as manufactured by Tnemec Company, Inc. of Kansas City, MO, or equivalent accepted by the Owner. Material shall be applied in strict accordance with manufacturers written instructions

END OF SECTION

SECTION 09905

PROTECTIVE COATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specifications sections, apply to the work of this section.

1.2 SUMMARY

The work covered under this Section of these Specifications consists of providing all plant, labor, supervision, equipment, appliances and materials, and in performing all operations in connection with the coating, handling, storing, and shipping of plant coated steel members, all in strict accordance with the Contract Documents.

1.3 SUBMITTALS

Submit material certification data for the coating system to the Engineer for review no later than the time of delivery of materials to the site. Certification shall include a statement by the coating applicator that the protective coating was installed in strict accordance with the manufacturer's written instructions, including all surface preparation.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. The Owner, through the Engineer, reserves the right of approval of any Subcontractor pre-qualified and selected for this portion of the Work by the Contractor. Approval will be based, in part, on:
   1. Documented successful experience in performing work of a similar nature.
   2. Acceptable schedule of unit prices for measurement and payment in event of changes in the Work of this Section.

C. Coating materials shall be handled, stored, and applied in accordance with the manufacturer's specifications, or as directed by an authorized representative of the coating manufacturer.

D. All references to SSPC shall be interpreted as Steel Structures Painting Council.

E. Structural steel fabrications shall be received by coating applicator free of all oil and grease:

PART 2 - PRODUCTS

2.1 MATERIALS

A. Epoxy-Coating
   1. Material used for factory epoxy coating of all scheduled surfaces shall be BAR-RUST 235 Multi-Purpose Epoxy Coating as manufactured by Devoe Coatings or equivalent accepted by the Engineer.
   2. Epoxy coating field touch-up material shall be identical to factory coating specified in Paragraph 2.1-A.1 above.
   3. The topcoat color for all surfaces is to be black, unless stated otherwise by Owner or the Contract Documents.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Surfaces shall be prepared in strict accordance with the protective coating system manufacturers written instructions. Surfaces are to be abrasion-blasted to a near-white surface cleanliness in accordance with SSPC-SP-10. Blast profile on steel shall be 1.5 to 2.5 mils in depth and be of a sharp, jagged nature as opposed to a “peen” pattern (from shot blasting). Surfaces must be sound, dry, clean, and free of oil, grease, dirt, mildew, form release agents, curing compounds, loose and flaking paint, grit dust, and other foreign substances. Roto blasted surfaces are not acceptable.

B. Surfaces requiring field touch-up shall be prepared as described in Paragraph 3.1-A above.

3.2 PROTECTIVE COATING APPLICATION

A. The protective coating shall be installed in strict accordance with the manufacturer’s written instructions. Coating is to be applied in two coats to achieve a minimum overall dry film thickness of 15 mils.

B. All holidays or other imperfections in the coating shall be removed or repaired at the Contractors expense prior to final acceptance of the Work.

C. Surfaces requiring field touch-up of any required areas shall be prepared as described in Paragraph 3.1-A above or by the following procedure:
   1. Clean all surfaces to be repaired per SSPC-SP1 Solvent Clean to remove chlorides and general surface contamination.

2. Grind all welded areas to provide a smooth surface with no sharp edges.
3. Feather existing coatings back to sound material.
4. Clean all other surfaces to be repaired per SSPC-SP2 (Hand Tool Cleaning) or SSPC-SP3 (Power Tool Cleaning). Do not grind surfaces smooth; maintain adequate surface profile from original blast cleaning.
5. Stripe coat all welds and edges with the epoxy coating prior to painting to insure adequate film thickness.

END OF SECTION

SECTION 15400

PLUMBING

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SECTION 15400

PLUMBING

PART 1 - GENERAL

~~1.1 FILING SUB-BIDS~~

~~A. Sub-bids for Work under this Section shall be for the complete Work required hereunder and shall be filed in a sealed envelope with the Awarding Authority before the time and date and at the location indicated in Section 00500, Notice to Bidders, and at that time will be publicly opened and read aloud.~~

~~B. Procedure for filing Sub-Bids shall conform to all requirements of the Commonwealth of Massachusetts General Laws, Chapter 149, as amended to date.~~

~~C. Every Sub-Bid submitted for Work under this Section shall be on a form furnished by the Awarding Authority as required by Section 44G of Chapter 149, as amended, which form is required to be completely filled in. A sample Form for Sub-Bid for Subcontractors is provided as an attachment to Section 00310, Bid Form.~~

~~D. Every Sub-Bid filed with the Awarding Authority shall be accompanied by bid security in the form and amount stipulated.~~

1.2 GENERAL PROVISIONS

A. All the Contract Documents and General Provisions of the Contract including, but not limited to, General and Supplementary Conditions, and Division 1 Specification Sections apply to this Section.

B. The work of this Section provides and contains general information which is inherently made a part of each Section and applies to all work performed under this Contract.

C. The Drawings on which this Contract is based are listed in Division 1. Consult all Drawings, note all conditions that may affect the Work and care for same in executing the Contract.

1.3 DESCRIPTION OF WORK

A. Provide all labor, materials, equipment, services and accessories necessary to furnish and install the work of this Section, complete and functional, as indicated in the Contract Documents and as specified herein.

B. The work covered by this Section of the Specifications includes the furnishing of all labor and materials and in performing all operations in connection with the installation of the Plumbing Work.

C. Without limiting the generality thereof, the work to be performed under this Section includes:
   1. Flushing, Sterilization, and Tests
   2. Furnishing of Access Panels
   3. Drilling, Coring and Cutting & Patching of holes and openings where the largest dimension thereof does not exceed 16 inches for Plumbing Piping and Equipment.
   4. Provide and maintain temporary water service as directed by General Contractor. General Contractor to pay for all water use.
   5. Scaffolding, Rigging, and Staging required for all Plumbing Work. Comply with Division 1 requirements.
   6. Preparation of Co-ordination Drawings.
   7. Smoke and Firestopping Seals and sealing of all wall penetrations as detailed on the drawings.
   8. When open-flame or spark producing tools such as blower torches, welding equipment, and the like are required in the process of executing the work, the General Contractor shall be notified not less than twenty four hours in advance of the time that the work is to begin and the location where work is to be performed. Provide fire protective covering and maintain constant non-working fire watch, paying all fees, where work is being performed and until it is completed. Fee for fire watch shall be included in the bid.

1.4 RELATED WORK

A. The following Related Work will be performed under the designated Sections:
   1. Cutting and Patching beyond 1.3C.3 above: SECTION 01045 - CUTTING AND PATCHING
   2. Electric Power Wiring: SECTION 16000 - ELECTRICAL
   3. Excavation and Backfill: SECTION 02200 - EARTHWORK
   4. Temporary Facilities: SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

1.5 CODES, ORDINANCES, AND PERMITS

A. Perform all work in accordance with the requirements of the Town of Chatham Building Department, Massachusetts State Plumbing and Fuel Gas Codes, D.E.P., A.D.A., NFPA, The Architectural Barrier Code, and applicable State and Federal Laws. Give all requisite notices, file all requisite plans, and obtain all permits required to perform all Plumbing Work. Where the Contract Documents indicate more stringent requirements than the above Codes and Ordinances, the Contract Documents shall take precedence.

B. Obtain all permits, inspections, and approvals, from the governing authorities and pay all fees and include cost in the bid, including approvals for the cross connection control device. Provide the Owner with the cross connection permit for the device in the Owner's name.

C. Owner will pay all related Gas Utility Company back charges.

1.6 DISCREPANCIES IN DOCUMENTS

A. Where Drawings or Specifications conflict or are unclear, advise Designer in writing before Award of Contract. Otherwise, Designer's interpretation of Contract Documents shall be final, and no additional compensation shall be permitted due to discrepancies or unclarities thus resolved.

B. Where Drawings or Specifications do not coincide with manufacturers' recommendations, or with applicable codes and standards, alert Designer in writing before installation. Otherwise, make changes in installed work as Designer requires within Contract Price.

C. If the required material, installation, or work can be interpreted differently from drawing to drawing, or between drawings and specs, this contractor shall provide that material, installation, or work which is of the higher standard.

D. It is the intent of these contract documents to have the contractor provide systems and components that are fully complete and operational and fully suitable for the intended use. There may be situations in the documents where insufficient information exists to precisely describe a certain component or subsystem, or the routing of a component. In cases such as this, where the contractor has failed to notify the Designer of the situation in accordance with the paragraph above, the contractor shall provide the specific component or subsystem with all parts necessary for the intended use, fully complete and operational, and installed in workmanlike manner either concealed or exposed per the design intent.

E. In cases covered by the paragraph above, where the contractor believes he/she needs engineering guidance, he/she shall submit a sketch identifying his proposed solution and the Designer shall review, note if necessary, and approve the sketch.

1.7 MODIFICATIONS IN LAYOUT

A. HVAC, Plumbing, Fire Protection, and Electrical Drawings are diagrammatic. They indicate general arrangements of mechanical and electrical systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structure and other trades and to meet architectural requirements.

B. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Designer.

C. Check Contract Drawings as well as Shop Drawings of all subcontractors to verify and coordinate spaces in which work of this Section will be installed.

D. Maintain maximum headroom at all locations. All piping and associated components to be as tight to underside of structure as possible.

E. Make reasonable modifications in layout and components needed to prevent conflict with work of other trades and to coordinate according to Paragraphs A, B, C, D above. Systems shall be run in a rectilinear fashion.

F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Designer for review and approval.

1.8 SHOP DRAWING AND MATERIAL SCHEDULES

A. Refer to SECTION 01340 - SUBMITTALS AND SUBSTITUTIONS for submittal of Shop Drawings. If apparatus or materials are substituted for those specified, and such substitution necessitates changes in or additional connections, piping, supports or construction, same shall be provided as the responsibility, and at the expense, of the Plumbing Subcontractor.

B. Fabrication of any material or performing of any work prior to the final approval of the Submittals will be entirely at the risk of the Subcontractor. The Subcontractor is responsible for furnishing and installing materials called for in the Contract Documents, even though these materials may have been omitted from approved Submittals.

C. Submit Shop Drawings for the following materials and equipment.
1. Valves, Piping, couplings and Fittings
2. Fixtures, Drains and Equipment including Supports
3. Backflow Preventers
4. Access Panels and Covers
5. Insulation
6. Drains, and Hydro Mechanical Specialties
7. Hose Bibs, Wall Hydrants
8. Hangers, Anchors, Guides, and Supports including Seismic Restraints
9. Cleanouts
10. Piping Identification System
11. Water Heating Equipment
12. Water heater air intake and exhaust breeching.

1.9 COORDINATION DRAWINGS

A. Before materials are purchased or Work is begun, prepare and submit to the Architect, Coordination Drawings showing the size and location of all equipment and piping lines relevant to the complete system. Ensure that these Drawings are compatible and correctly annotated and cross-referenced at their interfaces (match lines).

B. Coordination Drawings are for the Contractor's and the Architect's use during Construction and shall not be construed as replacing any Shop or Record Drawings required elsewhere in these Contract Documents.

C. Detailed procedures for Coordination Drawings are contained in DIVISION 01 - GENERAL REQUIREMENTS of these Contract Documents.

1.10 RECORD DRAWINGS

A. General: Refer to DIVISION 01 - GENERAL REQUIREMENTS for general requirements for maintaining as-built drawings and submitting final reproducible record documents.

B. The General Contractor will provide two sets of Drawings to the Plumbing Subcontractor, one set of which shall be maintained at the site and which shall, at all times, be accurate, clear, and complete, showing the actual locations of all equipment and piping as it is being installed. The Record Drawings shall be available to the Architect/Engineer's field representative at all times.

C. Provide electronic AutoCAD drawings to indicate revisions to piping size and location both exterior and interior; including locations of valves and other equipment requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; concealed equipment, dimensioned to column line; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located.

D. Include in the Record Drawings any addenda, sketches, and supplementary Drawings issued during the course of construction.

E. Non-availability of Record Drawings or inaccuracies therein will postpone the final inspection until they are available.

F. All valves shown on these Drawings shall be numbered with numbers corresponding to those on the valve charts.

G. All costs related to the foregoing requirements shall be paid by the Plumbing Subcontractor.

1.11 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. Provide operating instructions to the Owner's designated representative with respect to operation functions and maintenance procedures for all equipment and systems installed. At the completion of the project, turn over to the Architect four (4) complete manuals, in three-ring, loose-leaf binders, containing the following:

1. Complete Shop Drawings of all equipment.
2. Operation description for all systems.
3. Names, addresses, and telephone numbers of all suppliers of the system.
4. Preventative maintenance instructions for all systems.
5. Spare parts lists of all system components.
6. Valve tag chart.

1.12 GUARANTEE

A. Refer to Division 1 of the Contract. Guarantee all work under this Section free from defects in workmanship and materials for a period of one (1) year from the date of final acceptance of the building, as set forth in the Contract. Replace any

such defective work developing during this period, unless such defects are clearly the result of bad usage of equipment by others. Where such defective work results in damage to work of other Sections of the Specifications, restore such work to its original condition by mechanics skilled in the affected trade.

1.13 DRAWINGS

A. All work shown on the Drawings is intended to be approximately correct to scale, but shall be taken in a sense as diagrammatic. Sizes of pipes and general method of running them are shown, but it is not intended to show every offset and fitting. To carry out the true intent and purpose of the plans, furnish all necessary parts to make complete working systems ready for use. The Plumbing Drawings are intended to show the main stacks and risers and may or may not necessarily show all runout piping particularly in lavatories and gang toilet areas. Contractor shall include all runout piping to all referenced scheduled fixtures and equipment appearing on the Plumbing Drawings.

B. All floor drains installed on this project shall be equipped with trap primers. The trap primer and piping is not shown on the drawings and shall be located in the filed by the Contractor as dictated by field piping conditions.

C. The Plumbing Drawings and Specifications are intended to supplement each other so that any details shown on the Drawings and not mentioned in the Specifications, or vice-versa, shall be executed the same as if mentioned in the Specifications and shown on the Drawings.

D. Refer to the Architectural, Structural, and other Mechanical and Electrical Drawings, which indicate the construction in which this Work shall be installed. Locations shown on the plans shall be checked against the general and detailed Drawings of the construction proper. All measurements shall be taken at the Building.

1.14 VALVE TAGS, NAMEPLATES, AND CHARTS

A. All valves on pipes of every description shall have neat circular brass valve tags at least 1-1/2 in. in diameter attached with brass hook to each valve stem. Stamp on these valve tags, in letters as large as practical, the number of the valve and the service, such as "H.W., C.W., GAS", for hot water, cold water, and gas respectively. The numbers for each service shall be consecutive. Where valves are located above ACT ceilings, furnish and install valve finder ceiling tack, tack shall be minimum 7/8 in. diameter with 1/2 in. steel point, color as determined by Owner.

B. All valves on tanks and pumps shall be numbered by 3 in. red metal discs with white numbers 2 in. high, secured to stem of valves by means of small solid link brass chain, to correspond to numbers indicated for valves on the Record Drawings and on two (2) printed detailed lists. These printed lists shall state the numbers and locations of each valve and the fixture or group of fixtures which it controls, and other necessary information such as requiring the opening or closing

of another valve or valves when any one valve is to be opened and closed, and shall be prepared in form to meet approval of the Architect, and shall be framed under glass.

C. Nameplates, catalog numbers, and rating identifications shall be securely attached to Electrical and Mechanical equipment with screws or rivets. Adhesives or cements will not be permitted.

1.15 PIPE MARKER IDENTIFICATION SYSTEM

A. Mark all piping installed under this Section and at all Access Panels with a marking system in basic colors conforming to those specified in ANSI/ASME A-13.1. Markings shall indicate pipe content and direction of flow. Markers shall be applied at all valves and tee joints, and on straight runs of pipe at every 20 ft.-0 in. on center. Adhesive markings are not acceptable. Markers shall be painted on under the scope of this Section or may be snap-on system.

B. Clearly domestic water system with 4 inch wide colored bands, with arrow for direction of flow, every twenty-five (25) feet on center on all piping installed whether it is concealed or exposed and also on both sides of floor and/or wall penetrations. Mark domestic water green. Within 6 in. of each band identify with letter " C.W.", H.W." Color of letter shall match banding.

1.16 HOISTING EQUIPMENT AND MACHINERY

A. Unless otherwise specified, all hoisting and rigging equipment and machinery required for the proper and expeditious prosecution and progress of the Work of this Section shall be furnished, installed, operated and maintained in safe condition by each sub-contractor, as specified under SECTION 01500, TEMPORARY FACILITIES AND CONTROLS.

1.17 STAGING AND SCAFFOLDING

A. Unless otherwise specified, each sub-contractor shall provide all lifts and man-lifts, and furnish, erect and maintain in safe condition, all staging and scaffolding as specified under SECTION 01500, TEMPORARY FACILITIES AND CONTROLS as needed for proper execution of the work of this Section. Staging and scaffolding shall be of adequate design, erected and removed by experienced stage builders having all accident prevention devices required by Federal, state and local laws.

1.18 BREAKDOWN

A. Submit a breakdown of the contract price to aid the Architect in determining the value of the work installed as the job progresses.

B. No requisition will be approved until the breakdown is delivered to the Architect.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials and equipment furnished under this SECTION shall be new, unused, first quality of a manufacturer of established reputation. Each valve, fitting, section of pipe, and piece of equipment supplied to project shall have cast or indelibly stamped thereon the manufacturer's name, pressure rating where applicable, type, and any other specific information provided by manufacturer. Materials shall conform to Massachusetts Code as a minimum requirement and shall appear on the Massachusetts Approved Plumbing Products list.

2.2 PIPE AND FITTINGS

A. Pipe and fittings shall conform to the latest A.S.A., A.S.T.M., C.A., and F.S. standards.

B. All piping installed under this SECTION shall be in accordance with the following:

Service	Material
Domestic water piping above ground	Type ‘L’ hard tempered copper tubing
Domestic water piping Underground	Black Rolled piping Polyethylene

C. Fittings for Type 'L' hard tempered copper tubing for domestic water piping shall be cast bronze or wrought copper sweat type, water pattern fittings.

2.3 JOINTS

A. Copper tubing and sweat fittings shall be assembled with lead free solder, Silverbrite, Oatey, Harris, or equal, and a non-corrosive flux recommended by the manufacturer (includes waste piping and water piping).

B. Joints between copper tubing and ductile iron water pipe or at flanged joints to tanks shall be made with a combination iron and brass flange with composition gasket and iron bolts.

C. Joints at water heaters or other tanks having threaded connections shall be made up with dielectric unions.

D. Joints between floor or wall flanges and fixtures shall be made with one-piece special molded neoprene gaskets which shall be furnished by the fixture manufacturer.

E. Threaded pipe joints including plastics shall be made up with Teflon tape.

F. Joints on screwed gas piping shall be made up with thread compound on male threads only. Welded joints shall be made up by certified welders. All joints on

piping 2-1/2 in. and larger shall be welded. Joints for plastic gas piping shall be performed by the heat fusion method by Mass. Certified Technicians.

2.4 VALVES

A. Furnish and install valves where indicated on the Drawings or where specified and located so that they may be operated, repaired, or replaced with a minimum effort and repacked under pressure.

B. The following list of valves is intended only as a guide for type and quality. Valves shall be as manufactured by Apollo, Milwaukee, Nibco, Elkhart, Watts or approved equal.

Shutoff valves 2 in. and smaller	Apollo #70LF-202 through #70LF-208 solder end lead-free ball valves
Shutoff valves, 2-1/2 in. and 3 in.	Apollo #70LF-109 and #70LF-100 lead-free
Stop and waste valves 1 in. and smaller	Apollo #95LF-203 through #95LF-205, lead-free
Check valves	Walworth #406 SJ
Drain valves	Apollo #78-103-01 or #78-203-01 ball valve with cap and chain 1/2 in. x 3/4 in. hose end

2.5 INSULATION

A. Insulation for all water piping whether concealed or exposed shall be 1 in. thick, heavy density, preformed snap-on insulation equal to Johns Manville Micro-Lok HP, 850 degrees snap-on system. Insulation for cold water piping shall have a factory applied vapor barrier with ends and butts sealed with overlapping 4 in. sealing strips.

B. Valves and fittings shall be insulated with pre-formed fiberglass fitting insulation cut from dense fiberglass blanket and covered with pre-molded P.V.C. fitting covers. P.V.C. covers shall overlap the adjoining insulation and shall be secured with pressure sensitive vinyl tape over a vapor barrier adhesive seal at the joints. (Note: Staples or tacks are not permitted on covers).

C. All insulation shall have self-sealing type, all service jacket (ASJ-SSL) factory applied. At all exposed piping, cover jacket with continuous P.V.C. jacket.

D. Sealers, solvents, tapes, and adhesives, and mastics used in conjunction with the installation of insulation under this Section shall possess the maximum possible fire safe qualities available and shall be NFPA approved.

E. Covering shall be applied over clean and dry surfaces. No covering shall be applied until after the approval of all pressure and leakage tests.

F. Insulation shall be as manufactured by Johns Manville, Inc., Owens-Corning Fiberglass Corporation SSL II-ASJ, or Knauf Insulation 1000. Insulation shall be applied by skilled insulation mechanics in a first class manner.

2.6 DRAIN VALVES

A. It shall be possible to drain the water from all sections of the Domestic Hot and Cold Water Piping. Furnish and install 1/2 in. x 3/4 in. hose end ball valves with cap and chain. (see Paragraph 2.4 for model no.)

2.7 PIPING ACCESSORIES

A. Pressure and Temperature Relief Valves shall be A.S.M.E. rated temperature relief 210 deg. F. double BTU rated, self-closing, as manufactured by Watts Regulator Company or equal by Wilkins, McDonnell and Miller, or equal.

B. Vacuum reliefs shall be lead free Watts Regulator Company #LFN36 or equal by Wilkins or Lawler.

C. Temperature gauges shall be 4-1/2 in. diameter dial thermometers, any angle, and range of 30 degrees F. to 240 degrees F. as manufactured by Weiss Instruments, U.S. Gauge, Trerice or equal.

D. Pressure gauges shall be 4-1/2 in. diameter with a range of 0 to 160 psi as manufactured by Weiss Instruments, U.S. Gauge, Trerice or equal.

E. Furnish and install where piping crosses building expansion joints on the domestic water piping and gas piping, expansion joints and anchors sized for 1-1/2 in. expansion per one hundred feet. Expansion joints shall be Metraflex "Metraloop", or manufactured by Flexonic Company or Hyspan, or equal. Piping shall be anchored and guided to force the expansion in the proper direction. Domestic water expansion joints shall be NSF approved. Gas expansion joints shall be AGA approved.

F. Furnish and install where indicated on Drawings, Watts Regulator Company lead free pressure reducing valve and strainer combination size as indicated on the Drawing or equal, as manufactured by Donnelly Products Company or McDonnell and Miller.

G. Trap primer connections are required on all floor drains to maintain trap seal. The requirement for trap primer connections shall include all floor drains. Trap primers shall be Precision Plumbing Products, Inc. Model P/N-PR-500 prime-rite trap-primer valve or shall, where appropriate, be Zurn, Josam, Smith or equal in-line connections installed on flush valve supply.

2.8 HYDRANTS AND HOSE BIBB

A. Hose bibb shall be Zurn or equal model Z1341xL-P34-RC, chrome plated, 3/4 in. hose end.

B. Hydrants shall be manufactured by Zurn, J.R. Smith, Josam, or equal. Hose bibbs shall be manufactured by T&S Brass, Zurn, Chicago, or equal.

2.9 SUPPLEMENTARY STEEL, CHANNEL, AND SUPPORTS

A. Furnish and install all supplementary steel, channels, and supports required for the proper installation, mounting, and support of all equipment.

B. Supplementary Steel and Channels shall be firmly connected to building construction in a manner approved by the Architect.

C. The type and size of the Supporting Channels and Supplementary Steel shall be determined by the Plumbing Subcontractor and shall be sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

D. All Supplementary Steel and Channel shall be installed in a neat and workmanlike manner parallel to the walls, floor, and ceiling construction. All turns shall be made with 90 deg. fittings, as necessary to suit the construction and installation conditions.

2.10 HANGERS, ANCHORS, GUIDES, AND PIERS

A. All piping shall be supported from the Building Structure by means of approved hangers and supports. Piping shall be supported to maintain required grading and pitching of lines, to prevent vibration, and to secure piping in place, and shall be so arranged as to provide for expansion and contraction.

B. The spacing for hangers for horizontal piping shall be in accordance with the following:

1. Cast Iron Soil Pipe: 5 ft.-0 in. at the hubs for 5 ft. lengths. For 10 ft. lengths, use one (1) hanger at the hub and one (1) at midpoint of the length. Install cast iron pipe in accordance with CISPI Handbook - latest edition.
2. Copper Tubing: 6 ft.-0 in. o.c. for 1-1/4 in. and smaller, and 10 ft.-0 in. o.c. for 1-1/2 in. and larger.
3. Steel Pipe: 10 ft.-0 in. o.c. for 1-1/2 in. and over; 8 ft. - 0 in. for 1-1/4 in.; 6 ft. – 0 in. for 1 in. and smaller.

C. Hanger rod diameter shall be as follows:

Pipe Size	Rod Diameter
1/2 in. thru 2 in.	3/8 in.
2-1/2 in. and 3 in.	1/2 in.
4 in. and 5 in.	5/8 in.
6 in.	3/4 in.
8 in. and over	7/8 in.

D. Vertical lines shall be adequately supported at their bases by a suitable hanger placed in the horizontal line near the riser and at every 10 ft. interval.

E. All Hangers shall be adjustable Clevis Hanger. Hanger rods shall have machine threads. Malleable iron brackets of approved type shall be used along the walls. All Hangers for copper tubing shall be copper plated except where pipe is insulated, in which case, Steel Clevis Hanger and pipe shield shall be used.

F. Piping shall not be hung from the hangers of other trades.

G. Provide seismic restraints for all piping per requirements of the MA Building Code. All gas piping shall be seismically restrained.

H. Hangers shall be manufactured by Grinnell, Carpenter and Paterson, Fee and Mason, or equal.

I. Wire and strap hangers will not be permitted in this installation.

J. Install a 14 gauge metal pipe shield between pipe insulation and all pipe hangers. Hangers shall be sized so that the pipe insulation passes through the hanger and is supported on the shield.

2.11 BACKFLOW PREVENTERS

A. Backflow preventers shall be reduced pressure type furnished complete with shutoff valves, Massachusetts Approved. Backflow preventers 2-1/2 inch and smaller shall be Watts #LF009-QT-S. Backflow preventers 3 inch and larger shall be Watts 957-QT. Backflow preventers shall be lead free, all bronze, complete with strainer and soft seated check valve. Size shall be as indicated on Drawings.

B. Mount backflow preventer 3 ft.(+/-) above finished floor. Provide indirect waste funnel and run pipe to an air gapped discharge at sink or floor drain. Furnish a spare parts kit and parts list mounted in the vicinity of the device.

C. Prior to the installation of devices in the name of the Owner file for, pay for, and obtain all required permits and approvals for cross connection control devices from the Authority having Jurisdiction.

D. Backflow preventers shall be of one manufacturer, by Watts, Wilkins, Beeco, or equal.

2.12 UNION AND NIPPLES

A. All connections between copper tubing and galvanized piping or between copper tubing and all tanks (such as water heaters, chillers, and similar equipment) shall be made with dielectric unions and nipples.

B. All connection to Water Heaters, Meters, Pumps, and other equipment requiring maintenance or alteration shall be made up with unions. Unions on brass piping, 2 in. and smaller, shall be brass composition "E" in strict accordance with Federal Specification WW-U-516. On plastic piping, use unions of the same material as the piping.

C. All close and shoulder nipples shall be corresponding materials as the pipe and shall be extra heavy.

2.13 SCAFFOLDS AND STAGING

A. General: Trade Contractors shall obtain required permits for, and provide scaffolds, staging, and other similar raised platforms, required to access their Work as specified in SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS and herein.

2.14 HOISTING MACHINERY AND EQUIPMENT

A. All hoisting equipment, rigging equipment, crane services and lift machinery required for the work by this Trade Contractor shall be furnished, installed, operated and maintained in safe conditions by this Trade Contractor, as referenced under SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS.

PART 3 - EXECUTION

3.1 WORKMANSHIP AND INSTALLATION METHODS

A. All work shall be installed in a first-class manner consistent with the best current practices. All materials shall be securely installed plumb and/or level, and all flush mounted equipment shall have front edge flush with finished wall surface.

B. All piping shall be installed true to line and grade in the case of underground piping. All piping above ceilings or exposed shall be grouped together, be parallel to each other, and be either parallel or perpendicular to the structure. Utilize gang hangers wherever feasible. Group all valves together where feasible.

3.2 WORK COORDINATION AND JOB OPERATIONS

A. The equipment shall not be installed in congested and possible problem areas without first coordinating the installation of same.

B. Particular attention shall be directed to the coordination of piping and other equipment installed in the ceiling areas. Coordinate the elevations of all piping in hung ceiling areas to insure adequate space for the installation of recessed lighting fixtures before other mechanical equipment is installed.

C. Furnish to the General Contractor, and all other Subcontractors, all information relative to the portion of the Plumbing installation that will affect them, sufficiently in advance so that they may plan their work and installation accordingly.

D. In case of failure to give proper information as indicated above sufficiently in advance, pay for all back-charges for the modification, renovation, and relocation of any portion of the work already performed.

E. Obtain from the other trades, all information relative to the Plumbing Work to be executed in conjunction with the installation of their respective equipment.

3.3 CUTTING AND CORE DRILLING

A. Perform all cutting and core drilling operations that are outlined in Part 1 of this SECTION. Throughout the performance of the cutting and coring work, ensure that the structural integrity of the walls, floors, overhead structure, and other structural components, which are to remain, is maintained until permanent work is installed. Prior to any coring or cutting, verify all locations of same with the General Contractor. All cutting and coring is to be performed in accordance with approved Coordination Drawings

B. Cut all masonry and concrete with an approved diamond blade concrete saw in a neat straight direction, perpendicular to the plane of the wall or floor.

C. Use a core drilling process which produces clean, sharp edges and the minimum hole size which will accommodate the size of pipe sleeve specified. Submit procedures for cutting thru existing steel beams to Architect for review.

D. The patching of holes shall be performed by Plumbing Sub-contractor utilizing methods outlined for the finish trade involved. Holes shall be patched to the satisfaction of the Architect.

3.4 CLEANING AND PROTECTION

A. Protect all materials and equipment during shipment and so as to prevent damage. Water closets, lavatories, and sinks shall be boarded over and all other fixtures shall be protected with pasted on paper. Post notice prohibiting the use of the fixtures prior to completion. Assume full responsibility for protection of work until its completion, and final acceptance.

B. Keep the premises reasonably clean at all times and remove rubbish caused by the Plumbing Work as directed by the Architect.

C. Upon completion of this work, clean all fixtures and equipment installed herein and replace damaged parts. Failure to fulfill this obligation will result in back-charges for correction of the defective work.

3.5 SLEEVES, INSERTS, AND ESCUTCHEONS

A. All piping passing through slabs, floors, walls, partitions, foundation walls and grade beams, shall be sleeved and all such sleeves shall be furnished and installed by the Plumbing Subcontractor as detailed on the Drawings and herein specified. Set sleeves in concrete floors and walls as soon as forms are set and before concrete is poured. Core drilling openings shall have a sleeve caulked and leaded in place.

B. All pipes passing through floor, whether slab-on grade or above grade levels, shall be sleeved with sleeve extending 1 in. above floor. This includes all piping in toilet room pipe space, stairwells, closets, partitions and pre-cast planks.

C. All sleeves shall be Schedule 40 galvanized steel and shall be reamed. There shall be a minimum of 1 in. annular space between the sleeve and pipe provide greater clearance where seismic requirements dictate. Sleeves on insulated pipe shall be large enough to allow insulation to pass through sleeve. Sleeves on drywall, masonry, or concrete walls and partitions, shall be flush with wall on both sides.

D. The space between sleeve and pipe in all cases shall be filled with a U.L./F.M. approved caulking compound. This includes pipes concealed in chases and/or partitions.

E. Inserts where required shall be furnished and set by the Plumbing Subcontractor and where necessary may be drilled or power driven and shall be sized such that the insert will not exceed a depth of penetration of 1 in. into concrete.

F. Escutcheons: All exposed pipe, uncovered, passing through walls or floors or ceilings shall be fitted with C.P. brass spun or split type escutcheons with approved clamping device for holding in position. Floor escutcheons shall be deep enough to fit over sleeves, fastened to pipe, and extend down to floor.

3.6 TESTING

A. Test all Work in the presence of the Architect and/or Engineer and as required by Local Codes.

B. After Soil, Waste, and Vent Piping is in place and before being buried or furred in, plug lower ends and fill the system with water up to the top of stacks. Piping is to be left tight under these conditions and water lever shall be maintained intact for the period of at least four (4) hours.

C. Test all water piping by applying a hydrostatic pressure of 150 PSIG using a pump for this purpose. Make sure that all lines are properly plugged or capped

and that air has been vented before applying pressure which shall remain constant without pumping for two (2) hours at least.

D. Test gas piping per State Gas Code.

E. Any leaks in joints or evidence of defective pipe on fittings disclosed by test shall be immediately corrected by replacing defective parts with new joints or materials. No makeshift repair effected by caulking threaded pipe with lead wool, application or Wilky or patented compounds will be permitted.

3.7 CHLORINATION

A. Upon completion of the Plumbing Work, thoroughly chlorinate the entire domestic water system before putting same in service. Chlorinate all work in the presence of the Architect and/or Engineer. The chlorinating agent shall be as a solution of sodium hypochlorite. Water shall be fed slowly into the new line with chlorine in the proper amount to produce a dosage of 50 PPM. Open and close all valves while system is being chlorinated.

B. After the sterilization agent has been applied for 24 hours, pay for an independent testing agency to test for residual chlorine. A residual of not more than 5 PPM shall be required in all parts of the line.

C. If test show 5 PPM or greater of residual chlorine, flush out system until all traces of the chemical used are removed.

D. Provide testing report from independent testing agency.

END OF SECTION

SECTION 16000

ELECTRICAL

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SECTION 16000

ELECTRICAL
~~**(Filed Sub-Bid Required)**~~

PART 1 – GENERAL

~~1.1 GENERAL PROVISIONS~~

~~A. Filed Sub-Bid Requirements: As provided under Section 16000 – Electrical filed sub-bid requirements and supplemented under the Bidding Requirements, Contract Forms, and Conditions of the Contract, and applicable parts of Division 1 – General Requirements.~~

~~1. Work of this Filed Sub-Bid includes all individual Specification Sections listed in Section 16000.~~
~~2. The Form for Sub-Bid for Subcontractors is provided as an attachment to Section 00310, Bid Form.~~

1.2 GENERAL REFERENCES

A. Bidding Requirements, Contract Forms, General Conditions Contract for Construction Services and Division 1, General Requirements are hereby made a part of this Section.

1.3 SCOPE OF WORK

A. The scope of work consists of the installation of all materials to be furnished under this Section, and without limiting the generality thereof, consists of furnishing all labor, materials, equipment, plant, transportation, rigging, staging, scaffolding, appurtenances, programming, software, vendor inspections, component energization, startup testing, training, scheduling, documentation, and services necessary and/or incidental to properly complete all electrical work as shown on the Drawings, as described in the Specifications, or as reasonably inferred from either, in the opinion of the Architect as being required.

B. The work of this Section includes:
1. Conduit.
2. Disconnect Switches.
3. Electrical Supporting Devices.
4. Electric Service.
5. Fire Stopping.
6. Fuses.
7. Grounding.
8. Lighting Fixtures.
9. Nameplates.
10. Outlet Boxes and Accessories.

11. Panelboards.
12. Pull Boxes, Junction Boxes and Wireways.
13. Sleeves, Inserts and Supports.
14. Surge Protection Devices (SPD's).
15. Time Clocks.
16. Wire and Cable.
17. Wiring Device Plates.
18. Wiring Devices.
19. Alternates.
20. Furnish, erect and maintain staging and scaffolding, including electrical hoisting and rigging equipment required for the performance of the electrical work.
21. Existing Work and Demolition.

C. The Electrical Subcontractor shall be responsible for all cutting related to the work of this Section except in finished surfaces. Patching is the responsibility of the trade effected.

1.4 CODES, REGULATIONS AND PERMITS

A. All work done under this Section shall conform to the Codes and regulations governing such work as follows:
1. ANSI American National Standards Institution
2. ASTM American Society for Testing Materials
3. CS Commercial Standards
4. FS Federal Specifications
5. IEEE Institute of Electrical and Electronic Engineers
6. IES Illuminating Engineering Society
7. NEC National Electrical Code
8. Massachusetts Electrical Code
9. NECA National Electrical Subcontractors Association
10. NEMA National Electrical Manufacturer's Association
11. NFPA National Fire Protection Association
12. UL Underwriters Laboratory
13. NESC National Electrical Safety Code
14. IPCEA Insulated Power Cable Engineers Association
15. EEI Edison Electrical Institute
16. EIA Electronic Industry Association
17. All Local Governing Codes.
18. NETA, National Electrical Testing Association.

B. Give notices, file plans, obtain and pay for permits and licenses and obtain necessary approvals from authorities having jurisdiction. Permits shall be secured through the City. Deliver certificates of inspection to Architect. No work shall be covered before examination and approval by Architect, inspectors and authorities having jurisdiction. Imperfect or condemned work shall be replaced with work conforming to requirements, without extra cost to Owner, subject to the approval

of the Architect. If work is covered before due inspection and approval, the Electrical Subcontractor shall pay costs of uncovering the installed work, whether it meets contract requirements or not. Refer to Notice to Bidders and General Conditions Contract for Construction Services for payment of fees.

1.5 DEBRIS REMOVAL AND CLEAN-UP

A. The Electrical Subcontractor shall, at the end of each day's work, remove waste materials and debris resulting from the installation of the electrical system. The Electrical Subcontractor shall deposit such waste and debris in a dumpster on site. Dumpster shall be provided by the General Contractor. The General Contractor shall be responsible for the emptying of dumpster when required.

B. The Electrical Subcontractor shall, at the completion of his work, remove from the property all tools, equipment and surplus materials resulting from the installation of the electrical system.

1.6 DEFINITIONS

A. "E.C." or "Contractor" as used herein after in this Section shall mean the "Electrical Subcontractor," i.e., the filed bid Subcontractor under this Section 16000.

B. "Concealed" shall be defined as areas where conduit and wiring is located in chases, walls, partitions, shafts, and above finished ceilings.

C. "Underground" shall mean conduit and wiring exterior to or within the Building that is buried. All other conduit and wiring shall be considered "exposed."

D. "Exposed" shall mean conduit and wiring run on the surface of the Building construction.

E. "Conduit" shall mean in addition to conduit, all fittings, hangers and other accessories relating to such conduit systems.

F. "Provide" shall mean "provided complete in place," that is, "furnished and installed."

1.7 DRAWINGS AND SPECIFICATIONS

A. The Drawings and Specifications are complementary each to the other, and any labor or material called for by either, whether or not by both, or necessary for the successful operation of any components shall be furnished and installed.

B. Before installing any work, verify that it does not interfere with the clearances required for other work. Installed work which interferes with existing necessary services shall be modified as directed by the Architect, at no additional cost to the

Owner.

C. Be familiar with the Drawings and Specifications of all other trades to prevent interferences and assure complete coordination.

1.8 ELECTRICAL CHARACTERISTICS

A. In general, and unless specifically indicated otherwise in the Specifications or noted on the Drawings, all new Building service, heating, ventilating, air conditioning and plumbing equipment shall be of the following characteristics:
   1. Motors up to and including 1/3 HP shall be suitable for 120 volt, single phase operation.
   2. Motors larger than 1/3 HP shall be suitable for 208 volt, three phase operation.

1.9 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

A. Bidders are advised to visit the site and inform themselves as to conditions under which this work will be performed. Failure to do so will, in no way, relieve the successful bidder from the responsibility of furnishing any materials or performing any work in accordance with the true intent and meaning of the Drawings and Specifications.

B. No claim for extra compensation will be recognized if difficulties are encountered which an examination of the site conditions and contract documents prior to executing the contract would have revealed.

C. The Electrical Subcontractor shall be responsible for ordering and furnishing the correct quantity of material required. Routing and equipment arrangements shown on the Drawings are approximate only and are not warranted to be accurate.

D. Arrangements shall be made with the Owner prior to the visit for inspection of the existing Buildings.

E. The Electrical Subcontractor and the General Contractor shall be responsible to coordinate with the work of other trades and vendors. The Electrical requirements involved with HVAC, Plumbing, and Fire Suppression, shall be considered part of the Electrical Subcontractors scope of work.

1.10 GIVING INFORMATION

A. Keep fully informed as to the shape, size and position of all openings and foundations required for all apparatus furnished under this Section and give full information to the General Contractor sufficiently in advance of the work, so that all such openings and foundations may be built in advance. Furnish all sleeves and supports herein specified, so the General Contractor may install same in place.

B. In the case of failure to give proper information as noted above, assume the cost of having necessary changes to the work made by the General Contractor.

1.11 GUARANTEE AND SERVICE

A. The Electrical Subcontractor shall guarantee the performance of the installation and all equipment included in this Section in writing for one year from the date of final acceptance of same. Should any defects in materials or workmanship appear during this period, they shall be corrected or replaced by the Electrical Subcontractor to the satisfaction of the Architect, and at no additional expense to the Owner.

1.12 INTENT

A. It is not intended that the Drawings show every conduit, fitting and appurtenance. All such parts necessary for the complete execution of the work, in accordance with the best practices of the trade and to the satisfaction of the Architect shall be provided whether these parts may have been specifically mentioned or not, or indicated on the Drawings.

B. Electrical Subcontractor is responsible to provide equipment, components, and systems that are complete and fully working, with all necessary tests and documents.

1.13 MATERIALS AND EQUIPMENT

A. All materials and equipment furnished under this Section shall be new and of the best grade for the service intended. The manufacturers mentioned in the Specifications are intended to indicate the quality desired. Any substitutions shall be approved by the Architect as herein provided by the "or equal" clause, in addition to meeting the limitations of space and capacity shown or specified. Re-built materials and equipment will not be accepted.

1.14 OBTAINING INFORMATION

A. Obtain detailed information from the manufacturers of apparatus which is to be provided, for the proper methods of installation. Obtain all information from the General Contractor and other Subcontractors which may be necessary to facilitate the work and the completion of the whole project.

B. Electrical Subcontractor shall inspect the site associated with this project prior to submitting his bid and shall investigate all conditions under which this work will be performed. This shall include determination of exact locations of items indicated as existing on the Drawings. Such existing locations are diagrammatic and shall not be construed as exact enough to use for equipment and labor estimating purposes. Failure to inspect existing conditions or to fully understand the work which is required shall not excuse the Electrical Subcontractor from his obligation to supply and install work in accordance with the Specifications and Drawings and

under all existing site conditions. It shall be the responsibility of the Electrical Subcontractor to investigate and locate all existing underground utilities which may conflict with the installation of this electrical work. Coordinate elevations of conduits required to be installed under this Contract to avoid interference with any existing underground utilities.

1.15 OPERATIONS AND MAINTENANCE MANUALS

A. At least two (2) months prior to the time of turning over this contract to the Owner for use and occupancy or substantial completion, secure and deliver to the Architect three (3) complete indexed files containing approved operating and maintenance manuals, Shop Drawings and other data as follows:
   1. Operation description of all systems.
   2. Complete Shop Drawings of all equipment.
   3. Preventive maintenance instructions for all systems.
   4. Spare parts lists of all system components.
   5. Names, addresses and telephone numbers of all suppliers of the systems.

B. Non-availability of operating and maintenance manuals or inaccuracies therein may be grounds for cancellation and postponement of any scheduled final inspection by the Owner until such time as the discrepancy has been corrected and/or retainage of sufficient monies to prepare same.

C. Provide qualified trained personnel to ensure proper operation of the systems and to train the Owner's operating and maintenance personnel in the proper operation and maintenance of the systems. Instruction period shall be five (5) eight-hour days.
   1. Training of the Tenant’s and Building Owner’s operation and maintenance personnel is required in cooperation with the Tenant’s and Building Owner’s Representatives. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation and troubleshooting of the installed systems. The instruction shall be scheduled in coordination with the Tenant’s and Building Owner’s Representative after submission and approval of formal training plans.

1.16 RECORD DRAWINGS

A. General: Refer to Division 1, General Requirements, Project Record Drawings for Requirements.

B. The Record Drawings, required to be furnished under this Section, are of the “E” Series Drawings.

1.17 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or material shall be provided under the designated

Divisions:

1. Excavation, backfill, pumping, and shoring: Section 02200 - "Earthwork."
2. Concrete work: Division 03, "Concrete."
3. Field Painting: Division 09, "Finishes.

1.18 SHOP DRAWINGS

A. General: Refer to Division 1, General Requirements, Section 01340, Submittals and Substitutions, for submittal provisions and procedures.

B. In accordance with Division 1, General Requirements, submit to the Architect for approval complete sets of detailed information consisting of manufacturer's' bulletins, capacities, Shop Drawings, and parts lists of all material to be provided for this project.

C. Any manufacturer's names and/or model numbers identified herein are intended to assist in establishing a general level of quality, configuration, functionality, and appearance required. This is NOT a proprietary Specification unless otherwise noted and it should be noted that or approved equal applies to all products denoted herein. It is understood that all manufactures will have minor variations in configuration, appearance, and product Specifications and such minor variations shall not eliminate such manufacturers as an approved equal. It is the intent of this Specification to encourage open and competitive involvement from multiple manufacturers' that are able to supply similar products.

1.19 TEMPORARY LIGHT AND POWER

A. Provide capacity from existing building power distribution and pay all expenses related thereto.

B. Refer to Division 1, for requirements.

PART 2 - PRODUCTS

2.1 ACCESS PANELS

A. All work shall be installed so that all parts requiring inspection, operation, maintenance and repair are readily accessible. Minor deviations from the drawings may be made to accomplish this, but changes of magnitude shall not be made prior to written approval from the Architect.

B. Furnish access panels for installation in walls and ceilings at locations indicated on the drawings or as required to permit access.

C. All access panels shall be located in closets, storage rooms and/or other non-public areas, in a workmanlike manner, positioned so that junction can be easily reached and the size shall be sufficient for this purpose (minimum 12 inches x 16 inches).

When the access panels are required in corridor, lobbies or other habitable areas, they shall be located as directed by the Architect.

D. Access panels shall be as manufactured by Inland Steel Products Company "Milcor", Walsh-Hannon-Gladwin, Inc., "Way-Loctor" or approved equal. Types shall be as follows:

1. Masonry or Tile "Milcor" Type M
2. Drywall "Milcor" Type DW
3. Fire-Rated "Milcor"

E. Units shall have 16 gauge steel frame and 14 gauge steel hinged door panel. Door shall have concealed spring hinges allowing door to be opened to 175 degrees.

F. Provide flush screwdriver operated camlocks in accordance with manufacturer's schedule of panel sizes and number of locks.

G. Units shall be factory primed for field painting by Section 09905, "Protective Coating."

H. Install U.L. rated 1-1/2 hour Class B access panels where required to comply with applicable code requirements.

2.2 CONDUIT

A. Electric metallic tubing shall be electrogalvanized or sherardized steel and the rigid steel conduit shall be hot-dipped galvanized or sherardized, inside and outside, manufactured by one of the following: Pittsburgh Standard, Republic Steel Corp., Allied Tube and Conduit Corp. or equal.

B. Flexible metal conduit shall be galvanized steel and shall contain a separate copper grounding conductor. Liquid-tight flexible metal conduit shall be similar, but shall also have an extruded moisture and oil proof outer jacket of polyvinyl chloride plastic.

C. Non-Metallic Conduit (NMC): Rigid polyvinyl chloride (PVC) shall be Schedule 40, rated for use with 90 degree conductors, UL rated or approved equal, conforming to industry standards and NEMA TC-2, NEMA TC-3, Fed. Spec. W-C-1094, and UL 651.

D. Rigid steel conduit fittings, couplings and connectors shall be threaded and shall be galvanized or cadmium plated. Conduit fittings and outlet boxes shall be held in place by fittings of a type approved by the Architect. Steel supports or racks shall be galvanized steel channel and fittings, Unistrut, Kindorf or Husky Products Company, or equal.

E. Couplings and connectors for electric metallic tubing shall be galvanized steel of the compression type other than the identer type and with insulated throat or set-

screw type.

F. Steel support rods or support bolts for conduits shall be 1/8" diameter for each inch or fraction thereof of diameter of conduit size, but no rod or bolt shall be less than 1/4" in diameter.

G. Conduit shall be supported from the Building structure, and shall be independent of ducts, pipes, ceilings and their supporting members.

2.3 DISCONNECT SWITCHES

A. The Electrical Subcontractor shall furnish and install disconnecting means to comply with the National Electrical Code for all motors. Disconnect switches shall be fused or unfused as shown on the Drawings, NEMA Type HD safety switches for heavy duty, with interlocking cover, side operated with provisions for padlocking the switch handle in the off position.

B. All motor isolating switches indicated on the Drawings shall be rated in horsepower, and shall be rated for the voltage of the motor and shall be furnished and installed at the motor location whether or not the motor is within sight of the motor feeder disconnecting means.

C. Disconnect switch enclosures shall be of the proper NEMA type for the intended location as defined by NEMA and shall be phosphate coated or equivalent code gauge galvanized sheet steel with USAFI No. 24 dark gray baked enamel finish.

D. Disconnect switches shall bear the Underwriters' Laboratories label and be manufactured by Square D Company, Eaton/Cutler-Hammer, Siemens, or equal.

2.4 ELECTRICAL SUPPORTING DEVICES

A. All conduit and fittings on all work are to be secured by one or more of the following:
   1. Masonry - metal clips secured by toggle bolts or lead expansion sleeves.
   2. Woodwork - metal clips secured by wood screws.
   3. Bar joists - wedge hangers.
   4. Flanged beams - flange clips.

B. All pipe hangers and equipment supports shall be constructed and installed in accordance with Seismic Zone requirements as outlined in the State Building Code. The Electrical Subcontractor shall submit one (1) copy of Shop Drawings and calculations detailing seismic hanger restraints to the local Building Authority and Architect, along with a letter of compliance signed by a registered structural engineer confirming that the piping hangers meet State Seismic Code requirements. Cable provided for seismic systems shall be color-coded and pre-stressed.

2.5 FUSES

A. General

1. Furnish and install a complete set of fuses for all fusible equipment on the project as specified by the Electrical Drawings. Final tests and inspection shall be made prior to energizing the equipment. This shall include tightening all electrical connections and inspecting all ground conductors. Fuses shall be as manufactured by Mersen, Cooper Bussman, and Littelfuse, or equal.

B. Mains, Feeders and Branch Circuits

1. Fused circuits rated 601 amperes and above shall be protected by current-limiting Class L A4BQ fuses. Fuses shall be time delay and shall hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in .01 seconds or less and be UL listed and CSA certified with an interrupting rating of 200,000 RMS symmetrical amperes.
2. Fused circuits rated 600 amperes or less shall be protected by current-limiting Class RK1 time delay A2D (250V) or A6D (600V) or Class J time delay AJT fuses. Fuses rated 8 amperes and above shall have the Smart Spot blown fuse indicator. This indicator shall provide guidance for ascertaining if the opening was caused by an overload or a short circuit. No holes are permitted in the fuse body for the indicator function. Fuses shall hold 500% of rated current for a minimum of 10 seconds (30A, 250V Class RK1 case size shall be a minimum of 8 seconds) and shall be UL listed and CSA certified with an interrupting rating of 200,000 RMS symmetrical amperes.
3. Metal end caps of fuses rated 61 through 600 amperes shall be electrically connected to the fuse blades to facilitate safe voltage testing during OSHA required LOTO (lock out/tag out) procedures.

C. Motors and Motor Controllers

1. Motor Protection
   a. All individual motor circuits shall be protected by Class RK1, Class J, or Class L time delay fuses.

2. Motors under 10 H.P.
   a. ATDR fuses (Class CC) may be used on motors rated less than 10 H.P. at 480VAC and rated less than 5 H.P. at 240VAC. Fuse holders for Class CC fuses shall incorporate blown fuse indication.
   b. Fuse sizes for motor protection shall be chosen from tables published for the appropriate fuse. Heavy load and maximum fuse ratings are also shown for applications where typical ratings are not sufficient for the starting current of the motor.

APPLICATION INFORMATION

LOW VOLTAGE FUSES FOR MOTOR PROTECTION

Three Phase Motor Fuse Selection UL Classes RK5, RK1, J, CC and L

MOTOR HP	FULL LOAD AMPERES	RECOMMENDED FUSE AMPERE RATING MOTOR ACCELERATION TIMES								
		MINIMUM 2 SECS.	TYPICAL 5 SECS.	HEAVY LOAD OVER 5 SECS.	MINIMUM 2 SECS.	TYPICAL 5 SECS.	HEAVY LOAD OVER 5 SECS.	MINIMUM 2 SECS.	TYPICAL 5 SECS.	HEAVY LOAD OVER 5 SECS.
460V		RK5–TRS (Tri-onic®)/RK1–A6D			J–AJT			UL CLASS CC ATDR		
1/2	1.1	1-4/10	1-6/10	2	1-1/2	1-6/10	2	3	3-1/2	4-1/2
3/4	1.6	2	2-1/4	2-8/10	2	2-1/4	2-8/10	3-1/2	5	6-1/4
1	2.1	2-1/2	3-2/10	4	2-1/2	3-2/10	4	5	6-1/4	9
1-1/2	3	3-1/2	4-1/2	5-6/10	3-1/2	4-1/2	5-6/10	6	9	12
2	3.4	4	5	6	4	5	6	8	10	12
3	4.8	5-6/10	7	9	6	8	9	12	15	17-1/2
5	7.6	10	12	15	10	12	15	15	25	30
7-1/2	11	15	17-1/2	20	15	17-1/2	20	25	30	-
10	14	17-1/2	20	25	17-1/2	20	25	30	-	-
15	21	25	30	40	25	30	40	-	-	-
20	27	35	40	50	35	40	50	-	-	-
25	34	40	50	60	40	50	60	-	-	-
30	40	50	60	70	50	60	70	-	-	-
40	52	70	80	100	70	80	100	-	-	-
50	65	80	100	125	80	100	125	-	-	-
60	77	100	125	150	100	125	150	-	-	-
75	96	125	150	175	125	150	175	-	-	-
100	124	175	200	225	175	200	225	-	-	-
125	156	200	225	300	200	225	300	-	-	-
150	180	225	250	350	225	250	350	-	-	-
200	240	300	350	450	300	350	450	-	-	-
250	302	400	450	600	400	450	600	-	-	-
300	361	450	600	-	450	600	-	-	-	-
		CLASS L–A4BT								
300	360	–	601	650						
400	477	–	800	900						
500	590	–	1000	1100						

Minimum - This sizing is recommended if motor acceleration times do not exceed 2 seconds. Minimum sizing with RK1, RK5, and Class J fuses will provide overload relay back up protection but may not coordinate with some NEMA Class 20 overload relays. Minimum sizing is generally not heavy enough for motors with code letter G or higher.

Typical - Suggested for most applications. Will coordinate with NEMA Class 20 overload relays. Suitable for motor acceleration times up to 5 seconds.

Heavy Load - Maximum fuse size in accordance with Table 2. If this fuse size is not sufficient to start the load, RK1, RK5, and J time delay fuse size may be increased to a maximum of 225% of full load amperes. Class CC fuses may be increased to 400% of full load amperes. The Heavy Load column should be used for Design E and high efficiency Design B motor fuse sizing.

2. Motor Controllers
   a. IEC style and NEMA style motor controllers shall be protected from short circuits by time delay fuses. Controllers and fuses shall be coordinated for Type 2 protection of the motor controllers based upon the motor controller manufacturer's published recommendations. The fuses shall be Class RK1 A2D (250V) or A6D (600V) or Class J AJT, Class CC ATDR or Class L A4BQ.
3. AC and DC Variable Speed Drives
   a. AC and DC drives not internally protected by high speed fuses shall be provided branch circuit protection by High Speed Class J (HSJ) fuses. Class J time delay AJT fuses are an acceptable alternative to the HSJ in by-pass applications.

D. Other Equipment
1. Lighting and control circuits rated 600VAC and less shall be protected by Class CC time delay ATDR or ATQR fuses, sized according to the Drawings.
2. Switchboards, panelboards, and load centers shall utilize fully rated and listed components. Series rated overcurrent protective devices are not acceptable.

E. Labeling
1. Industrial control panel labels shall include a SCCR (short circuit current rating) and shall specify the overcurrent protection device upon which this rating is based as per the National Electrical Code.
2. Switchboards, panelboards, industrial control panels, and motor control centers shall include a label warning qualified personal of the potential arc flash hazard. The label shall be visible with equipment door closed.

F. Spares
1. Spare fuses amounting to 10% (minimum three) of each type and rating shall be supplied. These shall be turned over to the Owner upon project completion. Fuses shall be contained and cataloged within the appropriate number of spare fuse cabinets (no less than one), located per Drawings. Spare fuse cabinets shall be equipped with a key lock handle, be dedicated for storage of spare fuses and shall be ATFC.

G. Execution
1. To prevent mechanical damage to fuses; main, feeder, and branch circuit fuses are to be removed from equipment during transit and re-installed when equipment is to be energized.
2. As installed Drawings, showing actual fuses installed, shall be submitted to the Engineer after completion of the project.
3. Fuseholders capable of accepting Class H fuses are not acceptable.

H. Substitution
1. Fuse sizes indicated on Drawings are based on fuse performance and selectivity ratios. Alternative submittals to furnish materials other than those specified shall be submitted to the Engineer along with short circuit, selective coordination, and arc flash hazard studies.
2. Performance of any fuses submitted for substitution shall have:
    a. Indication integral with the fuse so that it indicates the voltage transient when the fuse is opened. This is a relative measure of how severe the fault was and gives information to the maintenance people to make them more efficient. No holes are permitted in the fuse body for the installation of indicators.
    b. Only the listed UL categories must be used, in order to reduce the possibility of arc flash injuries. Class RK5 and Class H are prohibited and could cause major liability should an arc flash occur.
    c. All end-caps of fuses must be electrically connected to the fuse

blades to prevent misreading of electrical testers during the required OSHA LOTO (Lock-Out Tag-Out) procedures. Misreading on the LOTO final voltage check could cause hazardous shock.

2.6 LIGHTING FIXTURES

A. Furnish all labor, materials and equipment required for a complete installation of lighting equipment specified on the lighting fixture schedule. This shall include plaster frames for all recessed fixtures whether or not itemized or specified on lighting fixture schedule which appears on Drawings.

B. Electrical Subcontractor shall assume all responsibility for the safe handling of all lighting fixtures which are furnished under this Section and other accessories and lamps until the final inspection has been made by the Architect.

C. Special fittings and materials that may be required to support fixtures shall be supplied as well as supports or grounds required to secure surface or pendant mounted fixtures on suspended ceilings unless otherwise noted. Fixtures shall be supported from the Building structure, and shall be independent of ducts, pipes, ceilings and their supporting members. This support shall be in addition to regular fixture support bars, and saddles. Fixtures mounted in association with suspended or integrated ceiling systems shall be supported above ceiling by threaded 1/4" diameter continuous galvanized steel hanger rods or #12 jack chain. Each such fixture shall have two supports per fixtures. Where duct work, pipes, type of Building construction materials and structural framing members provide obstructions or difficult support means, hanger rods shall be used in association with horizontal sections of steel support channels in an approved manner. Steel support channels shall be Unistrut, Kindorf, Huskey Products, or equal. Rigid steel conduit may be used instead of steel support channels for size and method of support. Exact mounting height of all stem supported lighting fixtures shall be determined on the job by Architect.

D. Fixtures, part or parts thereof (including lamps) determined defective upon completion of electrical installation shall be replaced by Electrical Subcontractor, at no cost to Owner.

E. Consult with General Contractor regarding arrangement of framing members to permit centering of recessed fixtures.

F. Consult with Ceiling Subcontractor and coordinate fixture locations and supports with suspended ceiling system.

G. Electrical Subcontractor shall be responsible for furnishing the specified recessed fixtures with proper mounting arrangement to be compatible with the type of ceiling construction in which fixture is to be mounted. If necessary, the type mounting arrangement shall be changed from that specified or indicated on fixtures schedule to conform to this requirement, at no additional cost to Owner. Submission of Shop

Drawings of such recessed fixtures shall be interpreted to indicate that Electrical Subcontractor has verified ceiling construction, type and material with the Architect for the various areas of the project in which these fixtures shall be mounted. Shop Drawings of such fixtures shall be accompanied by a written statement indicating Electrical Subcontractor has verified such mounting arrangements with Architect and the date verified.

H. All suspended lighting fixtures shall be hung in association with improved aligner type hangers, except where noted.

I. In addition to fixture supports, surface mounted lighting fixtures shall be secured to surface which they mount at a minimum of two points on fixture housing to prevent rotation or movement of fixture out of its normal position of alignment.

J. After installation and lamping of permanent lighting fixtures and with approval of the Architect, these fixtures may be used for lighting, and will not require re-lamping prior to completion of project, except where lamps are faulty or burnt out.

K. Lamping color temperature shall be as indicated on Drawings.

L. Lighting fixtures with multi wattage ballasts and drivers shall be labeled from the factory for the wattage specified to ensure compliance with Energy Code calculations.

M. All lighting fixtures that utilize LED (light emitting diodes) lamp sources shall be Energy Star rated or DLC (Designlights Consortium) qualified product listed, a kelvin temperature as scheduled having a color rendering index of 80 minimum and minimum L70 lifetime rating of 50,000 at 25°C ambient. LED array and driver packages shall have published IESNA LM-79 and LM-80 testing data as a standard manufactured offering. Individual component testing will not be accepted. LM-79 must be conducted at a laboratory listed in the U.S. Department of Energy's LED Lighting Facts approved testing laboratories list. Testing must be conducted within the accreditation effective and expiration dates detailed for a given laboratory. In-house LM-80 reporting of LED array from LED manufacturer will be accepted.

N. Where lighting fixtures other than the specified products are provided, the Electrical Subcontractor shall provide light level calculations in accordance with IESNA standards to justify that substituted fixtures are of equal performance to the specified products (applies to all lighting fixtures in all spaces).

2.7 NAMEPLATES

A. Nameplates shall be furnished and installed on the panelboards, junction boxes, cabinets for all special purpose switches, disconnect switches, starters, and other controls furnished under this Contract, to designate the equipment controlled and function.

B. Nameplates shall be laminated white bakelite with 1/4" high black recessed letters. Nameplates shall be securely attached to the equipment with galvanized screws or rivets. Adhesives or cements will not be permitted.

C. Power branch circuit junction boxes shall be identified with circuit's panel(s) origin and circuit number(s) by means of black fiber pen.

D. All pull boxes and junction boxes shall be identified as to system and function by means of black fiber pen.

E. Disconnecting means (disconnect switches and enclosed circuit breakers) nameplates shall indicate purpose and identification of the circuit source that supplies the disconnecting means.

2.8 OUTLET BOXES AND ACCESSORIES

A. Outlet boxes and accessories shall be as manufactured by Steel City, Appleton, Raco, or equal.

B. Lighting outlets in concrete ceilings, walls and columns shall be 4" octagonal rings, 4" deep with round bottom plate. Where concrete slab is less than 5" thick, boxes shall be 2-1/2" deep.

C. For wood framing and furred ceilings use 4" octagonal outlet boxes, bar hangers and covers. 4-11/16" boxes and covers shall be used where 1" conduit is involved.

D. Where outlets occur in beams or ribs of pan type concrete construction, a 4" shallow pan outlet, 3/4" deep, shall be used with conduit entering the back of the box.

E. All fixture outlet boxes shall have 3/8" solid make fixture studs and all auxiliary fixture stems shall be supported from 3/8" male fixture studs.

F. All outlets in walls other than lighting outlets in concrete shall be Series 52171, 4" square boxes with single of 2- gang raised covers, Series 52C50, of the proper depth required for the particular wall construction and finish. Where the wall construction or finish will not permit a neat cut around the raised cover, Series GW235 boxes shall be used.

G. Outlets in 2" partitions shall be 4" square, 1-1/4" deep, with raised cover.

H. Outlet boxes for weatherproof concealed work and exposed rigid conduit work shall be suitable cast or malleable iron conduit fittings, Crouse-Hinds Company, Appleton, Killark, or equal, and shall have threaded conduit hubs.

2.9 PANELBOARDS

A. At each location indicated on the plans, furnish and install an appropriate panel of

the ampacity and voltage rating shown on the Drawings.

B. All panels shall be of the safety dead front circuit breaker type for service on three phase, four wire mains unless otherwise specified. All panels shall be of code gauge steel.

C. Panels shall be surface or flush mounted, as indicated on the plans, and installed so that the top circuit breaker is no more than 6'-0" above the finished floor.

D. The panelboards shall bear the Underwriters' Laboratories Label.

E. All buses shall be copper. All panelboards shall have a circuit directory card mounted in a frame with plastic cover installed on the inside of the door. All directory cards shall be properly filled in, using a typewriter, and indicating areas and devices served by each circuit.

F. All circuit breakers shall be of quick-make and quick-break type on manual operation, trip-free, and with inverse time characteristics and shall have bolted bus connections; plug-in circuit breakers will not be allowed.

G. Panelboard trims shall have single doors. Trims and doors shall be made of code gauge, full finish sheet steel. The trim and doors shall be factory finished on both sides. All panelboards shall be keyed alike.

H. Panelboards shall contain circuit breakers indicated on panelboard schedule on the Drawings. Two and three pole breakers shall be common trip type.

I. All panelboards shall be equipped with a neutral bar having one solderless connector for each circuit as indicated and with all required knockouts.

J. Panelboards requiring 200% neutrals and isolated ground shall be as indicated on the Drawings.

K. Panelboards shall be Square D, Type NQOB for 120/208 volt, and I-Line for main distribution panelboards, Eaton/Cutler-Hammer, Siemens, or equal.

L. Provide panelboards with Nema 4X enclosure in Kitchen, Servery, and other wash down areas.

M. Circuit breakers which are rated at 1200 amps or more shall have Arc Energy Reduction complying with National Electrical Code 240.87.

N. Fully Rated equipment shall be provided; Series Rated equipment is not acceptable.

2.10 PULL BOXES, JUNCTION BOXES AND WIREWAYS

A. Pull boxes shall be of code gauge galvanized steel with screw covers to match. Pull

boxes and wireways shall be as shown on Drawings and/or comply with the National Electrical Code and/or job conditions, with steel barriers separating systems.

B. Wireways shall be of code gauge steel, baked enamel manufactured standard sections and fittings, with combination hinged and screw covers, as manufactured by Square D "Square-Duct," Bee Line, Cope or equal.

C. Conductors passing through pull boxes and wireways shall be identified to indicate their origin and termination. Provide nameplates for all pull boxes.

D. Refer to Drawings for Handhole specifications.

2.11 SURGE PROTECTIVE DEVICES (SPD's)

A. Scope
1. The Electrical Subcontractor shall furnish and install the Surge Protective Device (SPD) equipment having the electrical characteristics, ratings, and modifications as specified herein and as shown on the Drawings. To maximize performance and reliability and to obtain the lowest possible let-through voltages, the ac surge protection shall be integrated into electrical distribution equipment; main distribution panelboard.

B. References
1. SPD units and all components shall be designed, manufactured, and tested in accordance with the latest applicable UL standard (ANSI/UL 1449 3rd Edition).

C. Submittals – For Review/Approval
1. The following information shall be submitted to the Engineer:
   a. Provide verification that the SPD complies with the required ANSI/UL 1449 3rd Edition listing by Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratory (NRTL). Compliance may be in the form of a file number that can be verified on UL's website or on any other NRTL's website, as long as the website contains the following information at a minimum: model number, SPD Type, system voltage, phases, modes of protection, Voltage Protection Rating (VPR), and Nominal Discharge Current (I_n).
2. Where applicable the following additional information shall be submitted to the engineer:
   a. Descriptive bulletins
   b. Product sheets

D. Submittals – for Construction
1. The following information shall be submitted for record purposes:
   a. Final As-Built Drawings and information for items listed shall

incorporate all changes made during the manufacturing process.

E. Qualifications
1. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
2. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
3. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
4. The SPD shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

F. Manufacturer's
1. Eaton / Cutler-Hammer products, Current Technologies, Liebert, or equal.
2. The listing of specific manufacturer above does not imply acceptance of their products that do not meet the specified ratings, features, and functions. Manufacturer listed above is not relieved from meeting these Specifications in their entirety.

G. Voltage Surge Suppression - General
1. Electrical Requirements
a. Unit Operating Voltage – Refer to Drawings for operating voltage and unit configuration.
b. Maximum Continuous Operating Voltage (MCOV) – The MCOV shall not be less than 115% of the nominal system operating voltage.
c. The suppression system shall incorporate thermally protected metal-oxide varistors (MOVs) as the core surge suppression component. The system shall not utilize silicon avalanche diodes, selenium cells, air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards.
d. Protection Modes – The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

	Protection Modes			
Configuration	L-N	L-G	L-L	N-G
Wye	●	●	●	●
Delta	N/A	●	●	N/A
Single Split Phase	●	●	●	●
High Leg Delta	●	●	●	●

e. Nominal Discharge Current (I_n) – All SPDs applied to the distribution system shall have a 20kA I_n rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an I_n less than 20kA shall be rejected.

f. ANSI/UL 1449 3rd Edition Voltage Protection Rating (VPR) – The maximum ANSI/UL 1449 3rd Edition VPR for the device shall not exceed the following:

MODES	208Y/120	480Y/277	600Y/347
L-N; L-G; N-G	700	1200	1500
L-L	1200	2000	3000

2. SPD Design
   a. Maintenance Free Design – The SPD shall be maintenance free and shall not require any user intervention throughout its life. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
   b. Balanced Suppression Platform – The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV. Designs incorporating replaceable SPD modules shall not be accepted.
   c. Electrical Noise Filter – Each unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50 dB from 10 kHz to 100 MHz using the MIL-STD-220A insertion loss test method. Products unable able to meet this Specification shall not be accepted.
   d. Internal Connections – No plug-in component modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered, hardwired with connections utilizing low impedance conductors.
   e. Monitoring Diagnostics – Each SPD shall provide the following integral monitoring options:
      1) Protection Status Indicators - Each unit shall have a green / red solid-state indicator light that reports the status of the protection on each phase.
         a) For wye configured units, the indicator lights must report the status of all protection elements and circuitry in the L-N and L-G modes. Wye configured units shall also contain an additional green / red solid-state indicator light that reports the status of the protection elements and circuitry in the N-G mode. SPDs that indicate only the status of the L-N and L-G modes shall not be accepted.
         b) For delta configured units, the indicator lights must report the status of all protection elements and circuitry in the L-G and L-L modes.
         c) The absence of a green light and the presence of a red

light shall indicate that damage has occurred on the respective phase or mode. All protection status indicators must indicate the actual status of the protection on each phase or mode. If power is removed from any one phase, the indicator lights must continue to indicate the status of the protection on all other phases and protection modes. Diagnostics packages that simply indicate whether power is present on a particular phase shall not be accepted.

2) Remote Status Monitor – The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition.

3) Audible Alarm and Silence Button – The SPD shall contain an audible alarm that will be activated under any fault condition. There shall also be an audible alarm silence button used to silence the audible alarm after it has been activated.

4) Surge Counter – The SPD shall be equipped with an LCD display that indicates to the user how many surges have occurred at the location. The surge counter shall trigger each time a surge event with a peak current magnitude of a minimum of 50 ± 20A occurs. A reset pushbutton shall also be standard, allowing the surge counter to be zeroed. The reset button shall contain a mechanism to prevent accidental resetting of the counter via a single, short-duration button press. In order to prevent accidental resetting, the surge counter reset button shall be depressed for a minimum of 2 seconds in order to clear the surge count total.

a) The ongoing surge count shall be stored in non-volatile memory. If power to the SPD is completely interrupted, the ongoing count indicated on the surge counter's display prior to the interruption shall be stored in non-volatile memory and displayed after power is restored. The surge counter's memory shall not require a backup battery in order to achieve this functionality.

f. Overcurrent Protection

1) The unit shall contain thermally protected MOVs. These thermally protected MOVs shall have a thermal protection element packaged together with the MOV in order to achieve overcurrent protection of the MOV. The thermal protection element shall disconnect the MOV(s) from the system in a fail-safe manner should a condition occur that would cause them to enter a thermal runaway condition.

g. Fully Integrated Component Design – All of the SPD's components

and diagnostics shall be contained within one discrete assembly. SPDs or individual SPD modules that must be ganged together in order to achieve higher surge current ratings or other functionality shall not be accepted.

h. Safety Requirements

1) The SPD shall minimize potential arc flash hazards by containing no user serviceable / replaceable parts and shall be maintenance free. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.

H. System Application

1. The SPD applications covered under this Section include the main distribution panelboard, assemblies. All SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C, B, and A environments.
2. Surge Current Capacity – The minimum surge current capacity the device is capable of withstanding shall be as shown in the following table:

Minimum surge current capacity based on ANSI / IEEE C62.41 location category			
CATEGORY	Application	Per Phase	Per Mode
C	Main Distribution Panelboards	250 kA	125 kA

3. SPD Type – All SPDs installed on the line side of the service entrance disconnect shall be Type 1 SPDs. All SPDs installed on the load side of the service entrance disconnect shall be Type 1 or Type 2 SPDs.

I. Main Distribution Panelboard:

1. The SPD application covered under this Section includes computer panelboards. The SPD units shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category B environments.
   a. The SPD shall not limit the use of through-feed lugs, sub-feed lugs, and sub-feed breaker options.
   b. SPDs shall be installed immediately following the load side of the main breaker. SPDs installed in main lug only panelboards shall be installed immediately following the incoming main lugs.
   c. The panelboard shall be capable of re-energizing upon removal of the SPD.
   d. The SPD shall be interfaced to the panelboard via a direct bus bar connection.
   e. The SPD shall be included and mounted within the panelboard by the manufacturer of the panelboard.
   f. The SPD shall be of the same manufacturer as the panelboard.

g. The complete panelboard including the SPD shall be UL67 listed.

2. Main Distribution Panelboard Requirements:
   a. The SPD application covered under this Section is for the main distribution panelboard location. Service entrance located SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C environments.
   b. The SPD shall be of the same manufacturer as the main distribution panelboard.
   c. The SPD shall be factory installed inside the main distribution panelboard at the assembly point by the original equipment manufacturer.
   d. Locate the SPD on the load side of the main disconnect device, as close as possible to the phase conductors and the ground/neutral bar.
   e. The SPD shall be integral to main distribution panelboard as a factory standardized design.
   f. All monitoring and diagnostic features shall be visible from the front of the equipment.

J. Factory Testing
   1. Standard factory tests shall be performed on the equipment under this Section. All tests shall be in accordance with the latest version of NEMA and UL standards.

K. Installation
   1. The Electrical Subcontractor shall install all equipment per the manufacturer's recommendations and the Drawings.

L. Warranty
   1. The manufacturer shall provide a full ten (10) year warranty from the date of shipment against any SPD part failure when installed in compliance with manufacturer's written instructions and any applicable National or Local Code.

2.12 TIME CLOCKS

A. Provide time clocks where shown on the Drawings for the control of lighting.

B. Time clocks shall be shall be Tork DLC400BP, Intermatic, Paragon, or equal.
   1. Provide a 4 zone lighting controller with photosensor input (Tork model EPC2 photosensor to be supplied with controller).
   2. Memory Module shall be capable of being programmed at any one location and inserted into DLC400BP (with memory module socket) in any other remote location.
   3. Optional programmer shall be available (Model MMP), capable of accomplishing Windows based settings on a PC for easy duplication of Memory Modules or individualized programs for multiple locations.

4. Each zone shall be capable of independent, user settable turn On and Off light level set points ranging from 1 to 100 footcandles.
5. Three position slide switches shall be provided for each of the 4 zones allowing for user settings based on
   a. time of day or
   b. combination time of day and light level or
   c. light level.
6. Controller shall provide 30 Amp general purpose isolated contacts (unpowered) for each zone as well as a 500 ma, 24VDC output.
7. Controller shall have 1 digital input per channel for:

a. remote contact closure which can be used to turn corresponding outputs On/Off outside of the normal control time or

b. remote timed override which can be accomplished for the corresponding outputs with the use of Tork model SSA200R-24.

8. Enclosure shall provide separate wiring compartments for power connections and auxiliary connections.
9. Controller shall be capable of local override On or Off to the next scheduled event using the keypad for each zone.
10. Each zone shall be capable of astronomic function, adjustable from 10-60 degrees Northern or Southern latitude. Each zone can additionally be offset +/- 1-299 minutes for both sunset and sunrise.
11. Controller shall provide automatic daylight savings time (which can be omitted). Leap year adjustment shall be compensated for automatically.
12. Controller shall have 365 day holiday capability with 24 single dates and 4 seasons of unlimited duration.
13. Controller shall be capable of 99 set points with separate scheduling for each day of the week.
14. Controller shall have back-up capability:

a. Schedule shall be retained for 40 years without power,

b. real time shall be retained for 6 months using a field replaceable 9V lithium battery.

15. Unit shall have a NEMA type 3, metal indoor/outdoor enclosure.

2.13 WIRE AND CABLE

A. Wiring shall be a minimum of #12 AWG solid, except motor control circuit wiring and fire alarm system wiring may be #14 AWG. Wiring for 120V branch circuits which exceed a distance of 100' from the panel to the last outlet shall be #10 AWG, 190 ft. from the panel to the last outlet shall be #8 AWG and 280 ft. from the panel to the last outlet shall be #6 AWG minimum, wiring for 277V branch circuits which exceed a distance of 200' from the panel to the last outlet or light fixture shall be #10 AWG, and 300 ft. from the panel to the last outlet or light fixture shall be #8 AWG minimum. The Electrical Subcontractor shall be required to perform voltage drop calculations on all branch circuits in which the actual proposed routing of the circuit exceeds 100 ft. to ensure a maximum voltage drop of 3% is not exceeded. Wire sizes shall be increased to maintain the maximum 3% voltage drop.

B. Wires and cables shall be single conductor, except as otherwise specified or indicated on Drawings. Wires of sizes #8 AWG and larger shall be stranded, while wires of sizes smaller than #8 AWG shall be solid. In general, conductors shall be of soft drawn copper and shall have a conductivity of not less than 98% of the ANSI Standard for annealed copper, except as otherwise specified or indicated on Drawings. Aluminum conductors shall only be used where specifically indicated on the Drawings. Pressure type connectors shall be used at all terminals.

C. Wire shall be Type THWN-2, XHHW or approved equal, rated 90 degrees C. minimum and suitable for wet and dry locations.

D. MC cable may be used for branch circuit wiring only, where run concealed, where allowed by Code and approved by the Authority Having Jurisdiction. Type MC cable shall be supported and secured at intervals not exceeding six feet.

E. Wire and cable shall be by one of the following: Phelps Dodge Copper Products Corp., General Cable Co., AFC Cable Systems, Triangle Conduit and Cable Co., or equal.

F. Terminal lugs and splice connectors shall be of an ampacity equal to the circuit on which they are utilized.

G. All wiring where run in environmental air plenums shall conform to Article 300-22 of the National Electrical Code.

H. Wiring shall be supported from the Building structure, and shall be independent of ducts, pipes, ceilings and their supporting members.

2.14 WIRING DEVICE PLATES

A. All device plates shall be Specification Grade, .032” thick, Type 430, stainless steel, brushed finish. Plates shall be of appropriate type and size for all wiring and control devices.

B. Plates shall be set so that all edges are in contact with the mounting surface. Plaster fillings will not be allowed. Multi-device locations shall have one common device plate.

C. Device plates shall be by the same manufacturer as devices.

D. All receptacle device plates shall be labeled with circuit origination and circuit number. Letters/numbers shall be 1/4” high in black.

E. Plates for surface type boxes shall not overlap boxes and shall be designed for use with surface boxes.

F. Device plates for weatherproof receptacles shall be clear Polycarbonate "In-Use" type, pad lockable.

G. Labels shall be provided via Brother P-Touch, or equal.

2.15 WIRING DEVICES

A. Light Switches
1. All local wall switches shall be of the flush quiet toggle type, as follows, or as manufactured by Pass and Seymour, Inc., Leviton Manufacturing Co., or equal.
2. All switches shall be suitable for the control of tungsten filament lamps, and shall carry the proper marking of the Underwriters' Laboratories.
3. Local switches shall be installed in such a position that they shall bear evenly and truly, and be secured on the axis of the supporting members.
4. Under no circumstances are wooden wedges, shims or blocks to be used in truing up local switches. Should the outlet box in any case come too far back of the finished surface, recess boxes and screws of the proper length to reach the box shall be used of such a size as to form a shoulder at exactly the proper point to retain the switch in position.
5. Switches shall be rated 20 amperes, 120 - 277 volts, equal to the following:
Single Pole Switches - Hubbell HBL1221
Double Pole Switches - Hubbell HBL1222
Three-Way Switches - Hubbell HBL1223
Four-Way Switches - Hubbell HBL1224
Switch with Pilot Light - Hubbell HBL1221PL
Key switches shall be equal to corresponding switches above.
6. Refer to Drawings for Specification of Dimmer Switches.
7. Color of switches shall be white, unless otherwise noted.

B. Receptacles
1. Duplex receptacles shall be grounding type, rated 20 amperes, 125 volts. Receptacles shall be back and side wired with screw type terminals or pressure type, screwless terminals having suitable conductor release arrangement.
2. Special receptacles for single equipment, where required, shall have additional grounding leg and shall be of capacity for the equipment to be connected.
3. In general, convenience receptacle circuits shall be independent of lighting circuits and shall not be controlled by lighting circuit breaker switches or lighting switches, unless specifically indicated on the Drawings.
4. Receptacles shall be as follows, or as manufactured by Pass and Seymour, Inc., Leviton Manufacturing Co., or equal:
    a. Normal circuit duplex receptacles – Hubbell 5362.
    b. GFCI duplex receptacles installed on the exterior of the Building shall be "Weather Resistant" type.

5. GFCI Receptacles
   a. General Description: Straight blade, non-feed-through-type. Comply with NEMA WD 1, NEMA WD 6, UL 498, Federal Specification W-C-596, and UL943, Class A. Include indicator light that is lighted when device is tripped. Must have self-test feature (conducts an automatic test every three seconds, ensuring ground fault protection. If ground fault protection is compromised, power to the receptacle must be discontinued.
   b. Duplex GFCI receptacles, rated 20 amperes, 125 volts. Receptacles shall be as follows, or as manufactured by Pass and Seymour, Inc., Leviton Manufacturing Co., or equal:
      1) Hubbell – GFRST20.
6. Color of receptacles shall be white, unless otherwise noted.

PART 3 - EXECUTION

3.1 CLEANING, ADJUSTING AND TESTING

A. At the completion of the work, all parts of the installation shall be thoroughly cleaned. All devices, equipment, conduits, and fittings shall be completely cleaned of grease, metal cuttings, dirt which may have accumulated during construction, and protection covers. Any discoloration or damage to parts of the Building, its finish or furnishings due to failing to properly clean the electrical system shall be repaired by the Electrical Subcontractor without cost to the Owner.

B. The Electrical Subcontractor shall test all work and equipment as directed by the Architect and by Authorities Having Jurisdiction, furnish all equipment, necessary personnel and the electrical power.

C. The entire installation shall be tested for shorts, grounds and open circuits and all defects shall be corrected before acceptance of his work. All work shall be demonstrated to be in proper operating condition to the complete satisfaction of the Architect and Owner.

3.2 CONCRETE WORK

A. The General Contractor shall provide concrete work for site lighting pole bases.

B. The General Contractor shall provide duct and conduit envelopes and pads for electrical equipment. The General Contractor shall provide 4” concrete pads for all floor mounted electrical distribution equipment.

C. The Electrical Subcontractor shall furnish all equipment anchor bolts and shall be responsible for their proper installation and accurate location.

3.3 CONDUIT WORK

A. All wiring shall be installed in heavy wall rigid steel unless otherwise noted below and run concealed except as indicated on the Drawings. Branch circuit wiring in hung ceilings, furred spaces or exposed may be installed in electrical metallic tubing. Panelboard feeders may be run in electrical metallic tubing except panelboard feeders run underground or in concrete slabs shall be in heavy wall rigid steel conduit as specified above or PVC. All exposed conduit in spaces indicated as mechanical rooms and where installed exposed below the 8' level elsewhere on the project shall be rigid steel conduit. Conduit extensions in metal partitions may be made with flexible metal conduit, with grounding conductor.

B. Connections to portable and permanently mounted motorized equipment and motors, as well as the equipment housing, shall be made with approved liquid tight flexible metal conduit. Flexible connections shall be a maximum of 18" long and with grounding conductor. Flexible connections shall be used prior to attachment to equipment housings.

C. Conduit ends shall be cut square, threaded and reamed to remove burrs and sharp edges. Field threads shall be of the same type and have the same effective length as factory cut threads. Excessive exposed threads will not be allowed. Turns, wherever required in exposed conduit runs shall be made by the use of factory-made bends, or field made bends. Condulets, or in the event of a multiplicity of conduits making the same turn, a steel junction box with a removable steel cover may be used. Offsets and bends for changes in elevation of exposed conduit runs shall be made at walls or beams and not in open spaces between walls or beams. Conduits shall be routed so as not to interfere with the operation of maintenance of any equipment. The entire job shall be done in a neat and workmanlike manner. Steel supports or racks shall be galvanized steel channel and fittings, Unistrut, Kindorf, Husky Products Company, or equal.

D. All conduit work shall be carefully cleaned and dried inside before the installation of conductors. Wire shall not be pulled into conduit system until Building is completed. Plug conduit ends to exclude dust, moisture, plaster or mortar while Building is under construction. No lubricants or cleaning agents which might have a deleterious effects on conductor coverings shall be used for Drawing conductors into raceways.

E. Drawings, in relation to routing of conduits, are diagrammatic. The number and size of conduits and wire shall be furnished and installed as indicated by the Drawings. Conduits shall be routed in the field so as to be coordinated with the Building structure. Concealed conduit shall be as short and direct as possible. Exposed conduit shall be run in straight lines parallel to walls, beams and columns and with right angle bends and threaded conduit fittings. All conduit in concrete slabs shall be run above bottom steel reinforcing, below top reinforcing and column ties. Conduits passing through floors, walls and beams shall be of such size, number and in such locations so as not to impair the strength of the construction.

At time of roughing conduits in concrete slab area, prior to pouring of slab, the Electrical Subcontractor shall consult the Structural Engineer for coordination and approval of size, spacing and method of conduit installation in slabs and walls, as well as penetration of such. Particular attention shall be given to the installation of conduits at grouped areas, such as panelboard, cabinet and pull box entrances.

F. All metal conduit buried in the earth or fill shall be coated with two coats of heavy asphalt paint over its entire length, including couplings.

G. Raceways in ceiling spaces shall be routed in such an approved manner as to eliminate or minimize the number of junction boxes required, but also shall be routed in an orderly and organized manner. Support rods and clamps shall be furnished and installed as directed by the Architect. Support of conduits by use of wire is strictly prohibited. Conduits shall be supported and secured by conduit support devices.

H. Where rigid metal conduit is threaded in the field, a standard conduit cutting die providing 3/4" taper per foot shall be employed. Threadless coupling shall not be used on rigid metal conduit except where specifically allowed by the Architect. Running threads shall not be used on rigid metal conduit.

I. Conduit work shall be installed in such a manner to keep exposed threads to an absolute minimum, and in no case shall more than three threads be left exposed after the conduit work is made up tight. This requirement applies to all conduit work, including conduit buried in earth or fill or in concrete.

J. Minimum size conduit shall be 1/2" nominal trade size.

K. A minimum 3/16" diameter twisted nylon plastic type fish cord shall be furnished and installed in all empty raceways. Provide a tag on each end of fish cord indicating the location of the other end.

3.4 ELECTRIC SERVICE

A. Consult with Eversource, hereinafter called the Utility Company, with respect to providing service and metering to the building.

B. Secondary Service:
   1. The Electrical Subcontractor shall furnish and install secondary conduit and cable from the pad mounted transformer to the main disconnecting device. Secondary connections at the transformer shall be by the Electrical Subcontractor. Terminal connectors at the transformers secondary service shall be furnished and installed by the Electrical Subcontractor. Secondary service characteristics shall be 120/208 volt, three phase, four wire.
   2. The Electrical Subcontractor shall coordinate with the Utility Company to ensure the installation of the secondary service shall conform with the Utility Company's requirements.

3. Metering shall be provided as indicated on Drawings, by the Utility Company.

D. Division of responsibility with respect to the underground services shall be as follows:
   1. The General Contractor shall be responsible for the work and materials required for the following:
      a. Excavation.
      b. Backfill.
      c. Transformer pad.
      d. Concrete encasement of conduit.
      e. Resurfacing of grades.
   2. All other materials, equipment and labor required for the complete ductbank shall be furnished and installed by the Electrical Subcontractor under this Section, including the following:
      a. Primary and secondary raceways, including handholes.
      b. Grounding system.
      c. Pull strings.

3.5 EQUIPMENT CONNECTIONS

A. The Electrical Subcontractor shall provide all connections to all equipment requiring electrical service, including power cables, branch circuit extensions, fire alarm cables, motors, controllers, lighting fixtures and all other equipment and systems specified or shown on the Drawings.

3.6 FIRE STOPPING

A. Electrical installations in hollow spaces, vertical shafts and ventilation or air handling ducts shall be so made that the possible spread of fire or products of combustion will not be substantially increased. Openings around electrical penetrations through fire-resistance rated walls, partitions, floors or ceilings shall be firestopped using approved methods to maintain the fire-resistance rating. All fire stopping material and installation will be by the Electrical Subcontractor.

B. Fire Stopping shall be equal to Hilti.

3.7 GROUNDING

A. Grounding methods shall be in accordance with the Massachusetts Electrical Code Article 250 and Local Utility Company Regulations.

B. Furnish and install from the main service switch to the street side of the water meter a stranded copper grounding conductor in rigid steel conduit. If the water service pipe is of material which is not electrically conductive, furnish and install approved copper plates or rods buried and grounded below grade, to which the main service grounding conductor shall be connected.

C. Connections to the water pipe shall be made by a suitable ground fitting or lug connection to a plugged tee.

D. The required equipment grounding conductors and straps shall be sized in compliance with National Electrical Code and shall be provided with green insulation equivalent to the insulation on the associated phase conductors.

E. Flexible metallic conduit equipment connections utilized in conjunction with branch circuits shall be provided with suitable green insulated grounding conductors connected to approved grounding terminals at each end of the flexible conduit.

F. The neutral conductor of all circuits shall have an identifying marking preferable a covering of white, readily distinguishable from the other conductors. This wire shall be unbroken from the distribution switch to the outlet.

G. Each Electrical expansion fitting shall be provided with a bonding jumper.

3.8 INSTALLATION OF OUTLETS

A. If any discrepancy is found to exist between the electrical plans and any other Drawings associated with the project, notify the Architect at once and have location verified before outlets are installed. Any reasonable change in location of outlets and equipment prior to roughing shall not involve additional expense to the Owner.

B. Consult with the Ceiling Subcontractor regarding the centering of outlets in ceiling tile.

C. Whenever outlets of any system are installed in brick, masonry or concrete construction, furnish and install the necessary boxes and conduit in connection therewith so that the General Contractor may build them in as the work progresses. Box offsets shall be made at all outlets to provide for proper adjustment to finished surfaces.

D. Through-wall boxes will not be permitted. Outlet boxes shall not be mounted back to back but shall be staggered a minimum of 12” on center.

E. Knockouts in any boxes shall not be left open and all boxes not having equipment mounted on them shall be provided with blank covers.

F. Bar hanger type outlets shall be used in hollow framed partitions other than those of the masonry or construction block type, with bar hanger supported from two partition studs. Bar hangers shall be secured to metal type partition studs with self-threading metal screws, or drill through hangers with caddy (or equal) clips shall be used.

3.9 INSTALLATION REQUIREMENTS

A. All equipment mentioned in these Specifications or those on the Drawings shall be furnished new except where noted and completely installed and adjusted and left in a clean, safe and satisfactory condition, ready for operation and all supplies, appliances, and connections of every sort and description necessary to the operation of the equipment shall be furnished and installed to the satisfaction of the Architect and Owner.

B. The Owner will not be responsible for materials and equipment until they have been tested and accepted.

3.10 PROJECT CLOSEOUT

A. A certificate of completion shall be issued by the Electrical Subcontractor indicating that the installation is in conformance with the Construction Documents and all applicable Local, State and Federal Statutes and Codes. Final inspection by the Engineer shall be conducted after receipt of the Certificate of Completion. At minimum, life safety items shall be 100% complete including emergency lighting systems, the fire alarm system, and the emergency standby system before the Electrical Subcontractor request for final inspection. If final inspection by the Engineer proves that the emergency lighting systems, the fire alarm system, and the emergency standby system are not 100% complete, the Engineer will backcharge the Electrical Subcontractor at his hourly rate for re-inspection.

3.11 SLEEVES, INSERTS AND SUPPORTS

A. The Electrical Subcontractor shall lay out and install his work in advance of the pouring of concrete floors and walls.

B. Furnish and install all inserts, conduit hangers, anchors and steel supports necessary for the support and installation of all electrical equipment.

C. Where openings are required in walls and floors for the passing of raceways, ducts or busways, the Electrical Subcontractor shall furnish the General Contractor with the necessary information regarding dimensions and locations so that he may install suitable concrete stops to provide these openings. Such openings shall be by the General Contractor in such a manner so as not to interfere with the fireproof integrity of the Building.

D. The Electrical Subcontractor will be held responsible for the location of and maintaining in proper position, sleeves, inserts and anchor bolts supplied and/or set in place by him. In the event that failure to do so requires cutting and patching of finished work, such work shall be done at the Electrical Subcontractor's expense by the General Contractor.

3.12 SPECIAL COORDINATION INSTRUCTIONS

A. Coordination with the work of other trades is referred to within various parts of this Section. The following special instructions shall also be carefully noted:
   1. The Electrical Subcontractor shall obtain from the HVAC Engineer copies of all Shop Drawing prints showing the ductwork installation as it will be put in place on the project. These Drawings shall be thoroughly checked by the Electrical Subcontractor and the routing of all conduits and installation of all outlets and electrical equipment shall be coordinated with the ductwork so as to prevent any installation conflict. Such coordination shall be done prior to roughing-in conduits, outlets and electrical equipment.
   2. Locations of all wall outlets shall be verified with the Architect prior to roughing in conduits. Refer to details and wall elevations on the Architectural Drawings; mounting heights indicated on these Architectural Drawings and/or specific dimensional information given to the Electrical Subcontractor by the Architect shall take precedence over such information indicated on the Electrical Drawings.
   3. Refer to all other Drawings associated with this project. Any equipment which requires an electrical supply circuit, switch, controls and connections, even though not indicated on the Electrical Drawings, shall be furnished and installed as directed by the Architect. Locations of lighting fixtures shall conform to the architectural reflected ceiling plans.
   4. Refer to Architectural Drawings for areas in which the concrete slab is poured on grade. In these areas a moisture proofing membrane will be installed on the grade fill or earth prior to pouring of slab. Electrical conduits shall be so installed, where possible, to avoid the necessity of penetrating this moisture proofing membrane. Such penetration of the membrane shall only be made when specifically allowed by the Architect, and shall be made only at locations directed by the Architect.

3.13 UNDERGROUND DUCTBANK

A. Furnish and install ductbank as herein specified and as shown on the Drawings. The entire length of ductbank must be inspected and approved by the Utility Company prior to being covered.

B. Materials shall be as follows:
   1. Conduit-PVC Schedule 40.
   2. Conduit supports (duct system) shall be molded plastic with interlocking lugs and skeletonized structure. Minimum separation 3-1/2 inches.

C. Duct System shall be as follows:
   1. The size and number of conduit shall be as indicated on the Drawings.
   2. The entire length of ductbank shall be excavated and graded before any conduit is laid.
   3. The ductbank shall be set on undisturbed earth.
   4. The conduit shall be installed so that the top is a minimum of 36 inches

below finished grade.

5. Changes in direction shall be made by long sweep bends. Minimum radius 25 feet except that at the end of a run within 10 feet of termination, manufactured bends may be used having a minimum radius of 36".
6. Conduit base and intermediate spacers shall be installed a maximum of 5 feet on centers. Spacers shall not be placed one above the other but shall be staggered a minimum of 6".
7. All conduit joints shall be made watertight by means of a sealing compound before the coupling is installed. Joints in conduit shall be staggered. Minimum space between joints in adjacent conduit shall be 6".
8. When the required number of conduits have been installed, securely tie the assembly together at distances not exceeding 7 feet. Tie shall consist of three turns of No. 18 iron wire. Separate ties required for low tension and high tension conduit runs.
9. Where conduit is encased, the duct envelope shall be of monolithic construction.
    a. Pouring of concrete shall be continuous throughout the length of construction. The end of the pour shall be interlocked or sloped. If the installation is halted, the ends of the conduit shall be plugged.
    b. Concrete shall not be poured until the conduit installation has been inspected and approved.
10. After the installation is completed, each conduit shall be cleaned and identified. A standard flexible mandrel and stiff bristle brush shall be pulled through each conduit. The mandrel shall be not less than 12" long and the diameter approximately 1/4" less than the conduit.
11. Install approximately 12" below the top of the trench above each conduit or direct buried cable a 6-inch wide plastic warning tape. Tape shall be yellow in color with black letters reading "Buried Electric Lines."
12. Electric handholes shall be precast and shall be installed where indicated. The exact location of each handhole shall be determined after careful consideration has been given to the location of other utilities, grading and paving. The location of each handhole shall be approved by the Architect before installation. Handholes shall be monolithically constructed precast-concrete having the required strength as established by ASTM A 79 Grade 60 and inside dimensions by the Drawings or Specifications. Frames and covers shall be delivered on the job unpainted and, after approval, shall be given two (2) coats of asphalt paint. In unpaved areas, the top of handhole covers shall be approximately 1-2 inch above the finished grade. Where existing grades that are higher than finished grades are encountered, provide a brick collar to elevate temporarily the handhole cover to existing grade level. Where duct lines enter handholes, the sections of duct may be either cast in the concrete or may enter the handhole through a square or rectangular opening of suitable dimensions provided in the handhole walls. Where openings are provided for the entrance of duct lines, the space between ducts and between ducts and handhole walls shall be caulked tight with lead wool installed over the handhole sump. A cable-pulling iron shall be installed in the wall opposite each duct line entrance. All handholes shall

be provided with double-lockable type covers.

3.14 WIRE AND CABLE

A. Wiring for all branch circuits and feeder circuits shall be color coded as follows:

1. 3-phase, 4-wire, 208Y/120 volts:

Phase	Color
A	Black
B	Red
C	Blue
Neutral	White
Equip. Ground	Green

3. Connections to terminal shall be arranged Phase A, B, C from left to right.
4. Signal system shall be color coded differently from electrical systems described above.
5. For large size conductors available only in black, use colored plastic tape at all ends and where connections and splices are made for the specified color code identification. Tape shall be wrapped around the conductor three complete turns.

B. In each case, the phase wires shall be connected to the phase supply mains in proper rotation to assure a balanced condition on the panel. The circuit numbers assigned on the Drawings are used for convenience only and need not designate the circuit on the panel to which that circuit may be connected. However, the circuit numbers and circuit description are required to be typewritten on the panelboard directory at the conclusion of the work, and shall represent the circuits as actually connected to the panelboard.

C. Joints and splices shall be made in an approved manner and shall be equivalent, electrically and mechanically, to the conductor insulation. Solid conductors shall be spliced with approved wiring connectors. Conductors of Size No. 8 AWG and larger shall be connected by use of solderless pressure connectors; these joints and splices shall be taped with one wrap of varnish cambric tape and then a minimum of three wraps of No. 88 Scotchbranch (3M Company) all-weather vinyl plastic electrical tape, or equal Permacel or Plymouth Company. Each wrap of tape shall be half-lapped. Conductors of Size No. 4 AWG or larger shall have two coats of insulating varnish applied over the tape.

D. Switch leg wiring shall be the same color as the phase conductor from which it is supplied.

3.15 ALTERNATES

A. Refer to Alternates, Division 01, for alternates affecting the scope of work under this Section.

B. The work of this Section, which is required by the scope of work as stated in the

Alternates, Division 01, shall comply with the applicable quality and performance requirements for similar work under this Section.

C. The alternates which effect the Electrical Sections are:
   1. Alternate No.1 – Retaining Wall.
      a. Alternate Number 1: As indicated on the drawings all items which pertain to the installation of the retaining wall including, but not limited to, lighting and associated wiring, rerouting of existing site lighting and circuits and all appurtenances.

3.16 EXISTING WORK AND DEMOLITION

A. The Electrical Subcontractor shall survey the existing electrical system and notify the Owner of any possible problems or issues pertaining to disconnection or removal of any existing electrical equipment, etc. Particular care shall be taken to avoid creating hazard or causing unnecessary disruption of services in adjoining areas.

B. All electrical equipment, devices, raceways, lighting fixtures, etc. shall be disconnected and made safe for removal by the General Contractor.

C. All electrical equipment, devices, lighting fixtures, etc., shall be disconnected and removed in any area scheduled for renovation by the Engineer. All wiring associated with removed or disconnected equipment shall be removed back to next active outlet of panelboard. Raceways shall be capped at nearest coupling immediately outside of area to be renovated.

D. The Electrical Subcontractor shall reroute and reconnect all existing circuiting which originates or passes through the renovated areas but serves other areas not being renovated. These circuits shall be extended as required to the existing panelboards.

E. All equipment removed shall be turned over to the Owner unless indicated to be re-used or scrapped. All existing electrical equipment as designated by the Owner shall be stored at a location as directed by the Owner. All other equipment not to be retained by the Owner shall be removed from the premises in a legal and proper manner by the Electrical Subcontractor.

F. Provide blank coverplates for all obsolete boxes that are to remain.

END OF SECTION

SECTION 16421

CATHODIC PROTECTION BY GALVANIC ANODES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. References:
1. NACE SP0169 – Control of External Corrosion on Underground or Submerged Metallic Piping Systems
2. ASTM D1248 – Polyethylene Plastics Extrusion for Wire and Cable
3. NFPA 70 – National Electrical Code
4. IEEE C2 – National Electrical Safety Code

B. Submittals
1. Product Data
   a. Anodes

2. Certificates
   a. Qualifications of Corrosion Engineer

3. Closeout Submittals
   a. Cathodic Protection System Field Test Report

C. Services of Corrosion Engineer

The Contractor shall obtain the services of a corrosion engineer to supervise, inspect and test the installation of the cathodic protection system(s). Corrosion Engineer refers to a registered professional engineer with certification of licensing that includes education and experience in cathodic protection of buried or submerged metal structures, or a person accredited or certified by the National Association of Corrosion Engineers at the level of Corrosion Specialist or Cathodic Protection Specialist. Such a person shall have not less than five years experience in the cathodic protection of underground or submerged structures. The contractor shall submit evidence of the qualifications of the corrosion engineer for review and approval.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Anodes

Chemical composition is as follows:

Zinc	2.8-6.5 percent
Indium	0.01-.025 percent maximum
Silicon	0.08-0.21 percent
Copper	0.006 percent maximum
Iron	0.12 percent maximum
Other	0.02 percent maximum each
Aluminum	Remainder

Anodes shall be sized as indicated. Anodes shall be mounted on standard offset anode core.

1. Anode Core

   Steel strap 2" x 3/8". Typical anode core shall be a flat steep strap with an industry-standard angle offset. The shallow water anode core shall be a flat strap size as indicated.

2. Shallow water anode cable

   ASTM D1248, #6 AWG Type HMWPE/PVDF (High Molecular Weight Polyethylene/Polyvinylidene fluoride) stranded copper conductor.

B. EXOTHERMIC WELD KITS

Exothermic weld kits specifically designed by the manufacturer for welding the types of materials and shapes provided.

C. ELECTRICALLY INSULATING COATINGS

Conformable water-tight sealant having dielectric strength not less than 15 kV for a 1/8 inch thick layer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. NFPA 70. IEEE C2.

1. Anode Storage

   If anodes are not stored in a building, tarps or similar protection should be used to protect anodes from inclement weather.

2. Anodes and Lead Wires

   Provide each anode, test bracket, and lead wires as follows:

   a. Install each typical anode by first cleaning the pile surface prior to the anode installation by filing or wire brushing to produce a clean, bright surface. Attach the anode standoff bracket by means of a 1/4" fillet weld around 3 sides of each connection point on either end of the anode strap directly to the pile.
   b. In areas where the water is too shallow to vertically mount the anode, utilize the shallow water anode and anode assemblies. Connect the lead wire to a 2” x 7” x 3/8” steel plate. Secure down the cable with the use of two 3/4” U-Bolts. Connect the other end of the lead wire to the protruding anode core by use of an exothermic weld kit. Secure down the cable with the use of two 3/4” U-Bolts. Cover both connections with an electrically insulating coating. Weld connections using exothermic weld kits in accordance with the kit's manufacturer's instructions. Weld steel plate to sheet pile wall with a 1/4” fillet weld around the perimeter of the connection. Anodes shall be placed in areas that are completely submerged at all times. Allow sufficient slack in the cable to allow for movement and sinkage of the anode into the mud.

PART 4 - FIELD QUALITY CONTROL

Field tests shall be witnessed by a Cathodic Protection Specialist or his designated representative. Advise the Cathodic Protection Specialist 5 days prior to performing each field test. Quality control for the cathodic protection system shall consist of the following:

a. Initial field testing by the contractor upon construction.

b. Final field testing by the contractor after one year of service.

A. TESTING

1. Initial Cathodic Protection System Field Testing

Testing shall include the following measurements:

a. Base potential tests: Before connection of anodes to the structure, measure base (native) structure-to-electrolyte potentials of the structure using a portable silver-silver chloride reference electrode and a voltmeter having an input impedance of not less than 10 megaohms. Perform measurements at intervals not exceeding 20 feet with readings at each end point and at each pipe pile. Readings shall be taken at the surface of the water and at the mudline. The locations of these measurements shall be identical to the locations specified for potential measurements with anodes connected. Use the same measuring equipment that is specified for measuring protected potential

b. Protected potential measurement tests: With the entire galvanic protection system put into operation for at least two weeks, measure potentials along the structure using a portable silver-silver chloride reference electrode and a voltmeter having an input impedance of not less than 10 megaohms. The locations of these measurements shall be identical to the locations used for the base potential measurements.

2. Initial Cathodic Protection System Field Test Report

The contractor shall submit a field test report of the cathodic protection system. All structure-to-electrolyte measurements, including initial potentials and anode outputs, shall be recorded on applicable forms. Identification of test locations, test station and anode test stations shall coordinate with the as-built drawings and be provided on system drawings included in the report. The contractor shall locate, correct, and report to the Contracting Officer any short circuits encountered during the checkout of the installed cathodic protection system.

3. Final Field Testing

Conduct final field testing of the cathodic protection system utilizing the same procedures specified under, "Initial Field Testing of the Galvanic Cathodic Protection Systems". The Contractor shall inspect and test the cathodic protection system after one year of operation to ensure its continued conformance with the criteria outlined below. The performance period for these tests shall commence upon completion of all cathodic protection work.

B. CRITERIA FOR CATHODIC PROTECTION

Conduct in accordance with **NACE SP0169**. Criteria for determining the adequacy of protection shall be selected by the corrosion engineer as applicable:

1. A negative voltage of at least 0.80 volt (800 millivolts) as measured between the structure surface and a saturated silver-silver chloride reference electrode contacting the electrolyte. Determination of this voltage is to be made with the protective current applied to the structure for a minimum of two weeks.

OR

2. A minimum polarization voltage shift of 100 mV measured between the structure surface and a saturated silver-silver chloride reference electrode contacting the electrolyte. Determination of this voltage shift is a comparison to the base potential test and the protected potential measurement test.

END OF SECTION

Drawings

Drawing G-001	Cover Sheet
Drawing G-002	General Notes
Drawing G-003	General Notes and Legend
Drawing C-101	Existing Site and Demolition Plan
Drawing C-102	Existing Utility Layout
Drawing C-103	Existing Bulkhead Demolition and Excavation Sections
Drawing C-104	Existing Timber Deck Plan and Section
Drawing S-101	Site Plan Improvements
Drawing S-102	Bulkhead and South Pier Design Plan
Drawing S-103	Bulkhead and South Pier Design Plan and Section
Drawing S-104	Bulkhead Sections
Drawing S-105	Bulkhead Section, Outfall and Valve Box Details
Drawing S-106	Bulkhead and Pier Details
Drawing S-107	Guardrail and Handrail Details
Drawing S-108	Fender Mounting Details
Drawing S-109	Timber Deck Plan Design
Drawing S-110	Timber Deck Design
Drawing S-111	Timber Deck Sections
Drawing S-112	Typical Framing and Handrail Sections
Drawing S-113	Walkway Plan and Profile
Drawing S-114	Sidewalk Plan & Profile
Drawing S-115	Sidewalk Details
Drawing E-1	Electrical Site Details
Drawing E-2	Electrical Site Plan
Drawing E-3	Electrical Site Plan
Drawing E-4	Electrical Power Riser Diagrams
Drawing CP-1	Cathodic Protection Plan
Drawing CP-2	Cathodic Protection Plan Details
Drawing P-1	Plumbing Legend and Details
Drawing P-2	Plumbing Demolition Plan
Drawing P-3	Plumbing Renovation Site Plan
Drawing P-4	Plumbing Renovation Site Plan

ISSUED FOR CONSTRUCTION

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM, MASSACHUSETTS
SEPTEMBER, 2022

Prepared by:
Foth Infrastructure & Environment, LLC

DRAWING INDEX	
SHEET #	**TITLE**
G-001	COVER SHEET
G-002	GENERAL NOTES
G-003	GENERAL NOTES AND LEGEND
C-101	EXISTING SITE AND DEMOLITION PLAN
C-102	EXISTING UTILITY LAYOUT
C-103	EXISTING BULKHEAD DEMOLITION AND EXCAVATION SECTIONS
C-104	EXISTING TIMBER DECK PLAN AND SECTION
S-101	SITE PLAN IMPROVEMENTS
S-102	BULKHEAD AND SOUTH PIER DESIGN PLAN
S-103	BULKHEAD AND SOUTH PIER DESIGN PLAN AND SECTION
S-104	BULKHEAD SECTIONS
S-105	BULKHEAD SECTION, OUTFALL AND VALVE BOX DETAILS
S-106	BULKHEAD AND PIER DETAILS
S-107	GUARDRAIL AND HANDRAIL DETAILS
S-108	FENDER MOUNTING DETAILS
S-109	TIMBER DECK PLAN DESIGN
S-110	TIMBER DECK DESIGN
S-111	TIMBER DECK SECTIONS
S-112	TYPICAL FRAMING AND HANDRAIL SECTIONS
S-113	WALKWAY PLAN AND PROFILE
S-114	SIDEWALK PLAN & PROFILE
S-115	SIDEWALK DETAILS
E-1	ELECTRICAL SITE DETAILS
E-2	ELECTRICAL SITE PLAN
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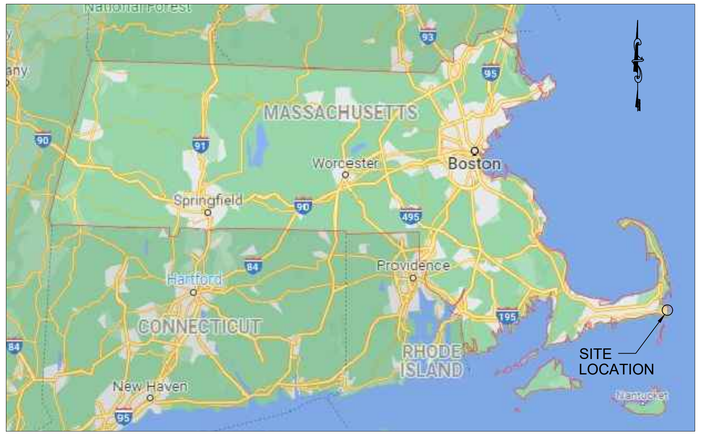
CP-1	CATHODIC PROTECTION PLAN
CP-2	CATHODIC PROTECTION PLAN DETAILS
P-1	PLUMBING LEGEND AND DETAILS
P-2	PLUMBING DEMOLITION PLAN
P-3	PLUMBING RENOVATION SITE PLAN
P-4	PLUMBING RENOVATION SITE PLAN



LOCATION MAP

VICINITY MAP

26 September 2022
ENGINEER OF RECORD

SHEET TITLE
COVER SHEET

SHEET NUMBER
G-001

Friday, September 23, 2022 1:21:26 PM
DWG Filename: title-legend-notes.dwg Layout: g-001 - cover sheet
DWG Folder Location: Chatham MA T\0021C036.00\CAD\Drawings

DESIGN CRITERIA:

1. STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE, NINTH EDITION.
2. THE COMPLETED STRUCTURE HAS BEEN DESIGNED TO WITHSTAND THE FOLLOWING SUPERIMPOSED LOADS:
   a. GENERAL

BUILDING RISK CATEGORY	II

   b. LIVE LOADS:

UNIFORM LIVE LOAD:	300 PSF UNIFORM LOAD
HS-20 TRUCK LOAD:	32 KIP AXLE LOAD
GROVE TMS700E CRANE:	91 KIP OUTRIGGER LOAD
CAT 320F EXCAVATOR:	91 KIP OUTRIGGER LOAD

   c. WIND LOAD

BASIC WIND SPEED	140 MPH
WIND EXPOSURE CATEGORY	D

   d. SNOW LOAD

GROUND SNOW LOAD	25 PSF

   e. EARTHQUAKE LOAD

SEISMIC IMPORTANCE FACTOR	Ie=1.0
MCE_R GROUND MOTION (PERIOD=0.2s)	S_S=0.135
MCE_R GROUND MOTION (PERIOD=1.0s)	S_1=0.051
SITE-MODIFIED SPECTRAL ACCELERATION	S_{MS}=0.135
SITE-MODIFIED SPECTRAL ACCELERATION	S_{M1}=0.0918
NUMERIC SEISMIC DESIGN VALUE AT 0.2S SA	SDS=0.09
NUMERID SEISMIC DESIGN VALUE AT 1.0S SA	SD1=0.0612
SITE CLASS	D
SEIMIC DESIGN CATEGORY	A
DESIGN PROCEDURE: EQUIVALENT LATERAL FORCE	

3. FOUNDATION

REQUIRED SOIL BEARING CAPACITY	1500 PSF

   A GEOTECHNICAL ENGINEER SHALL REVIEW ALL BEARING STRATA PRIOR TO CASTING CONCRETE IN ORDER TO VERIFY THE PRESUMPTIVE BEARING VALUE.

4. CONCRETE

a. CAST-IN-PLACE CONCRETE	f'c=5000 PSI
b. CONCRETE EXPOSURE	CLASSES F3, S1, W1, C2
c. W/C RATIO	0.40
d. REINFORCING BARS	ASTM A615 GR. 60
e. WELDED WIRE REINFORCEMENT	ASTM A1064
f. BAR EXPOXY COATING	ASTM A775
g. PROVIDE THE FOLLOWING COVER FOR REINFORCEMENT:	
CAST AGAINST EARTH	3 IN
EXPOSED TO EARTH, WEATHER OR WATER	3 IN

5. STEEL

a. STEEL W AND WT SHAPES	ASTM A276 SS 316
b. OTHER STEEL SHAPES	ASTM A276 SS 316
c. STEEL PLATES	ASTM A276 SS 316
d. STEEL HSS	ASTM A276 SS 316
e. STEEL PIPE	ASTM A276 SS 316
f. BOLTED CONNECTIONS	ASTM F3125 GR A325 HDG SNUG TIGHT U.N.O.
g. BLIND BOLTS	HEAVY DUTY BOLT A4-70 SS
h. ANCHOR BOLTS	ASTM F1554 GR 36 HDG
i. HILTI ANCHOR BOLTS	HAS SS 304/316
j. STEEL WELDING ELECTRODES	E70XX
k. SS WELDING ELECTRODES	E316-16
l. STEEL SHEET PILE	ASTM A690 GR. 50 (EPOXY COATED - TOP 30 FEET)
m. HP14X102 (BH CLOSURE)	ASTM A690 GR. 50 (EPOXY COATED - TOP 30 FEET)
a. HP14X102 (BH WALE)	ASTM A690 GR. 50 (EPOXY COATED)
n. C15X33.9 (BH WALE)	ASTM A690 GR. 50 (EPOXY COATED)
o. DYWIDAG THREADBAR	ASTM A615 GR. 100 (EPOXY COATED)
p. GALVANIZING	ASTM A123 OR ASTM A153

6. TIMBER

a. TIMBER PILES	GREENHEART 14" DIAMETER
b. TIMBER POSTS	SYP NO 2 OR BETTER
c. TIMBER PILE CAPS AND BRACES	SYP NO. 2 OR BETTER
d. TIMBER STRINGERS	SYP NO. 2 OR BETTER
e. TIMBER DECKING	ADMIRAL SPACEMAKER
f. TIMBER NOSING	TANGENT FIBERFORCE
g. PRESERVATIVES	
PILE CAPS AND STRINGERS	0.4 PCF ACQ
h. HARDWARE	
HARDWARE FOR TIMBER CONSTRUCTION SHALL BE STAINLESS STEEL IN COMPLIANCE WITH AISI 316, U.N.O.	

7. WATER LEVELS

   TIDAL DATUM INFORMATION DETERMINED USING NOAA TIDE STATION #8447435 CHATHAM, LYDIA COVE, MA.

TIDAL STAGE	MLLW DATUM	MLW DATUM	NAVD88 DATUM
MHHW (FT)	5.17	5.01	2.68
MHW (FT)	4.80	4.64	2.31
NAVD88 (FT)	2.49	2.33	0.00
MLW (FT)	0.16	0.00	-2.33
MLLW(FT)	0.00'	-0.16	-2.49
NOAA TIDE STATION: CHATHAM, MA 8447435			

8. LOCATION OF EXISTING STRUCTURES TAKEN FROM SURVEY BY FOTH INFRASTRUCTURE & ENVIRONMENT, LLC, ON DECEMBER 13, 2016, MARCH 25, 2019, AND REPRESENT THE CONDITIONS OF THE SITE AT THE TIME OF THE SURVEY.
9. THE STRUCTURES HAVE BEEN DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER CONSTRUCTION IS COMPLETE. THE STABILITY OF THE STRUCTURES PRIOR TO COMPLETION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THIS RESPONSIBILITY EXTENDS TO RELATED ASPECTS OF THE CONSTRUCTION ACTIVITY INCLUDING, BUT NOT LIMITED TO, ERECTION METHODS, ERECTION SEQUENCE, CONNECTIONS, TEMPORARY BRACING, FORMS, SHORING, USE OF EQUIPMENT, AND SIMILAR CONSTRUCTION PROCEDURES. REVIEW OF CONSTRUCTION BY THE OWNER AND ENGINEER OF RECORD IS FOR GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS ONLY. LACK OF COMMENT BY THE OWNER AND ENGINEER OF RECORD WITH REGARD TO CONSTRUCTION PROCEDURES SHALL NOT BE INTERPRETED AS APPROVAL OR ACCEPTANCE OF SUCH PROCEDURES.

GENERAL CONDITIONS:

1. NO GUARANTEE TO THE ACCURACY OF THE REFERENCE DOCUMENTS IS PROVIDED HEREIN AND THE CONTRACTOR SHALL RELY ON HIS OWN FIELD VERIFICATION FOR ITEMS SO REQUIRED.
2. SECTIONS, DETAILS, NOTES, DIMENSIONS AND CONDITIONS ARE APPLICABLE AT ANY OTHER LOCATION WHERE CONDITIONS AND DETAIL ARE SIMILAR BUT ARE NOT SPECIFICALLY NOTED AS SUCH OR ARE NOT SHOWN.
3. THE CONTRACTOR SHALL PERFORM THE WORK IN A MANNER THAT DOES NOT IMPEDE THE OWNER'S OPERATIONS ON SITE OR THE OWNER'S ON-SITE OPERATING EQUIPMENT.
4. THE CONTRACTOR PRIOR TO CONSTRUCTION AND FABRICATION OF CONSTRUCTION MATERIALS SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS.
5. IF, DURING THE PERFORMANCE OF THE WORK, THE CONTRACTOR FINDS A CONFLICT, ERROR, OR DISCREPANCY IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SO REPORT TO THE ENGINEER OF RECORD IN WRITING AT ONCE. BEFORE PROCEEDING WITH THE WORK AFFECTED THEREBY, THE CONTRACTOR SHALL OBTAIN A WRITTEN INTERPRETATION OR CLARIFICATION FROM THE ENGINEER OF RECORD. WORK DONE BEFORE THE ENGINEER OF RECORD RENDERS HIS DECISION IS AT THE CONTRACTOR'S SOLE RISK.
6. THE WORK SHALL BE PERFORMED IN A GENERAL SEQUENCE DEVELOPED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW, IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR THE SEQUENCES AND PROCEDURES TO BE USED.
7. THE CONTRACTOR SHALL FURNISH AND COORDINATE PLANT, LABOR, SUPERVISION, MATERIALS, EQUIPMENT AND APPLIANCES FOR DEMOLITION AND/OR CONSTRUCTION WORK IN CONNECTION WITH THE DEMOLITION AND/OR CONSTRUCTION OF THE MARINE FACILITIES.
8. THE OWNER HAS SECURED CERTAIN PERMITS REQUIRED BY FEDERAL, AND STATE AUTHORITIES FOR THE PROPOSED ACTIVITIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM THE WORK IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE PERMITS. THE CONTRACTOR SHALL POST COPIES OF THE PERMITS AT THE SITE THROUGHOUT THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN PERMITS ASSOCIATED WITH THE LEGAL DISPOSAL OF CONSTRUCTION DEBRIS. THE CONTRACTOR SHALL SECURE REQUIRED LOCAL AUTHORIZATIONS AND PERMITS.
9. SPECIAL INSPECTION REQUIREMENTS PER LOCAL AND/OR STATE BUILDING CODES SHALL BE FULFILLED AND SHALL BE COORDINATED BY THE OWNER. THE CONTRACTOR SHALL INFORM THE OWNER OF THE PROGRESS OF WORK AND PROVIDE ADEQUATE NOTICE AS TO WHEN SPECIAL INSPECTIONS ARE TO OCCUR SUCH AS TO NOT DELAY THE SCHEDULE.
10. THE CONTRACTOR SHALL FURNISH MATERIALS FOR INSTALLATION IN THE COMPLETED WORK AS SPECIFIED HEREINAFTER. THE CONTRACTOR SHALL HANDLE THESE MATERIALS AS THEY ARE DELIVERED TO THE SITE OR OFF-SITE WORK AREAS AND SHALL STORE THEM IN A DESIGNATED STORAGE AREA.
11. THE CONTRACTOR WILL INDEMNIFY AND SAVE HARMLESS THE OWNER AND ENGINEER OF RECORD FROM AND AGAINST ALL LOSSES AND ALL CLAIMS, DEMANDS, PAYMENTS, SUITS, ACTIONS, RECOVERIES, AND JUDGMENTS OF EVERY NATURE AND DESCRIPTION BROUGHT OR RECOVERED AGAINST THE OWNER AND ENGINEER OF RECORD BY REASON OF ANY ACT OR OMISSION OF THE CONTRACTOR, OR OF ANY SUBCONTRACTOR TO THE CONTRACTOR, OR OF ANY PERSON DIRECTLY OR INDIRECTLY EMPLOYED BY THE CONTRACTOR OR ANY SUCH SUBCONTRACTOR, IN THE PERFORMANCE OF ANY WORK FOR, OR THE RENDERING OF ANY SERVICES TO, THE OWNER.
12. THE CONTRACTOR AGREES THAT, AT ITS OWN COST AND EXPENSE, IT SHALL PROCURE AND CONTINUE IN FORCE; INSURANCE COVERAGE AS REQUIRED BY THE OWNER. SUCH INSURANCE SHALL BE WRITTEN BY A COMPANY OR COMPANIES AUTHORIZED TO ENGAGE IN THE BUSINESS OF GENERAL LIABILITY INSURANCE IN THE STATE IN WHICH THE DEMISED PREMISES ARE LOCATED, AND THERE SHALL BE DELIVERED TO THE OWNER WITH THE BID CUSTOMARY CERTIFICATES EVIDENCING SUCH PAID-UP INSURANCE, WHICH CERTIFICATES ARE TO BE ISSUED BY THE INSURANCE COMPANIES. GOOD AND RESPONSIBLE COMPANIES, REASONABLY ACCEPTABLE TO THE OWNER, SHALL WRITE SUCH INSURANCE.
13. THE ENGINEER AND ITS SUB CONSULTANTS SHALL BE ADDED TO THE CONTRACTOR'S GENERAL LIABILITY INSURANCE POLICY AS ADDITIONAL INSURED ON PRIMARY AND CON-CONTRIBUTORY BASIS. SUBMIT CERTIFICATES OF INSURANCE TO THE ENGINEER AS EVIDENCE OF THIS COVERAGE.
14. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF LOCATIONS, DIMENSIONS, AND LEVELS AND NO PLEA AS TO INSTRUCTIONS OR ORDER RECEIVED FROM OTHER SOURCES OTHER THAN INFORMATION CONTAINED ON CONTRACT DRAWINGS, SPECIFICATIONS OR IN WRITTEN ORDERS OF THE OWNER OR ENGINEER OF RECORD SHALL JUSTIFY DEPARTURE FROM THE DIMENSIONS AND ELEVATIONS REQUIRED BY THE CONTRACT DRAWINGS.
15. THE CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AT THE SITE, VERIFYING THE SAME WITH THE CONTRACT DRAWINGS AND EXISTING FACILITIES, AND WILL BE HELD RESPONSIBLE FOR THE PROPER FIT AND ALIGNMENT OF COMPLETED WORK IN POSITION.
16. THE CONTRACTOR SHALL GUARANTEE TO THE OWNER MATERIALS AND WORKMANSHIP AGAINST ORIGINAL DEFECTS, OR AGAINST INJURY FROM PROPER AND USUAL WEAR WHEN USED FOR THE PURPOSE INTENDED, FOR TWELVE (12) MONTHS AFTER DATE OF FINAL PAYMENT CERTIFICATIONS AND SHALL MAINTAIN ITEMS IN PERFECT CONDITION DURING THE PERIOD OF GUARANTEE. DEFECTS APPEARING DURING THE PERIOD OF GUARANTEE SHALL BE MADE GOOD BY THE CONTRACTOR AT HIS EXPENSE UPON DEMAND OF THE OWNER, IT BEING REQUIRED THAT WORK SHALL BE IN PERFECT CONDITION WHEN THE PERIOD OF GUARANTEE SHALL HAVE ELAPSED. IN THE EVENT OF DEFAULT BY THE CONTRACTOR, THE COMPANY SHALL HAVE THE RIGHT TO MAKE GOOD DEFECTS AND BILL THE CONTRACTOR COST PLUS 15% FOR ADMINISTRATION FEES.
17. AT THE CONTRACTOR'S EXPENSE, THE CONTRACTOR'S WORKING AREAS SHALL BE CLEANED BY HIM ON A DAY-TO-DAY BASIS, WITH RUBBISH REMOVED FROM THE SITE AND WORK AREAS CLEANED AT THE END OF EACH DAY. AT FINAL COMPLETION OF WORK THE CONTRACTOR SHALL LEAVE THE ENTIRE PREMISES, WITHIN THE SITE OF HIS OPERATIONS, CLEAN AND FREE FROM THE RUBBISH RESULTING FROM HIS CONSTRUCTION OPERATIONS.
18. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE AND MAINTAIN UTILITIES HE DEEMS NECESSARY TO AFFECT THE WORK.
19. THE CONTRACTOR SHALL PROVIDE FIELD ENGINEERING SERVICES REQUIRED FOR PROPER COMPLETION OF THE WORK INCLUDING, BUT NOT NECESSARILY LIMITED TO: ESTABLISHING AND MAINTAINING LINES AND LEVELS; STRUCTURAL DESIGN OF SHORES, FORMS, AND SIMILAR ITEMS PROVIDED BY THE CONTRACTOR AS PART OF HIS MEANS AND METHODS OF CONSTRUCTION.
20. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AT HIS EXPENSE REQUIRED FIRE PROTECTION SYSTEMS AND DEVICES AS NECESSARY TO SAFELY PERFORM THE WORK IN ACCORD WITH THE APPLICABLE REGULATIONS. IT SHALL BE OPERATIONAL THROUGHOUT THE PERIOD OF CONSTRUCTION.
21. THE OWNER SHALL HAVE THE RIGHT TO WITHHOLD WITHOUT PENALTY PAYMENT DESCRIBED ABOVE, OR SECTIONS REFERENCED HEREIN, FOR COMPLETED WORK SHOULD THE CONTRACTOR FAIL TO MEET OBLIGATIONS OR REQUIREMENTS OF THE CONTRACT. WITHHELD PAYMENT SHALL BE PROMPTLY MADE UPON THE CONTRACTOR'S FULL COMPLIANCE WITH THE CONTRACT.
22. COMPLY WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR PROTECTION OF THE ENVIRONMENT DURING THE WORK. ENSURE THAT PERSONNEL ARE PROPERLY TRAINED AND THAT SUFFICIENT EQUIPMENT AND MATERIALS ARE READILY AVAILABLE FOR USE IF REQUIRED. ABIDE BY STATE AND FEDERAL SPILL REPORTING REQUIREMENTS.
23. THE OWNER RESERVES THE RIGHT TO CHARGE THE CONTRACTOR FOR ADDITIONAL ENGINEERING SERVICES IF REQUIRED DUE TO THE CONTRACTOR'S ACTIONS OR INACTIONS.
24. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF HIS OPERATIONS. THE CONTRACTOR SHALL TAKE REASONABLE PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE REASONABLE PROTECTION TO PREVENT DAMAGE, INJURY, OR LOSS TO PERSONS EMPLOYED BY THE CONTRACTOR IN PERFORMANCE OF THE WORK, AND PERSONS NEARBY THAT MAY BE AFFECTED BY THE CONTRACTOR'S OPERATIONS OR THE WORK, INCLUDING EQUIPMENT AND MATERIALS WHICH WILL BE INCORPORATED IN THE WORK, AND OTHER PROPERTIES AND STRUCTURES AT THE SITE, OR ON ADJACENT PROPERTIES.
25. OBSTRUCTIONS ARE DEFINED AS UNFORESEEN OBJECTS, WHICH IMPEDE PROGRESS. OBJECTS, WHICH ARE MADE KNOWN TO THE CONTRACTOR, WILL NOT BE CONSIDERED TO BE OBSTRUCTIONS. NOTIFY THE ENGINEER OF RECORD IMMEDIATELY UPON ENCOUNTERING OBSTRUCTIONS. NO CONSIDERATION WILL BE GIVEN FOR ADDITIONAL COMPENSATION ON THIS ACCOUNT WITHOUT THIS TIMELY NOTIFICATION.
26. SUBSTITUTIONS MAY BE FURNISHED FOR MATERIALS SPECIFIED HEREIN PROVIDED THE CONTRACTOR SECURES ACCEPTANCE FROM THE ENGINEER OF RECORD.

SELECTIVE DEMOLITION AND DISPOSAL:

1. SELECTIVE DEMOLITION AND DISPOSAL SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL PERMIT AND BUILDING CODE REQUIREMENTS.
2. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THOSE STRUCTURES AND DERELICT COMPONENTS AS INDICATED ON THE DRAWINGS.
3. SELECTIVE DEMOLITION INCLUDES BUT IS NOT LIMITED TO REMOVAL AND REUSE (WHERE POSSIBLE) OF EXISTING MATERIALS, UTILITIES, AND OTHER COMPONENTS ESSENTIAL FOR A COMPLETE PROJECT.
4. THE CONTRACTOR SHALL TAKE REASONABLE CARE IN REMOVING ELEMENTS SELECTED TO BE DEMOLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. DAMAGE OR DESTRUCTION BY THE CONTRACTOR TO EXISTING ELEMENTS DESIGNATED TO REMAIN SHALL BE REPAIRED OR REPLACED IN-KIND AT THE DISCRETION OF THE OWNER AT NO ADDITIONAL COST.
5. ITEMS TO BE REMOVED AND REUSED SHALL BE PLACED IN A STAGING AREA ACCESSIBLE FOR INSPECTION BY THE OWNER.
6. PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION, THE CONTRACTOR SHALL SUBMIT A DISPOSAL PLAN FOR ITEMS TO BE DEMOLISHED. DEMOLITION MATERIAL DESIGNATED BY THE OWNER TO BE REMOVED FROM THE SITE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE DEBRIS DISPOSAL PLAN SHALL ACKNOWLEDGE THIS OWNERSHIP AND SHALL IDENTIFY THE MEANS AND METHODS AND FINAL DISPOSITION FOR DISPOSAL MATERIALS.
7. PRIOR TO COMMENCEMENT OF DEMOLITION, THE CONTRACTOR SHALL CLEARLY MARK THE LIMITS OF THE DEMOLITION FOR REVIEW AND APPROVAL BY THE OWNER.
8. COMPLETELY REMOVE ITEMS DESIGNATED LEAVING SURFACES CLEAN, SOUND, AND READY TO RECEIVE NEW MATERIALS AS SPECIFIED IN THE CONTRACT DOCUMENTS.
9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING THE COURSE OF DEMOLITION.
10. THE CONTRACTOR SHALL SUBMIT A DISPOSAL CERTIFICATE TO THE OWNER'S REPRESENTATIVE CERTIFYING LEGAL AND PROPER DISPOSAL.

TEMPORARY WORK:

1. LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK THAT, UPON COMPLETION, ARE NOT A PART OF THE WORK, SHALL BE FURNISHED, INSTALLED, AND SUBSEQUENTLY REMOVED FROM THE SITE BY THE CONTRACTOR.
2. TEMPORARY WORK SHALL BE SUBJECT TO THE REQUIREMENTS OF THE STATE AND APPLICABLE LOCAL BUILDING CODES.
3. DURING EXECUTION OF THE WORK, THE CONTRACTOR IS REQUIRED TO INSTALL AND MAINTAIN REQUIRED SEDIMENTATION AND EROSION CONTROL MEASURES TO PROTECT ADJACENT WATERWAYS, STREETS, AND PROPERTIES. MEASURES INCLUDE BUT ARE NOT LIMITED TO TEMPORARY BERMS, HAY BALES, SILT FENCES, CONTAINMENT BOOMS, AND TURBIDITY CURTAINS. IN ACCORDANCE WITH STATE REGULATORY AUTHORIZATIONS, THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN TEMPORARY TURBIDITY CURTAINS DURING CONSTRUCTION. TEMPORARY MATERIALS AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS FOR TEMPORARY WORK.

EXCAVATING, BACKFILLING, AND COMPACTION:

1. STRUCTURAL FILL SHALL CONSIST OF BROKEN OR CRUSHED STONE, BANK OR CRUSHED GRAVEL, OR MIXTURES THEREOF. BROKEN OR CRUSHED STONE SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE STONE. BANK OR CRUSHED GRAVEL SHALL CONSIST OF WELL-GRADED, SOUND, TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE FROM SOFT, THIN, ELONGATED OR LAMINATED PIECES AND ORGANIC OR OTHER DELETERIOUS SUBSTANCES. STRUCTURAL FILL SHALL WELL GRADED WITH 100% MASS PASSING THE 90 mm (3.5") SQUARE MESH SIEVE. SUBMIT AN INDEPENDENT GRADATION ANALYSIS AND MODIFIED PROCTOR TEST FOR ENGINEER OF RECORD'S REVIEW. INCLUDE A REPRESENTATIVE SAMPLE OF THE FILL MATERIAL WITH THE SUBMITTAL.
2. THE CONTRACTOR SHALL EXCAVATE UNSUITABLE MATERIALS AND GRADE THE SITE TO THE ELEVATIONS AND LIMITS SHOWN AND AS NEEDED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION.
3. STRUCTURAL FILL SHALL BE PLACED IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH. DO NOT PLACE FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN OR CONTAINING FROST AND/OR ICE. PLACE FILL MATERIALS EVENLY ADJACENT TO STRUCTURES, TO REQUIRED ELEVATIONS. TAKE CARE TO PREVENT WEDGING ACTION OF BACKFILL AGAINST STRUCTURES BY CARRYING THE MATERIAL UNIFORMLY AROUND THE STRUCTURE TO APPROXIMATELY THE SAME ELEVATION IN EACH LIFT.
4. CONTROL STRUCTURAL FILL COMPACTION DURING CONSTRUCTION TO PROVIDE THE MINIMUM PERCENTAGE OF DENSITY SPECIFIED FOR EACH AREA AS DETERMINED ACCORDING TO ASTM D1557. STRUCTURAL FILL AREAS SHALL NOT FALL BELOW 95% OF ITS DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ABOVE TEST.

PARKING LOT PERIMETER SWALE SEEDING:

1. SEEDING (WETMIX BY NEW ENGLAND WETLAND PLANTS, INC., OR APPROVED EQUAL) WILL REQUIRE MULCHING WITH APPROPRIATE MATERIALS. ANCHOR THE MULCH IMMEDIATELY AFTER SEEDING.
2. SLOPES AND VEGETATION OF THE WET WATER QUALITY SWALE ARE TO BE INSPECTED THE FIRST FEW MONTHS AFTER CONSTRUCTION AND TWICE A YEAR AFTER FOR EROSION.
3. SWALE TO BE RE-SEEDED AS NECESSARY.
4. THE SOIL MIX MUST BE UNIFORM, FREE OF STONES, ROOTS, OR SIMILAR OBJECTS LARGER THAN 2". CLAY CONTENT SHOULD NOT EXCEED 5%.

COMMONWEALTH OF MASSACHUSETTS
ALEX L MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
549 MAIN ST. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1			
2			
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DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

SHEET TITLE:

GENERAL NOTES

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
G-002

Wednesday, October 5, 2022 7:06:19 AM
DWG Filename: title+legend-notes.dwg Layout: g-002 - general notes
DWG Folder Location: Chatham MA TV0021c036.00\CAD\Drawings

PILE DRIVING:

1. DRIVE PILES WITH AN AIR OR DIESEL OPERATED HAMMER WITH SUFFICIENT ENERGY AND ENERGY TRANSFER CHARACTERISTICS TO DRIVE THE PILES TO THE REQUIRED CAPACITY AND TOE ELEVATIONS WITHOUT DAMAGING THE PILE HEAD. USE CAUTION NOT TO INJURE THE PILES BY OVER DRIVING AS WOULD BE INDICATED BY REBOUND OF HAMMER OR STAGGERING OF PILE. CUT OFF HEADS OF PILES ACCURATELY IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AFTER COMPLETION OF DRIVING.
2. DRIVE THE PILES STRAIGHT AND TRUE AT INDICATED LOCATIONS, WITH DEVIATION FROM THE LONGITUDINAL AXIS OF NOT MORE THAN 1/4 INCH PER FOOT.
3. CONTINUOUSLY DRIVE EACH PILE TO REACH THE CAPACITY AND/OR FULL EMBEDDED LENGTH CALLED FOR ON THE DRAWINGS.
4. WITHDRAW PILES THAT ENCOUNTER UNDERGROUND OBSTRUCTIONS SUFFICIENT TO IMPEDE PILE DRIVING. RE-DRIVE AS CLOSE AS POSSIBLE TO ORIGINAL POSITION, SUBJECT TO REVIEW OF THE OWNER. REMOVE PILES WHICH SPLIT, BROOM, BREAK OR DRIVE OUT OF LINE. DRIVE ANOTHER PILE IN ITS PLACE. PROVIDE AND MAINTAIN NECESSARY LIGHTING AND BARRIERS TO ADEQUATELY ASSURE PUBLIC SAFETY. PROVIDE ADEQUATE SAFEGUARDS TO PROTECT FROM DAMAGE IMPROVEMENTS ON THE WORK SITE AND ON ADJACENT PROPERTIES.
5. LENGTHS SHOWN ON THE DRAWINGS ARE CONSIDERED AVERAGE VALUES, AND THE ACTUAL LENGTHS MAY VARY WHEN SO ACCEPTED BY THE ENGINEER.
6. PROVIDE DRIVING RESISTANCE PENETRATION AND REFUSAL VALUES AS ACCEPTED BY THE ENGINEER.
7. USE SUITABLE CUSHIONS OR DRIVING HEADS TO AVOID DAMAGE TO THE PILES, DEVELOPING PROPER TOTAL DRIVING ENERGY, AND DIRECTING THE ENERGY ALONG THE LONGITUDINAL CENTER OF GRAVITY OF THE PILE.
8. DRIVE PILES TO THEIR FULL PENETRATION WITHOUT BENDING, RUPTURING, OR SEVERELY DAMAGING THE PILES. IF FAILURE IN THE ABOVE RESPECTS IS ENCOUNTERED, PULL THE PILE AND DRIVE A NEW PILE AT NO ADDITIONAL COST TO THE OWNER. IF A REPLACEMENT PILE FAILS TO DEVELOP FULL DRIVING RESISTANCE, PULL THE REPLACEMENT PILE AND DRIVE A NEW PILE WITH LARGER DIAMETER AT NO ADDITIONAL COST TO THE OWNER.
9. JETTING TO ASSIST PENETRATION WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE ENGINEER. PRE-DRILLING WILL NOT BE PERMITTED UNLESS ACCEPTED BY THE ENGINEER, WHEREBY APPROVED PRE_DRILLING TO ASSIST PENETRATION MAY BE USED WHERE EXTREME DRIVING RESISTANCE IS ENCOUNTERED, OR WHERE VIBRATIONS FROM DRIVING MAY BE DETRIMENTAL TO ADJACENT STRUCTURES.
10. WHERE PILES ARE PUSHED UP BY PRESSURE FROM DRIVING OF ADJACENT PILES, RE-DRIVE AS REQUIRED AND AT NO ADDITIONAL COST TO THE OWNER.
11. HE CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE DRIVING RECORD WITH THE DATE OF FINAL INSTALLATION AND TIP ELEVATIONS. THIS RECORD SHALL BE SUBMITTED WEEKLY AND SIGNED BY A REPRESENTATIVE OF THE CONTRACTOR. THE CONTRACTOR SHALL KEEP AN ACCURATE SET OF PILE RECORDS INDICATING PILE NUMBER, PILE TYPE AND INSTALLED LENGTH, TYPE OF HAMMER AND RATED ENERGY, DATE OF INSTALLATION, FINAL TIP ELEVATION, AND CONTRACTOR'S REPRESENTATIVE NAME AND SIGNATURE.

NON-SHRINK GROUT:

1. NON-SHRINK GROUT SHALL BE SIKAGROUT 212, AS MANUFACTURED BY SIKA CORPORATION, CONFORMING TO ASTM C827 AND SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 6000 PSI.

GROUND ANCHORS:

1. GROUND ANCHORS SHALL BE DESIGNED, INSTALLED AND TESTED IN ACCORDANCE WITH POST TENSIONING INSTITUTE (PTI) GUIDELINES. SEE SPECIFICATIONS FOR PERFORMANCE AND PROOF TEST, DETAILED REQUIREMENTS OF COMPONENTS AND OTHER REQUIREMENTS.
2. GROUND ANCHORS SHALL BE DESIGNED FOR THE FOLLOWING LOADS:

   HORIZONTAL LOAD: 12.1 KIP/FT
3. GROUND ANCHORS ARE SPACED AT 9.2+/- FEET ON CENTER.
4. ULTIMATE GEOTECHNICAL ANCHOR CAPACITY SHALL BE NO LESS THAN 1.5 TIMES THE ANCHOR DESIGN LOAD. BOND LENGTH SHALL BE DESIGNED BY THE CONTRACTOR.
5. GROUND ANCHORS SHALL BE INSTALLED WITH 30 DEGREE VERTICAL ANGLE RESPECT HORIZONTAL PLANE AS SHOWN ON DRAWINGS.
6. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE ANCHOR BEARING PLATE. BEARING PLATE DESIGN SHALL CONSIDER FACTORS, INCLUDING BUT NOT LIMITED TO, ANCHOR TEST LOAD, SIZE OF ANCHOR HEAD, SIZE OF HOLE IN BEARING PLATE, SIZE OF HOLE IN BEARING SURFACE (SLEEVE), AND CONCRETE COMPRESSIVE STRENGTH.
7. STEEL TRUMPET SHALL BE WELDED TO BEARING PLATE. STEEL ANCHORAGE ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.
8. PROVIDE CLASS I CORROSION PROTECTION FOR GROUND ANCHOR IN ACCORDANCE WITH PTI RECOMMENDATIONS.
9. REGROUT TUBES SHALL BE INSTALLED IN EACH ANCHOR.
10. ANCHORAGE BLOCKOUTS SHALL BE FILLED WITH NON-SHRINK GROUT AFTER TESTING AND LOCK-OFF OF THE ANCHOR IS COMPLETED AND ACCEPTED.

PROTECTIVE COATING:

1. MATERIAL USED FOR FACTORY EPOXY COATING OF ALL SCHEDULED SURFACES SHALL BE BAR_RUST 235 MULTI_PURPOSE EPOXY COATING AS MANUFACTURED BY DEVOE COATINGS OR EQUIVALENT ACCEPTED BY THE ENGINEER.
2. FIELD TOUCH_UP COATING SHALL BE IDENTICAL TO FACTORY COATING AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
3. PROTECTIVE COATING TOPCOAT SHALL BE BLACK.
4. SURFACES SHALL BE PREPARED IN STRICT ACCORDANCE WITH THE PROTECTIVE COATING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. THE PROTECTIVE COATING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. COATING IS TO BE APPLIED IN TWO COATS TO ACHIEVE A MINIMUM OVERALL DRY FILM THICKNESS OF 16 MILS.
6. ALL HOLIDAYS OR OTHER IMPERFECTIONS IN THE COATING SHALL BE REMOVED OR REPAIRED AT THE CONTRACTORS EXPENSE PRIOR TO FINAL ACCEPTANCE OF THE WORK.

ACCESS LADDERS:

1. ACCESS LADDERS SHALL BE MANUFACTURED FOLLOWING THESE DRAWINGS AND USING STEEL IN COMPLIANCE WITH ASTM A36.
2. ACCESS LADDERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. COAT BOTTOM 42 INCHES OF LADDER WITH COMPATIBLE PRODUCT. COLOR OF COATING SHALL BE YELLOW.
4. SUBMIT PRODUCT AND APPLICATION PROCEDURE TO ENGINEER FOR REVIEW AND ACCEPTANCE.

BATHYMETRIC SURVEY NOTES:

1. THE BATHYMETRIC DATA SHOWN ON THIS PLAN WAS GATHERED BY FOTH ON MARCH 10, 2021.
2. THE TOPOGRAPHIC DATA SHOWN ON THIS PLAN WAS GATHERED BY FOTH ON 3/17/2021 AND 1/19/2022.
3. UTILITIES SHOWN ON THIS PLAN ARE FROM GPR SURVEY PERFORMED BY TPI ENVIRONMENTAL ON 1/19/2022. SEE TPI REPORT FOR ADDITIONAL INFORMATION REGARDING UTILTIES.
4. CONTOURS REFER TO DEPTH BELOW THE REFERENCE PLANE. THE REFERENCE PLANE FOR THIS PROJECT IS NAVD88.
5. COORDINATES ARE BASED ON NAD 83 STATE PLANE MASSACHUSETTS MAINLAND COORDINATE GRID.
6. BENCHMARK / RTK TIDES: TIDES ARE RECORDED USING RTK TIDES IN HYPACK. ELEVATIONS FROM ELLIPSOID TO ORTHOMETRIC NAVD88 USE GEOID 12B.
7. PROJECT BENCHMARK IS A NGS DISK STAMPED "7435 F 2009" LOCATED ON A CONCRETE BULKHEAD NEAR THE USCG DOCK EL= 7.11' NAVD88 (9.74' MLW).
8. RTK CORRECTIONS FOR THIS SURVEY PROVIDED BY KEYNET - VRS (GEOID 12A)
9. THE INFORMATION DEPICTED ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES SHOWN, AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS AT THAT TIME. INTERPOLATED INFORMATION FROM BETWEEN SOUNDING RUNS IS NOT GUARANTEED. SHOALS, OBSTRUCTIONS OR OTHER DIFFERING CONDITIONS MAY EXIST BETWEEN THESE RUNS. CONSULT WITH FOTH FOR MORE DETAILED INFORMATION.
10. POSSESSION AND USE OF THE MATERIAL CONTAINED ON THESE DRAWINGS IS GRANTED ONLY IN CONNECTION WITH ITS USE AS IT RELATES TO THE TITLED PROJECT, ANY OTHER USE, REPRODUCTION OR DISCLOSURE OF THE INFORMATION CONTAINED HEREON IS EXPRESSLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF FOTH.

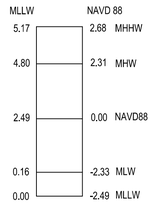
LAND SURVEY NOTES:

1. PROJECT NAME:	AUNT LYDIA'S COVE CONDITIONS
2. PROJECT NUMBER:	21C036.00
3. PLOT SCALE:	AS SHOWN
4. SURVEY DATE:	MARCH 10, 2021
5. SURVEYOR:	M. COUNT, H. CHOUINARD
6. VESSEL:	OLAF
7. TRANS./FATH.:	200KHZ, 3 DEGREE, ODOM CVM RTK KEYNET CORRECTIONS
9. PROJECT DATUM:	NAVD88 SEE DATUM CONVERSION
10. COOR. SYSTEM:	NAD-83, MASSACHUSETTS MAINLAND
11. DATA REDUCTION:	DATA SORTED BASED ON A 20' RADIUS USING THE HYPACK SORT PROGRAM
12. SITE BENCHMARK:	DISK IN CONCRETE BULKHEAD 7.11 FT NAVD88 (9.74 FT MLW)

GPR AND UTILITY SURVEY NOTES:

1. PROJECT NAME:	AUNT LYDIA'S COVE CONDITIONS
2. PROJECT NUMBER:	20C036.00
3. PLOT SCALE:	AS SHOWN
4. SURVEY DATE:	JANUARY 19, 2022
5. SURVEYOR:	M. COUNT
6. VESSEL:	OLAF
7. TRANS./FATH.:	200KHZ, 3 DEGREE, ODOM CVM RTK KEYNET CORRECTIONS
9. PROJECT DATUM:	NAVD88 SEE DATUM CONVERSION
10. COOR. SYSTEM:	NAD-83, MASSACHUSETTS MAINLAND
12. SITE BENCHMARK:	DISK IN CONCRETE BULKHEAD 7.11 FT NAVD88 (9.74 FT MLW)

TIDAL DATUM



NOAA TIDE STATION
CHATHAM, MA 8447435

GENERAL SYMBOLS

- EXISTING TREE
- EXISTING SPOT ELEVATION (X 9.71)
- EXISTING CONTOUR (10)
- EXISTING CONTROL POINT LOCATION
- EXISTING BENCH MARK LOCATION
- EXISTING SPRINKLER HEAD LOCATION
- EXISTING CATCH BASIN LOCATION
- EXISTING LIGHTPOLE LOCATION
- PROPOSED LIGHTPOLE LOCATION
- EXISTING SANITARY MANHOLE LOCATION
- EXISTING DRAINAGE MANHOLE LOCATION
- EXISTING SANITARY MANHOLE LOCATION
- EXISTING WATER SOURCE LOCATION
- EXISTING GAS METER LOCATION
- EXISTING GAS VALVE LOCATION
- EXISTING WATER VALVE LOCATION
- NO PARKING AREA
- AREA TO BE EXCAVATED OR DEMOLISHED
- AREA TO PLACE CONCRETE - PAD & DECK
- HANDICAP PARKING SPOT
- EXISTING ELECTRIC LINE (E)
- EXISTING COMMUNICATIONS LINE (COMM)
- EXISTING WATER LINE (W)
- EXISTING STORM SEWER (SS)
- EXISTING SANITARY SEWER (S)
- EXISTING GAS LINE (G)
- UNKNOWN UTILITY LINE
- APPROXIMATE PROPERTY LINE
- PROPERTY EASEMENT
- BENT GRASS BOUNDARY
- EXISTING OR PROPOSED SHEET PILINGS
- SHELLFISH SUITABILITY AREA (MASSGIS)
- HISTORIC HIGH TIDE LINE (MASSGIS)
- FEMA FLOOD ZONE (MASSGIS)
- WETLAND RESOURCE AREAS (MA GIS)
- MEAN LOW WATER (MLW) = -2.33' NAVD88
- MEAN HIGH WATER (MHW) = 2.31' NAVD88

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
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REGISTERED PROFESSIONAL ENGINEER
26 September 2022

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
549 MAIN ST. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

NOTES AND LEGEND

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

G-003

Wednesday, October 5, 2022 7:07:31 AM
DWG Filename: title-legend-notes.dwg Layout: g-003 - notes and legend
DWG Folder Location: Chatham MA T:\0021c036.00\CAD\Drawings

SHORE ROAD
(PUBLIC - 50' WIDE)

BARCLIFF AVE EXTENSION

APPROXIMATE PROPERTY LINE (TYP)

EDGE OF PAVEMENT

LIGHT POLE AND BASE TO BE REMOVED

SIDEWALK EXCAVATION AREA (HATCHED AREA)

AREA OF UNDERGROUND CONCRETE PAD - VERIFY IN FIELD

T/MANHOLE COVER EL. +29.45

T/MANHOLE COVER EL. 329.64

TOP OF CATCH BASIN EL. +26.9'

CONC. PAD FOR STATUE; EL. VARIES, AVE EL. +24.5

1' TIMBER CURB

UPPER PARKING LOT AREA

TIMBER DECKING AND FOUNDATION TO BE REPLACED (HATCHED AREA)

APPROX. LOCATION OF HARBOR MASTER OFFICE PANEL C ON UPPER LEVEL

ELECTRICAL SERVICE

BIKE RACK

VEGETATED GRASS SWALE

EXISTING BRICK SIDEWALK

LIGHT (TYP.)

METER CENTER

WHARFINGER HARBOR MASTER BLDG.

SHED

A.C. UNITS

TRANSFORMER

BENCHMARK NOAA TIDAL BENCHMARK 7435-B BRONZE DISK FOUND IN TRANSFORMER CONCRETE PAD ELEV: +12.56' NAVD88

APPROX. LOCATION OF EX. 18" DIA. DRAINAGE PIPE

HYDRANT (TYP.)

EX. WATER VALVE (TYP.)

EL=10.828

EL=10.518

SEWER MANHOLE (TYP.)

WATER VALVE TO BE CONFIRMED

GAS VALVE

CONTROL POINT PK6 ELEV = 15.462

NO PARKING STRIPING (TYP.)

PARKING

SPRINKLER HEAD (TYP.)

PROPERTY EASEMENT LINE

MAP 16F-20-E10
#400 SHORE ROAD
N/F
CBI PC LLC &
CBI NCA LLC

MAP 16E LOT 18-6
#15 BARCLIFF AVENUE EXT.
N/F
BROWN

CHATHAM FISH MARKET BLDG.

MAP 16E LOT 19-N
#45 BARCLIFF AVENUE EXT.
BARCLIFF MARKET LLC

PAINTED PEDESTRIAN WALKWAY

CONCRETE RETAINING WALL

STEEL BULKHEAD

BULKHEAD

CONCRETE

FIRE SPRINKLER WATER PIPE

NORTH HOIST

GMH RIM EL. +7.35' HELD, TOP OF 2"Ø GAS SHUTOFF VALVES (2) EL. +5.05'±, BOTTOM OF SUMP EL. +4.70'±, CENTER OF U/G RIM EL. +6.95'

OUTLINE OF TIMBER OBSERVATION DECK

FENDERS (TYP)

FUEL DISPENSER PUMPS

PERSONNEL DOOR

OVERHEAD DOORS AT LOADING DOCK

CHATHAM FISH PACKING BLDG.

LIGHTS MOUNTED TO DECK

BENCHMARK DHSET EL:7.37

FENDERS (TYP) TO BE REMOVED, REFURBISHED AND REINSTALLED. (QTY = 31)

SOUTH STAIRS

SOUTH HOIST

OUTFALL LOCATION

OUTLINE OF OBSERVATION DECK

CATCH BASIN TO BE REMOVED

FENDER PILES (TYP) TO BE EXTRACTED AND STORED ON SITE FOR OWNERS USE

HELICAL EARTH TIE-BACK ANCHOR (TYP.) TO BE REMOVED AS NEEDED

STEEL BULKHEAD

STEEL WALES TO BE REMOVED AND DEMOLISHED

CONCRETE OR ASPHALT EXCAVATION AREAS

24" Ø STEEL PILES

SOUTH JOG PIER

CONCRETE FLOAT TO REMAIN IN-PLACE DURING WORK

LIGHT POLE AND SST CAP TO BE REMOVED AND REINSTALLED. CONTRACTOR TO PROVIDE CONNECTION DETAIL

GANGWAY LANDING EL. +5.0' NAVD88 TO BE REMOVED AND REINSTALLED

GANGWAY (TO BE REMOVED AND REINSTALLED. CONTRACTOR TO PROVIDE CONNECTION DETAIL FOR REVIEW AND ACCEPTANCE)

TIMBER BULKHEAD

STONE REVETMENT (TO BE REMOVED)

MHW = +2.31'

MLLW = -2.49'

MLW = -2.33'

AHTL = +3.56'

BENT GRASS AREA

LIGHT POLE AND BASE TO BE REMOVED

DEADMAN ANCHOR SYSTEM (TO REMAIN)

UNKNOWN UTILITY (2' DOWN, EL.= +4.40)

UNKNOWN UTILITY (2.5' DOWN, EL.= +2.42±)

EDGE OF PAVEMENT

MAP 16F-21-E9
#390 SHORE ROAD
N/F
CBI PC LLC &
CBI NCA LLC

MAP 16F-22-E8
#22 SHORE ROAD
N/F
CBI PC LLC & CBI NCA LLC

MAP 16F PIER 5
#52 BARCLIFF AVENUE EXT.
N/F
TOWN OF CHATHAM

FLOOD

EBB

AUNT LYDIA'S COVE

Mooring hex

13:17:04 miss fitz

FEDERAL CHANNEL LIMITS

30' RADIUS AROUND EXISTING BEACHCOMBER MOORING

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH =20FEET

Friday, September 23, 2022 11:46:43 AM
DWG Filename: existing conditions.dwg Layout: c-101 - existing conditions
DWG Folder Location: Chatham MA TV0021c036.00\CAD\Drawings

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA
02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

SHEET TITLE:

EXISTING SITE AND DEMOLITION PLAN

ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

PROJECT NO: 021C036.00

SHEET NUMBER
C-101

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	BY	DATE	DESCRIPTION

DATE OF PREPARATION

	BY	DATE
SURVEYED	M.COUNT	1/19/2022
DRAWN	M.COUNT	2/1/2022
DESIGNED		
CHECKED	AIM	9/13/2022

SHEET TITLE:

EXISTING UTILITY LAYOUT

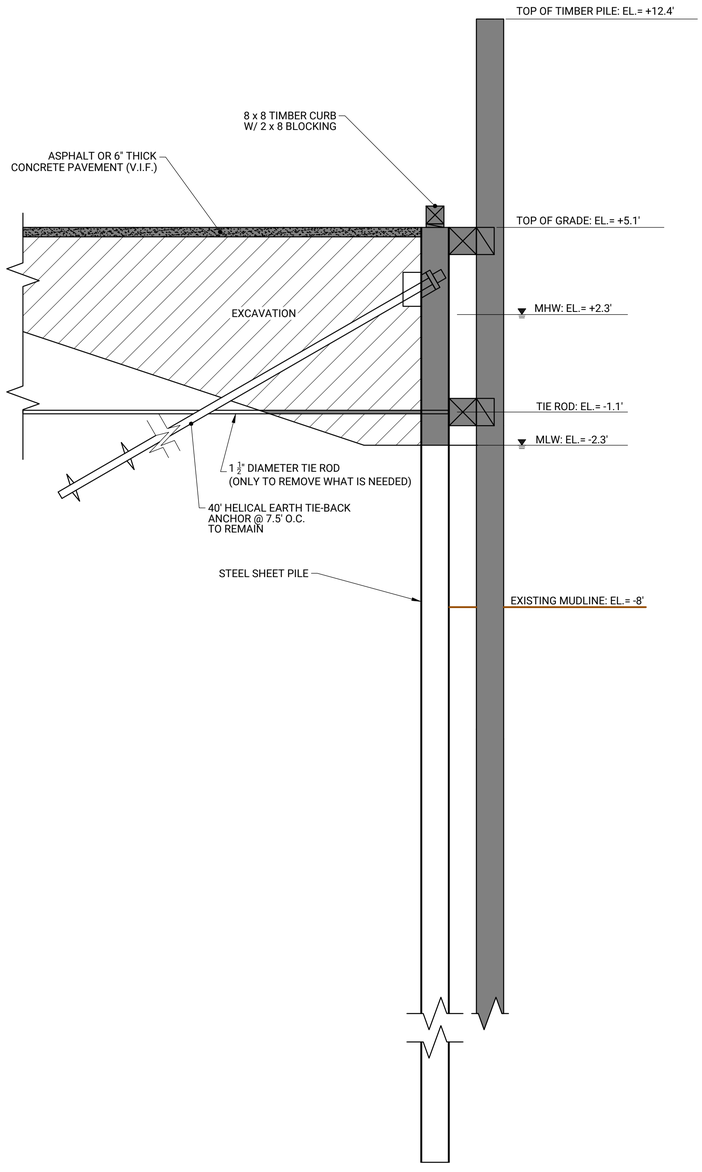
COMMONWEALTH OF MASSACHUSETTS
ALEX I. MCRA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

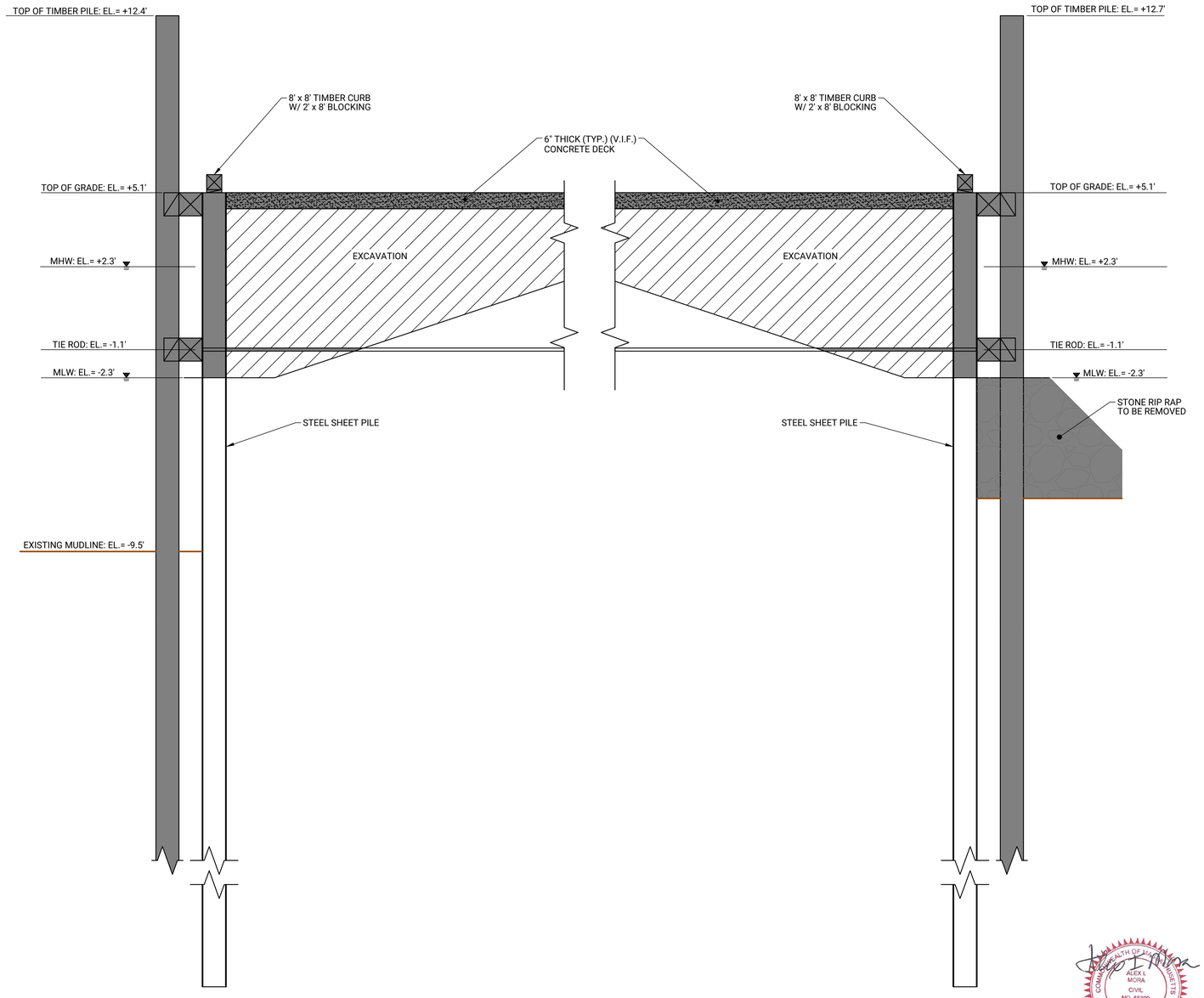
SHEET NUMBER
C-102

Monday, September 12, 2022 12:53:48 PM
DWG Filename: gpr foth topo.dwg Layout: c-102 - existing utility layout
DWG Folder Location: Clients\Chatham MA T\0021C036.00\CAD\Drawings



1 C-101 **BULKHEAD AT PARKING AREA**

SCALE: 3/8" = 1'



2 C-101 **BULKHEAD AT SOUTH JOG PIER**

SCALE: 3/8" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA
02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
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6			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

COMMONWEALTH OF MASSACHUSETTS
ALEX L MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

SHEET TITLE:

EXISTING BULKHEAD DEMOLITION AND EXCAVATION SECTIONS

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

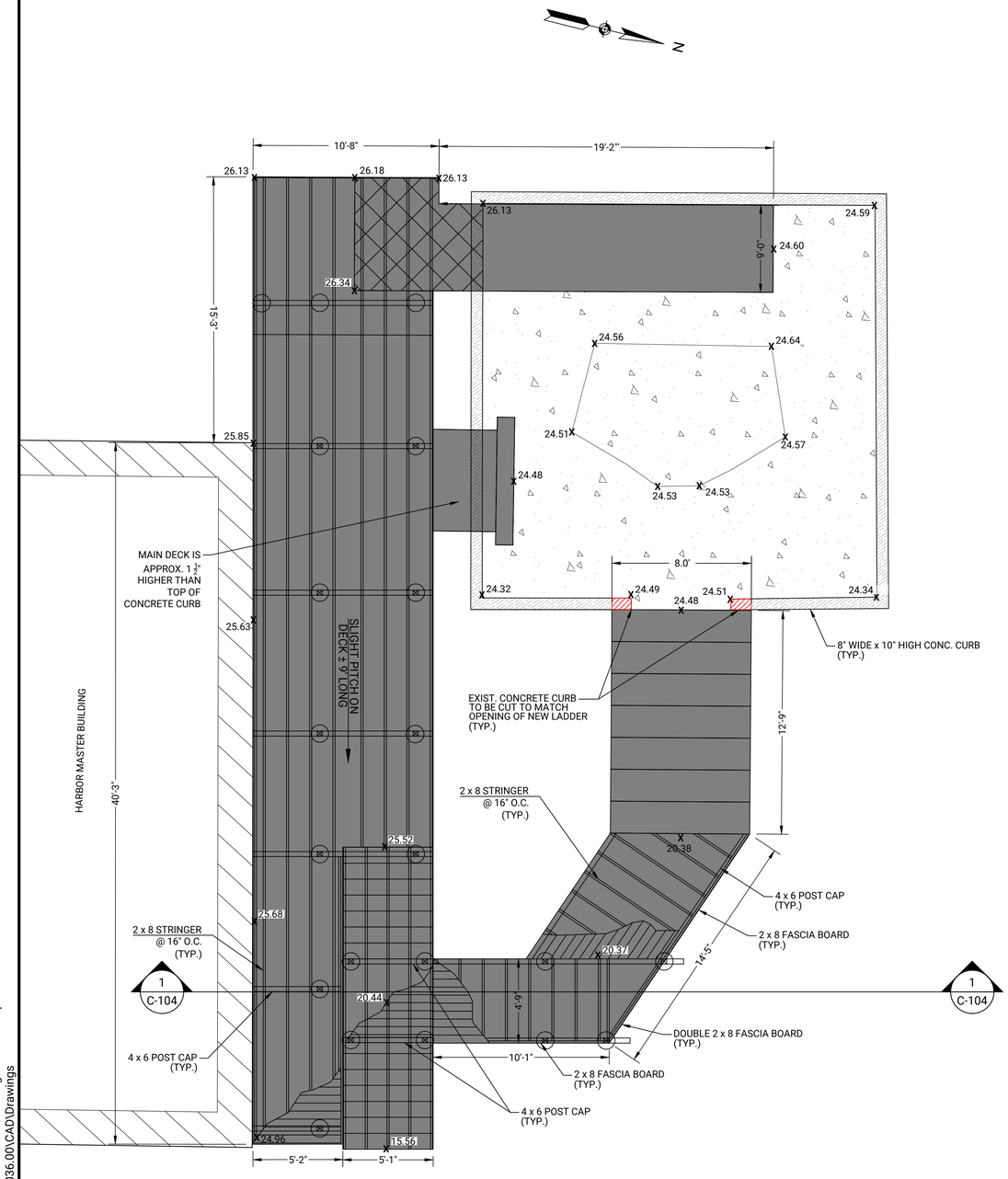
C-103

GRAPHIC SCALE

0 3/16 3/8 3/4

(IN INCHES)
3/8 INCH = 1 FOOT

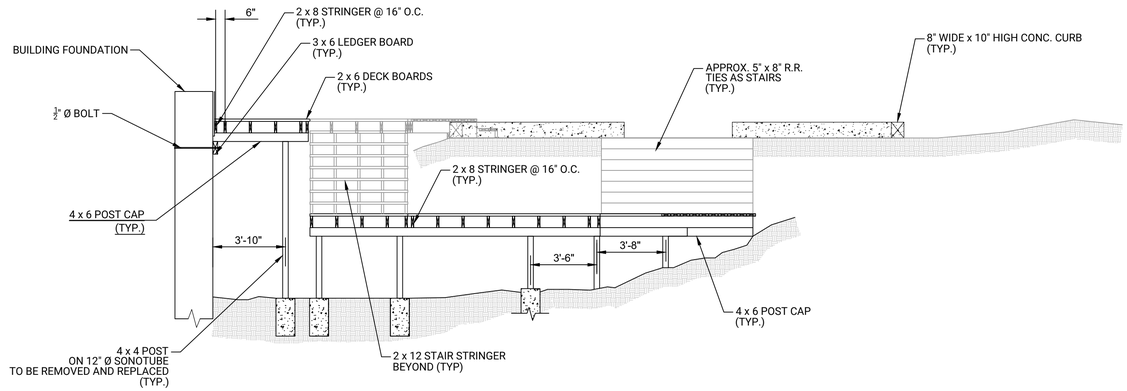
Friday, September 23, 2022 11:51:17 AM
DWG Filename: existing conditions.dwg Layout: c-103 - existing bulkhead demo-excavation sections
DWG Folder Location: Chatham MA T:\021c036.00\CAD\Drawings



A C-104 EXISTING TIMBER DECKING PLAN
SCALE: 1/4" = 1'

NOTES:

1. **All Elevations are Referenced to NAVD 88.**
2. **Shaded Denotes Items for Demolition. See S-104 for New Construction.**



1 C-104 TIMBER DECK
SCALE: 1/4" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

EXISTING TIMBER DECK PLAN AND SECTION

ISSUED FOR CONSTRUCTION

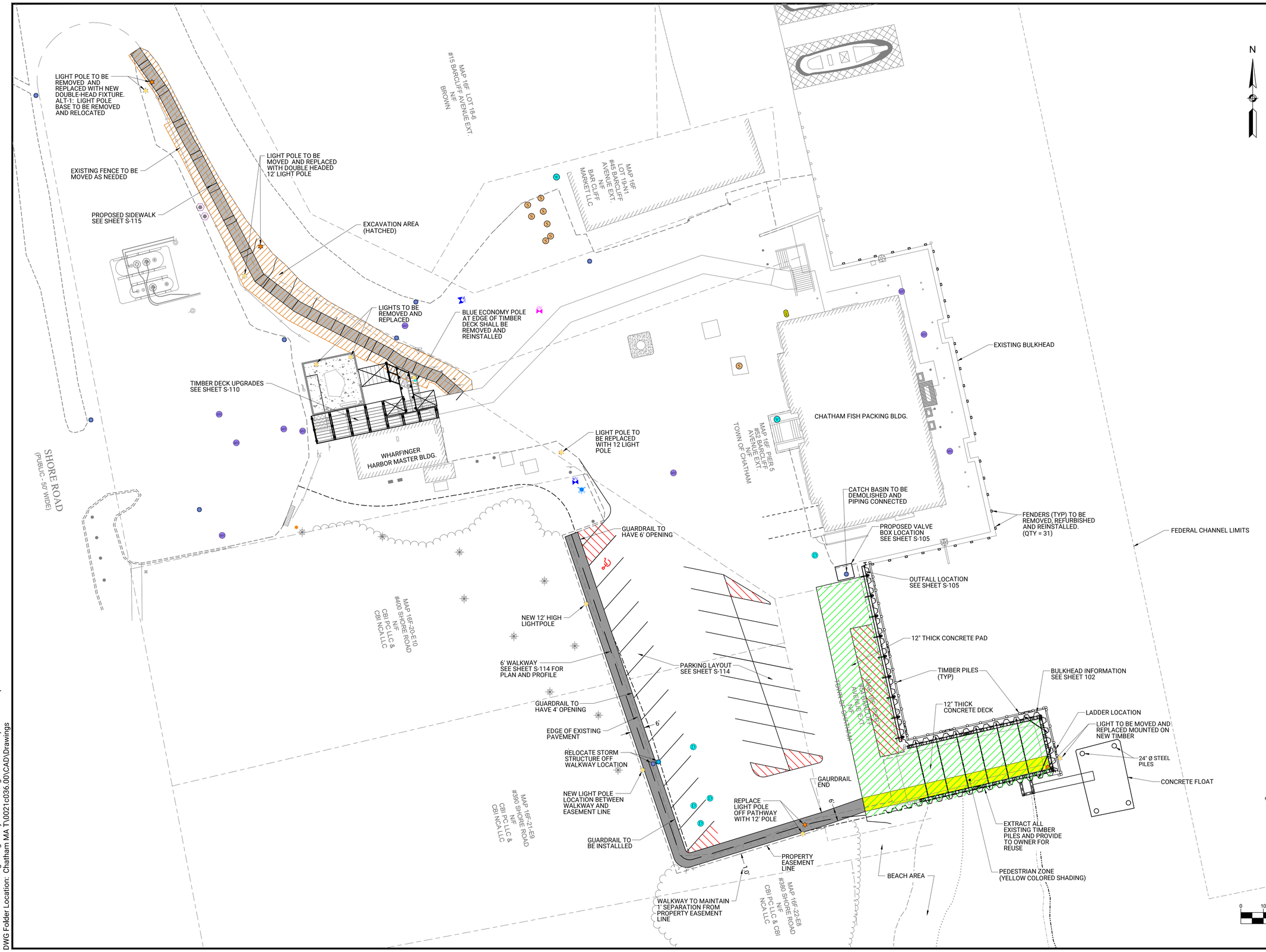
PROJECT NO: 021C036.00

SHEET NUMBER
C-104

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED
PROFESSIONAL ENGINEER
26 September 2022

GRAPHIC SCALE
0 1/8 1/4 1/2
(IN INCHES)
1/4 INCH = 1 FOOT

Monday, September 12, 2022 12:51:38 PM
DWG Filename: existing conditions.dwg Layout: c-104 - existing timber deck plan-section
DWG Folder Location: Chatham MA T\0021c036.00\CAD\Drawings



Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

GENERAL SITE IMPROVEMENTS PLAN

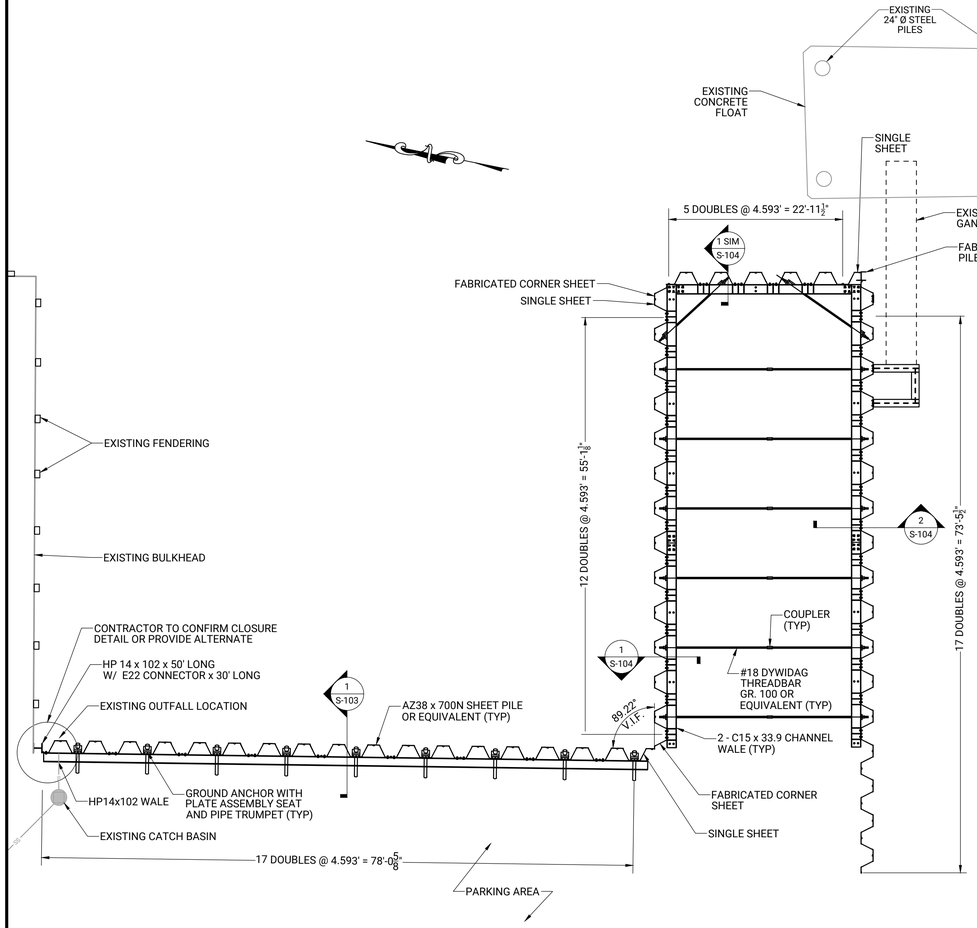
COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

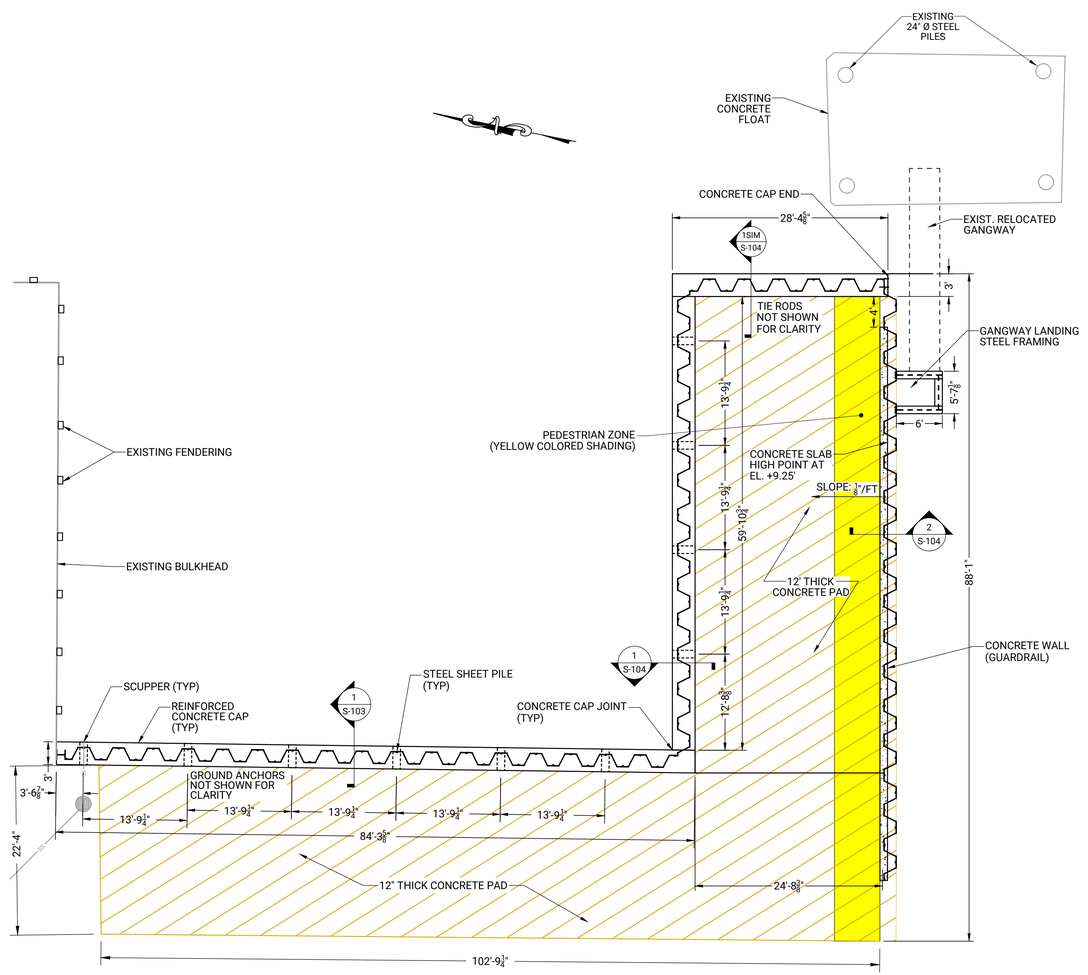
SHEET NUMBER
S-101

Monday, October 03, 2022 10:56:30 AM
DWG Filename: site design.dwg Layout: s-101 - general site improvements plan
DWG Folder Location: Chatham MA T\0021c036.00\CAD\Drawings



A S-102 BULKHEAD PLAN

SCALE: 1" = 10'



B S-102 REINFORCED CONCRETE CAP AND SLAB PLAN

SCALE: 1" = 10'

NOTE:

1. Contractor to survey site for generation of sheet pile bulkhead shop drawing.
2. Steel sheet pile layout, including corner piles, shall be provided by sheet pile distributor in a shop drawing, after site is surveyed for accuracy of dimensions.

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

BULKHEAD AND SOUTH PIER DESIGN PLAN

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

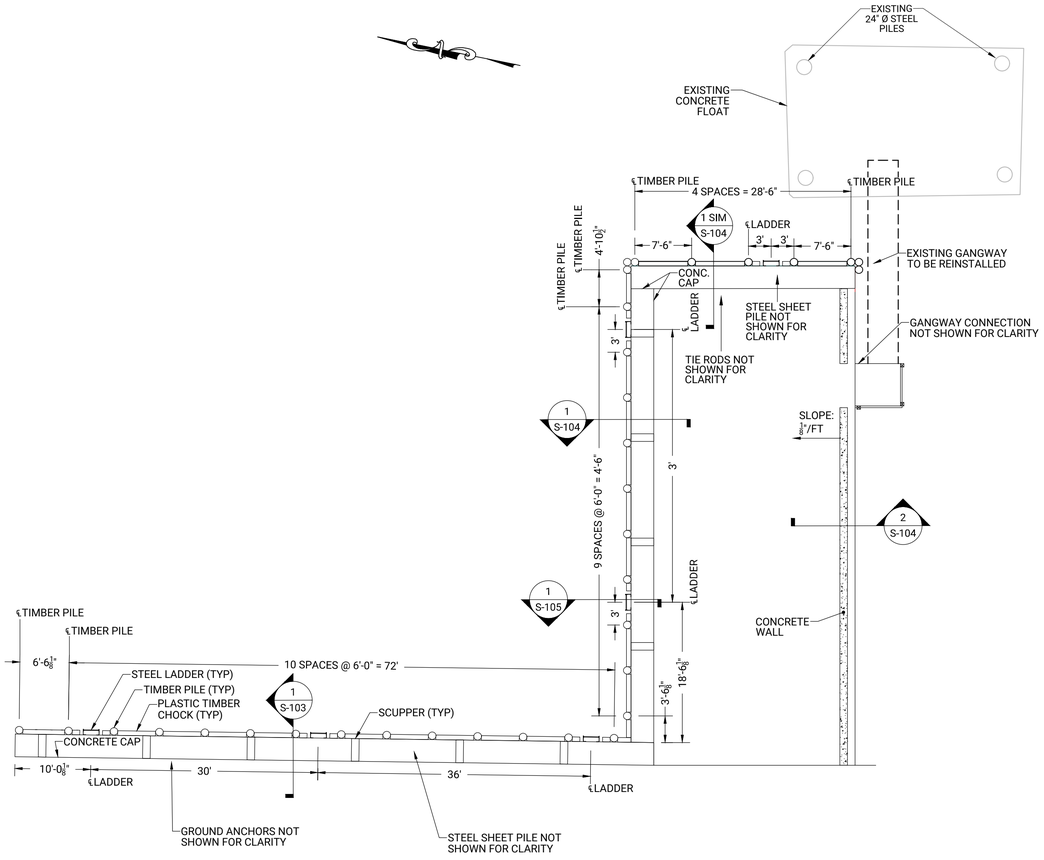
SHEET NUMBER

S-102

0 5 10 20

(IN FEET)
1" = 10 FEET
GRAPHIC SCALE

Monday, October 03, 2022 10:58:15 AM
DWG Filename: bulkhead sections and details.dwg Layout: s-102 bulkhead and s pier design plan
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings

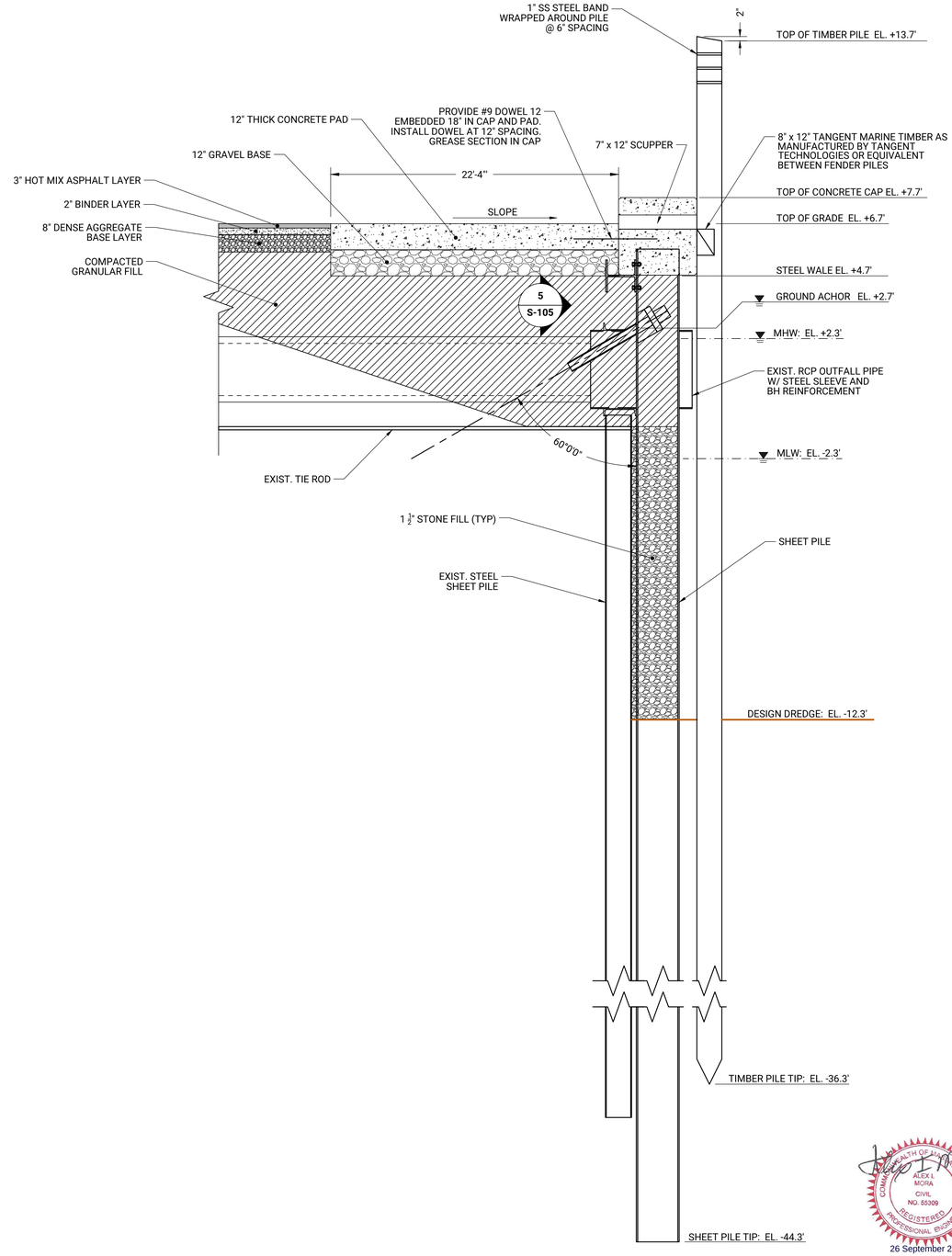


NOTES:

1. THE PARKING AREA BULKHEAD IS DESIGNED FOR A UNIFORM DISTRIBUTED LOAD (UDL) SURCHARGE OF 300 PSF.
2. IN LIEW OF THIS UDL SURCHARGE WILL CONSIDER THE PRESSURE OF A 50 TON TRUCK-MOUNTED CRANE (GROVE TMS700E) WITH OUTRIGGER LOAD AT 10 FEET FROM BACK OF BULKHEAD.
3. THE SOUTH JOG BULKHEAD IS DESIGNED FOR A UDL SURCHARGE OF 300 PSF.
4. IN LIEW OF THIS UDL SURCHARGE WILL CONSIDER THE PRESSURE OF A 50,000 LB EXCAVATOR (CAT 320).
5. EXCAVATOR TRACKS SHALL BE AT LEAST 6 FEET FROM BACK OF BULKHEAD.
6. CONTRACTOR SHALL PROVIDE GANGWAY CONNECTION FOR REVIEW AND ACCEPTANCE BY ENGINEER.

A / S-103 TIMBER PILE, CURB, AND STEEL LADDER PLAN

SCALE: 1" = 10'



1 / S-102 SECTION OF BULKHEAD AT PARKING AREA

SCALE: 3/8" = 1'

NOTE:
FOR CONCRETE PAD RENFORCEMENT SEE DETAIL K ON SHEET S-107.

COMMONWEALTH OF MASSACHUSETTS — ALEX L MORA — CIVIL — NO. 55309 — REGISTERED PROFESSIONAL ENGINEER

26 September 2022

GRAPHIC SCALES

0 5 10 20
(IN FEET)
1" = 10 FEET

0 3/16 3/8 3/4
(IN INCHES)
3/8 INCH = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
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DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

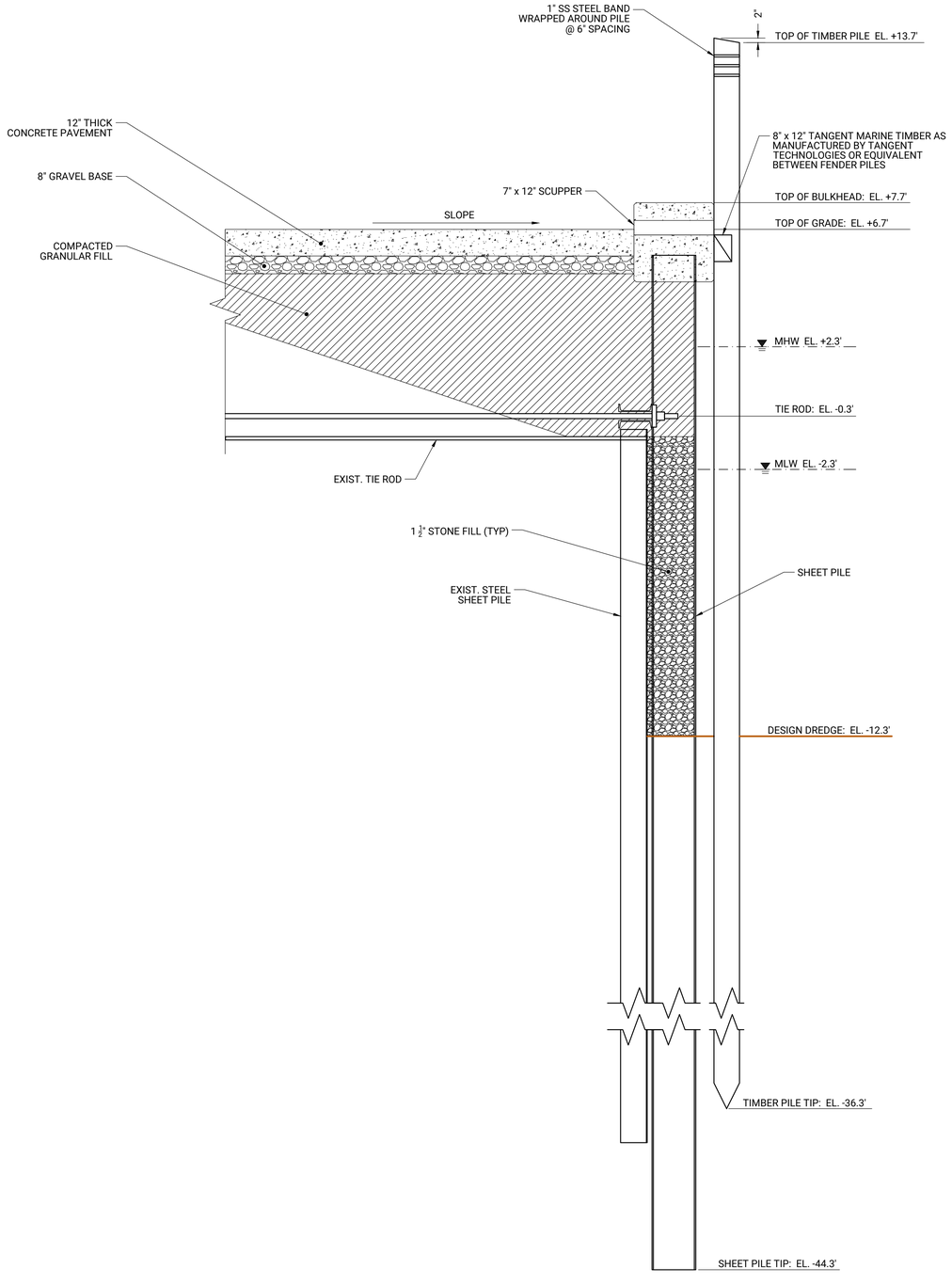
BULKHEAD AND SOUTH PIER DESIGN PLAN AND SECTION

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
S-103

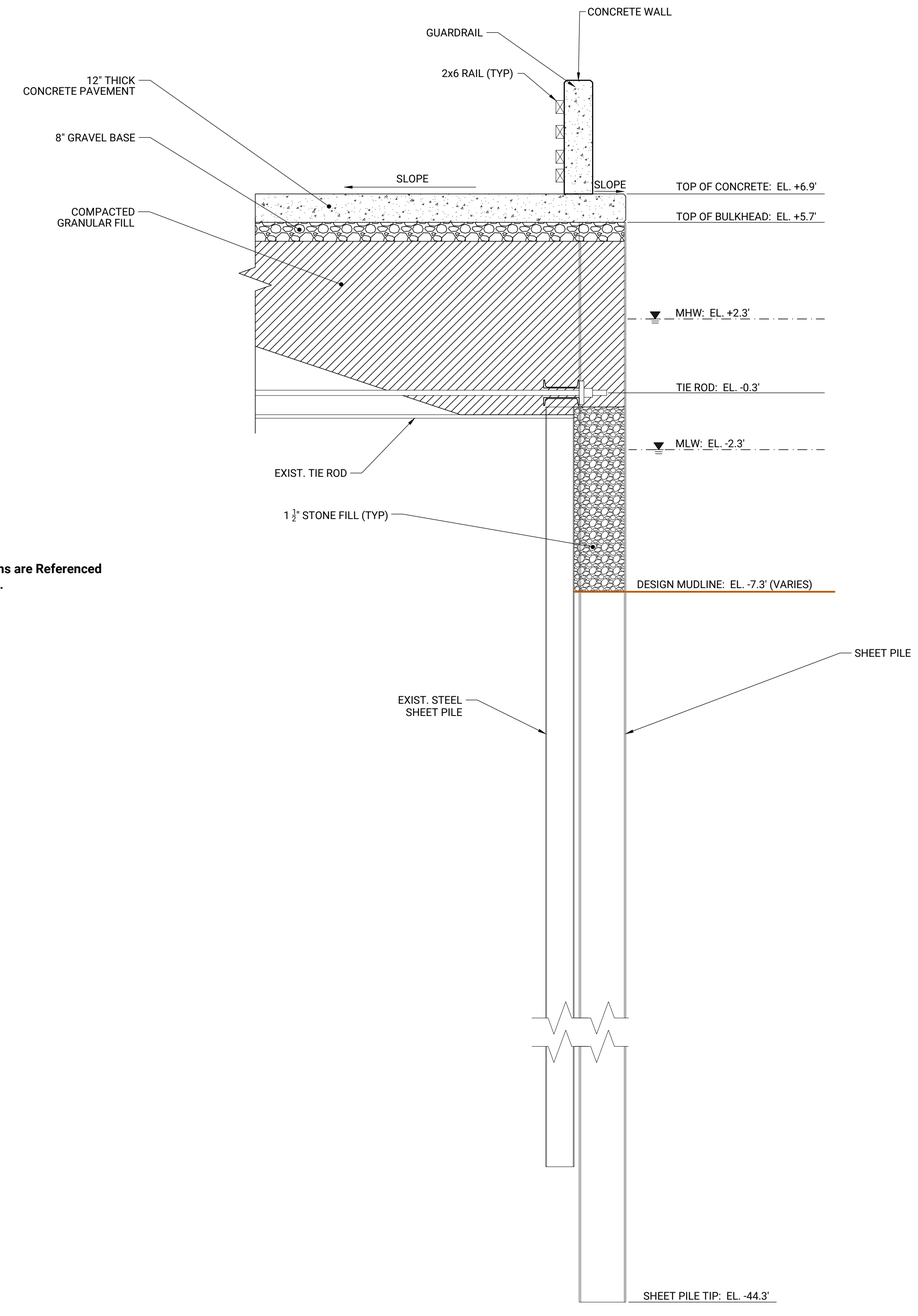
Wednesday, September 28, 2022 11:28:49 AM
DWG Filename: bulkhead sections and details.dwg Layout: s-103 bulkhead and s pier design plan and section
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings



1 S-102 **SECTION OF BULKHEAD AT SOUTH JOG**

SCALE: 3/8" = 1'

NOTE:
All Elevations are Referenced to NAVD 88.



2 S-102 **SECTION OF BULKHEAD AT SOUTH JOG**

SCALE: 3/8" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
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5			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

SHEET TITLE:

BULKHEAD SECTIONS

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

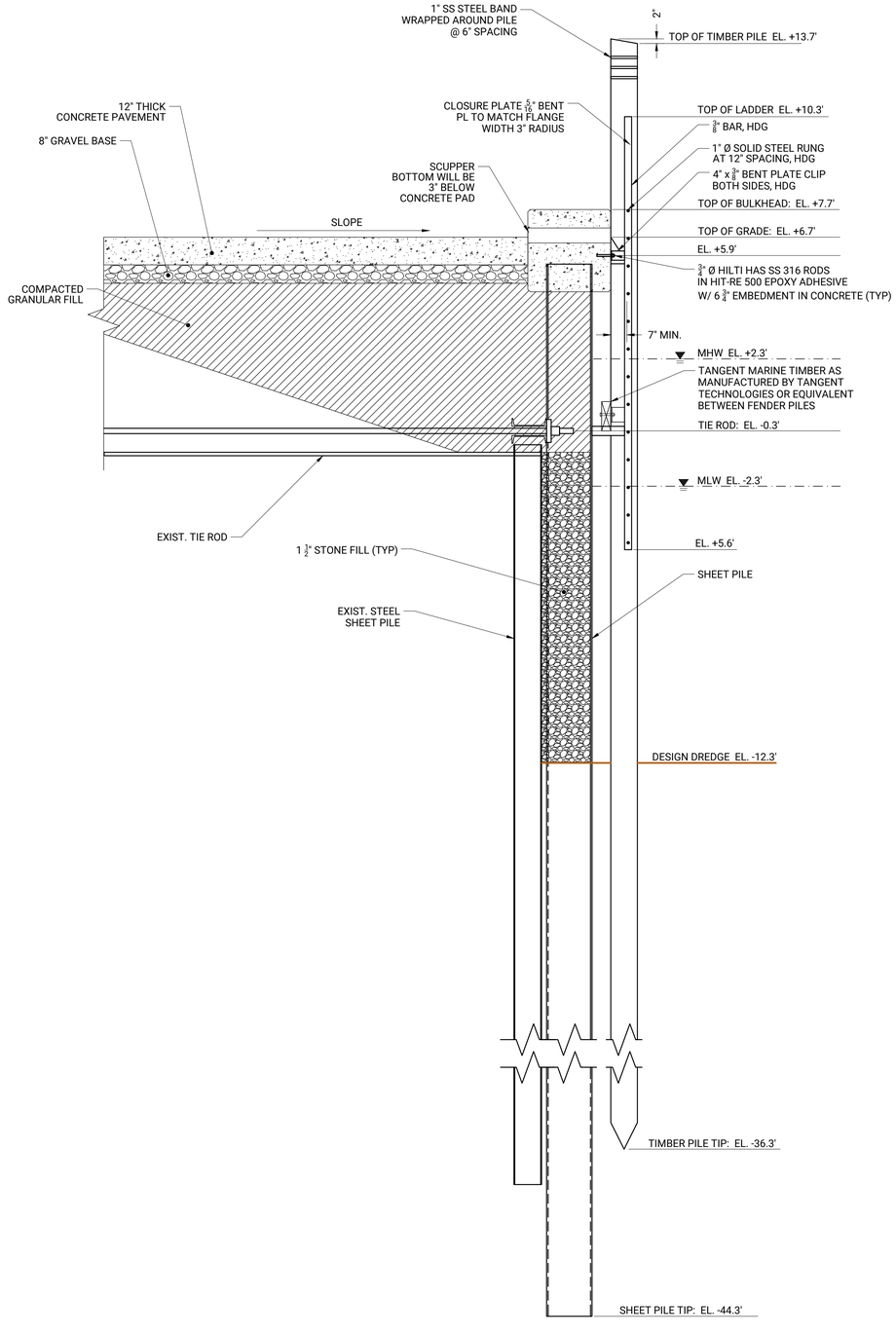
ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
S-104

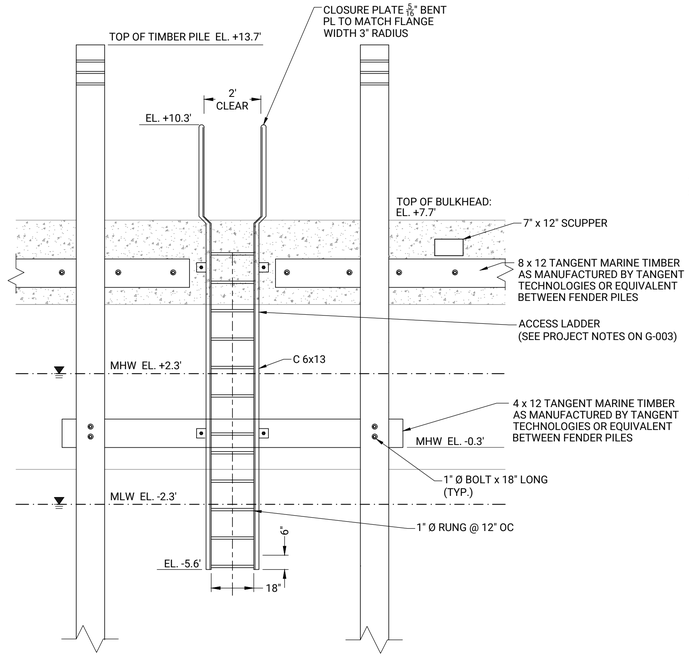
GRAPHIC SCALE
0 3/16" 3/8" 3/4"
(IN INCHES)
3/8 INCH = 1 FOOT

Friday, September 23, 2022 11:55:22 AM
DWG Filename: bulkhead sections and details.dwg Layout: s-104 - bulkhead sections
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings



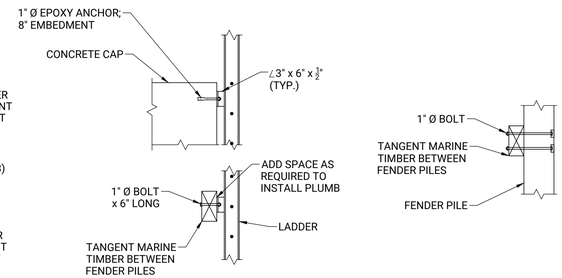
1 S-105 **SECTION OF BULKHEAD AT LADDER**

SCALE: 3/8" = 1'



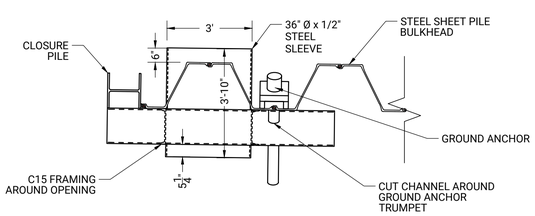
2 S-103 **LADDER - ELEVATION**

SCALE: 3/8" = 1'



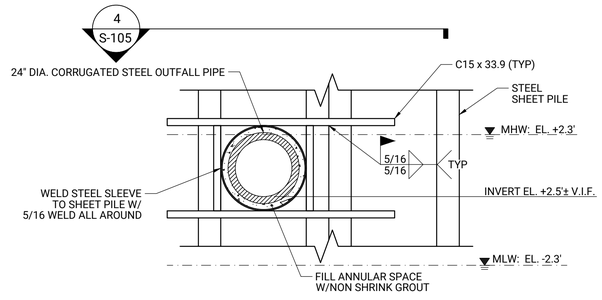
3 S-103 **LADDER CONNECTIONS**

SCALE: 3/8" = 1'



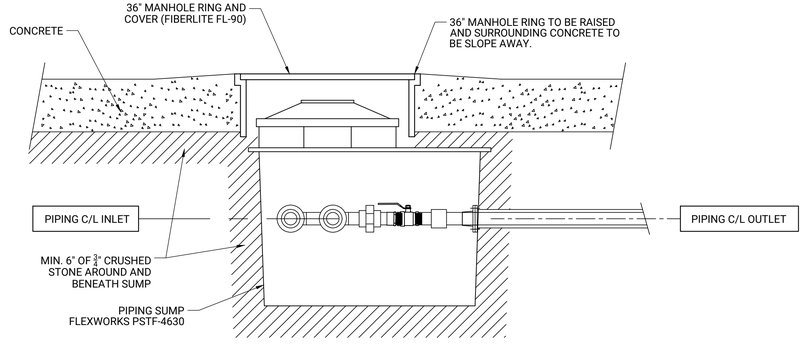
4 S-105 **PARTIAL PLAN OF BULKHEAD AT OUTFALL**

SCALE: 3/8" = 1'



5 S-105 **ELEVATION OF OUTFALL OPENING FRAMING**

SCALE: 3/8" = 1'



6 S-105 **VALVE BOX DETAIL**

NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

GRAPHIC SCALE
0 3/16" 3/8" 3/4"
(IN INCHES)
3/8" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

BULKHEAD SECTION, OUTFALL AND VALVE BOX DETAILS

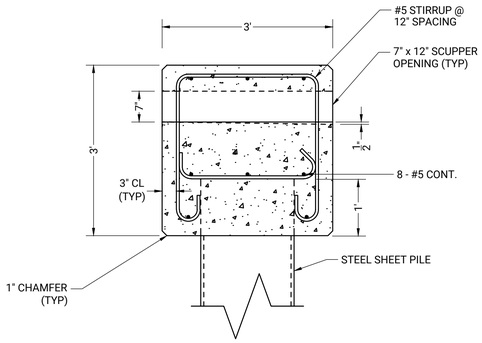
ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

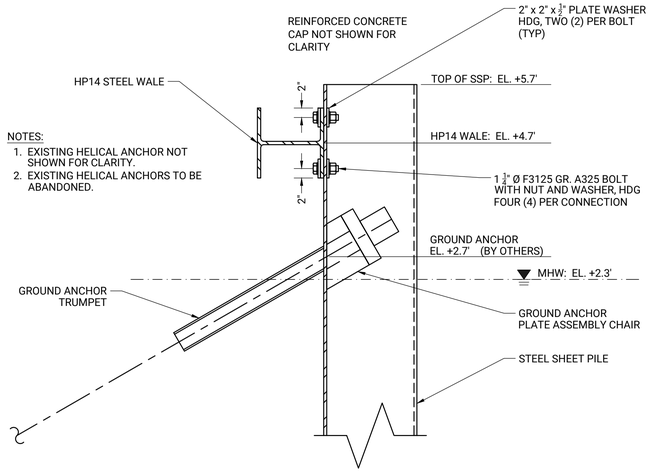
S-105

Monday, September 12, 2022 1:23:37 PM
DWG Filename: bulkhead sections and details.dwg Layout: s-105 - bulkhead section and outfall detail
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings



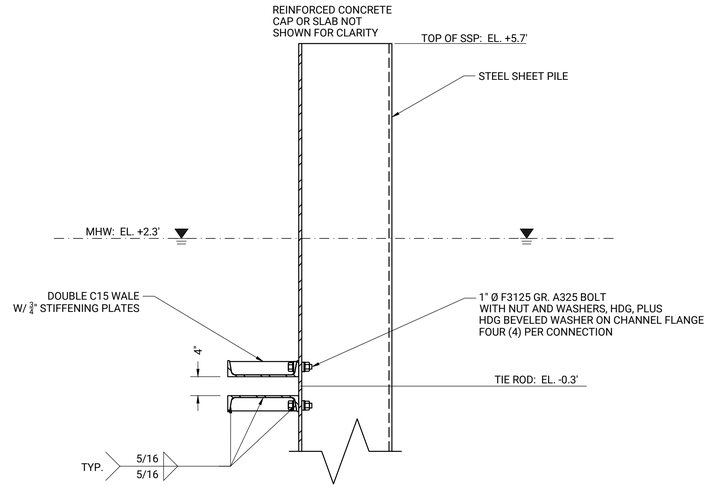
A S-106 REINFORCED CONCRETE CAP DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



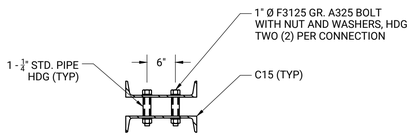
B S-106 BULKHEAD HP14 WALE CONNECTION DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



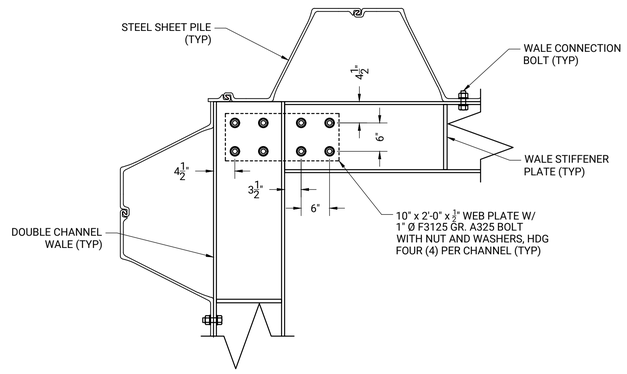
C S-106 DOUBLE C15 CHANNEL WALE CONNECTION DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



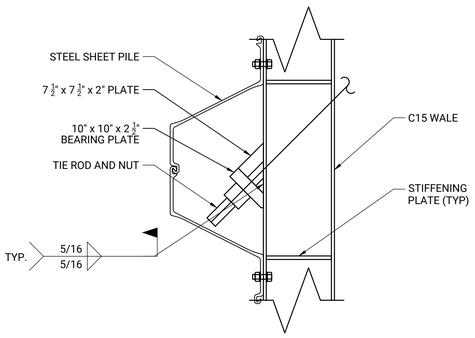
D S-106 WALE SPACER DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



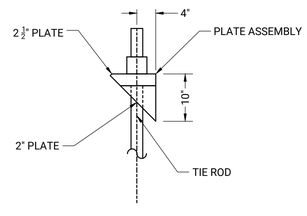
E S-106 WALE CORNER CONNECTION DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



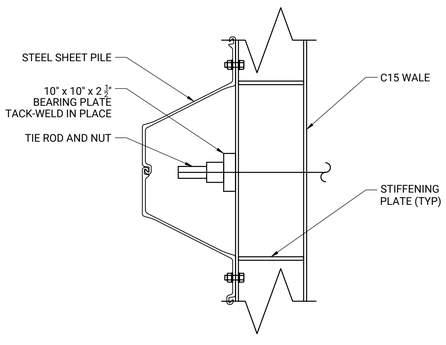
F S-106 ANGLED TIE ROD CONNECTION DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



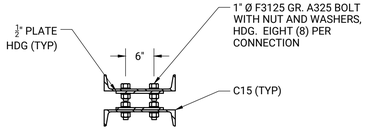
G S-106 TIE ROD CHAIR DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



H S-106 TIE ROD CONNECTION DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"



I S-106 WALE SPLICE DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"

ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

26 September 2022

0 3/8" 3/4" 1-1/2"

(IN INCHES)
3/8 INCH = 1 FOOT
GRAPHIC SCALE

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

BULKHEAD AND PIER DETAILS

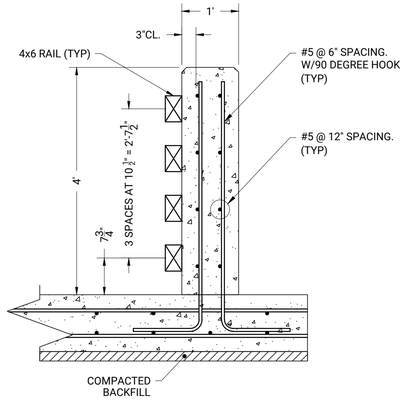
ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

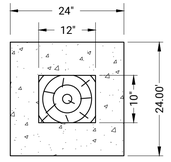
S-106

Monday, September 12, 2022 1:04:56 PM
DWG Filename: bulkhead sections and details.dwg Layout: s-106 - bulkhead and pier details
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings

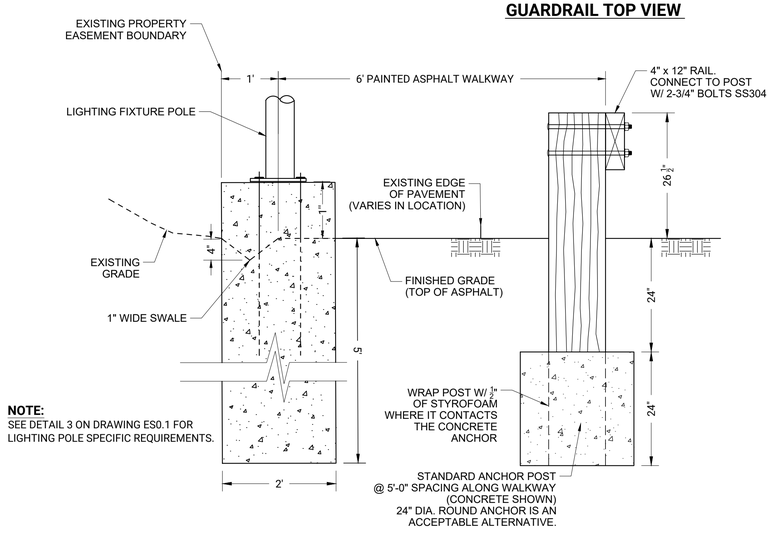


M / S-107 **CONCRETE WALL DETAIL**

SCALE: ¾" = 1'-0"



GUARDRAIL TOP VIEW

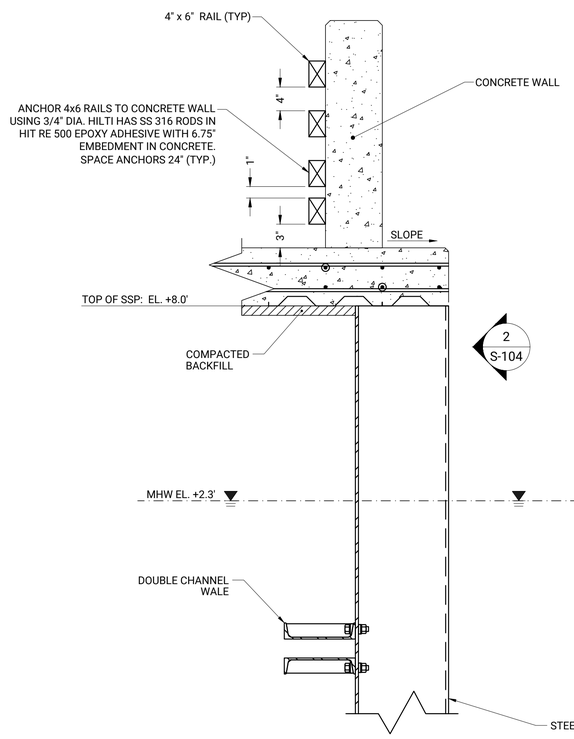


NOTE:
SEE DETAIL 3 ON DRAWING ES0.1 FOR LIGHTING POLE SPECIFIC REQUIREMENTS.

O / S-107 **SECTION OF PARKING LOT WALKWAY**

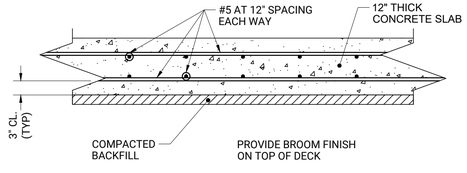
SCALE: ¾" = 1'-0"

GRAB RAIL NOTES:
- 1 ½" DIA. SCH.40 MARINE GRADE ALUMINUM.
- ALL GRAB RAILS NEED TO EXTEND 1 FOOT PAST THE HANDRAIL POST, AT HANDRAIL ENDS.



N / S-107 **HANDRAIL DETAIL**

SCALE: ¾" = 1'-0"



P / S-107 **REINFORCED CONCRETE SLAB DETAIL**

SCALE: ¾" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
ALEX L MORA
CIVIL
NO. 55309
REGISTERED
PROFESSIONAL ENGINEER

26 September 2022

0 3/16" 3/8" 3/4"

(IN INCHES)
3/8" = 1 FOOT
GRAPHIC SCALE

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

SHEET TITLE:

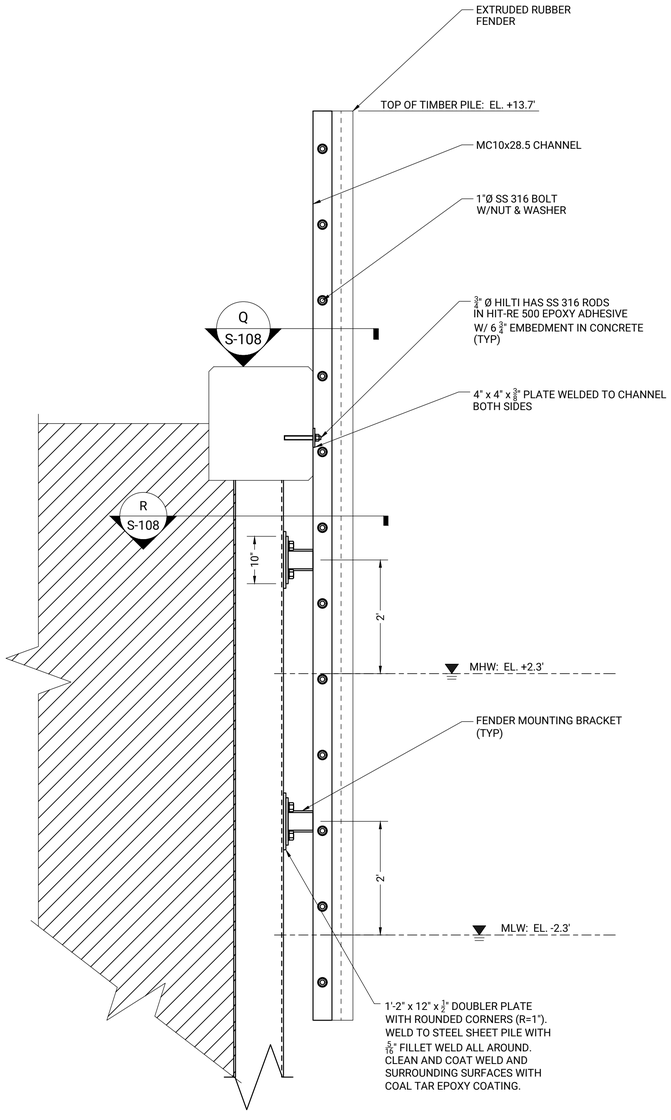
GUARDRAIL AND HANDRAIL DETAILS

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

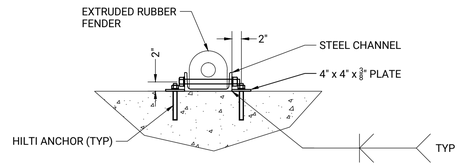
SHEET NUMBER
S-107

Friday, September 23, 2022 12:51:13 PM
DWG Filename: bulkhead sections and details.dwg Layout: s-107 - guardrail and handrail details
DWG Folder Location: Chatham\021c026.00\CAD\Drawings



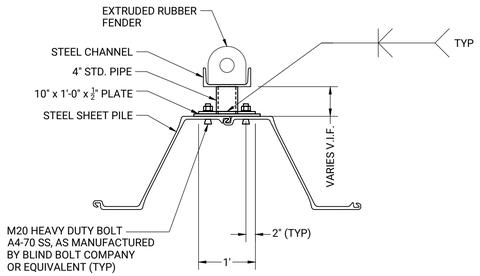
1 / S-108 SECTION AT FISH BUILDING FENDER SYSTEM

SCALE: ¾" = 1'-0"



Q / S-108 FENDER SYSTEM CONNECTION TO CONCRETE CAP DETAIL

SCALE: ¾" = 1'-0"



R / S-108 FENDER SYSTEM CONNECTION TO SHEET PILE DETAIL

SCALE: ¾" = 1'-0"

NOTES:

1. FENDER ASSEMBLY SHALL BE REMOVED, REFURBISHED, AND REINSTALLED. ONLY BOTTOM BRACKET TO BE REPLACED. TOP BRACKET TO BE INSPECTED AND REPLACED IF NEEDED.
2. AFTER REMOVAL OF FENDER ASSEMBLY, REMOVE RUBBER FENDER, CLEAN AND COAT STEEL SHEET PILE AT LOCATIONS WHERE NEW DOUBLER PLATE WILL BE INSTALLED.
3. INSTALL DOUBLER PLATE AND WELD TO EXISTING STEEL SHEET PILE. WELD ALL AROUND WITH 5/16" FILLET WELD.
4. CLEAN AND COAT WELDED AREA WITH COAL TAR EPOXY COATING.
5. DRILL HOLES ON DOUBLER PLATE TO RECEIVE FENDER ASSEMBLY ANCHOR BOLTS.
6. ONCE FENDER ASSEMBLY IS REMOVED, BURN OUT CONNECTING BRACKETS AND REPLACE WITH NEW.
7. FENDER STEEL ASSEMBLY SHALL BE HOT DIPPED GALVANIZED AFTER CONNECTING BRACKETS ARE REPLACED.
8. INSTALL RUBBER FENDER.
9. INSTALL FENDER ASSEMBLY AS SHOWN ON THE DRAWINGS.

COMMONWEALTH OF MASSACHUSETTS
ALEX L MORA
CIVIL
NO. 65309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

GRAPHIC SCALE

0 3/8" 3/4" 1-1/2"

(IN INCHES)

3/4" = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

FENDER MOUNTING DETAILS

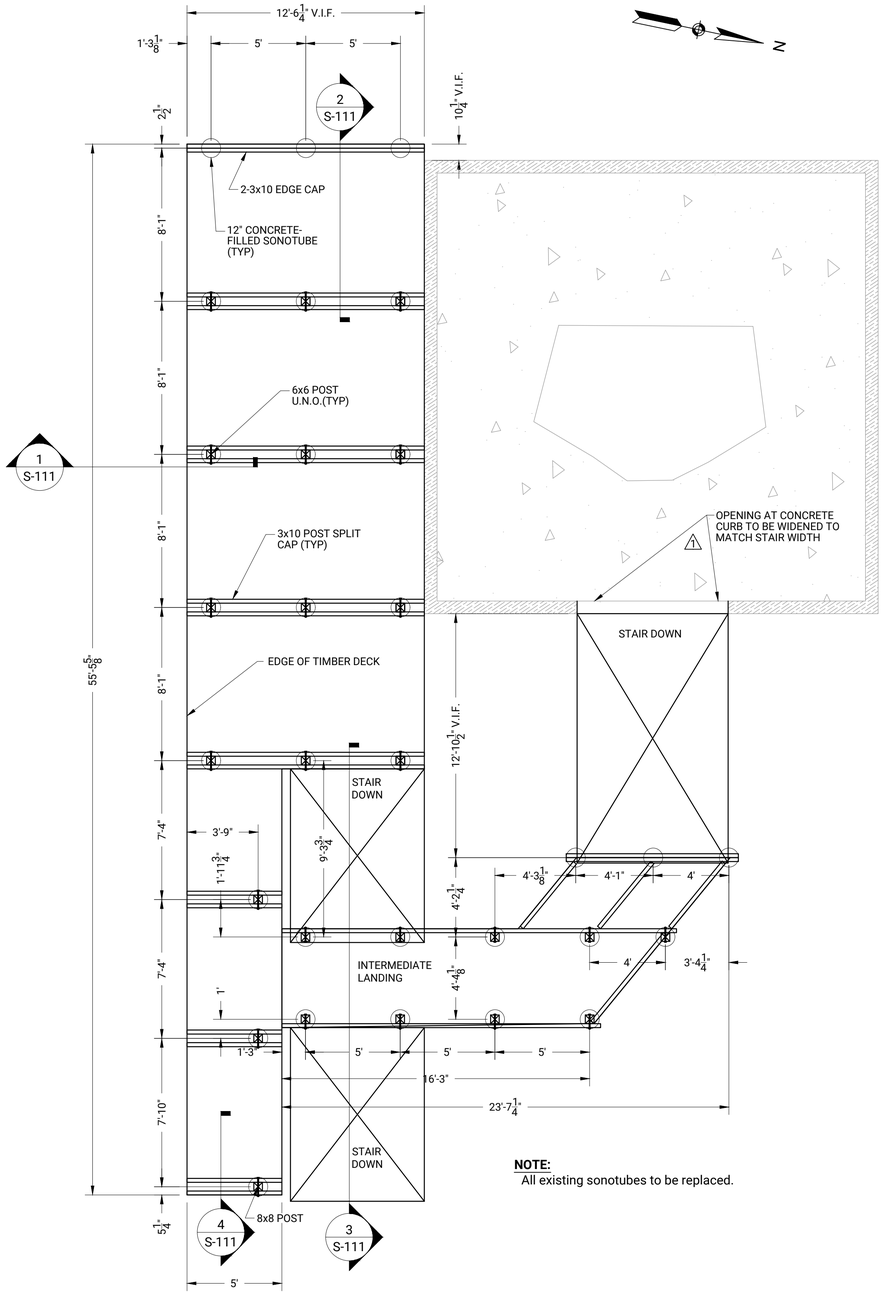
ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

S-108

Monday, September 12, 2022 1:03:05 PM
DWG Filename: bulkhead sections and details.dwg Layout: s-108 - fender mounting details
DWG Folder Location: Chatham\0021c026.00\CAD\Drawings

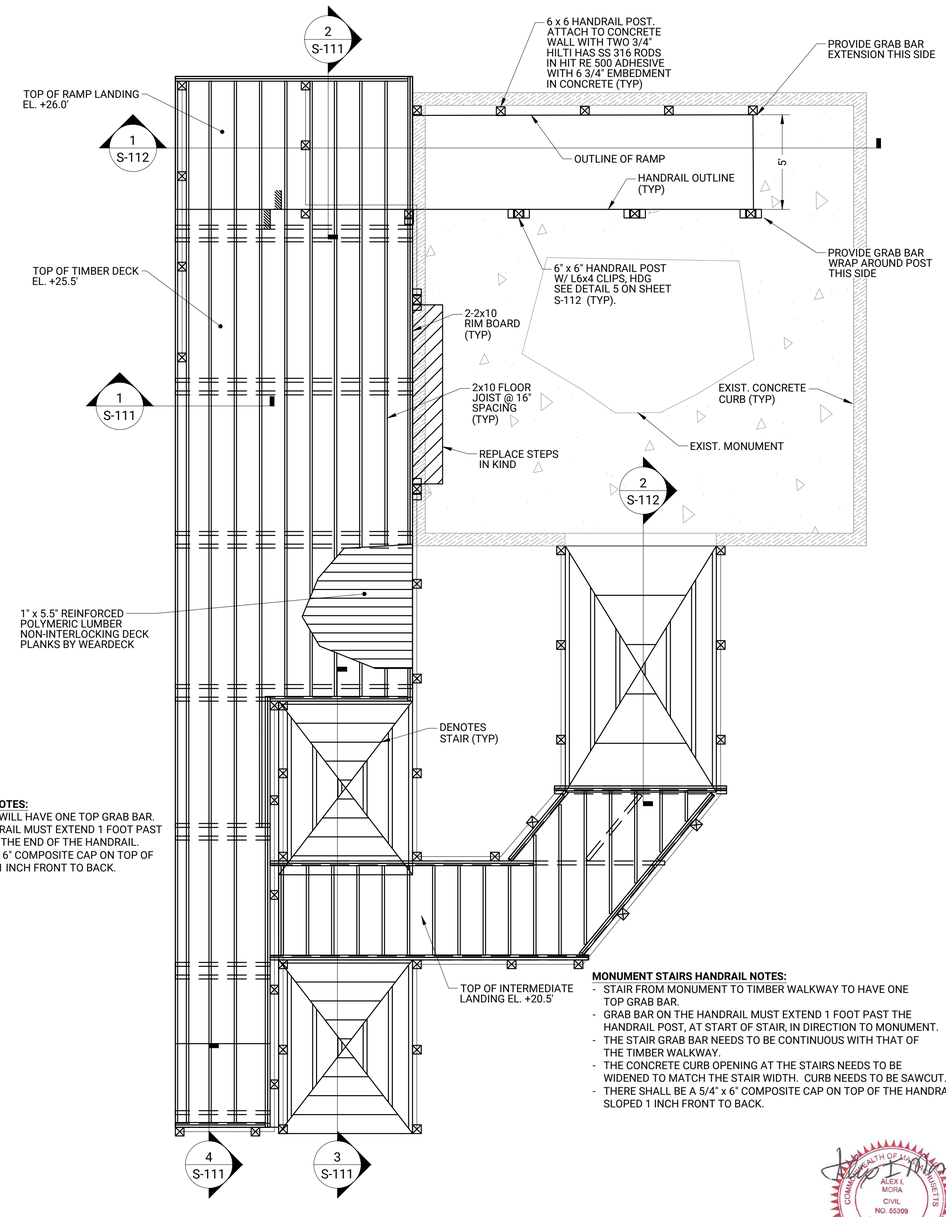


NOTE:
All existing sonotubes to be replaced.

A S-109 SONOTUBE, TIMBER POST AND TIMBER CAP PLAN

SCALE: 1/4" = 1'-0"

MONUMENT RAMP HANDRAIL NOTES:
- TOP GRAB BAR FOR THE HANDRAIL TO BE AT 36 INCHES FROM WALKING SURFACE.
- BOTTOM GRAB BAR FOR THE HANDRAIL TO BE AT 18 INCHES FROM WALKING SURFACE.
- GRAB BARS ON THE HANDRAIL AWAY FROM THE MONUMENT MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT HANDRAIL END.
- GRAB BARS ON THE HANDRAIL CLOSER TO THE MUST WRAP AROUND THE POST.



TIMBER DECK HANDRAIL NOTES:
- HANDRAIL AT THE DECK WILL HAVE ONE TOP GRAB BAR.
- GRAB BAR ON THE HANDRAIL MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT THE END OF THE HANDRAIL.
- THERE SHALL BE A 5/4" x 6" COMPOSITE CAP ON TOP OF THE HANDRAIL, SLOPED 1 INCH FRONT TO BACK.

MONUMENT STAIRS HANDRAIL NOTES:
- STAIR FROM MONUMENT TO TIMBER WALKWAY TO HAVE ONE TOP GRAB BAR.
- GRAB BAR ON THE HANDRAIL MUST EXTEND 1 FOOT PAST THE HANDRAIL POST, AT START OF STAIR, IN DIRECTION TO MONUMENT.
- THE STAIR GRAB BAR NEEDS TO BE CONTINUOUS WITH THAT OF THE TIMBER WALKWAY.
- THE CONCRETE CURB OPENING AT THE STAIRS NEEDS TO BE WIDENED TO MATCH THE STAIR WIDTH. CURB NEEDS TO BE SAWCUT.
- THERE SHALL BE A 5/4" x 6" COMPOSITE CAP ON TOP OF THE HANDRAIL, SLOPED 1 INCH FRONT TO BACK.

B S-109 MAIN DECK FRAMING PLAN

SCALE: 1/4" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
ALEX I MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

GRAPHIC SCALE
0 1/8 1/4 1/2
(IN INCHES)
1/4 INCH = 1 FOOT

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

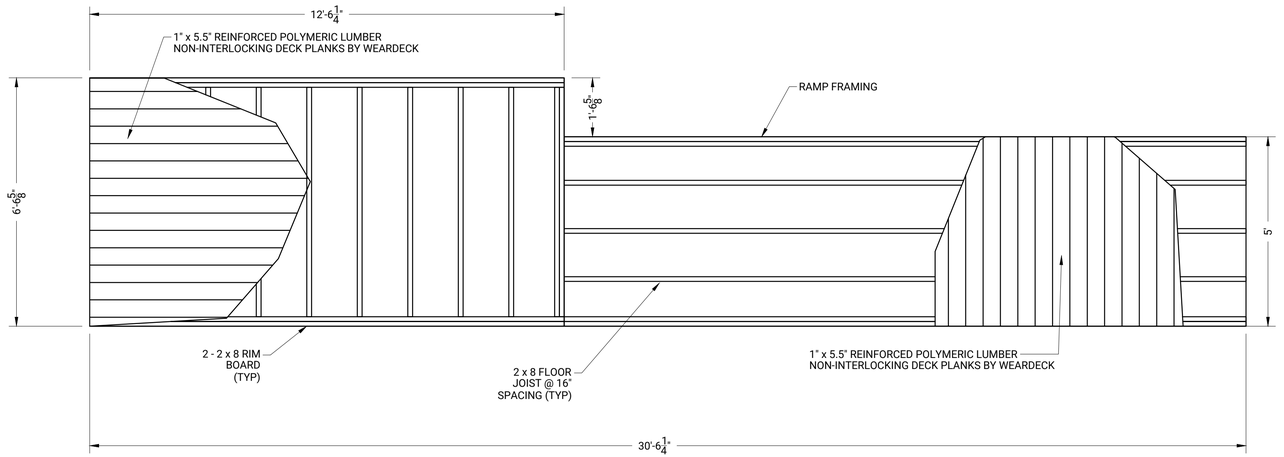
TIMBER DECK PLAN DESIGN

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

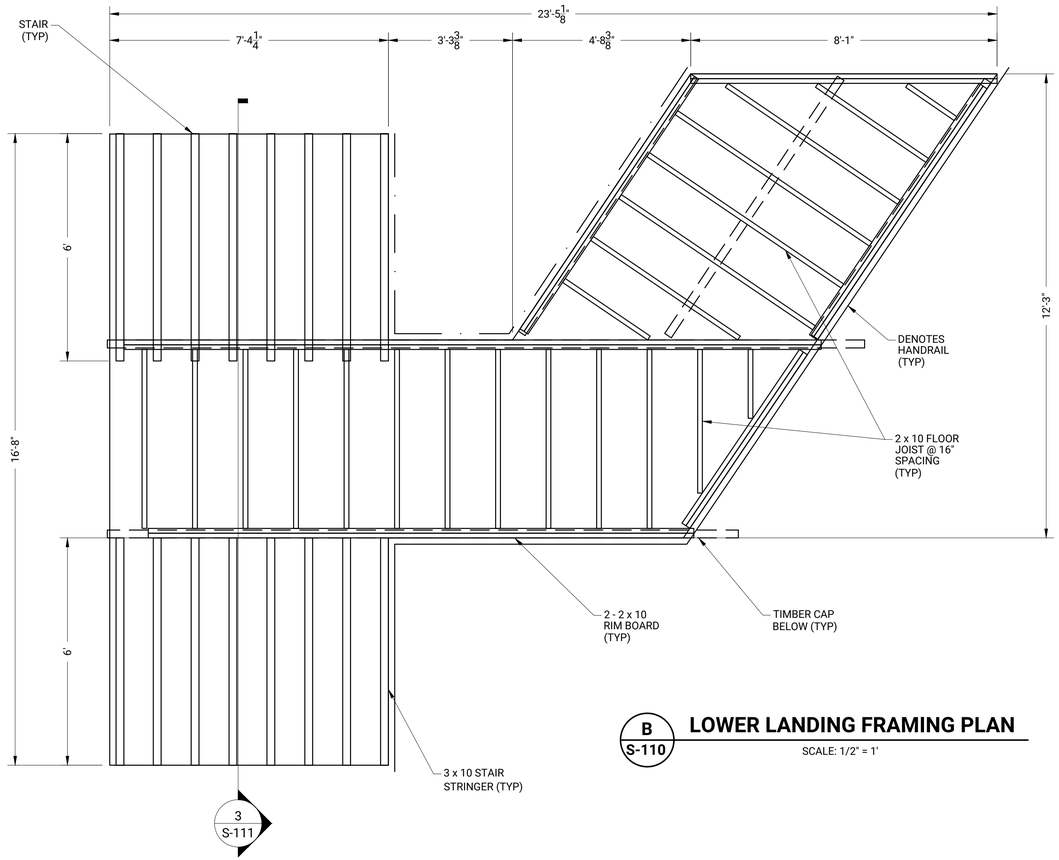
SHEET NUMBER
S-109

Monday, September 12, 2022 1:48:01 PM
DWG Filename: timber deck sections and details.dwg Layout: s-109 timber deck plan design
DWG Folder Location: Chatham MA T\0021c036.00\CAD\Drawings



1 / S-110 **TIMBER DECK DESIGN**

SCALE: 1/2" = 1'



B / S-110 **LOWER LANDING FRAMING PLAN**

SCALE: 1/2" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND
SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM

54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS

NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

TIMBER DECK DESIGN

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

26 September 2022

ISSUED FOR CONSTRUCTION

GRAPHIC SCALE

0 1/4 1/2 1

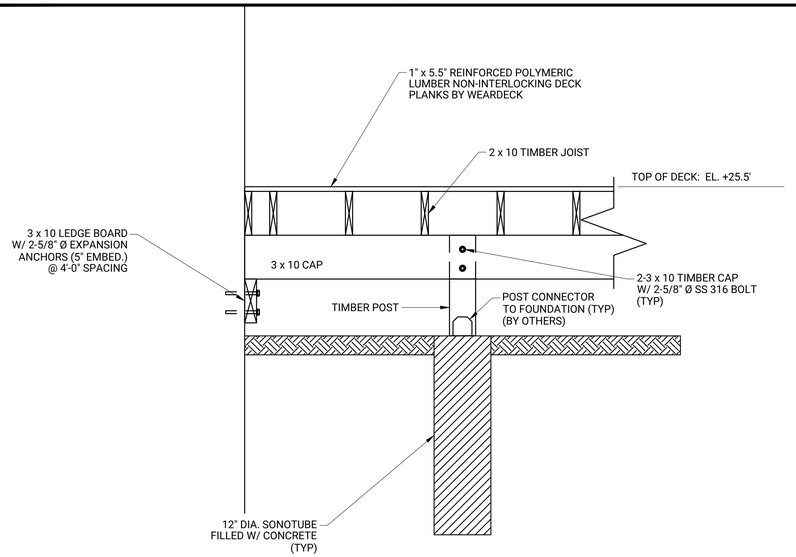
(IN INCHES)
1/2 INCH = 1 FOOT

PROJECT NO: 021C036.00

SHEET NUMBER

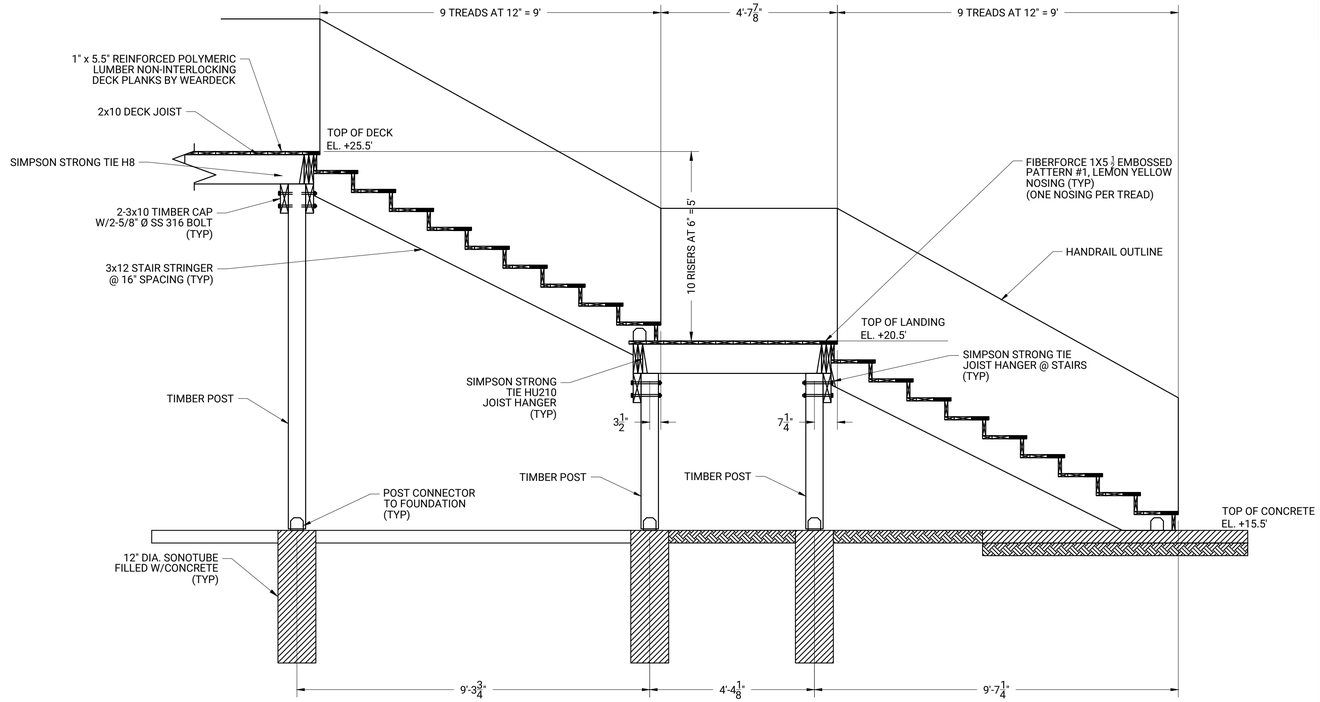
S-110

Monday, September 12, 2022 1:47:18 PM
DWG Filename: timber deck sections and details.dwg Layout: s-110 timber deck design
DWG Folder Location: Chatham MA TV0021c036.00\CAD\Drawings



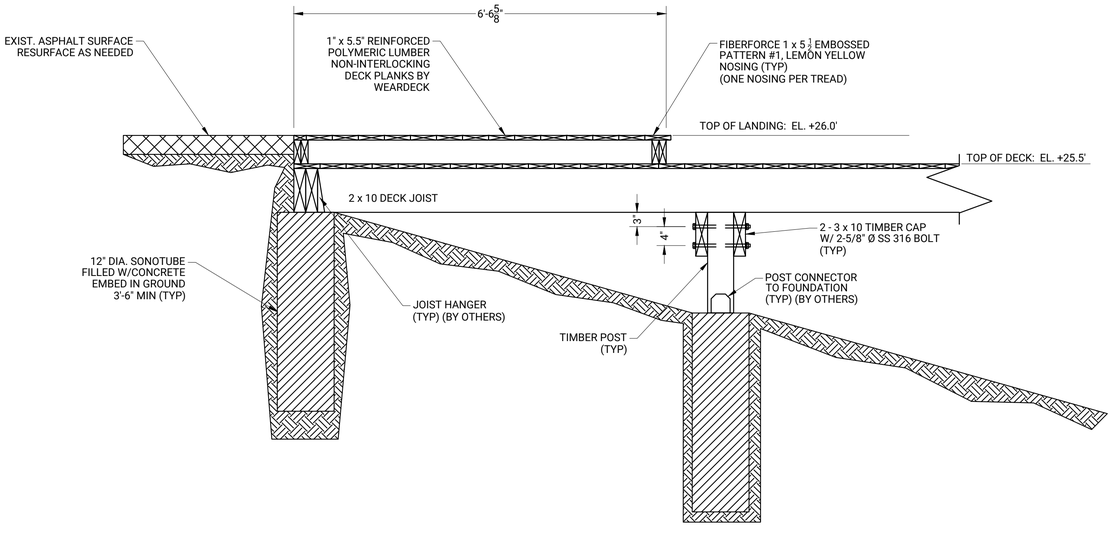
1 S-109 TIMBER FRAMING AND FOUNDATION

SCALE: 3/4" = 1'



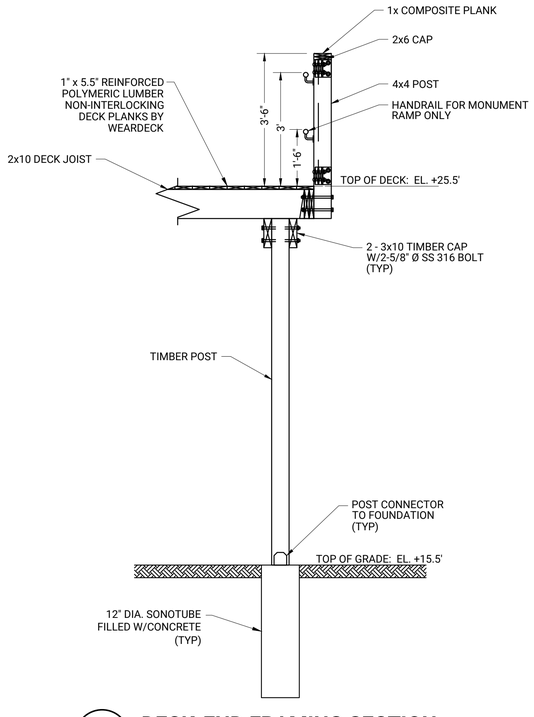
3 S-109 TIMBER FRAMING AND FOUNDATION

SCALE: 1/2" = 1'



2 S-109 TIMBER FRAMING AND FOUNDATION

SCALE: 3/4" = 1'



4 S-109 DECK-END FRAMING SECTION

SCALE: 1/2" = 1'

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/23/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/23/2022

SHEET TITLE:

TIMBER DECK SECTIONS

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER

S-111

COMMONWEALTH OF MASSACHUSETTS — ALEX I. MORA — CIVIL — NO. 55309 — REGISTERED PROFESSIONAL ENGINEER

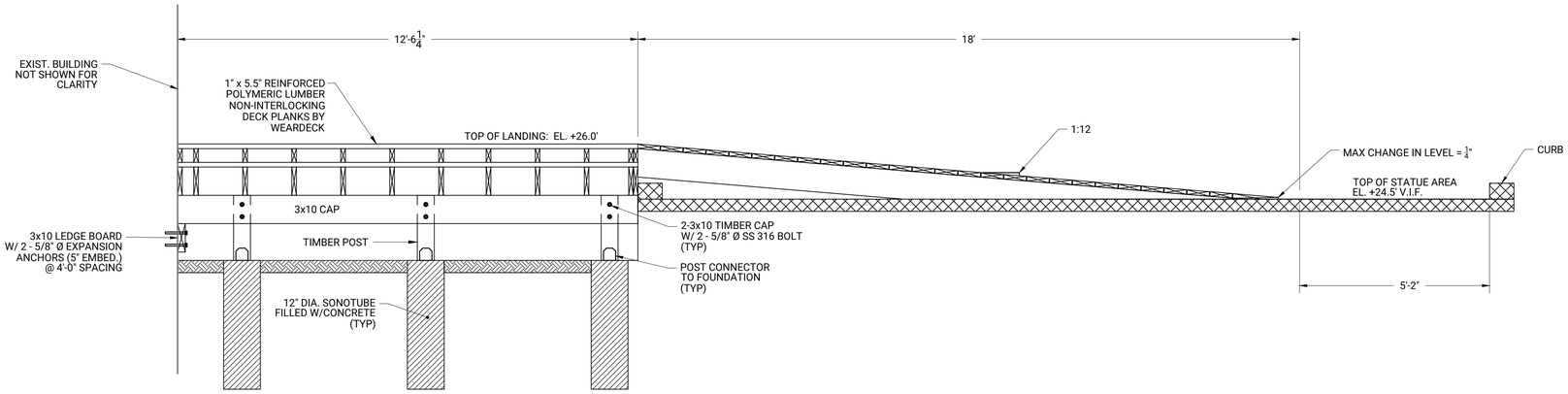
26 September 2022

GRAPHIC SCALES

0 1/4 1/2 1.0
(IN INCHES)
1/2 INCH = 1 FOOT

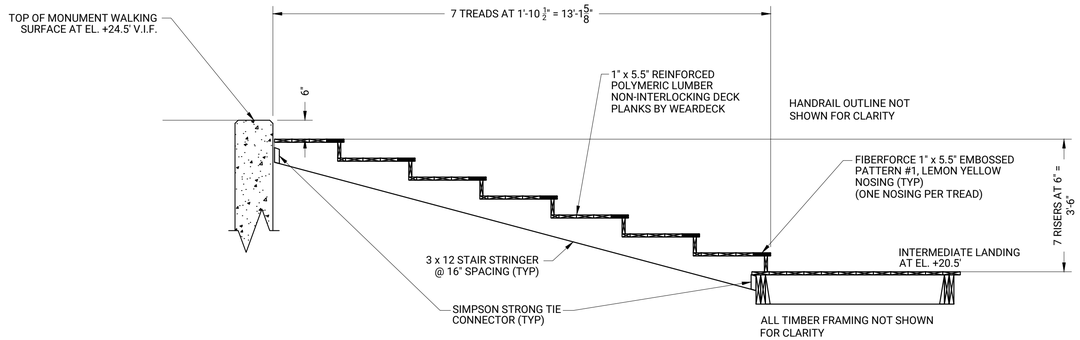
0 3/8 3/4 1.5
(IN INCHES)
3/4 INCH = 1 FOOT

Friday, September 23, 2022 12:54:11 PM
DWG Filename: timber deck sections and details.dwg Layout: s-111 timber deck sections
DWG Folder Location: Chatham MA T\0021c036.00\CAD\Drawings



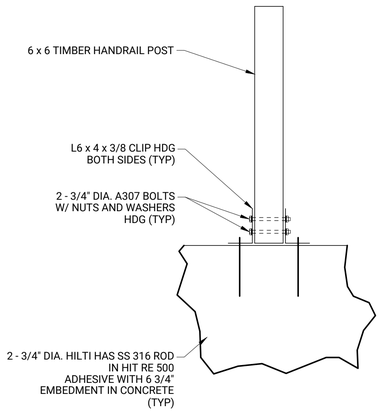
1 / S-110 LONGITUDINAL RAMP FRAMING SECTION

SCALE: 1/2" = 1'



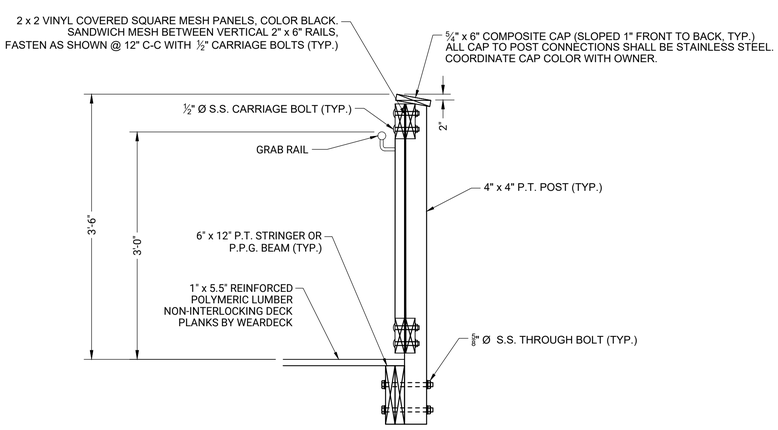
2 / S-110 MONUMENT STAIR FRAMING SECTION

SCALE: 1/2" = 1'



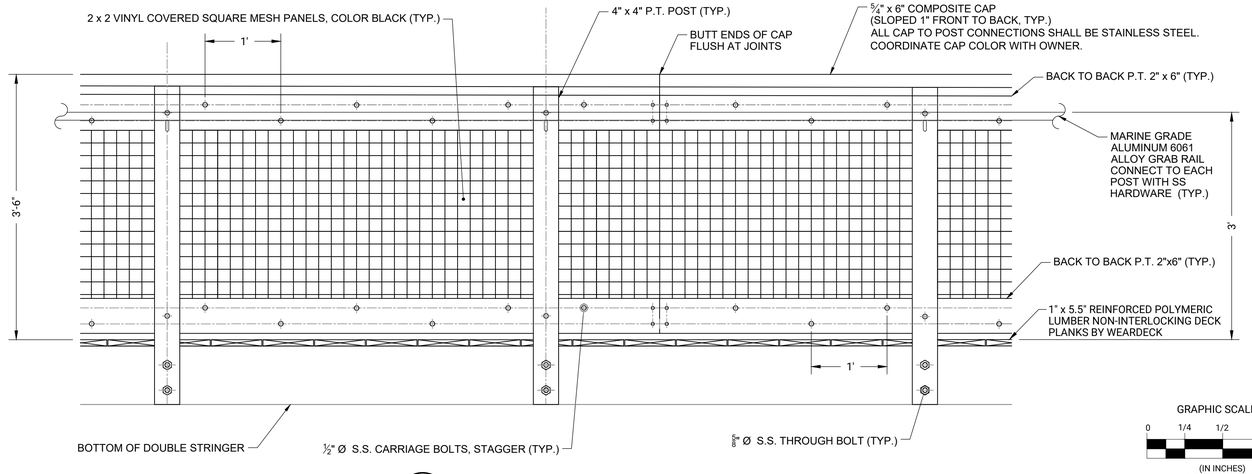
5 / S-110 RAMP POST CONNECTION DETAIL

SCALE: 3/4" = 1'



3 / S-112 TYPICAL HANDRAIL DETAIL ELEVATION

SCALE: 1" = 1'



4 / S-112 TYPICAL HANDRAIL DETAIL SECTION

SCALE: 1" = 1'

NOTE:
GRAB RAIL SHALL EXTEND PAST END OF HANDRAIL 12 INCHES TO MEET ADA REQUIREMENTS.

GRAPHIC SCALES

0 1/4 1/2 1.0
(IN INCHES)
1/2 INCH = 1 FOOT

0 1/2 1 2
(IN INCHES)
1 INCH = 1 FOOT

ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
26 September 2022

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

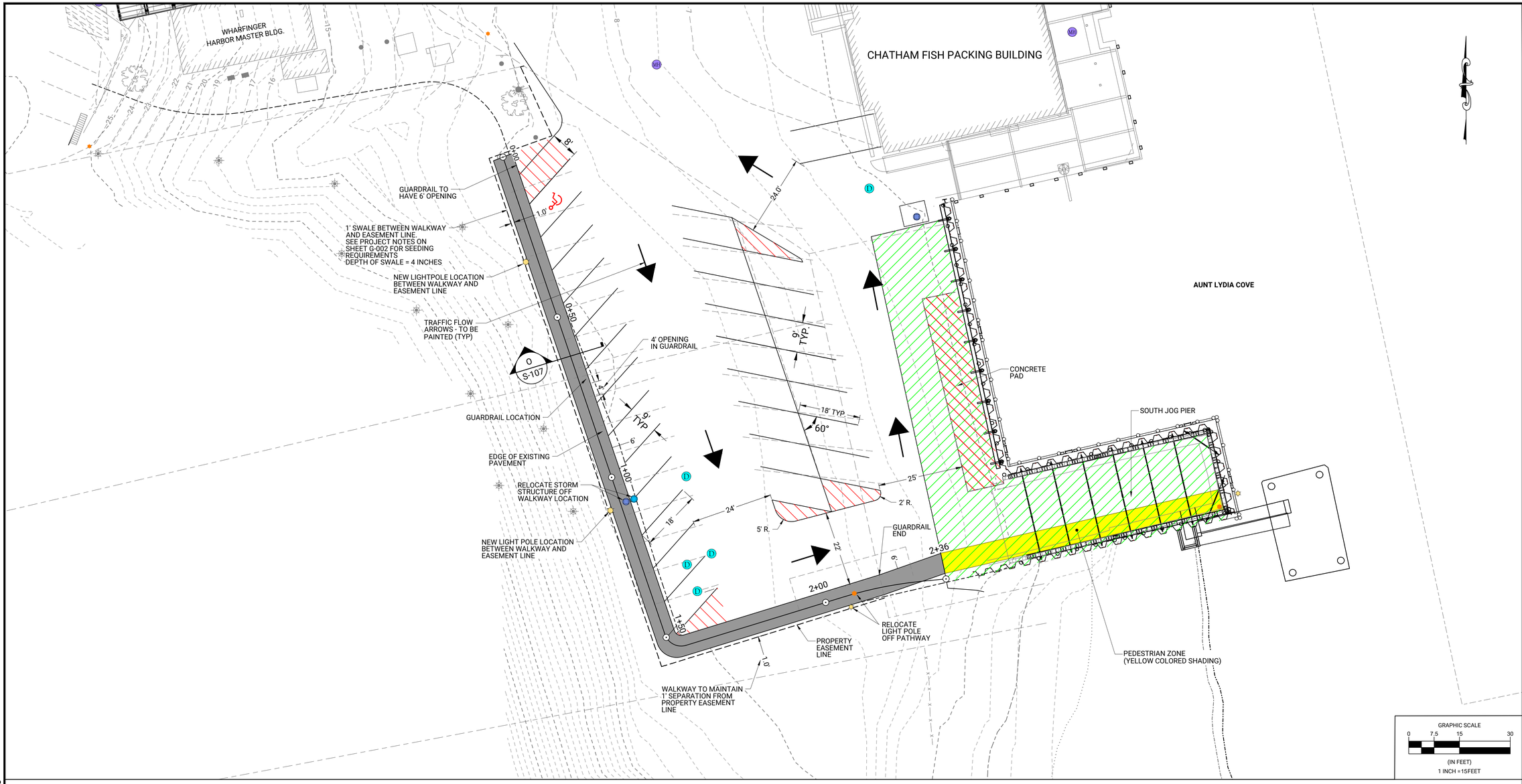
SHEET TITLE:
TYPICAL FRAMING AND HANDRAIL SECTIONS

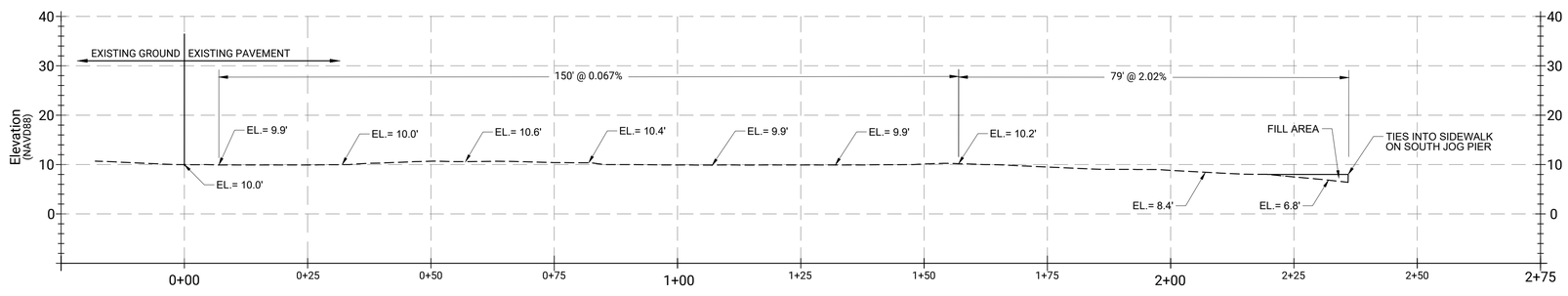
ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
S-112

Monday, September 12, 2022 1:49:53 PM
DWG Filename: timber deck sections and details.dwg Layout: s-112 typ framing and handrail sections
DWG Folder Location: Chatham MA T:\0021c036.00\CAD\Drawings





WALKWAY PROFILE

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH =20FEET

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			

DATE OF PREPARATION

	BY	DATE
SURVEYED	-	-
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

PARKING LOT LAYOUT AND WALKWAY PLAN AND PROFILE

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER

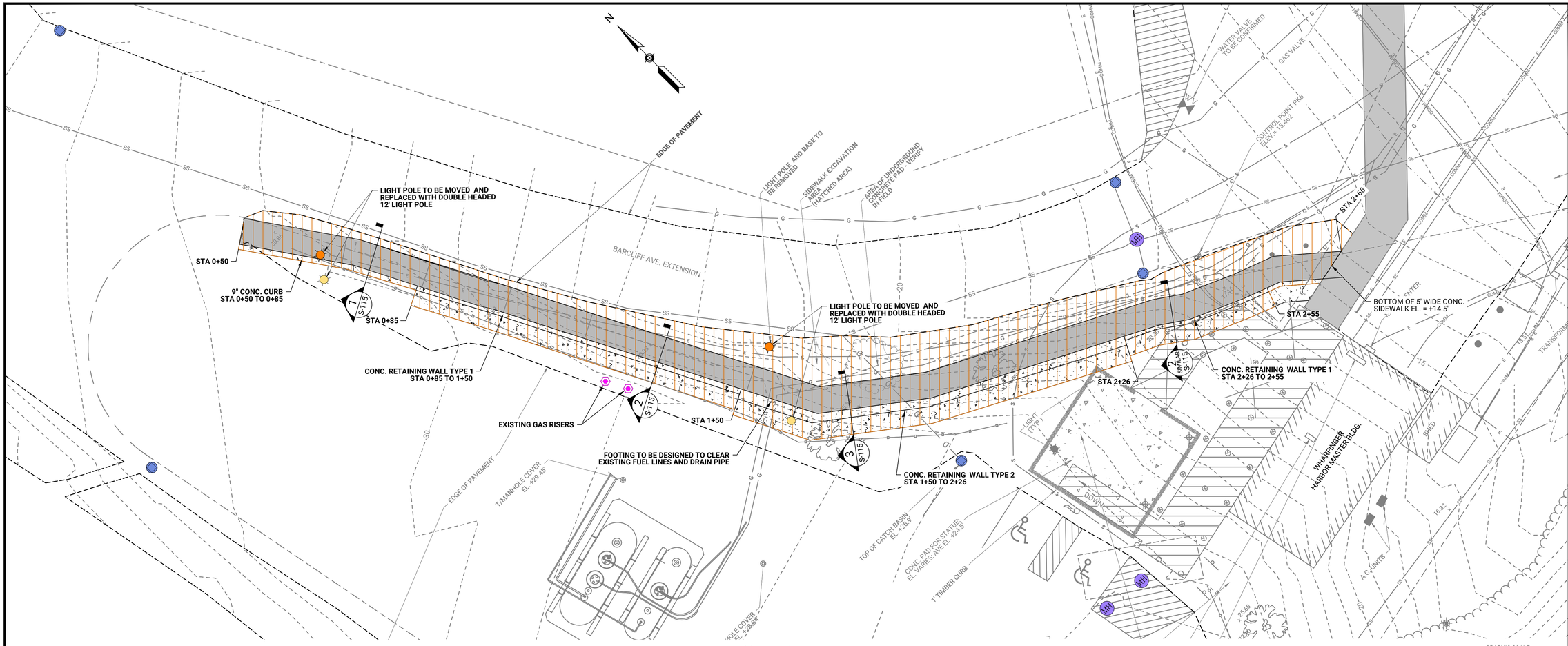
26 September 2022

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
S-113

Tuesday, October 04, 2022 8:22:17 AM
DWG Filename: walkway plan and profile.dwg Layout: s-113 - parking lot layout and walkway plan and profile
DWG Folder Location: Clients\Chatham Ma T\0021C036.00\CAD\Drawings



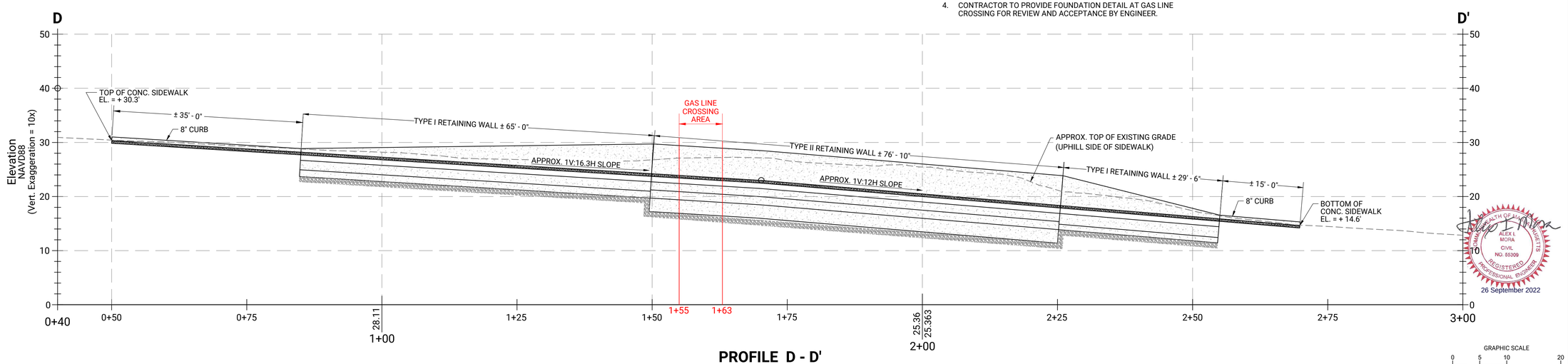
SITE PLAN

SCALE: 1" = 10'

NOTES:

1. EXISTING LAMP POLES IN WORK AREA OF SITE WALL SHALL BE REMOVED AND REINSTALLED.
2. EXISTING TREES SHALL BE IDENTIFIED AND REMOVED AS NECCESSARY.
3. LAMP POLE FOUNDATION MAY BE PLACED BEARING ON SITE WALL FOUNDATION.
4. CONTRACTOR TO PROVIDE FOUNDATION DETAIL AT GAS LINE CROSSING FOR REVIEW AND ACCEPTANCE BY ENGINEER.

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 INCH = 10 FEET



PROFILE D - D'

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 INCH = 10 FEET

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION

DATE OF PREPARATION

	BY	DATE
SURVEYED		
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

SIDEWALK PLAN AND PROFILE

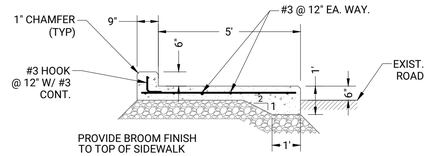
COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

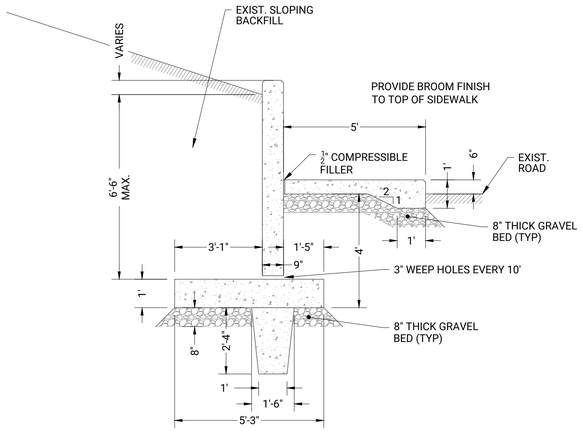
SHEET NUMBER
S-114

Friday, September 23, 2022 1:41:36 PM
DWG Filename: sidewalk plan and profile.dwg Layout: s-114 - sidewalk plan and profile
DWG Folder Location: Chatham MA T\021C036.00\CAD\Drawings



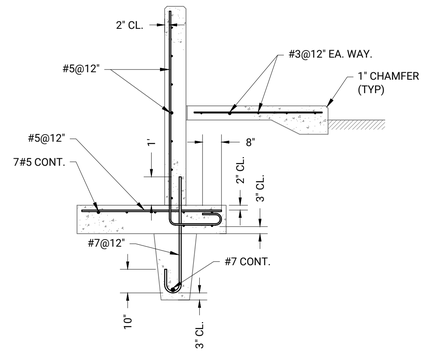
1 / S-115 SIDEWALK WITH CURB

SCALE: 3/8" = 1'-0"



2 / S-115 TYPE I CONCRETE RETAINING WALL GEOMETRY

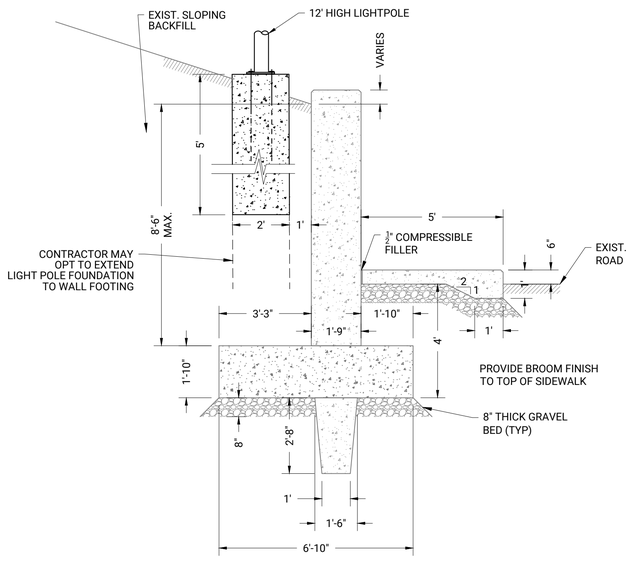
SCALE: 3/8" = 1'-0"



TYPE I CONCRETE RETAINING WALL REINFORCEMENT

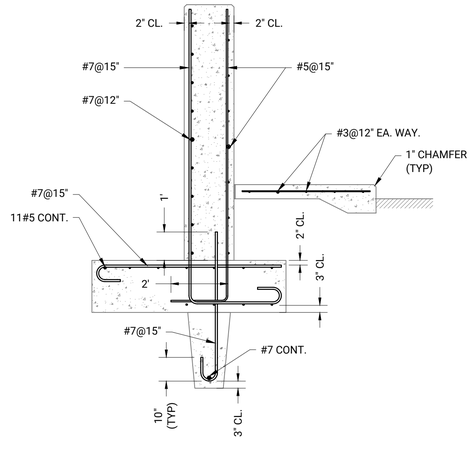
SCALE: 3/8" = 1'-0"

NOTE:
SEE DETAIL 3 ON DRAWING ES0.1 FOR LIGHTING POLE SPECIFIC REQUIREMENTS.



3 / S-115 TYPE II CONCRETE RETAINING WALL GEOMETRY

SCALE: 3/8" = 1'-0"



TYPE II CONCRETE RETAINING WALL REINFORCEMENT

SCALE: 3/8" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
ALEX I. MORA
CIVIL
NO. 55309
REGISTERED PROFESSIONAL ENGINEER
26 September 2022

GRAPHIC SCALE
0 3/16 3/8 3/4
(IN FEET)
1 INCH = 3/8 FEET

Foth

CHATHAM FISH PIER
BULKHEAD RESHEETING AND SOUTH JOG IMPROVEMENTS PROJECT

TOWN OF CHATHAM
54 BARCLIFF AVE. CHATHAM, MA 02633

REVISIONS			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			

DATE OF PREPARATION

	BY	DATE
SURVEYED	INT	
DRAWN	JRB2	9/12/2022
DESIGNED	AIM	9/12/2022
CHECKED	AIM	9/13/2022

SHEET TITLE:

SIDEWALK DETAILS

ISSUED FOR CONSTRUCTION

PROJECT NO: 021C036.00

SHEET NUMBER
S-115

Monday, September 12, 2022 2:11:31 PM
DWG Filename: sidewalk plan and profile.dwg Layout: s-115 - sidewalk details
DWG Folder Location: Chatham MA T\0021C036.00\CAD\Drawings

ELECTRICAL LEGEND:

POWER OUTLETS:

ALL RECEPTACLES SHALL MOUNTED AT 18" A.F.F. TO CENTER, UNLESS OTHERWISE NOTED. THE FOLLOWING DESIGNATIONS SHALL APPLY TO ALL RECEPTACLE TYPES.

C = MOUNTED AT 6" ABOVE BACK SPLASH TO BOTTOM, REFER TO ARCHITECTURAL ELEVATIONS.
CP = FOR CONDENSATE PUMP. MOUNT ABOVE ACCESSIBLE CEILING, SURFACE MOUNT TO STRUCTURE.
CM = CEILING MOUNTED.
IG = ISOLATED GROUND.
MF = MOUNTED IN FURNITURE, REFER TO ARCHITECTURAL ELEVATIONS.
T = TABLET CHARGING STATION, MOUNTED AT 48" A.F.F. TO CENTER.
WP = WEATHERPROOF MARINE GRADE.
Y = MOUNT ADJACENT TO TECHNOLOGY OUTLET.
H = PROVIDED WITH HVAC EQUIPMENT, CIRCUIT AS INDICATED.
CW = MOUNTED ON FACE OF CASEWORK; REFER TO ARCHITECTURAL ELEVATIONS.
XP = CLASS 1, DIVISION 2, EXPLOSION PROOF.
G = GOOGLE CABINET.
P = MOUNT ADJACENT TO PROJECTOR OUTLET.
TP =MOUNT TO NEW DOCK TIMBER PILE 48" ABOVE FINISHED GRADE/DOCK

DUPLEX RECEPTACLE.

GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLE.

DOUBLE DUPLEX RECEPTACLE.

POWER:

SURFACE MOUNTED PANELBOARD.

T — TRANSFORMER.

M — METER SOCKET, PROVIDE AS PER ELECTRIC UTILITY CO. STANDARDS, METER BY ELECTRIC UTILITY CO.

MDP — MAIN DISTRIBUTION PANELBOARD.

J — WEATHERPROOF MARINE GRADE JUNCTION BOX

JB — WEATHERPROOF FIBER GLASS IN GROUND JUNCTION BOX WITH FIBERGLASS COVER PLATE.

TC — TIMECLOCK

LIGHTING:

SL1 — SINGLE HEAD SITE LIGHT FIXTURE (LUMINAIRE). REFER TO POLE BASE DETAIL.

SL2 — DUAL HEAD SITE LIGHT FIXTURE (LUMINAIRE). REFER TO POLE BASE DETAIL.

SL3 — POST TOP HEAD SITE LIGHT FIXTURE (LUMINAIRE). REFER TO POLE BASE DETAIL.

DEMOLITION:

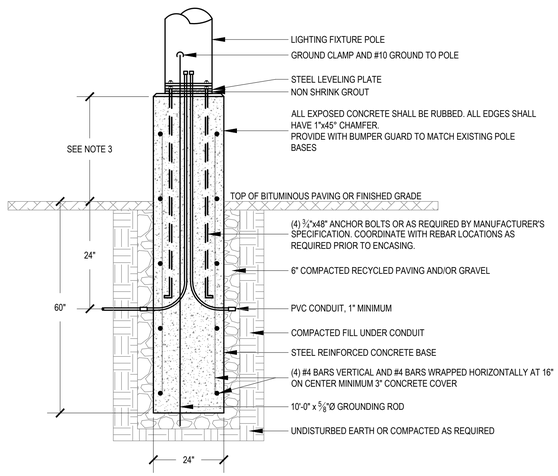
X X X X — "X" INDICATES EXISTING ELECTRICAL EQUIPMENT WHICH IS TO BE REMOVED. PULL BACK WIRING AND CONDUIT BACK TO NEXT ACTIVE OUTLET OR POWER SOURCE.

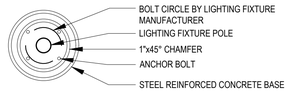
R R R R — "R" INDICATES EXISTING ELECTRICAL EQUIPMENT TO BE REMOVED AND RELOCATED. EXISTING CIRCUIT SHALL BE EXTENDED TO NEW LOCATION OF RELOCATED EXISTING ELECTRICAL EQUIPMENT.

N N N N — "N" INDICATES NEW LOCATION OF RELOCATED EXISTING ELECTRICAL EQUIPMENT.

D D D D — "D" INDICATES EXISTING ELECTRICAL EQUIPMENT TO BE REMOVED. EXISTING CIRCUIT/WIRING AND BACK BOX SHALL REMAIN. NEW DEVICE SHALL BE LOCATED IN PLACE, EXTEND CIRCUIT/WIRING TO NEW ELECTRICAL EQUIPMENT.

NOTES:
1. DOTTED SYMBOLS INDICATE EXISTING ELECTRICAL EQUIPMENT.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. ELECTRICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE CONTINUITY OF ALL EXISTING CIRCUITS WHICH ARE REMAINING.
4. ELECTRICAL SUBCONTRACTOR SHALL DISCONNECT AND REMOVE ALL ELECTRICAL EQUIPMENT, WIRING, CONDUIT, ETC. ASSOCIATED WITH EXISTING MECHANICAL, PLUMBING, AND FIRE PROTECTION EQUIPMENT SCHEDULED TO BE REMOVED. REFER TO DRAWINGS FOR LOCATIONS OF EQUIPMENT.



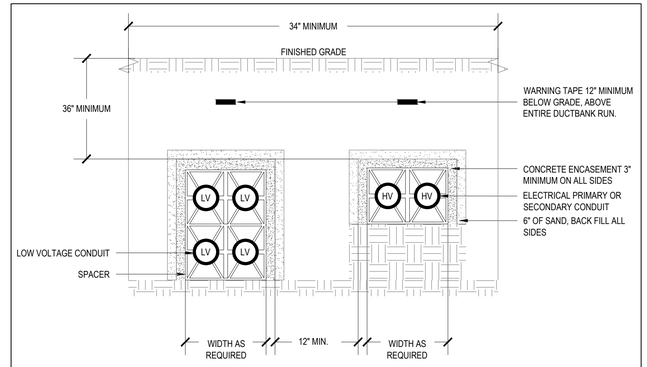


PLAN VIEW

POLE BASE DETAIL NOTE

1. ALL SITE LIGHTING POLES SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. ALL TRENCHING, STEEL REINFORCING, CONCRETE WORK, BACKFILLING, GRADING, AND RESURFACING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. POLE BASE HEIGHT FROM FINISHED GRADE:
   PB1 - 12"
   PB2 - 24"
   PB3 - 36"

3	SITE LIGHTING POLE BASE ABOVE GROUND DETAIL	SCALE
		NOT TO SCALE



DUCTBANK CONSTRUCTION NOTES

1. ALL CONDUITS ARE PVC, SIZE PER DUCTBANK DETAILS.
2. ALL DIMENSIONS ARE MINIMUM.
3. ALL DESCRIPTIONS ARE TYPICAL FOR THIS DIAGRAM.
4. ALL BASE AND INTERMEDIATE SPACERS TO BE INTERLOCKING TYPE.
5. ALL SPACERS TO BE CONSTRUCTED OF HIGH IMPACT PVC.
6. ALL SPACERS TO BE INSTALLED AT 5'-0" CENTERS ALONG THE ENTIRE RUN.
7. CONDUIT DUCTBANK CROSS SECTION IS SUBJECT TO APPROVAL BY UTILITY COMPANY, PRIOR TO CONSTRUCTION.
8. DUCTBANK TRENCH MUST BE INSPECTED, APPROVED AND COORDINATED WITH THE UTILITY COMPANY REQUIREMENTS, PRIOR TO INSTALLATION AND PRIOR TO BACKFILL.
9. ALL TRENCHING, CONCRETE WORK, BACKFILLING, GRADING, AND RESURFACING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1	TYPICAL DUCTBANK CONSTRUCTION DETAIL	SCALE
		NOT TO SCALE

DUCTBANK DETAIL A-A
NOT TO SCALE

S — 4" CONDUIT FOR SECONDARY ELECTRICAL SERVICE

SP — SPARE 4" CONDUIT

DUCTBANK LEGEND NOTE
1. REFER TO TYPICAL DUCTBANK CONSTRUCTION DETAIL FOR ADDITIONAL INFORMATION

2	DUCTBANK LEGEND DETAIL	SCALE
		NOT TO SCALE

LED SITE LIGHTING FIXTURE SCHEDULE

NOTES:
1. LIGHTING FIXTURES SHALL BE FURNISHED COMPLETE WITH ALL HARDWARE, LAMPS, HANGERS, ACCESSORIES, ETC. FOR A COMPLETE AND PROPER INSTALLATION.
2. THE MANUFACTURER'S AND CATALOG NUMBERS IDENTIFIED IN THIS LIGHTING FIXTURE SCHEDULE ARE INTENDED TO ESTABLISH A GENERAL LEVEL OF QUALITY, CONFIGURATION, MATERIALS, AND APPEARANCE REQUIRED. THIS IS NOT A PROPRIETARY SPECIFICATION AND IT SHOULD BE NOTED THAT "OR EQUAL" APPLIES TO ALL LIGHTING FIXTURES DENOTED HEREIN. IT IS UNDERSTOOD THAT ALL MANUFACTURER'S WILL HAVE MINOR VARIATIONS IN CONFIGURATION, APPEARANCE, AND PRODUCT SPECIFICATIONS AND SUCH MINOR VARIATIONS SHALL NOT ELIMINATE SUCH MANUFACTURER'S AS AN APPROVED EQUAL.
3. LIGHTING FIXTURES SHALL CONFORM TO THE REQUIREMENTS OF THE ELECTRIC UTILITY CO. REBATE PROGRAM, WHERE APPLICABLE.
4. MOUNTING ABBREVIATIONS, "RW" = RECESSED IN WALL, "S/W" = SURFACE/WALL, "P" = POLE, "G" = GROUND, PT = POST TOP.
5. REFER TO TECHNOLOGY DRAWINGS. COORDINATE EXACT MOUNTING LOCATION AND ORIENTATION OF ALL CAMERAS AND ASSOCIATED MOUNTING ARMS WITH ARCHITECT/ ENGINEER PRIOR TO INSTALLATION.
6. POLE LENGTH SHALL BE AS REQUIRED SO THAT BOTTOM OF LIGHTING FIXTURE IS AT 30' ABOVE FINISHED GRADE, TAKING INTO ACCOUNT LIGHTING FIXTURE, ARM, POLE, POLE BASE, AND CONCRETE POLE BASE. PROVIDE ELEVATION INCLUDING ALL DIMENSIONS DURING SUBMITTAL PHASE FOR REVIEW.
7. POLE LENGTH SHALL BE AS REQUIRED SO THAT BOTTOM OF LIGHTING FIXTURE IS AT 12' ABOVE FINISHED GRADE, TAKING INTO ACCOUNT LIGHTING FIXTURE, ARM, POLE, POLE BASE, AND CONCRETE POLE BASE. PROVIDE ELEVATION INCLUDING ALL DIMENSIONS DURING SUBMITTAL PHASE FOR REVIEW.
8. LIGHTING FIXTURE WILL DIM TO 50% POWER, 50% LIGHT OUTPUT, PER DIMMING PROFILE. IF MOTION IS DETECTED DURING THE TIME THAT THE LIGHTING FIXTURE IS OPERATING AT 50%, THE LIGHTING FIXTURE GOES TO 100% POWER AND LIGHT OUTPUT. THE LIGHTING FIXTURE REMAINS ON HIGH UNTIL NO MOTION IS DETECTED FOR THE DURATION PERIOD, AFTER WHICH THE LIGHTING FIXTURE RETURNS TO LOW. DURATION PERIOD IS SET AT FACTORY TO 15 MINUTES.

TYPE	MANUFACTURER	CATALOG NUMBER	VOLTAGE	MOUNTING	WATTAGE	TOTAL LUMENS	COLOR TEMP.	DIMMING (%)	BUG	DISTRIBUTION TYPE	DESCRIPTION/REMARKS	COLOR/ FINISH	APPROVED ALTERNATE MANUACTURER'S
W1	LIGMAN	URA-40701 13W W30 01120/277 MODIFIED FOR WATTAGE AND LUMENS	UNV	RW	13	900	3000	X	B0 U2 G1	X	RECESSED WALL MOUNTED LED LIGHTING FIXTURE. FIXTURE TO BE MOUNTED IN RETAINING WALL 24" ABOVE FINISHED GRADE TO CENTER ALTERNATE 1.	X	OR EQUAL
W2	NLS LIGHTING	NV1T416L3530K8UNVWMBRZFSP211FSP20	UNV	SW	18	2250	3000	0-10	B1 U0 G1	T4	WALL MOUNTED LIGHTING FIXTURE MOUNTED AT 12' ABOVE FINISHED GRADE TO WOOD POST. SEE NOTE 8.	BRONZE	OR EQUAL
SL1	NLS LIGHTING	NV1T416L130K8UNVDPS7BRZMGFPCRFSP211FSP20	UNV	P	71	7810	3000	0-10	B2 U0 G2	T4	SINGLE HEAD POLE MOUNTED LIGHTING FIXTURE . SEE NOTE 8. PROVIDE 12'. 5" SQ. ALUMINUM POLE; NLS LIGHTING SSAP12SS1889BCSGL BRZ 3430MGF	BRONZE	OR EQUAL
SL2	NLS LIGHTING	(1) NV1T416L130K8UNVDPS7BRZMGFPCRFSP211FSP20 (1) NV1T216L3530K8UNVDPS7BRZMGFPCRFSP211FSP20	UNV	P	71	7810	3000	0-10	B2 U0 G2	T3/T4	DUAL HEAD POLE MOUNTED LIGHTING FIXTURE . SEE NOTE 8. PROVIDE 12'. 5" SQ. ALUMINUM POLE; NLS LIGHTING SSAP12SS1889BCD180 BRZ 3430MGF. TYPE 2 DISTRIBUTION HEAD TOWARDS THE STREET; TYPE 4 DISTRIBUTION TOWARDS THE PARKING LOT.	BRONZE	OR EQUAL
SL1A	NLS LIGHTING	NV1T416L130K8UNVDPS7BRZMGFPCRFSP211FSP20 HSS	UNV	P	71	7810	3000	0-10	B2 U0 G2	T4	SINGLE HEAD POLE MOUNTED LIGHTING FIXTURE WITH HOUSE SIDE SHIELD. SEE NOTE 8. PROVIDE 12'. 5" SQ. ALUMINUM POLE; NLS LIGHTING SSAP12SS 1889BCSGL BRZ 3430MGF	BRONZE	OR EQUAL

GRIFFITH & VARY, INC.
Consulting Engineers
12 Kendrick Road
Wareham, MA 02571
508-295-0050 (T)
508-295-0003 (F)
www.griffithandvary.com

ISSUED FOR CONSTRUCTION
09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

North Arrow

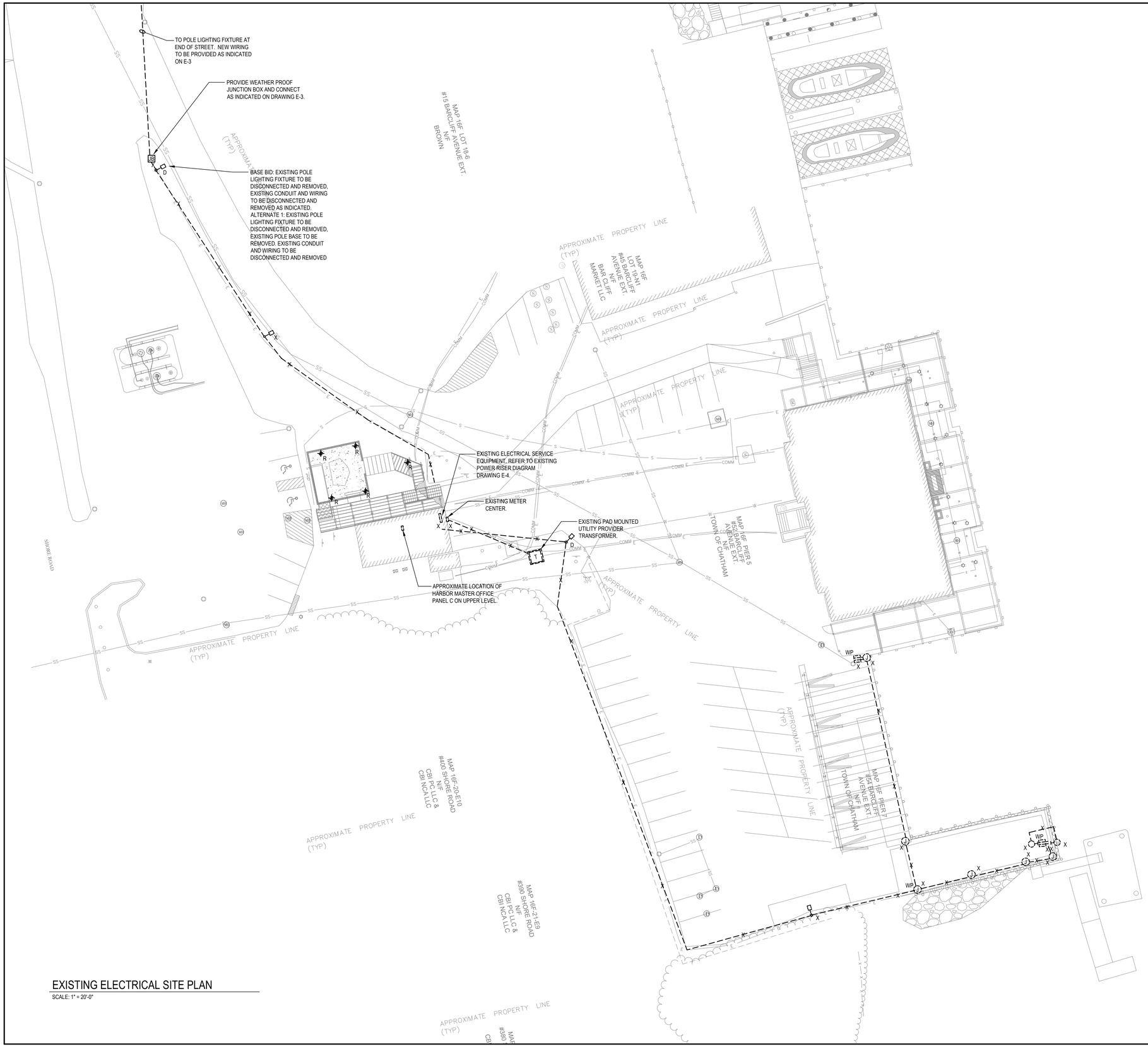
COMMONWEALTH OF MASSACHUSETTS
ROBERT C. BRAVO
No. 49857
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER

Keyplan

Drawing Name:
ELECTRICAL SITE DETAILS

Scale: NONE
Job No.: 1GV-265
Drawn By: JGS
Date: 9/26/2022

Drawing Number:
E-1



EXISTING ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

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ISSUED FOR CONSTRUCTION
09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

North Arrow

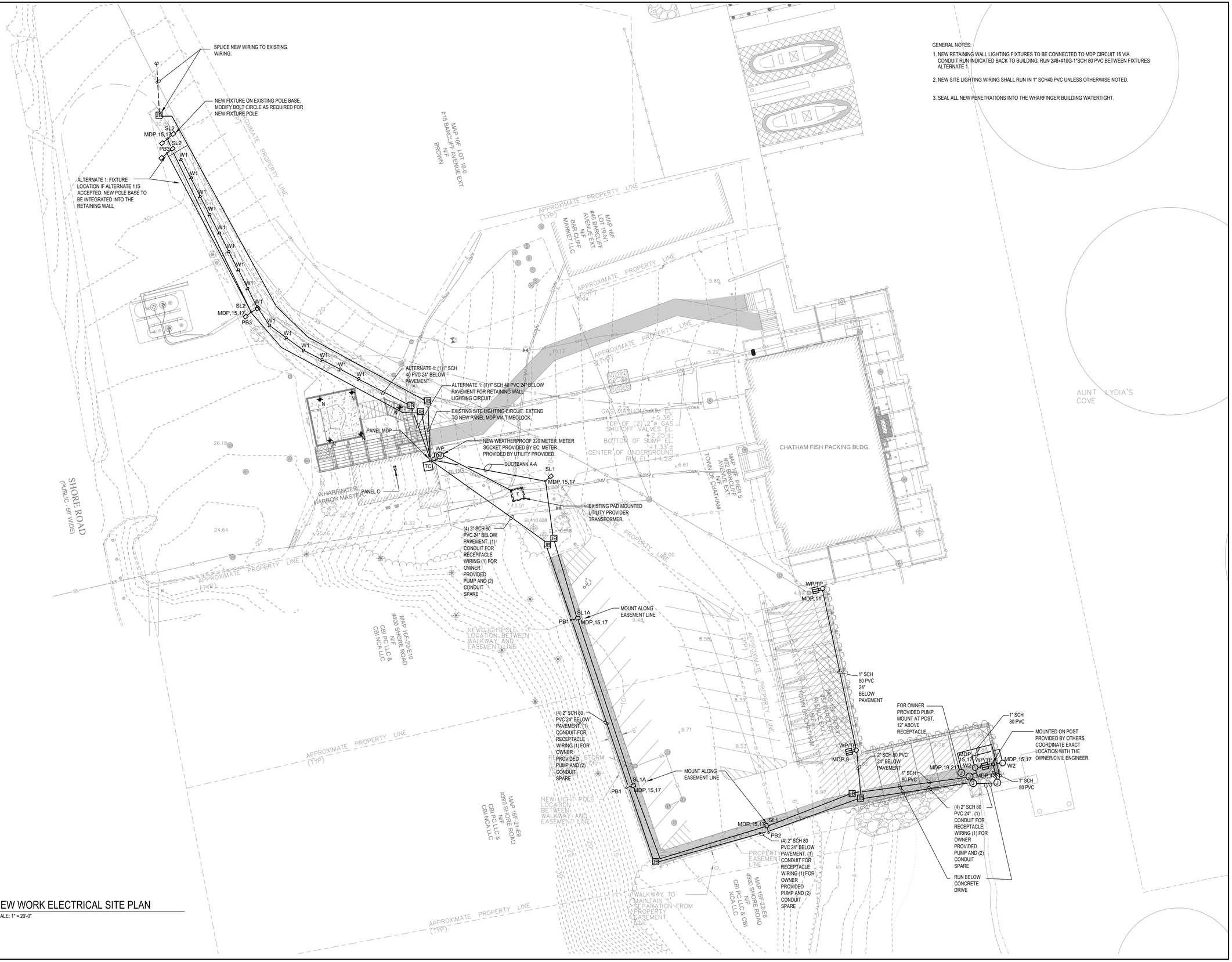
COMMONWEALTH OF MASSACHUSETTS
ROBERT C. BRAVO
ELECTRICAL
NO. 49111
REGISTERED PROFESSIONAL ENGINEER

Keyplan

Drawing Name:
ELECTRICAL SITE PLAN

Scale:	1"= 20'-0"
Job No.:	1GV-265
Drawn By:	JGS
Date:	9/26/2022

Drawing Number:
E-2



GENERAL NOTES:

1. NEW RETAINING WALL LIGHTING FIXTURES TO BE CONNECTED TO MDP CIRCUIT 16 VIA CONDUIT RUN INDICATED BACK TO BUILDING. RUN 2#8+#10G-1"SCH 80 PVC BETWEEN FIXTURES ALTERNATE 1.
2. NEW SITE LIGHTING WIRING SHALL RUN IN 1" SCH40 PVC UNLESS OTHERWISE NOTED.
3. SEAL ALL NEW PENETRATIONS INTO THE WHARFINGER BUILDING WATERTIGHT.

NEW WORK ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

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09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

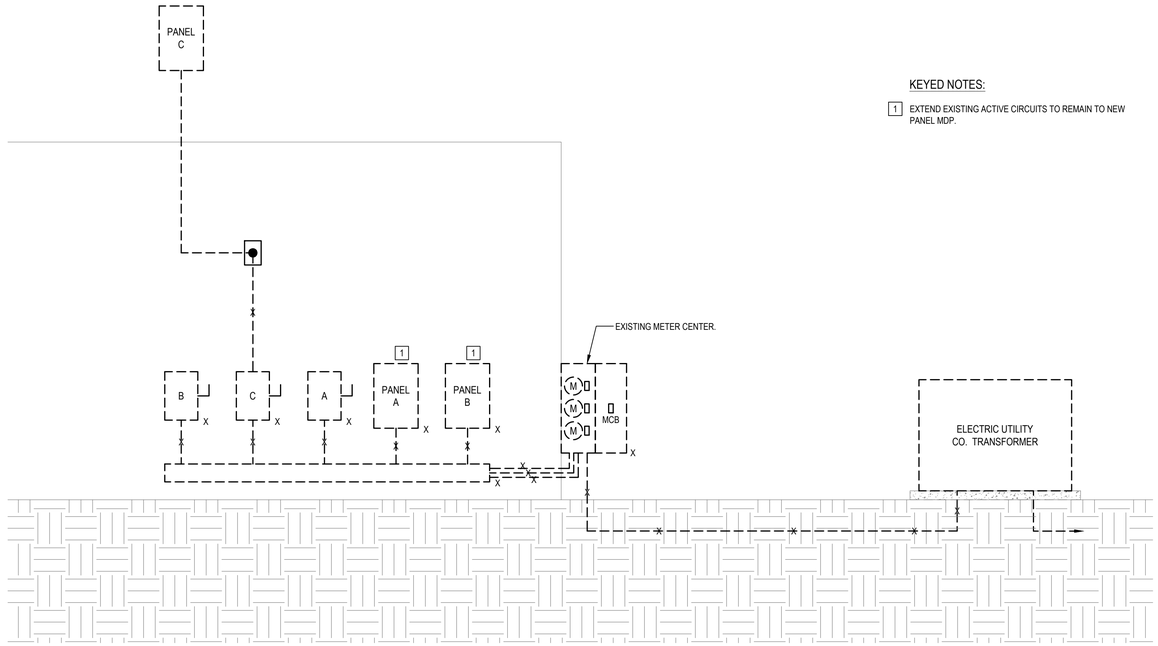
North Arrow

Keyplan

Drawing Name:
ELECTRICAL SITE PLAN

Scale:	1"= 20'-0"
Job No.:	1GV-265
Drawn By:	JGS
Date:	9/26/2022

Drawing Number:
E-3

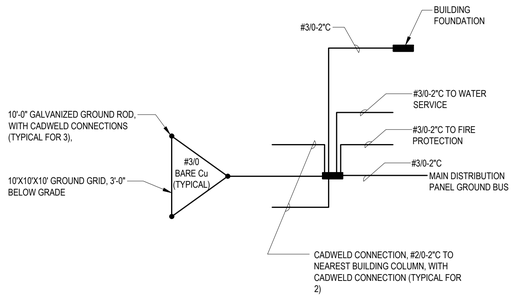


EXISTING POWER RISER DIAGRAM

N.T.S.

KEYED NOTES:

1 EXTEND EXISTING ACTIVE CIRCUITS TO REMAIN TO NEW PANEL MDP.



1	BUILDING GROUNDING DIAGRAM	SCALE: N.T.S.

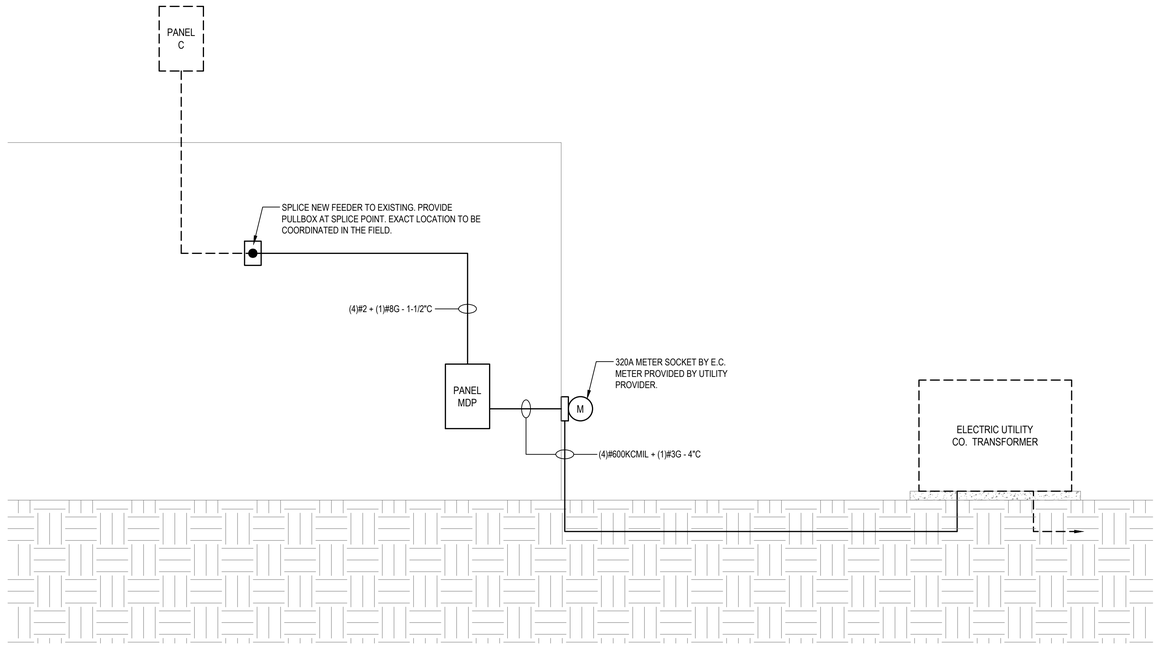
PANELBOARD: **MDP** — **400 A, 208Y/120 V, 3PH, 4W, 60HZ**

- ☐ MAIN LUG ONLY
- ☑ MAIN CIRCUIT BREAKER
- ☐ FLUSH MOUNTED
- ☑ SURFACE MOUNTED
- 35K AIC
- 400A BUS AMPS RATING
- ☑ NEMA 4X ENCLOSURE
- ☐ 200% RATED NEUTRAL
- ☐ ISOLATED GROUND
- ☐ FEED THRU LUGS
- ☐ 100% RATED MAIN BREAKER
- ☐ GROUND FAULT MAIN C.B.
- ☐ COMPUTER PANEL
- ☐ SURGE PROTECTION DEVICE

NOTES:
LC = VIA NEW TIMECLOCK
L = PROVIDE LOCK ON CB
IG = ISOLATED GROUND
P = GFPE - 30 mA TRIP
G = GFCI - 5mA TRIP
S = SHUNT TRIP
A = ARC FAULT CIRCUIT BREAKER
3 = 3W + G

GENERAL NOTES
1. FOR SINGLE POLE CIRCUIT BREAKERS, PROVIDE 2 WIRES + GROUND, U.O.N.
2. FOR TWO POLE CIRCUIT BREAKERS, PROVIDE 3 WIRES + GROUND, U.O.N.
3. FOR THREE POLE CIRCUIT BREAKERS, PROVIDE 3 WIRES + GROUND, U.O.N.
4. WIRE SIZES AS SHOWN ON PANEL

CKT NO.		LOAD DESCRIPTION	NOTE	WIRE SIZE		CIRCUIT BREAKER 20/1	20/2	15/2	,	,	,	,	CKT NO.		LOAD DESCRIPTION	NOTE	WIRE SIZE		CIRCUIT BREAKER 20/1	40/1	20/2	,	,	,	100/3
1		EXISTING BLOWER COIL PNL A		12			1						2		EXISTING SITE LIGHTS PNL A	LC	8		1						
3													4		DRAIN HEATER PNL A		8			1					
5		EXISTING COMPRESSOR PNL A		12			1						6		LITE PNL B				1						
7													8		EXISTING BLOWER COIL PNL B		12				1				
9		RECEPTACLE		8		1							10												
11		RECEPTACLE		8		1							12		EXISTING COMPRESSOR PNL B		12				1				
13		RECEPTACLE		8		1							14												
15		NEW SITE LIGHTING	LC	8			1						16		RETAINING WALL LIGHTING	LC	8		1						
17													18		SPARE				1						
19		PUMP		8				1					20		SPARE				1						
21													22		SPARE				1						
23		SPARE				1							24		SPARE				1						
25		SPARE				1							26		SPARE				1						
27		SPARE				1							28		SPARE				1						
29		SPARE				1							30		SPARE				1						
31		SPARE				1							32		SPARE				1						
33		SPARE				1							34		SPARE				1						
35		SPARE				1							36		SPARE				1						
37		SPARE				1							38												
39		SPARE				1							40		EXISTING PANEL C		SEE RSR								1
41		SPARE				1							42												



NEW WORK POWER RISER DIAGRAM

N.T.S.

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ISSUED FOR CONSTRUCTION
09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

North Arrow

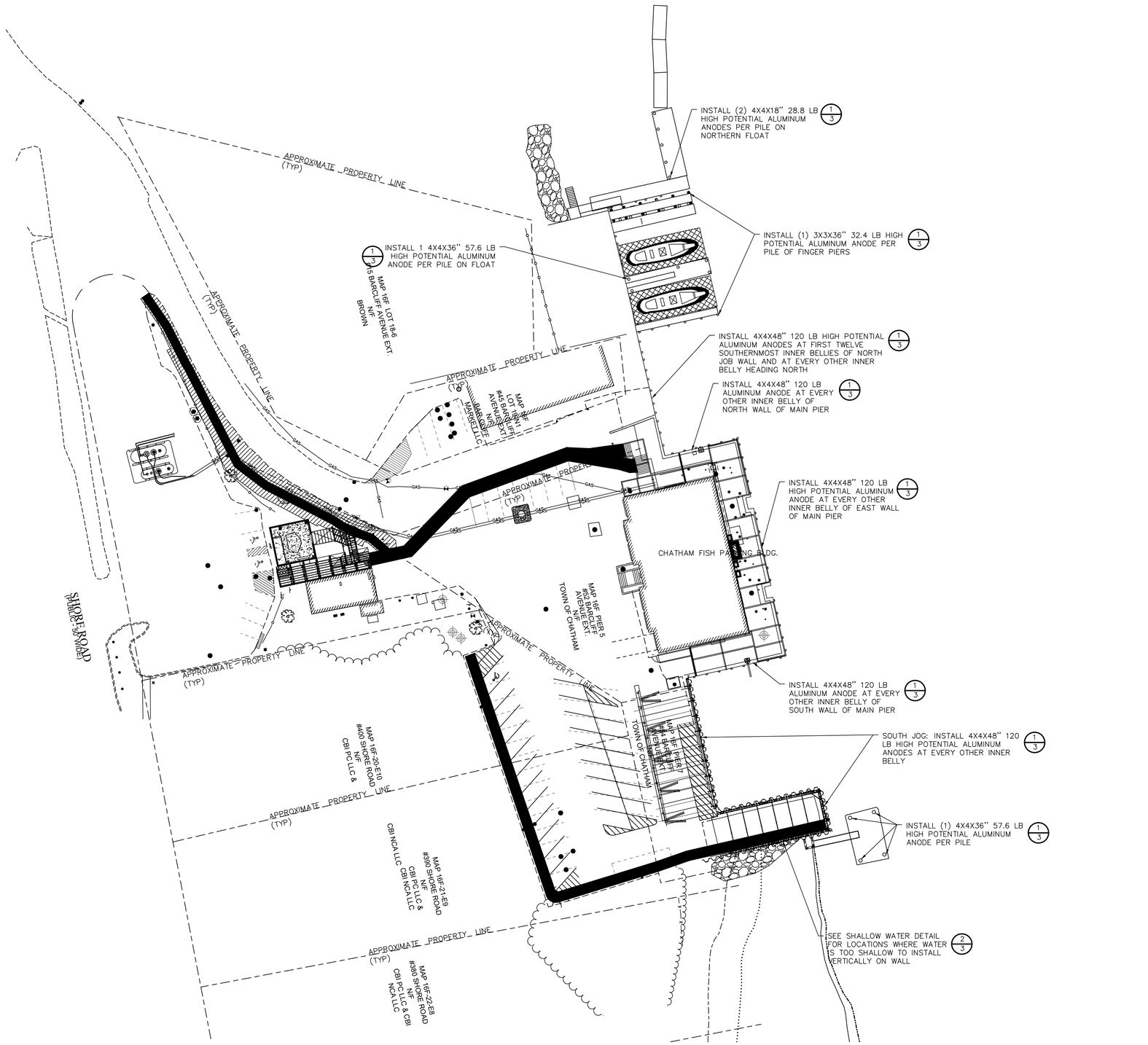
COMMONWEALTH OF MASSACHUSETTS
ROBERT C. BRAVO
ELECTRICAL
No. 49477
REGISTERED PROFESSIONAL ENGINEER

Keyplan

Drawing Name:
ELECTRICAL POWER RISER DIAGRAMS

Scale: NONE
Job No.: 1GV-265
Drawn By: JGS
Date: 9/26/2022

Drawing Number:
E-4



- / 2 CATHODIC PROTECTION SITE PLAN

Scale: 1" = 30'

REV	DATE	DESCRIPTION	DRWN	CHK'D	APP'D
3	9/26/22	ISSUED FOR CONSTRUCTION	MLC	JC	JC
2	6/29/22	ISSUED FOR BID	MLC	JC	JC
1	2/25/22	REVISION 1	MLC	JC	JC

AMI®

PROJECT#: 65000879

CHATHAM FISH PIER IMPROVEMENTS PROJECT
CP SYSTEM DESIGN
SITE PLAN

DRAWN BY:	MLC	SCALE: 1": 30'	DATE: 2022/09/26
DESIGN BY:	JC	DWG NO.: CP-1	REV. 3
CHECKED BY:	JC		
APPROVED BY:	JC		

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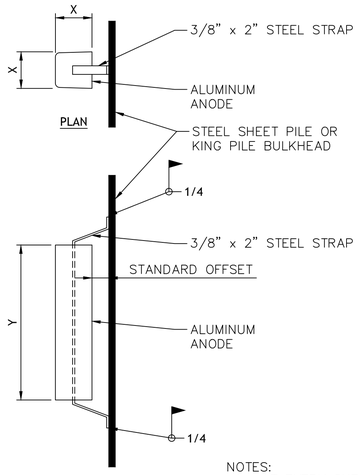
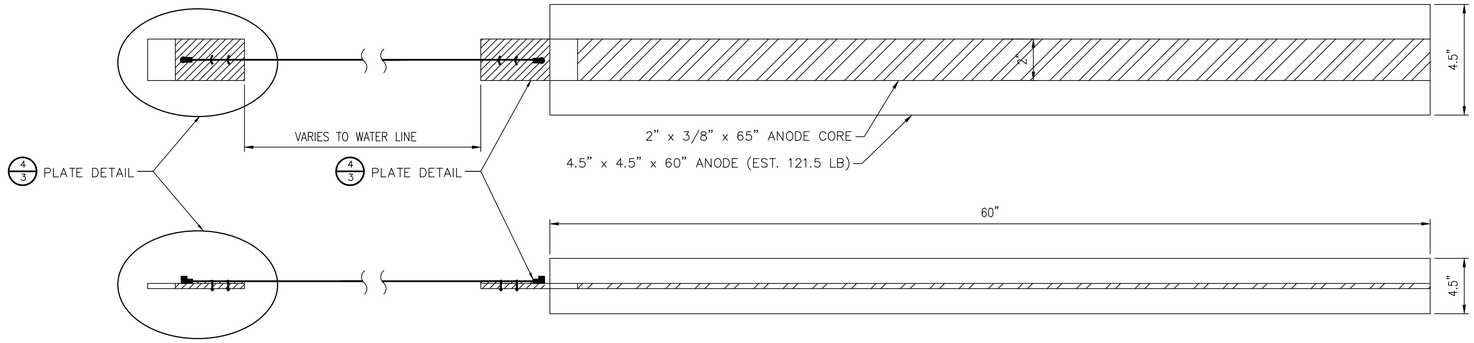


NOTES:
1. AT EVERY SHEET PILE INTERLOCK BETWEEN SHEET PILES PROVIDE A 3-INCH LONG WELD AT TOP OF PILE.
2. ANODES TO BE MOUNTED WITH THE BOTTOM OF THE ANODE NO MORE THAN 1 FOOT FROM THE MUDLINE.
3. ANODES ON PIPE PILES WITH TWO ANODES SHALL BE INSTALLED 180 DEGREES FROM EACH OTHER.

1/3 ANODE DETAIL

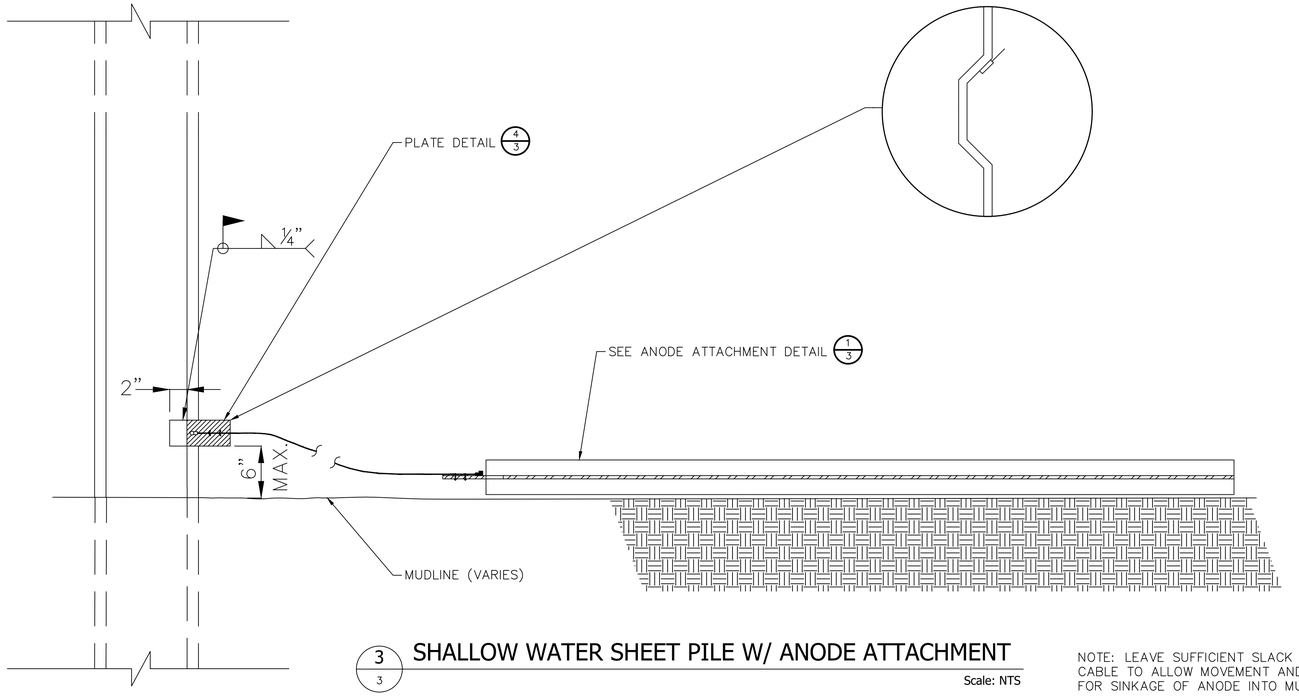
NTS

ANODE SCHEDULE			
LOCATION	X (IN.)	Y (IN.)	WEIGHT (LBS.)
SHEET PILE WALLS	5	48	1204
FLOAT PILES – TYPICAL	4	36	57.6
FINGER PIER PILES	3	36	32.4
NORTH FLOAT PILES	4	18	28.8



2/3 SHALLOW WATER ANODE ATTACHMENT DETAIL

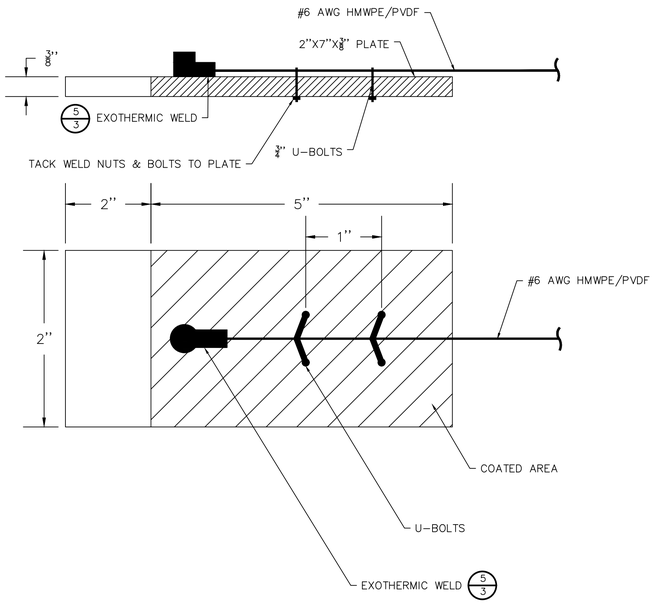
Scale: NTS



3/3 SHALLOW WATER SHEET PILE W/ ANODE ATTACHMENT

Scale: NTS

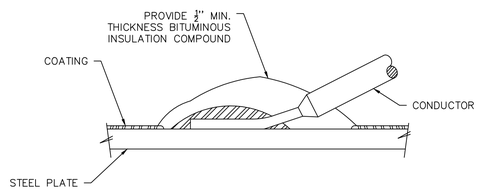
NOTE: LEAVE SUFFICIENT SLACK IN CABLE TO ALLOW MOVEMENT AND FOR SINKAGE OF ANODE INTO MUD



NOTES:
1. PLATE ASSEMBLY SHALL BE COATED WITH TWO COATS OF "TAPE COAT" TC MASTIC OR EQUAL AND ALLOWED TO DRY COMPLETELY PRIOR TO INSTALLATION

4/3 NEGATIVE CABLE PLATE DETAIL

Scale: NTS



5/3 EXOTHERMIC WELD

Scale: NTS

REV	DATE	DESCRIPTION	DRWN	CHK'D	APP'D
3	9/26/22	ISSUED FOR CONSTRUCTION	MLC	JC	JC
2	6/29/22	ISSUED FOR BID	MLC	JC	JC
1	2/25/22	REVISION 1	MLC	JC	JC

AMI®

PROJECT#: 65000879

CHATHAM FISH PIER IMPROVEMENTS PROJECT
CP SYSTEM DESIGN
DETAILS

DRAWN BY: MLC	SCALE: NONE	DATE: 2022/09/26	
DESIGN BY: JC			
CHECKED BY: JC	DWG NO.: CP-2		REV. 3
APPROVED BY: JC			

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PLUMBING LEGEND

GENERAL

	EXISTING PIPING TO BE REMOVED
	HEAVY LINE INDICATES NEW WORK
	LIGHT LINE INDICATES EXISTING WORK
	PIPING INTERRUPTED OR TO BE CONTINUED
	CAP OR END OF PIPE
CTE	CONNECT TO EXISTING
DETAIL # 1 / DRAWING # P7.1	DETAIL DESIGNATION TAG
	DIRECTION OF SLOPE
DN	ELBOW DOWN OR DROP
UP	ELBOW UP OR RISE
	FLOW IN DIRECTION OF ARROW
HC	HANDICAPPED ACCESSIBLE
	TEE LOOKING DOWN
	TEE LOOKING UP

ABBREVIATIONS

AC	ABOVE CEILING
AD	ACCESS DOOR
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AP	ACCESS PANEL
ARCH	ARCHITECT
BHP	BRAKE HORSEPOWER
BT	BATH TUB
BPW	BED PAN WASHER
BLDG	BUILDING
CI	CAST IRON
CFM	CUBIC FEET PER MINUTE
CLNG	CEILING
CLDI	CEMENT LINED DUCTILE IRON
CP	CHROME PLATED
CS	CUP SINK
DIA	DIAMETER
DWG	DRAWING
DF	DRINKING FOUNTAIN
EFF	EFFICIENCY
EL	ELEVATION
EWC	ELECTRIC WATER COOLER
EW	EMERGENCY EYE WASH
ES	EMERGENCY SHOWER
EWH	ELECTRIC WATER HEATER
ETBR	EXISTING TO BE REMOVED
ETR	EXISTING TO REMAIN
FFE	FINISH FLOOR ELEVATION
FH	FUME HOOD
FLR	FLOOR
FT	FOOT
FRS	FLUSHING RIM SERVICE SINK
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
HB	HOSE BIBB
HP	HORSEPOWER
HVAC	HEAT, VENTILATION & AIR CONDITIONING
ID	INSIDE DIAMETER
INV	INVERT
L	LAVATORY
LS	LAB SINK
MAX	MAXIMUM
MIN	MINIMUM
MSB	MOP SERVICE BASIN
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OD	OUTSIDE DIAMETER
ORD	OVERFLOW ROOF DRAIN
PC	PLUMBING CONTRACTOR
POS	PROVIDED UNDER OTHER SECTION
RPM	REVOLUTIONS PER MINUTE
SC	SITE CONTRACTOR
SH	SHOWER
SK	SINK
SPEC	SPECIFICATION
ST. ST.	STAINLESS STEEL
SF	SQUARE FEET
SWH	STEAM WATER HEATER
TYP	TYPICAL
UR	URINAL
WC	WATER CLOSET

DRAINAGE

IW	INDIRECT WASTE
KW	KITCHEN WASTE
KW	KITCHEN WASTE BURIED
ORL	OVERFLOW RAINWATER / OVERFLOW STORM DRAIN
RL	RAINWATER / STORM DRAIN
RL	RAINWATER / STORM DRAIN BURIED
AW	ACID WASTE
AV	ACID WASTE VENT
AW	ACID WASTE BURIED
AV	ACID WASTE VENT BURIED
V	SANITARY VENT
V	SANITARY VENT BURIED
W	SOIL / SANITARY WASTE
W	SOIL / SANITARY WASTE BURIED
AD	AREA DRAIN
CO	CLEANOUT
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
GCO	GROUND CLEANOUT
OD	OVERFLOW DRAIN / SECONDARY ROOF DRAIN
	P-TRAP
RD	ROOF DRAIN
WCO	WALL CLEANOUT

GASES

AI	AIR INTAKE PIPING
EXH	EXHAUST AIR PIPING
G	NATURAL GAS PIPING
HPG	HIGH PRESSURE NATURAL GAS PIPING

WATER

140°FHW	140° HOT WATER
140°FHWR	140° HOT WATER RETURN
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
TP	TRAP PRIMER
EW	EMERGENCY WATER W/ HEAT TRACE

VALVES

	BALANCING VALVE
	BALL VALVE
NC	BALL VALVE NORMALLY CLOSED
NO	BALL VALVE NORMALLY OPEN
	BUTTERFLY VALVE
CV	CHECK VALVE
	GAS COCK
	GATE VALVE
	GATE VALVE NORMALLY CLOSED
	MIXING VALVE (ELEVATION & PLAN)
PRV	PRESSURE REDUCING / REGULATING VALVE
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER (2" OR LESS)
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER (ADJUSTABLE SET TURNED UP)
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER (ADJUSTABLE SET TURNED DOWN)
	SOLENOID VALVE
T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
VIV	VALVE IN VERTICAL

ACCESSORIES

FM	FLOW METER
GH	GROUND HYDRANT
HB	HOSE BIBB
	IN-LINE FILTER
	PIPE GUIDE / BEAM PENETRATION
PG	PRESSURE GAUGE
	STRAINER
TG	TEMPERATURE GAUGE
TP	TRAP PRIMER
	UNION
VB	VACUUM BREAKER
WH	WALL HYDRANT
WHA	WATER HAMMER ARRESTOR / SHOCK ABSORBER
	WATER PROOF PIPE SLEEVE

REMARKS:
(1) SYMBOLS WITHIN LEGEND FOR REFERENCE ONLY. ALL SYMBOLS SHOWN MAY NOT BE APPLICABLE TO PROJECT.

PLUMBING FIXTURE SCHEDULE

TAG	DESCRIPTION	FIXTURE		WATER SUPPLY			APPURTENANCES						WASTE & TRAP	CARRIER	ADA MET	REMARKS
		MANUFACTURER	MODEL	MANUFACTURER	MODEL NO	SUPPLY	MANUFACTURER	MODEL NO	TYPE	MANUFACTURER	MODEL NO	TYPE				
HB-1	HOSE BIBB	ZURN	Z1341XL-P34-RC	---	---	---	---	---	---	---	---	---	---	---	---	MOUNTED ON WOODING PIER.

NOTE: *ALL PLUMBING FIXTURES THAT ARE ACCESSIBLE & SHALL BE INSTALLED PER ADA STANDARDS, MASS, ARCHITECTURAL BARRIERS BOARD (MAAB).
*REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS.
*REFER TO ARCHITECTURAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
*REFER TO PLUMBING FIXTURE CONNECTION SCHEDULE FOR ALL FIXTURE CONNECTION TYPES & SIZES.

PLUMBING FIXTURE CONNECTION SCHEDULE

TAG	FIXTURE	CONNECTION SIZE											FLOW / FLUSH RATE	REMARKS
		WASTE	VENT	HOT	COLD	TW	NPCW	NPHW	IW	LW	KV	KW		
HB-1	HOSE BIBB	---	---	---	1/2"	---	---	---	---	---	---	---	---	---

NOTE: ALL PLUMBING FIXTURES ARE ACCESSIBLE & SHALL BE INSTALLED PER ADA STANDARDS, MASS, ARCHITECTURAL BARRIERS BOARD (MAAB). REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS. REFER TO ARCHITECTURAL EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.

* GALLONS PER CYCLE (GPC) IS BASED ON A MAXIMUM FLOW RATE OF .5 GPM AND A 12 SECOND CYCLE WHICH EQUALS .10 GPC. (F.B.O.) FURNISHED BY OTHERS

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ISSUED FOR CONSTRUCTION
09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

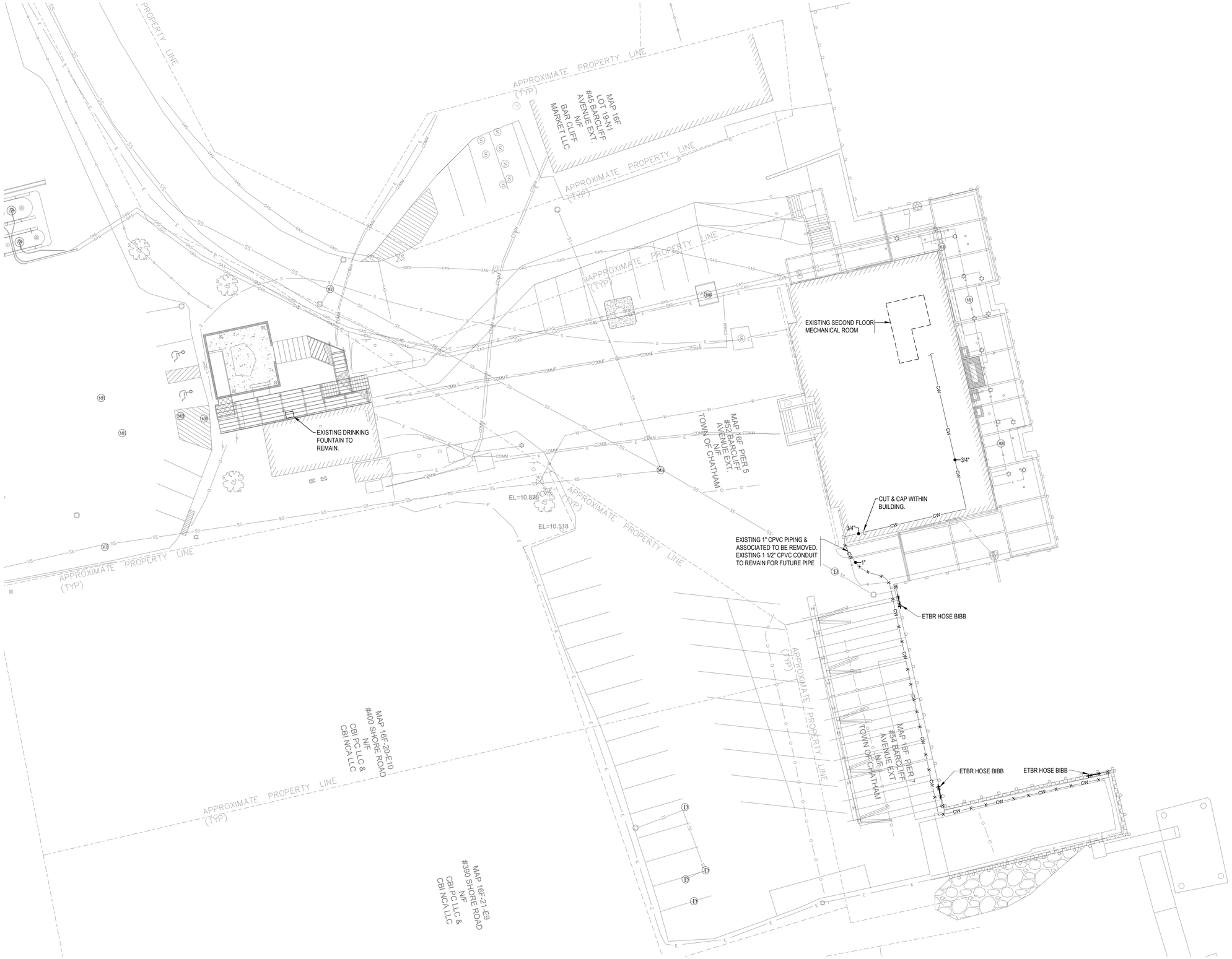
North Arrow

Keyplan

Drawing Name:
PLUMBING LEGEND AND DETAILS

Scale: NOT TO SCALE
Job No.: 1GV-265
Drawn By: SPD
Date: 9/26/2022

Drawing Number:
P-1



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54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

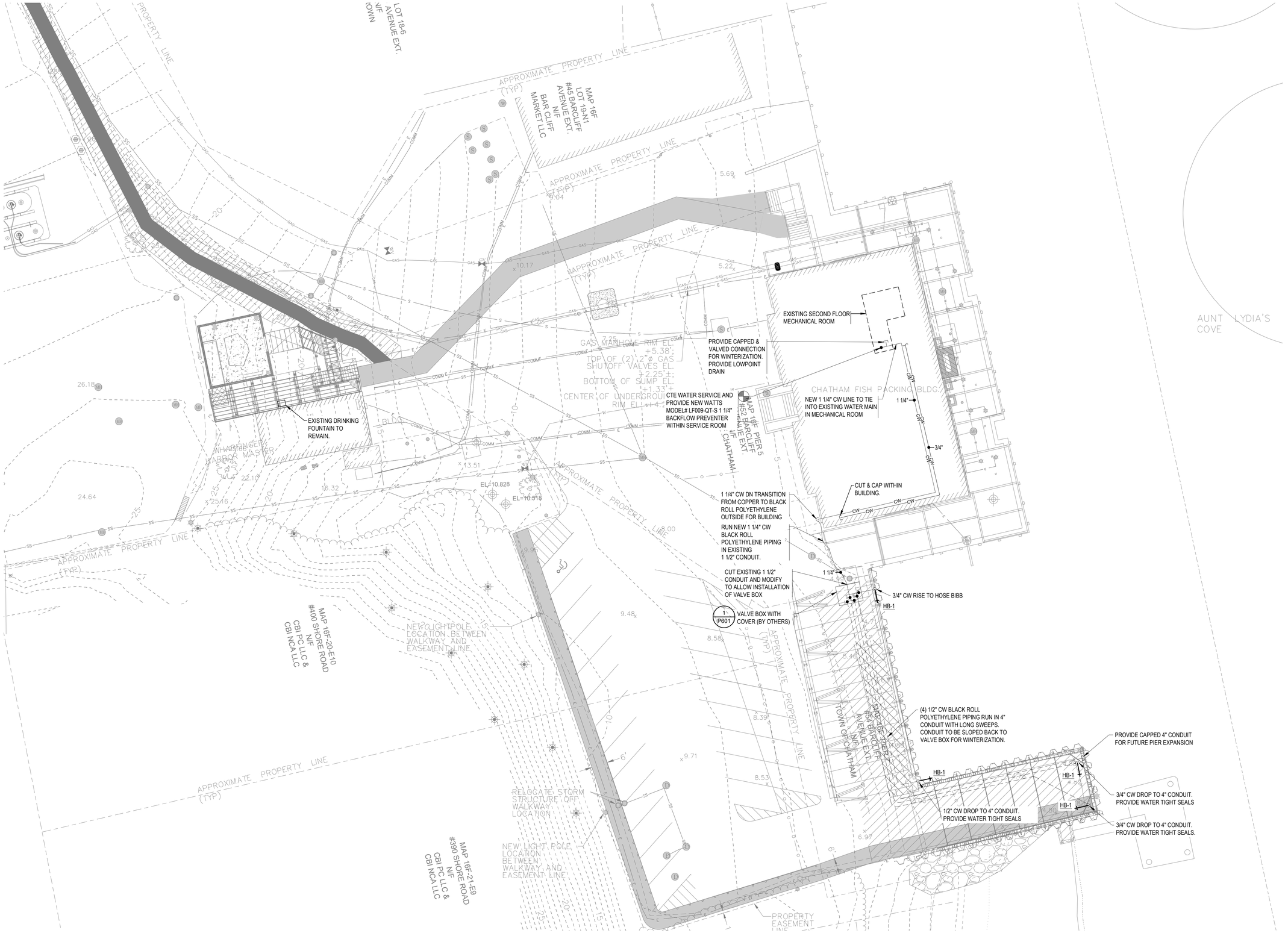
North Arrow

Keyplan

Drawing Name:
PLUMBING DEMOLITION SITE PLAN

Scale: 1/16"= 1'-0"
Job No.: 1GV-265
Drawn By: SPD
Date: 9/26/2022

Drawing Number:
P-2



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09/26/2022

CHATHAM
FISH PIER BULKHEAD RESHEETING & SOUTH JOG IMPROVEMENT PROJECT

54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

North Arrow

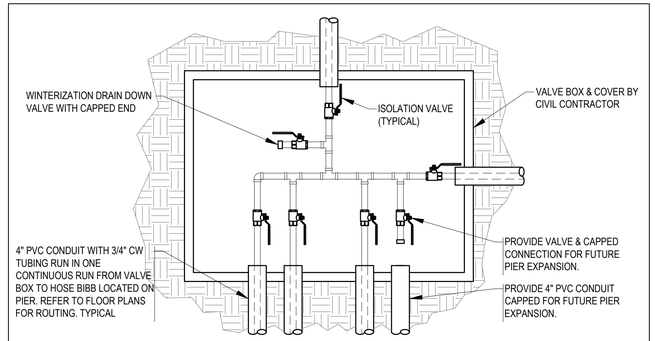
Keyplan

Drawing Name:

PLUMBING RENOVATION SITE PLAN

Scale:	1/16"= 1'-0"
Job No.:	1GV-265
Drawn By:	SPD
Date:	9/26/2022

Drawing Number:
P-3



1	RECESSED VALVE BOX	SCALE
		NOT TO SCALE

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54 BARCLIFF AVE
CHATHAM, MA 02633

Notes:

North Arrow

Keyplan

Drawing Name:
PLUMBING DETAILS

Scale: NOT TO SCALE
Job No.: 1GV-265
Drawn By: SPD
Date: 9/26/2022

Drawing Number:
P-4

Attachment 1

Prevailing Wage

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

ROSALIN ACOSTA
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Town of Chatham

Contract Number: N/A **City/Town:** CHATHAM

Description of Work: Installation of a new steel pile bulkhead with reinforced concrete cap and timber fender piles, and replacement of timber decking.

Job Location: 45 Barcliff Avenue Ext, Chatham, MA

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- **The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor.** For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Issue Date: 07/15/2022 **Wage Request Number:** 20220715-010

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.95	$13.41	$16.01	$0.00	$65.37
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.02	$13.41	$16.01	$0.00	$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.14	$13.41	$16.01	$0.00	$65.56
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 2)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	$103.05	$9.40	$23.12	$0.00	$135.57
AIR TRACK OPERATOR *LABORERS - ZONE 2*	06/01/2022	$37.06	$9.10	$16.64	$0.00	$62.80
	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)* For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2021	$36.16	$9.10	$16.64	$0.00	$61.90
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	12/01/2020	$38.10	$12.80	$9.45	$0.00	$60.35
ASPHALT RAKER *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)* For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 2*	06/01/2022	$37.06	$9.10	$16.64	$0.00	$62.80
	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)* For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2021	$36.16	$9.10	$16.64	$0.00	$61.90
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2020	$46.10	$7.07	$17.98	$0.00	$71.15

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$29.97	$7.07	$11.69	$0.00	$48.73
2	65	$29.97	$7.07	$11.69	$0.00	$48.73
3	70	$32.27	$7.07	$12.59	$0.00	$51.93
4	75	$34.58	$7.07	$13.49	$0.00	$55.14
5	80	$36.88	$7.07	$14.38	$0.00	$58.33
6	85	$39.19	$7.07	$15.29	$0.00	$61.55
7	90	$41.49	$7.07	$16.18	$0.00	$64.74
8	95	$43.80	$7.07	$17.09	$0.00	$67.96

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) — 02/01/2022 — $57.15 — $11.39 — $22.34 — $0.00 — $90.88
BRICKLAYERS LOCAL 3 (NEW BEDFORD)

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 New Bedford*

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.58	$11.39	$22.34	$0.00	$62.31
2	60	$34.29	$11.39	$22.34	$0.00	$68.02
3	70	$40.01	$11.39	$22.34	$0.00	$73.74
4	80	$45.72	$11.39	$22.34	$0.00	$79.45
5	90	$51.44	$11.39	$22.34	$0.00	$85.17

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER — 12/01/2021 — $50.83 — $14.00 — $16.05 — $0.00 — $80.88
OPERATING ENGINEERS LOCAL 4

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN — 12/01/2021 — $42.33 — $9.10 — $17.72 — $0.00 — $69.15
LABORERS - FOUNDATION AND MARINE

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER — 12/01/2021 — $41.18 — $9.10 — $17.72 — $0.00 — $68.00
LABORERS - FOUNDATION AND MARINE

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING TOP MAN — 12/01/2021 — $41.18 — $9.10 — $17.72 — $0.00 — $68.00
LABORERS - FOUNDATION AND MARINE

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	03/01/2022	$44.53	$8.68	$19.97	$0.00	$73.18
	09/01/2022	$45.18	$8.68	$19.97	$0.00	$73.83
	03/01/2023	$45.78	$8.68	$19.97	$0.00	$74.43

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.27	$8.68	$1.73	$0.00	$32.68
2	60	$26.72	$8.68	$1.73	$0.00	$37.13
3	70	$31.17	$8.68	$14.78	$0.00	$54.63
4	75	$33.40	$8.68	$14.78	$0.00	$56.86
5	80	$35.62	$8.68	$16.51	$0.00	$60.81
6	80	$35.62	$8.68	$16.51	$0.00	$60.81
7	90	$40.08	$8.68	$18.24	$0.00	$67.00
8	90	$40.08	$8.68	$18.24	$0.00	$67.00

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.59	$8.68	$1.73	$0.00	$33.00
2	60	$27.11	$8.68	$1.73	$0.00	$37.52
3	70	$31.63	$8.68	$14.78	$0.00	$55.09
4	75	$33.89	$8.68	$14.78	$0.00	$57.35
5	80	$36.14	$8.68	$16.51	$0.00	$61.33
6	80	$36.14	$8.68	$16.51	$0.00	$61.33
7	90	$40.66	$8.68	$18.24	$0.00	$67.58
8	90	$40.66	$8.68	$18.24	$0.00	$67.58

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $30.45/ 3&4 $36.57/ 5&6 $56.36/ 7&8 $62.54

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME *CARPENTERS-ZONE 3 (Wood Frame)*	04/01/2022	$23.66	$7.21	$4.80	$0.00	$35.67
	04/01/2023	$24.16	$7.21	$4.80	$0.00	$36.17
All Aspects of New Wood Frame Work						

Apprentice - *CARPENTER (Wood Frame) - Zone 3*

Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$14.20	$7.21	$0.00	$0.00	$21.41
2	60	$14.20	$7.21	$0.00	$0.00	$21.41
3	65	$15.38	$7.21	$0.00	$0.00	$22.59
4	70	$16.56	$7.21	$0.00	$0.00	$23.77
5	75	$17.75	$7.21	$3.80	$0.00	$28.76
6	80	$18.93	$7.21	$3.80	$0.00	$29.94
7	85	$20.11	$7.21	$3.80	$0.00	$31.12
8	90	$21.29	$7.21	$3.80	$0.00	$32.30

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$14.50	$7.21	$0.00	$0.00	$21.71
2	60	$14.50	$7.21	$0.00	$0.00	$21.71
3	65	$15.70	$7.21	$0.00	$0.00	$22.91
4	70	$16.91	$7.21	$0.00	$0.00	$24.12
5	75	$18.12	$7.21	$3.80	$0.00	$29.13
6	80	$19.33	$7.21	$3.80	$0.00	$30.34
7	85	$20.54	$7.21	$3.80	$0.00	$31.55
8	90	$21.74	$7.21	$3.80	$0.00	$32.75

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $17.86/ 3&4 $20.22/ 5&6 $27.57/ 7&8 $29.94

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (NEW BEDFORD)*	01/01/2020	$49.07	$12.75	$22.41	$0.62	$84.85

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (New Bedford)*

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.54	$12.75	$15.41	$0.00	$52.70
2	60	$29.44	$12.75	$17.41	$0.62	$60.22
3	65	$31.90	$12.75	$18.41	$0.62	$63.68
4	70	$34.35	$12.75	$19.41	$0.62	$67.13
5	75	$36.80	$12.75	$20.41	$0.62	$70.58
6	80	$39.26	$12.75	$21.41	$0.62	$74.04
7	90	$44.16	$12.75	$22.41	$0.62	$79.94

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$52.38	$14.00	$16.05	$0.00	$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$33.69	$14.00	$16.05	$0.00	$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2022	$54.86	$8.65	$23.05	$0.00	$86.56
	01/01/2023	$56.06	$8.65	$23.05	$0.00	$87.76
	07/01/2023	$57.26	$8.65	$23.05	$0.00	$88.96
	01/01/2024	$58.46	$8.65	$23.05	$0.00	$90.16
	07/01/2024	$59.66	$8.65	$23.05	$0.00	$91.36
	01/01/2025	$60.86	$8.65	$23.05	$0.00	$92.56

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$27.43	$8.65	$0.00	$0.00	$36.08
2	55	$30.17	$8.65	$6.27	$0.00	$45.09
3	60	$32.92	$8.65	$6.84	$0.00	$48.41
4	65	$35.66	$8.65	$7.41	$0.00	$51.72
5	70	$38.40	$8.65	$19.63	$0.00	$66.68
6	75	$41.15	$8.65	$20.20	$0.00	$70.00
7	80	$43.89	$8.65	$20.77	$0.00	$73.31
8	90	$49.37	$8.65	$21.91	$0.00	$79.93

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.03	$8.65	$0.00	$0.00	$36.68
2	55	$30.83	$8.65	$6.27	$0.00	$45.75
3	60	$33.64	$8.65	$6.84	$0.00	$49.13
4	65	$36.44	$8.65	$7.41	$0.00	$52.50
5	70	$39.24	$8.65	$19.63	$0.00	$67.52
6	75	$42.05	$8.65	$20.20	$0.00	$70.90
7	80	$44.85	$8.65	$20.77	$0.00	$74.27
8	90	$50.45	$8.65	$21.91	$0.00	$81.01

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: ADZEMAN *LABORERS - ZONE 2*	06/01/2022	$42.33	$9.10	$17.57	$0.00	$69.00
	12/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	06/01/2023	$44.33	$9.10	$17.57	$0.00	$71.00
	12/01/2023	$45.58	$9.10	$17.57	$0.00	$72.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 2*	06/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	12/01/2022	$44.33	$9.10	$17.57	$0.00	$71.00
	06/01/2023	$45.33	$9.10	$17.57	$0.00	$72.00
	12/01/2023	$46.58	$9.10	$17.57	$0.00	$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 2*	06/01/2022	$43.08	$9.10	$17.57	$0.00	$69.75
	12/01/2022	$44.08	$9.10	$17.57	$0.00	$70.75
	06/01/2023	$45.08	$9.10	$17.57	$0.00	$71.75
	12/01/2023	$46.33	$9.10	$17.57	$0.00	$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 2*	06/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	12/01/2022	$44.33	$9.10	$17.57	$0.00	$71.00
	06/01/2023	$45.33	$9.10	$17.57	$0.00	$72.00
	12/01/2023	$46.58	$9.10	$17.57	$0.00	$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 2*	06/01/2022	$43.08	$9.10	$17.57	$0.00	$69.75
	12/01/2022	$44.08	$9.10	$17.57	$0.00	$70.75
	06/01/2023	$45.08	$9.10	$17.57	$0.00	$71.75
	12/01/2023	$46.33	$9.10	$17.57	$0.00	$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 2*	06/01/2022	$42.33	$9.10	$17.57	$0.00	$69.00
	12/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	06/01/2023	$44.33	$9.10	$17.57	$0.00	$71.00
	12/01/2023	$45.58	$9.10	$17.57	$0.00	$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2020	$68.70	$9.40	$23.12	$0.00	$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2020	$49.07	$9.40	$23.12	$0.00	$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2020	$73.60	$9.40	$23.12	$0.00	$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2020	$103.05	$9.40	$23.12	$0.00	$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) *DRAWBRIDGE - SEIU LOCAL 888*	07/01/2020	$26.77	$6.67	$3.93	$0.16	$37.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELECTRICIAN *ELECTRICIANS LOCAL 223*	03/01/2022	$44.89	$11.25	$15.51	$0.00	$71.65
	09/01/2022	$46.35	$11.50	$16.18	$0.00	$74.03
	09/01/2023	$47.87	$11.75	$16.86	$0.00	$76.48

Apprentice - *ELECTRICIAN - Local 223*

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.96	$11.25	$0.54	$0.00	$29.75
2	45	$20.20	$11.25	$0.61	$0.00	$32.06
3	50	$22.45	$11.25	$0.67	$0.00	$34.37
4	55	$24.69	$11.25	$6.93	$0.00	$42.87
5	60	$26.93	$11.25	$7.42	$0.00	$45.60
6	65	$29.18	$11.25	$7.88	$0.00	$48.31
7	70	$31.42	$11.25	$8.41	$0.00	$51.08
8	75	$33.67	$11.25	$8.91	$0.00	$53.83

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$18.54	$11.50	$0.56	$0.00	$30.60
2	45	$20.86	$11.50	$0.63	$0.00	$32.99
3	50	$23.18	$11.50	$0.70	$0.00	$35.38
4	55	$25.49	$11.50	$7.35	$0.00	$44.34
5	60	$27.81	$11.50	$7.86	$0.00	$47.17
6	65	$30.13	$11.50	$8.37	$0.00	$50.00
7	70	$32.45	$11.50	$8.89	$0.00	$52.84
8	75	$34.76	$11.50	$9.40	$0.00	$55.66

Notes:

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2022	$65.62	$16.03	$20.21	$0.00	$101.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.81	$16.03	$0.00	$0.00	$48.84
2	55	$36.09	$16.03	$20.21	$0.00	$72.33
3	65	$42.65	$16.03	$20.21	$0.00	$78.89
4	70	$45.93	$16.03	$20.21	$0.00	$82.17
5	80	$52.50	$16.03	$20.21	$0.00	$88.74

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2022	$45.93	$16.03	$20.21	$0.00	$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2022	$47.18	$14.00	$16.05	$0.00	$77.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2022	$48.72	$14.00	$16.05	$0.00	$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2022	$23.33	$14.00	$16.05	$0.00	$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 223*	09/01/2020	$43.66	$10.90	$14.66	$0.00	$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING*ELECTRICIANS LOCAL 223*	09/01/2020	$36.86	$10.90	$12.45	$0.00	$60.21
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$41.76	$14.00	$16.05	$0.00	$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$24.50	$9.10	$16.64	$0.00	$50.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE II*	03/01/2022	$47.62	$8.68	$20.27	$0.00	$76.57

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *FLOORCOVERER - Local 2168 Zone II*

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.81	$8.68	$1.79	$0.00	$34.28
2	55	$26.19	$8.68	$1.79	$0.00	$36.66
3	60	$28.57	$8.68	$14.90	$0.00	$52.15
4	65	$30.95	$8.68	$14.90	$0.00	$54.53
5	70	$33.33	$8.68	$16.69	$0.00	$58.70
6	75	$35.72	$8.68	$16.69	$0.00	$61.09
7	80	$38.10	$8.68	$18.48	$0.00	$65.26
8	85	$40.48	$8.68	$18.48	$0.00	$67.64

Notes: Steps are 750 hrs.
% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
Step 1&2 $31.90/ 3&4 $38.39/ 5&6 $58.70/ 7&8 $65.26

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$33.69	$14.00	$16.05	$0.00	$63.74

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 1333*	06/01/2020	$39.18	$10.80	$10.45	$0.00	$60.43

Apprentice - *GLAZIER - Local 1333*

Effective Date - 06/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.59	$10.80	$1.80	$0.00	$32.19
2	56	$22.04	$10.80	$1.80	$0.00	$34.64
3	63	$24.49	$10.80	$2.45	$0.00	$37.74
4	69	$26.94	$10.80	$2.45	$0.00	$40.19
5	75	$29.39	$10.80	$3.15	$0.00	$43.34
6	81	$31.83	$10.80	$3.15	$0.00	$45.78
7	88	$34.28	$10.80	$10.45	$0.00	$55.53
8	94	$36.73	$10.80	$10.45	$0.00	$57.98

Notes:

Apprentice to Journeyworker Ratio:1:3

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$28.26	$14.00	$0.00	$0.00	$42.26
2	60	$30.83	$14.00	$16.05	$0.00	$60.88
3	65	$33.40	$14.00	$16.05	$0.00	$63.45
4	70	$35.97	$14.00	$16.05	$0.00	$66.02
5	75	$38.54	$14.00	$16.05	$0.00	$68.59
6	80	$41.10	$14.00	$16.05	$0.00	$71.15
7	85	$43.67	$14.00	$16.05	$0.00	$73.72
8	90	$46.24	$14.00	$16.05	$0.00	$76.29

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2022	$38.91	$13.65	$17.15	$2.09	$71.80
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 223*	09/01/2020	$43.66	$10.90	$14.66	$0.00	$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2022	$38.91	$13.65	$17.15	$2.09	$71.80
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PLUMBERS & PIPEFITTERS LOCAL 51*	08/30/2021	$46.49	$10.15	$19.95	$0.00	$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PLUMBERS & PIPEFITTERS LOCAL 51*	08/30/2021	$46.49	$10.15	$19.95	$0.00	$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 2*	06/01/2022	$37.06	$9.10	$16.64	$0.00	$62.80
	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$36.16	$9.10	$16.64	$0.00	$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2021	$51.40	$13.80	$17.14	$0.00	$82.34
	09/01/2022	$53.85	$13.80	$17.14	$0.00	$84.79

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston*

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.70	$13.80	$12.42	$0.00	$51.92
2	60	$30.84	$13.80	$13.36	$0.00	$58.00
3	70	$35.98	$13.80	$14.31	$0.00	$64.09
4	80	$41.12	$13.80	$15.25	$0.00	$70.17

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.93	$13.80	$12.42	$0.00	$53.15
2	60	$32.31	$13.80	$13.36	$0.00	$59.47
3	70	$37.70	$13.80	$14.31	$0.00	$65.81
4	80	$43.08	$13.80	$15.25	$0.00	$72.13

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 37*	03/16/2021	$42.46	$7.70	$17.10	$0.00	$67.26

Apprentice - *IRONWORKER - Local 37*

Effective Date - 03/16/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	$29.72	$7.70	$17.10	$0.00	$54.52
2	75	$31.85	$7.70	$17.10	$0.00	$56.65
3	80	$33.97	$7.70	$17.10	$0.00	$58.77
4	85	$36.09	$7.70	$17.10	$0.00	$60.89
5	90	$38.21	$7.70	$17.10	$0.00	$63.01
6	95	$40.34	$7.70	$17.10	$0.00	$65.14

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 2*	06/01/2022	$36.31	$9.10	$16.64	$0.00	$62.05
	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER - Zone 2*

Effective Date - 06/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.79	$9.10	$16.64	$0.00	$47.53
2	70	$25.42	$9.10	$16.64	$0.00	$51.16
3	80	$29.05	$9.10	$16.64	$0.00	$54.79
4	90	$32.68	$9.10	$16.64	$0.00	$58.42

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.30	$9.10	$16.64	$0.00	$48.04
2	70	$26.01	$9.10	$16.64	$0.00	$51.75
3	80	$29.73	$9.10	$16.64	$0.00	$55.47
4	90	$33.44	$9.10	$16.64	$0.00	$59.18

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.41	$9.10	$16.64	$0.00	$61.15

Apprentice - *LABORER (Heavy & Highway) - Zone 2*

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.25	$9.10	$16.64	$0.00	$46.99
2	70	$24.79	$9.10	$16.64	$0.00	$50.53
3	80	$28.33	$9.10	$16.64	$0.00	$54.07
4	90	$31.87	$9.10	$16.64	$0.00	$57.61

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE 2*	06/01/2022	$36.31	$9.10	$16.64	$0.00	$62.05
	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 2*	06/01/2022	$36.31	$9.10	$16.64	$0.00	$62.05
	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 2*	06/01/2022	$36.40	$9.10	$16.70	$0.00	$62.20
	12/01/2022	$37.25	$9.10	$16.70	$0.00	$63.05
	06/01/2023	$38.15	$9.10	$16.70	$0.00	$63.95
	12/01/2023	$39.05	$9.10	$16.70	$0.00	$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 2*	06/01/2022	$36.31	$9.10	$16.64	$0.00	$62.05
	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 2*	06/01/2022	$36.31	$9.10	$16.64	$0.00	$62.05
	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2022	$43.69	$11.39	$20.37	$0.00	$75.45

Apprentice - *MARBLE & TILE FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.85	$11.39	$20.37	$0.00	$53.61
2	60	$26.21	$11.39	$20.37	$0.00	$57.97
3	70	$30.58	$11.39	$20.37	$0.00	$62.34
4	80	$34.95	$11.39	$20.37	$0.00	$66.71
5	90	$39.32	$11.39	$20.37	$0.00	$71.08

Notes:

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2022	$57.17	$11.39	$22.31	$0.00	$90.87

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.59	$11.39	$22.31	$0.00	$62.29
2	60	$34.30	$11.39	$22.31	$0.00	$68.00
3	70	$40.02	$11.39	$22.31	$0.00	$73.72
4	80	$45.74	$11.39	$22.31	$0.00	$79.44
5	90	$51.45	$11.39	$22.31	$0.00	$85.15

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) *MILLWRIGHTS LOCAL 1121 - Zone 2*	01/03/2022	$40.67	$8.58	$21.57	$0.00	$70.82
	01/02/2023	$41.92	$8.58	$21.57	$0.00	$72.07

Apprentice - *MILLWRIGHT - Local 1121 Zone 2*

Effective Date - 01/03/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.37	$8.58	$5.72	$0.00	$36.67
2	65	$26.44	$8.58	$17.93	$0.00	$52.95
3	75	$30.50	$8.58	$18.98	$0.00	$58.06
4	85	$34.57	$8.58	$20.01	$0.00	$63.16

Effective Date - 01/02/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$23.06	$8.58	$5.72	$0.00	$37.36
2	65	$27.25	$8.58	$17.93	$0.00	$53.76
3	75	$31.44	$8.58	$18.98	$0.00	$59.00
4	85	$35.63	$8.58	$20.01	$0.00	$64.22

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension,
but do receive annuity. (Step 1 $5.72, Step 2 $6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:4

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MORTAR MIXER *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$23.48	$14.00	$16.05	$0.00	$53.53
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$28.44	$14.00	$16.05	$0.00	$58.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2022	$54.86	$8.65	$23.05	$0.00	$86.56
	01/01/2023	$56.06	$8.65	$23.05	$0.00	$87.76
	07/01/2023	$57.26	$8.65	$23.05	$0.00	$88.96
	01/01/2024	$58.46	$8.65	$23.05	$0.00	$90.16
	07/01/2024	$59.66	$8.65	$23.05	$0.00	$91.36
	01/01/2025	$60.86	$8.65	$23.05	$0.00	$92.56

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$27.43	$8.65	$0.00	$0.00	$36.08
2	55	$30.17	$8.65	$6.27	$0.00	$45.09
3	60	$32.92	$8.65	$6.84	$0.00	$48.41
4	65	$35.66	$8.65	$7.41	$0.00	$51.72
5	70	$38.40	$8.65	$19.63	$0.00	$66.68
6	75	$41.15	$8.65	$20.20	$0.00	$70.00
7	80	$43.89	$8.65	$20.77	$0.00	$73.31
8	90	$49.37	$8.65	$21.91	$0.00	$79.93

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.03	$8.65	$0.00	$0.00	$36.68
2	55	$30.83	$8.65	$6.27	$0.00	$45.75
3	60	$33.64	$8.65	$6.84	$0.00	$49.13
4	65	$36.44	$8.65	$7.41	$0.00	$52.50
5	70	$39.24	$8.65	$19.63	$0.00	$67.52
6	75	$42.05	$8.65	$20.20	$0.00	$70.90
7	80	$44.85	$8.65	$20.77	$0.00	$74.27
8	90	$50.45	$8.65	$21.91	$0.00	$81.01

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	07/01/2022	$45.76	$8.65	$23.05	$0.00	$77.46
	01/01/2023	$46.96	$8.65	$23.05	$0.00	$78.66
	07/01/2023	$48.16	$8.65	$23.05	$0.00	$79.86
	01/01/2024	$49.36	$8.65	$23.05	$0.00	$81.06
	07/01/2024	$50.56	$8.65	$23.05	$0.00	$82.26
	01/01/2025	$51.76	$8.65	$23.05	$0.00	$83.46

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - New*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.88	$8.65	$0.00	$0.00	$31.53
2	55	$25.17	$8.65	$6.27	$0.00	$40.09
3	60	$27.46	$8.65	$6.84	$0.00	$42.95
4	65	$29.74	$8.65	$7.41	$0.00	$45.80
5	70	$32.03	$8.65	$19.63	$0.00	$60.31
6	75	$34.32	$8.65	$20.20	$0.00	$63.17
7	80	$36.61	$8.65	$20.77	$0.00	$66.03
8	90	$41.18	$8.65	$21.91	$0.00	$71.74

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.48	$8.65	$0.00	$0.00	$32.13
2	55	$25.83	$8.65	$6.27	$0.00	$40.75
3	60	$28.18	$8.65	$6.84	$0.00	$43.67
4	65	$30.52	$8.65	$7.41	$0.00	$46.58
5	70	$32.87	$8.65	$19.63	$0.00	$61.15
6	75	$35.22	$8.65	$20.20	$0.00	$64.07
7	80	$37.57	$8.65	$20.77	$0.00	$66.99
8	90	$42.26	$8.65	$21.91	$0.00	$72.82

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2022	$43.82	$8.65	$23.05	$0.00	$75.52
	01/01/2023	$45.02	$8.65	$23.05	$0.00	$76.72
	07/01/2023	$46.22	$8.65	$23.05	$0.00	$77.92
	01/01/2024	$47.42	$8.65	$23.05	$0.00	$79.12
	07/01/2024	$48.62	$8.65	$23.05	$0.00	$80.32
	01/01/2025	$49.82	$8.65	$23.05	$0.00	$81.52

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.91	$8.65	$0.00	$0.00	$30.56
2	55	$24.10	$8.65	$6.27	$0.00	$39.02
3	60	$26.29	$8.65	$6.84	$0.00	$41.78
4	65	$28.48	$8.65	$7.41	$0.00	$44.54
5	70	$30.67	$8.65	$19.63	$0.00	$58.95
6	75	$32.87	$8.65	$20.20	$0.00	$61.72
7	80	$35.06	$8.65	$20.77	$0.00	$64.48
8	90	$39.44	$8.65	$21.91	$0.00	$70.00

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$8.65	$0.00	$0.00	$31.16
2	55	$24.76	$8.65	$6.27	$0.00	$39.68
3	60	$27.01	$8.65	$6.84	$0.00	$42.50
4	65	$29.26	$8.65	$7.41	$0.00	$45.32
5	70	$31.51	$8.65	$19.63	$0.00	$59.79
6	75	$33.77	$8.65	$20.20	$0.00	$62.62
7	80	$36.02	$8.65	$20.77	$0.00	$65.44
8	90	$40.52	$8.65	$21.91	$0.00	$71.08

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	07/01/2022	$44.36	$8.65	$23.05	$0.00	$76.06
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2023	$45.56	$8.65	$23.05	$0.00	$77.26
	07/01/2023	$46.76	$8.65	$23.05	$0.00	$78.46
	01/01/2024	$47.96	$8.65	$23.05	$0.00	$79.66
	07/01/2024	$49.16	$8.65	$23.05	$0.00	$80.86
	01/01/2025	$50.36	$8.65	$23.05	$0.00	$82.06

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.18	$8.65	$0.00	$0.00	$30.83
2	55	$24.40	$8.65	$6.27	$0.00	$39.32
3	60	$26.62	$8.65	$6.84	$0.00	$42.11
4	65	$28.83	$8.65	$7.41	$0.00	$44.89
5	70	$31.05	$8.65	$19.63	$0.00	$59.33
6	75	$33.27	$8.65	$20.20	$0.00	$62.12
7	80	$35.49	$8.65	$20.77	$0.00	$64.91
8	90	$39.92	$8.65	$21.91	$0.00	$70.48

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.78	$8.65	$0.00	$0.00	$31.43
2	55	$25.06	$8.65	$6.27	$0.00	$39.98
3	60	$27.34	$8.65	$6.84	$0.00	$42.83
4	65	$29.61	$8.65	$7.41	$0.00	$45.67
5	70	$31.89	$8.65	$19.63	$0.00	$60.17
6	75	$34.17	$8.65	$20.20	$0.00	$63.02
7	80	$36.45	$8.65	$20.77	$0.00	$65.87
8	90	$41.00	$8.65	$21.91	$0.00	$71.56

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2022	$42.42	$8.65	$23.05	$0.00	$74.12
	01/01/2023	$43.62	$8.65	$23.05	$0.00	$75.32
	07/01/2023	$44.82	$8.65	$23.05	$0.00	$76.52
	01/01/2024	$46.02	$8.65	$23.05	$0.00	$77.72
	07/01/2024	$47.22	$8.65	$23.05	$0.00	$78.92
	01/01/2025	$48.42	$8.65	$23.05	$0.00	$80.12

Apprentice - *PAINTER Local 35 Zone 2 - BRUSH REPAINT*

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.21	$8.65	$0.00	$0.00	$29.86
2	55	$23.33	$8.65	$6.27	$0.00	$38.25
3	60	$25.45	$8.65	$6.84	$0.00	$40.94
4	65	$27.57	$8.65	$7.41	$0.00	$43.63
5	70	$29.69	$8.65	$19.63	$0.00	$57.97
6	75	$31.82	$8.65	$20.20	$0.00	$60.67
7	80	$33.94	$8.65	$20.77	$0.00	$63.36
8	90	$38.18	$8.65	$21.91	$0.00	$68.74

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.81	$8.65	$0.00	$0.00	$30.46
2	55	$23.99	$8.65	$6.27	$0.00	$38.91
3	60	$26.17	$8.65	$6.84	$0.00	$41.66
4	65	$28.35	$8.65	$7.41	$0.00	$44.41
5	70	$30.53	$8.65	$19.63	$0.00	$58.81
6	75	$32.72	$8.65	$20.20	$0.00	$61.57
7	80	$34.90	$8.65	$20.77	$0.00	$64.32
8	90	$39.26	$8.65	$21.91	$0.00	$69.82

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)* For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2021	$35.41	$9.10	$16.64	$0.00	$61.15
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.78	$13.41	$16.01	$0.00	$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 2)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	$46.11	$9.40	$23.12	$0.00	$78.63
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 2)*	08/01/2020	$46.11	$9.40	$23.12	$0.00	$78.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 2*

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	$0.00	$0.00	$0.00	$0.00	$0.00

Notes: Apprentice wages shall be no less than the following Steps;
(Same as set in Zone 1)
1$57.06/2$61.96/3$66.87/4$69.32/5$71.78/6$71.78/7$76.68/8$76.68

Apprentice to Journeyworker Ratio:1:5

PIPELAYER *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PLUMBER & PIPEFITTER *PLUMBERS & PIPEFITTERS LOCAL 51*	08/30/2021	$46.49	$10.15	$19.95	$0.00	$76.59

Apprentice - *PLUMBER/PIPEFITTER - Local 51*

Effective Date - 08/30/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$18.60	$10.15	$2.50	$0.00	$31.25
2	50	$23.25	$10.15	$2.50	$0.00	$35.90
3	60	$27.89	$10.15	$8.80	$0.00	$46.84
4	70	$32.54	$10.15	$14.08	$0.00	$56.77
5	80	$37.19	$10.15	$17.60	$0.00	$64.94

Notes:
Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

PNEUMATIC CONTROLS (TEMP.) *PLUMBERS & PIPEFITTERS LOCAL 51*	08/30/2021	$46.49	$10.15	$19.95	$0.00	$76.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER *LABORERS - ZONE 2*	06/01/2022	$37.31	$9.10	$16.64	$0.00	$63.05
	12/01/2022	$38.16	$9.10	$16.64	$0.00	$63.90
	06/01/2023	$39.06	$9.10	$16.64	$0.00	$64.80
	12/01/2023	$39.96	$9.10	$16.64	$0.00	$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$36.41	$9.10	$16.64	$0.00	$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$33.69	$14.00	$16.05	$0.00	$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER *TEAMSTERS 653 - Southeastern Concrete (Weymouth)*	05/01/2022	$24.50	$12.91	$6.90	$0.00	$44.31
	08/01/2022	$24.50	$13.41	$6.90	$0.00	$44.81
	05/01/2023	$25.00	$13.41	$6.90	$0.00	$45.31
	08/01/2023	$25.00	$13.91	$6.90	$0.00	$45.81
RECLAIMERS *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	02/01/2022	$47.03	$12.28	$19.45	$0.00	$78.76

Apprentice - *ROOFER - Local 33*

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.52	$12.28	$5.21	$0.00	$41.01
2	60	$28.22	$12.28	$19.45	$0.00	$59.95
3	65	$30.57	$12.28	$19.45	$0.00	$62.30
4	75	$35.27	$12.28	$19.45	$0.00	$67.00
5	85	$39.98	$12.28	$19.45	$0.00	$71.71

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive $1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 33* For apprentice rates see "Apprentice- ROOFER"	02/01/2022	$47.28	$12.28	$19.45	$0.00	$79.01
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - B*	04/01/2022	$37.41	$13.95	$17.85	$2.08	$71.29

Apprentice - *SHEET METAL WORKER - Local 17-B*

Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$14.96	$13.95	$4.10	$1.02	$34.03
2	45	$16.83	$13.95	$4.61	$1.09	$36.48
3	50	$18.71	$13.95	$11.26	$1.35	$45.27
4	55	$20.58	$13.95	$11.26	$1.41	$47.20
5	60	$22.45	$13.95	$14.60	$1.53	$52.53
6	65	$24.32	$13.95	$14.88	$1.59	$54.74
7	70	$26.19	$13.95	$15.16	$1.66	$56.96
8	75	$28.06	$13.95	$15.44	$1.72	$59.17
9	80	$29.93	$13.95	$15.72	$1.79	$61.39
10	85	$31.80	$13.95	$15.57	$1.85	$63.17

Notes:

Apprentice to Journeyworker Ratio:1:3

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$16.01	$0.00	$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.53	$13.41	$16.01	$0.00	$65.95
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2*	03/01/2022	$57.92	$10.44	$22.10	$0.00	$90.46
	10/01/2022	$59.45	$10.44	$22.10	$0.00	$91.99
	03/01/2023	$60.98	$10.44	$22.10	$0.00	$93.52
	10/01/2023	$62.56	$10.44	$22.10	$0.00	$95.10
	03/01/2024	$64.18	$10.44	$22.10	$0.00	$96.72
	10/01/2024	$65.80	$10.44	$22.10	$0.00	$98.34
	03/01/2025	$67.42	$10.44	$22.10	$0.00	$99.96

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SPRINKLER FITTER - Local 550 (Section B) Zone 2*

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$20.27	$10.44	$12.35	$0.00	$43.06
2	40	$23.17	$10.44	$13.10	$0.00	$46.71
3	45	$26.06	$10.44	$13.85	$0.00	$50.35
4	50	$28.96	$10.44	$14.60	$0.00	$54.00
5	55	$31.86	$10.44	$15.35	$0.00	$57.65
6	60	$34.75	$10.44	$16.10	$0.00	$61.29
7	65	$37.65	$10.44	$16.85	$0.00	$64.94
8	70	$40.54	$10.44	$17.60	$0.00	$68.58
9	75	$43.44	$10.44	$18.35	$0.00	$72.23
10	80	$46.34	$10.44	$19.10	$0.00	$75.88

Effective Date - 10/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$20.81	$10.44	$12.35	$0.00	$43.60
2	40	$23.78	$10.44	$13.10	$0.00	$47.32
3	45	$26.75	$10.44	$13.85	$0.00	$51.04
4	50	$29.73	$10.44	$14.60	$0.00	$54.77
5	55	$32.70	$10.44	$15.35	$0.00	$58.49
6	60	$35.67	$10.44	$16.10	$0.00	$62.21
7	65	$38.64	$10.44	$16.85	$0.00	$65.93
8	70	$41.62	$10.44	$17.60	$0.00	$69.66
9	75	$44.59	$10.44	$18.35	$0.00	$73.38
10	80	$47.56	$10.44	$19.10	$0.00	$77.10

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 223*	09/01/2021	$37.63	$11.25	$13.17	$0.00	$62.05
	09/01/2022	$38.16	$11.25	$13.31	$0.00	$62.72
	09/01/2023	$39.40	$11.50	$13.91	$0.00	$64.81
	09/01/2024	$40.69	$11.75	$14.53	$0.00	$66.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 223*

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	$0.00	$0.00	$0.00	$0.00	$0.00

Notes: See Electrician Apprentice Wages

Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3***

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2022	$56.09	$11.39	$22.34	$0.00	$89.82

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.05	$11.39	$22.34	$0.00	$61.78
2	60	$33.65	$11.39	$22.34	$0.00	$67.38
3	70	$39.26	$11.39	$22.34	$0.00	$72.99
4	80	$44.87	$11.39	$22.34	$0.00	$78.60
5	90	$50.48	$11.39	$22.34	$0.00	$84.21

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$42.58	$9.10	$17.72	$0.00	$69.40
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$41.30	$9.10	$17.72	$0.00	$68.12
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$41.18	$9.10	$17.72	$0.00	$68.00
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2021	$50.83	$14.00	$16.05	$0.00	$80.88
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.82	$13.41	$16.01	$0.00	$66.24
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$53.41	$9.10	$18.17	$0.00	$80.68
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$55.41	$9.10	$18.17	$0.00	$82.68
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$45.48	$9.10	$18.17	$0.00	$72.75

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2021	$47.48	$9.10	$18.17	$0.00	$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$16.01	$0.00	$65.66
WAGON DRILL OPERATOR *LABORERS - ZONE 2*	06/01/2022	$36.56	$9.10	$16.64	$0.00	$62.30
	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2021	$35.66	$9.10	$16.64	$0.00	$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2021	$51.38	$14.00	$16.05	$0.00	$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & PIPEFITTERS LOCAL 51*	08/30/2021	$46.49	$10.15	$19.95	$0.00	$76.59
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Marine Drilling						
BLASTER *MARINE DRILLING*	01/01/2018	$41.82	$7.63	$3.60	$0.00	$53.05
BOAT CAPTAIN *MARINE DRILLING*	01/01/2018	$33.87	$7.63	$3.30	$0.00	$44.80
BOAT CAPTAIN / Over 1,000 hp *MARINE DRILLING*	01/01/2018	$38.06	$7.63	$3.60	$0.00	$49.29
CORE DRILLER *MARINE DRILLING*	01/01/2018	$31.43	$7.63	$2.90	$0.00	$41.96
CORE DRILLER HELPER *MARINE DRILLING*	01/01/2018	$28.47	$7.63	$3.00	$0.00	$39.10
DRILLER *MARINE DRILLING*	01/01/2018	$39.70	$7.63	$3.60	$0.00	$50.93
ENGINEER *MARINE DRILLING*	01/01/2018	$39.69	$7.63	$3.50	$0.00	$50.82
HELPER *MARINE DRILLING*	01/01/2018	$34.24	$7.63	$3.00	$0.00	$44.87
MACHINIST *MARINE DRILLING*	01/01/2018	$38.88	$7.63	$3.30	$0.00	$49.81
OILER - MARINE DRILLING *MARINE DRILLING*	01/01/2018	$34.24	$7.63	$3.00	$0.00	$44.87
TUG DECKHAND *MARINE DRILLING*	01/01/2018	$27.61	$7.63	$3.00	$0.00	$38.24
WELDER *MARINE DRILLING*	01/01/2018	$38.88	$7.63	$3.30	$0.00	$49.81
Op Eng Marine (Dredging Work)						
BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$29.26	$7.63	$3.30	$0.00	$40.19
CERTIFIED WELDER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$31.09	$7.63	$3.60	$0.00	$42.32

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHIEF WELDER/ CHIEF MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$33.02	$7.63	$3.60	$0.00	$44.25
DERRICK / SPIDER / SPILLBARGE OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$33.02	$7.63	$3.60	$0.00	$44.25
DRAG BARGE OPERATOR / WELDER / MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$30.24	$7.63	$3.30	$0.00	$41.17
ENGINEER / ELECTRICIAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$33.02	$7.63	$3.60	$0.00	$44.25
LICENSED BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$33.02	$7.63	$3.60	$0.00	$44.25
LICENSED TUG OPERATOR OVER 1000HP *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$38.18	$7.63	$3.60	$0.00	$49.41
MAINTENANCE ENGINEER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$33.03	$7.63	$3.60	$0.00	$44.26
OILER - MARINE DIVISION *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$24.30	$7.63	$3.00	$0.00	$34.93
OPERATOR / LEVERMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$38.18	$7.63	$3.60	$0.00	$49.41
RODMAN / SCOWMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$24.30	$7.63	$3.00	$0.00	$34.93
SHOREMAN / DECKHAND *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2017	$24.30	$7.63	$3.00	$0.00	$34.93
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$29.67	$9.25	$1.89	$0.00	$40.81
CABLEMAN (Underground Ducts & Cables) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$42.03	$9.25	$10.27	$0.00	$61.55
DRIVER / GROUNDMAN CDL *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$34.62	$9.25	$10.07	$0.00	$53.94
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$27.20	$9.25	$1.82	$0.00	$38.27
EQUIPMENT OPERATOR (Class A CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$42.03	$9.25	$14.35	$0.00	$65.63
EQUIPMENT OPERATOR (Class B CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$37.09	$9.25	$10.87	$0.00	$57.21
GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$27.20	$9.25	$1.82	$0.00	$38.27
GROUNDMAN -Inexperienced (<2000 Hrs.) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	$22.25	$9.25	$1.82	$0.00	$33.32
JOURNEYMAN LINEMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/30/2020	$49.45	$9.25	$17.48	$0.00	$76.18

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LINEMAN (Outside Electrical) - East Local 104*

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$29.67	$9.25	$3.39	$0.00	$42.31
2	65	$32.14	$9.25	$3.46	$0.00	$44.85
3	70	$34.62	$9.25	$3.54	$0.00	$47.41
4	75	$37.09	$9.25	$5.11	$0.00	$51.45
5	80	$39.56	$9.25	$5.19	$0.00	$54.00
6	85	$42.03	$9.25	$5.26	$0.00	$56.54
7	90	$44.51	$9.25	$7.34	$0.00	$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	02/04/2019	$30.73	$4.70	$3.17	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	02/04/2019	$28.93	$4.70	$3.14	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	02/04/2019	$28.93	$4.70	$3.14	$0.00	$36.77

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.
*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Attachment 2

Order of Conditions

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

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

Provided by MassDEP:
SE 10-3555
MassDEP File #

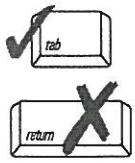
eDEP Transaction #

Chatham
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

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



1. From: Chatham
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Robert — a. First Name
Duncanson, Ph.D. — b. Last Name
Town of Chatham — c. Organization
549 Main Street — d. Mailing Address
Chatham — e. City/Town
MA — f. State
02633 — g. Zip Code

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
c. Organization
d. Mailing Address
e. City/Town
f. State
g. Zip Code

5. Project Location:

54 & 0 Barcliff Avenue Extension — a. Street Address
Chatham — b. City/Town
16F — c. Assessors Map/Plat Number
PIER- 5 & 7 — d. Parcel/Lot Number

Latitude and Longitude, if known: 41d41m17s — d. Latitude; 69d57m04s — e. Longitude

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: SE 10-3555 (MassDEP File #)
eDEP Transaction #
Chatham (City/Town)

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
   Barnstable (a. County) | (b. Certificate Number (if registered land))
   673 (c. Book) | 164 (d. Page)

7. Dates: 6/7/2022 (a. Date Notice of Intent Filed) | 7/6/2022 (b. Date Public Hearing Closed) | 7/7/2022 (c. Date of Issuance)

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
   South Jog Pier & Site Improvements Permit Drawings G-001 to G-003, C-101, S-101 to S-108, ES.01, EDS1.1, ES1.1, E4.1, P001, PD100, P100 & P001
   Foth Infrastructure & Environment, LLC (b. Prepared By) | John T. Contillo, Jr (c. Signed and Stamped by)
   Various- See Plans (d. Final Revision Date) | Various- See Plans (e. Scale)
   (f. Additional Plan or Document Title) | (g. Date)

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

   Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☐ Public Water Supply b. ☒ Land Containing Shellfish c. ☒ Prevention of Pollution
d. ☐ Private Water Supply e. ☐ Fisheries f. ☒ Protection of Wildlife Habitat
g. ☐ Groundwater Supply h. ☒ Storm Damage Prevention i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☒ Land Under the Ocean	453 a. square feet	453 b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☒ Coastal Beaches	129 a. square feet	129 b. square feet	cu yd c. nourishment	cu yd d. nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☒ Land Containing Shellfish	66 a. square feet	66 b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☒ Land Subject to Coastal Storm Flowage	4,400 a. square feet	4,400 b. square feet		
22. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Massachusetts Department of Environmental Protection
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Provided by MassDEP:
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B. Findings (cont.)

* **#23.** If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW | b. square feet of salt marsh

24. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 7/7/2025 unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

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C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number SE 10-3555 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:

    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;

    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;

    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

see attached

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

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

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Chatham hereby finds (check one that applies):
   Conservation Commission

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:
   Chatham Wetlands Bylaw and Regulations
   1. Municipal Ordinance or Bylaw | 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   see attached

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

7/7/22
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

5
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

54 & 0 Bardiff Avenue Extension

Signature	Printed Name
Robert Balls	ROBERT BALLS

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested, on 7/7/22

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
SE 10-3555
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G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Chatham
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Chatham
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

54 & 0 Barcliff Avenue Extension
Project Location

SE 10-3555
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Barnstable
County

673
Book

164
Page

for: Town of Chatham
Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

7/7/2022
Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Request for Departmental Action Fee Transmittal Form

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

DEP File Number:

Provided by DEP

A. Request Information

1. Location of Project

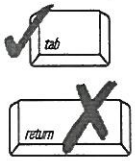
a. Street Address

b. City/Town, Zip

c. Check number

d. Fee amount

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



2. Person or party making request (if appropriate, name the citizen group's representative):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

4. DEP File Number:

B. Instructions

1. When the Departmental action request is for (check one):

☐ Superseding Order of Conditions – Fee: $120.00 (single family house projects) or $245 (all other projects)

☐ Superseding Determination of Applicability – Fee: $120

☐ Superseding Order of Resource Area Delineation – Fee: $120

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Request for Departmental Action Fee Transmittal Form

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

DEP File Number:

Provided by DEP

B. Instructions (cont.)

Send this form and check or money order, payable to the *Commonwealth of Massachusetts,* to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community).

4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

SE 10- 3555
CWP N-22 - 27

File Number

TOWN OF CHATHAM CONSERVATION COMMISSION

Findings on Application filed under the
Chatham Wetlands Protection Bylaw, Chapter 272

Issuance Date

7/7/22

APPLICANT : Town of Chatham
549 Main Street
Chatham, MA 02633

OWNER:

Location of Work: 540 Bardiff Ave Extension **Assessors' Map:** 16F **Parcel ID:** PIER-5&7

Property recorded at the Registry of Deeds or Land Court in Barnstable County:

Certificate: **Book:** 673 **Page:** 164

After public hearing in accordance with the Open Meeting Law (MGL Ch 39, s23B) closed **on** 7/6/22 the Chatham Conservation Commission, in accordance with the Town of Chatham Wetlands Protection Bylaw (Ch 272) finds:

✓ **Permit is granted**; work may proceed subject to the attached Special Conditions.

___ **Permit is denied**; see attached explanation.

Chatham Conservation Commission:

Robert Kells
Peter D. Bilyard
Joan Lathrin
Peter L. Hoyt

signed by 5 of 7 Commissioners

Town of Chatham – Order of Conditions
Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40
Town of Chatham Wetlands Bylaw C. 272 and Regulations
54 & 0 Barcliff Avenue Extension, Map [16F] Parcel [PIER-5 & 7]
SE 10- 3555, CWP N-22-27

Owner/Applicant: Robert Duncanson, Ph.D. for The Town of Chatham
Owner's Representative: Foth Infrastructure & Environment, LLC
Project Type: Install sheet bulkhead seaward of existing bulkhead, reconstruct existing timber stairs and landing, and add a walkway from upper parking lot.

SUPPORTING DOCUMENTS

Through the Public Hearing process, plans, work protocols, and expert testimony were submitted. The following list of documents reflects the project as reviewed by the Commission and represents the project that seeks an Order of Conditions under the Massachusetts Wetlands Protection (310 CMR 10.00) and Town of Chatham Wetlands Protection Regulations. The following materials are hereby made a part of this Order:

- Wetlands Protection Act Form 3 – Notice of Intent and Wetland Fee Transmittal Form
- NOI Checklist
- Check for State and Local Filing Fees
- Site Access Authorization Form
- Certified Abutters List and Map from the Chatham Assessor's Office
- Abutter Notification Letter and Mail Receipts
- Property description
- Wetland Delineation Information
- Project description
- Performance standards
- Construction Protocol
- Variance Request and Alternatives Analysis
- Staking Protocol
- Maps: Locus Map, FEMA Flood Insurance Rate Map (FIRM)
- Site Plan Titled: South Jog Pier & Site Improvements- Permit Drawings for property located at 54 & 0 Barcliff Avenue Extension, Chatham, MA, prepared for Town of Chatham , prepared by Foth Infrastructure & Environment, LLC, dated Various- see plans, scale 1" =Various- see plans, stamped by Various- see plans

HEARING INFORMATION:

The Applicant submitted a Notice of Intent received by the Conservation Division on 6/7/2022. The Conservation Commission held a public hearing on 6/22/2022 to review the proposed Notice of Intent. An Order of Conditions was reviewed at the Work Session on 7/6/2022.

Town of Chatham – Order of Conditions
Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40
Town of Chatham Wetlands Bylaw C. 272 and Regulations
54 & 0 Barcliff Avenue Extension, Map [16F] Parcel [PIER-5 & 7]
SE 10- 3555, CWP N-22-27

RESOURCE AREAS:

The following Resource Areas are associated with the project site:

Resource Areas: Areas subject to protection under M.G.L. c. 131, § 40	310 CMR 10.00: DEP's Wetland Protection Regulations	Chatham Wetlands Protection Regulations
Land Under the Ocean	310 CMR 10.25 (2)	CWPR 2.01 (2)
Coastal Beaches	310 CMR 10.27 (2)	CWPR 2.02 (2)
Coastal Banks	310 CMR 10.30 (2)	CWPR 2.05 (2)
Land Containing Shellfish/Shellfish and Shellfish Habitat	310 CMR 10.34 (2)	CWPR 2.08 (2)
Land Subject to Coastal Storm Flowage (LSCSF)	310 CMR 10.04	CWPR 2.10 (2)(a)
Adjacent Upland Resource Area (AURA)		CWPR 4.01 (2)
Estimated Habitats of Rare Wildlife	310 CMR 10.37	

PROPERTY AND PROJECT DESCRIPTION:

Property Description:

The subject property is 2.08 acres of waterfront utilized as an offloading facility for commercial fisherman, fishing charters, and Coast Guard & Harbormaster rescue vessels. The site includes a fish packaging building, and a wharfinger/harbormaster building with public restrooms and a staff office for facility oversight, timber decks and stairs, parking, and a public viewing deck overlooking the fish off-loading area. The subject property is identified by the Chatham Board of Assessors as Parcel 16F-PIER 5 and classified as a Municipal Property by the Chatham Zoning Map. The site is located along Chatham Harbor and Aunt Lydia's Cove in FEMA flood zone VE (EL. 15) with a zone AE (EL. 13) upland.

The Project is within Land Under the Ocean, Coastal Bank, Coastal Beach and Land Subject to Coastal Storm Flowage coastal resource areas. Other regulated areas within the Project area include Natural Heritage and Endangered Species Program (NHESP) priority habitat of rare species and estimated habitat of rare wildlife. The area seaward of the existing bulkhead is depicted as an Approved Shellfish Growing Area on MassGIS based on the Division of Marine Fisheries. The area seaward of the east face of the South Jog is designated as a shellfish suitability area (Blue Mussel).

The subject property includes a paved parking lot with a curb along the top of the existing bulkhead. The existing finger piers, floating dock, and sheet pile bulkhead are licensed under multiple state licenses and Orders of Conditions listed in Table 1 and in Attachment G.

Project and Mitigation Description:

The project will stabilize the shoreline and protect the subject property and bank by replacing the bulkhead which has reached the end of its service life and is deteriorating. The replacement bulkhead will be installed just seaward of the existing bulkhead, The existing fendering system will be replaced with a timber pile system. A cathodic protection system comprised of aluminum anodes is proposed throughout the facility to reduce corrosion of the steel. The riprap south of the existing South Jog Pier will be removed prior to construction to drive the sheet pile. The existing fendering system that is located around the building will be replaced from the southside of the building around the bulkhead and to the north property line.

The existing timber stairs and landings alongside the Wharfinger building are in poor condition, not compliant with current building codes, and will be reconstructed. A new curbed sidewalk will be added from the north end of the Upper parking lot along Barcliff Avenue Extension intersection the path alongside the Wharfinger building, then an at-grade walkway along the perimeter of the Lower parking lot to the South Jog Pier. The walkway is designed to separate pedestrian access from vehicular traffic and commercial activities at the facility.

FINDINGS:

Following review of the Application and Supporting Documents referenced above that describe the proposed Project and the information provided at the public hearings held on the application, the Conservation Commission finds that:

1. The proposed project will result in an overall coverage increase of 1500 sf for the creation of the walkway.
2. 650 sf of rip rap will be removed.
3. The pedestrian walkway was deemed necessary for safety and will have a guardrail to try to maintain pedestrian flow to the walkway and to keep vehicles at bay.
4. Bulkhead installation will be a land-based or water-based crane via barge.
5. A grass swale will be established next to the walkway to mitigate for stormwater runoff (depicted on plan S.106). New drainage (outside of Conservation jurisdiction) will also occur in the upper parking lot.

6. Preservation of the Fish Pier is beneficial to the fishing industry, economy and public benefits.
7. The proposed project includes activities in the NDZ, therefore a variance is required and/or requested. Given that the lot is constrained in size, the lot is extensively disturbed, the project serves public interest and a bulkhead already exists, the Commission finds that the increase in the NDZ is offset by an overall benefit or no change to the resource area. Therefore, the Commission finds that the proposed Project qualifies for a variance from the Chatham bylaw pursuant to the Chatham Wetlands Protection Regulations, Part IV, Section 4.03, because the applicant has (a) demonstrated that there are no reasonable alternatives to the project within the proposed, site and (b) demonstrated, and the Commission finds, that, as conditioned herein, there will be no adverse impact from the project. Accordingly, the Commission grants the variance.

DECISION: The Commission **APPROVES** the Project and finds the project as described in the Supporting Documents can be permitted subject to the following Special and General Conditions which protect the interests identified in the Chatham Wetland Bylaw c. 272 and Regulations and Massachusetts Wetland Protection Act M.G.L. c. 131 § 40 and the Regulations 310 CMR 10.00 (inclusive).

DISCLAIMER: By issuing this permit, the Conservation Commission makes no determination of property rights or the legal ability of the applicant to undertake this project. In all cases, the applicant proceeds with the project at his/her own peril in this regard.

CONDITIONS

The Project approval is based on compliance with the following Special and Standard Conditions. Except as otherwise specifically notes on the approved Plans, these Conditions apply as and to the extent they are applicable to the specific Project. The Standard Conditions supplement the Special Conditions and relate generally to steps necessary for the protection of wetland Resource Areas before, during, and after project completion, and to provide documentation necessary to confirm that the project has been completed as permitted. If there is any conflict or inconsistency between the Standard Conditions and the Special Conditions, the Special Conditions shall control.

SPECIAL CONDITIONS:

1. The approved Site Plans, all Notes on the Approved Plans and Work Protocols contained in the Applicant's Narrative are hereby incorporated by reference and made a part of this Order of Conditions.
2. Applicant shall take special care to ensure that no unpermitted alteration, including temporary alteration, of the No Disturb Zone (NDZ) occurs during the project. Steps to be taken to protect the NDZ shall include, as examples and without limitation, avoiding any excavation within the NDZ, installation of Limit of Work (hay bales, silt fence or similar protective barrier) along the boundaries of the NDZ to prevent any unnecessary incursion. Any disturbance of NDZ that cannot be avoided shall be minimized as much as possible and the NDZ shall be restored to its pre-construction condition immediately after the project is completed.
3. Prior to start the contractor shall submit a site management plan that details procedures for material storage, cleaning of site, containment of debris and silt curtain installation/maintenance.
4. No pesticides, fertilizers or new permanent irrigation is permitted within any Resource Areas in Conservation jurisdiction. **This condition shall be recorded as an on-going condition on the Certificate of Compliance.**

STANDARD CONDITIONS:

A. Pre-construction Conditions

1. All pre-construction activities shall be conducted in a manner that avoids alteration to any wetland Resource Area as defined in 310 CMR 10.00 and the Town of Chatham Wetlands Protection Regulations.
2. Project installation and maintenance shall be implemented, supervised, and monitored by a qualified consultant/contractor approved by the Conservation Commission. If, following Commission review, approval of the plans, and issuance of an Order of Conditions, there is no consultant/contractor selected or there is a change in consultant/contractor, the Applicant shall appear before the Conservation Commission at a regularly scheduled meeting to request approval of a consultant/contractor appropriately qualified to undertake the Project prior to undertaking or continuing any work.
3. Prior to any site disturbance and to the pre-construction meeting, all sedimentation controls shall be in place and ready for inspection by the Agent during the pre-construction meeting. The Agent may instruct the contractors to modify the

sedimentation controls to protect wetland Resource Areas and for compliance with the Order of Conditions. Note: Hay is not acceptable for erosion controls.

4. Prior to any work commencing and the pre-construction meeting with the Agent, a sign shall be visibly displayed on the site showing the DEP and/or the Chatham Conservation Division file number and shall remain posted until the issuance of a Certificate of Compliance. A copy of this Order of Conditions and site plan shall be retained on the site at all times and visibly displayed in a weatherproof container.
5. Prior to any site disturbance, a pre-construction meeting will be held with the responsible contractors, engineer, and Commission/Agent to review the Order of Conditions, the work protocol and other required materials identified in this Order of Conditions. Multiple contractors may be required to attend the pre-construction meeting, at the discretion of the Conservation Agent or Conservation Commission. Notice of work start and completion shall be given to the Agent in writing before or during the Pre-Construction meeting. The notice of start of work shall also include the name(s) and telephone number(s) of the person(s) responsible on site for compliance with this Order. Work shall not begin until a pre-construction meeting is held, and the Agent determines the work can proceed.
6. The applicant shall identify a professional land surveyor, engineer, landscape designer and/or ecological restoration professional (as appropriate to the project), or other professional approved by the Commission) to act as a project site manager or "clerk of the works". The "clerk of the works" shall be approved by the Conservation Agent at the pre-construction meeting. The clerk of the works shall supervise the contractor(s) and inspect the site regularly whenever work takes place in or within 100 feet of a wetland Resource Area. The clerk of the works will be onsite regularly and shall take responsibility for the proper functioning of drainage and erosion control systems for the project. The phone number for the "Clerk of the Works" shall be given to the Agent at the Pre-Construction meeting. Prior to any work commencing, the named "Clerk of the Works" shall sign and submit a form acknowledging their understanding of this Order of Conditions and asserting that they will provide all subcontractors with a copy of these Conditions as they apply to each subcontractor. Multiple clerks of the works may be required where projects involve multiple components which each need specialized oversight capability.

B. Conditions for Demolition, Construction, Site Disturbance and Drainage

1. All material and debris generated during demolition of existing structures shall be loaded onto waiting trucks and removed from the site daily. Stockpiling of debris shall not occur within any Resource Areas.
2. All construction materials, earth stockpiles, landscaping materials, slurry pits, waste products, refuse, debris, stumps, slash or excavate shall be stockpiled or collected in outside all Resource Areas and associated buffer zones under cover and surrounded by a double staked row of straw bales to prevent contact with rain water. Port-o-potties shall be sited at least 100 feet from wetland Resource Areas or on existing pavement. Washing of equipment and tools shall be done off site or handled in a manner approved by the Conservation Agent and in no case, shall concrete or masonry debris be left on site and uncovered.
3. No material of any kind shall be buried, placed or dispersed in areas within jurisdiction of the Conservation Commission, except as expressly permitted by the Order of Conditions or the plan(s) approved herein.
4. Disturbed areas where the grade is steep (>10%) shall not be exposed for longer than two months. If exposed for longer than 2 weeks, erosion control matting shall be installed and firmly anchored in placed to prevent soil from washing out during rain or flooding events. In addition, the exposed area(s) shall be seeded with perennial rye or other native grasses for stability. All sedimentation controls shall be approved by the Agent prior to installation. All disturbed areas shall be stabilized and seeded prior to November 1st of each year and no disturbed areas shall be left unprotected or without erosion controls during the winter months (December – April).
5. Machinery and vehicle access shall be from the existing parking areas and across upland areas, unless otherwise specified in the Approved Work Protocol or approved Site Plan(s). The granting of this permit does not obviate the Applicant's need to gain proper permission from any abutter whose property is to be used for access.
6. Machinery and vehicles, when not in use, shall be parked on existing pavement, unless otherwise specified in the Order of Conditions or on the approved site plan(s).
7. There shall be no discharge or spillage of fuel, oil or other pollutants to any wetland Resource Area(s) or associated buffer zones. The Applicant shall take all reasonable precautions to prevent the release of pollutants through negligence, ignorance, accident or vandalism.
8. Runoff from hardscaped areas or roof runoff shall be allowed to percolate down through the soils from the surface using best management practices for handling stormwater, and as approved by the Commission/Agent. At no time may runoff be

directed to any Resource Area. All stormwater runoff from hardscaped areas on the applicant's property, including runoff from rooves, patios, terrace, swimming pools and other hardscape features, must be captured on the applicant's property and not allowed to flow onto neighboring properties or into Resource Areas. This project shall not increase runoff, nor cause flood or storm damage to abutters, other property owners or the Resource Area.

9. Failure to follow approved and required maintenance practices for the Project, or any part of this Project is shown to cause negative impact to the Resource Areas shall be cause for the Commission to require that remedial measures must be undertaken. The Commission reserves the right to require that a hearing be held, at the applicant's expense, in order to discuss the necessary remedial measures and determine if more information from the Applicant or a Third Party Consultant is required. The Commission may determine that the approved project is to be modified as necessary to protect the interests of the Act.

PROJECT SPECIFIC CONDITIONS:

C. Installation of Sheet Pile Bulkhead

1. The approved Site Plan and Planting Plans, the notes on the approved plans and any Construction Protocols and/or notes are hereby incorporated by reference and made a part of this Order of Conditions.
2. Any equipment to be used in any Resource Area shall be inspected for leaks prior to entering in the Resource Areas and only biodegradable hydraulic fluid shall be used.
3. There shall be no adverse impact to the shellfish habitat or intertidal area during the construction of the bulkhead or after the bulkhead is installed. This condition shall be recorded as an ongoing condition on the Certificate of Compliance.
4. All equipment used during construction shall be removed from tidal and sandy access routes prior to any astronomic tidal or storm event.
5. Beach nourishment, when required by this Order of Conditions, shall be performed in accordance with the Massachusetts DEP's *Beach Nourishment: Guide to Best management Practices for Projects in Massachusetts.* Beach nourishment material shall be clean and of compatible grain size with existing material. Prior to any nourishment activities, the Applicant's Engineer shall submit written documentation detailing that the sand is clean and compatible. The maximum amount of nourishment required in any given year shall not exceed the volume specified in the Site Plan, Planting Plan, Land Management Plan and/or Construction Protocols. If no such volume is shown on

documents listed above, then the nourishment volume shall be approved by the Commission prior to any nourishment activity. This condition is an ongoing condition and shall be recorded as such on the Certificate of Compliance.

6. If, after consulting with qualified coastal engineers or coastal geologists at the Applicant's expense, the Commission finds that the bulkhead has caused or accelerated erosion on the site or on nearby properties, it may order the Applicant to nourish the beaches using clean sand of a similar grain size, with an amount of material equal to an engineer's/geologists calculation of the loss caused by the structure. The Commission may order re-nourishment as necessary. This condition shall be recorded as an ongoing condition on the Certificate of Compliance.
7. In the event the Project is not performing as anticipated or has suffered a catastrophic failure and that, as a consequence, the Applicant and/or the Commission determines some part or all of it should be removed, the Applicant shall seek approval for a protocol to remove project components or the entire Project from the Resources Area(s). This condition shall be recorded as an ongoing condition on the Certificate of Compliance.
8. The approved shorefront protection system may not be appropriate *infinitum* due to changes in site conditions, the Commission reserves the right in the future to require that a hearing be held, at the applicant's expense. This would be done for the purpose of determining whether conditions on the site have changed substantially, particularly in relation to the change in mean high water elevation or other. The Commission may determine that approved shorefront protection system the is to be modified as necessary to protect the interests of the Act. This condition shall be recorded as an ongoing condition on the Certificate of Compliance.
9. Failure to follow maintenance of the Project or if the any part of this Project shall be shown to cause negative impact to the resource areas shall be cause for the Commission to require that remedial measures must be undertaken, including, if appropriate, the removal of the bulkhead. This condition shall be recorded as an ongoing condition on the Certificate of Compliance.

A. General Conditions

1. The "applicant" as used in this Order of Conditions shall refer to the owner, any successor in interest or successor in control of the property referenced in the Notice of Intent, supporting documents and this Order of Conditions. The Commission shall be notified in writing within 30 days of all transfers of title of any portion of property that take place prior to issuance of a Certificate of Compliance.

2. This Order of Conditions shall be recorded at the registry of deeds/land court and proof of the recording shall be submitted to the Conservation Commission prior to the Pre-Construction meeting with the Conservation Agent.
3. The Applicant shall provide a copy of this Order of Conditions to the person or persons supervising the activities that are the subject of this Order and will be responsible for ensuring that all persons performing the permitted activities are fully aware of the terms and conditions of this Order of Conditions.
4. Any person performing work on the activities permitted with this Order of Conditions is individually responsible for understanding and complying with the requirements of this Order, the Wetlands Protection Act (310 CMR 10.00) and the Town of Chatham Wetland Protection Regulations.
5. This Order of Conditions authorizes only the activities described on the approved plan(s) and approved documents referenced in this Order of Conditions. Any other or additional activities in areas within jurisdiction of the Conservation Commission shall require a separate review and approval by the Conservation Commission.
6. If any change is made to the approved plan(s) which may or will alter an area subject to protection under the Wetlands Protection Act (310 CMR 10.00) and the Town of Chatham Wetlands Protection Regulations, the Applicant shall inquire from the Conservation Commission and/or the Conservation Agent, prior to implementing the change in the field, whether the change is significant enough to require an additional filing (i.e. Field Change Request, Amendment to the Order of Conditions or new Notice of Intent). Any errors in plans or information submitted by the Applicant or their Representative shall be considered changes and the above process shall be followed. This Order of Conditions is subject to the applicant obtaining all applicable local and state permits.
7. The Commission, its employees and agents shall have the right of entry to inspect for compliance with the terms of this Order until a Certificate of Compliance has been obtained and recorded at the Barnstable Registry of Deeds. Commission members or their agent may acquire any information, measurements, photographs, observations and/or materials or may require the submittal of any data or information deemed necessary by this Commission for that evaluation.
8. This Order of Conditions is valid for three years under the local Wetlands Protection By-Law and three years under MGL Ch. 131, s 40. Application for an extension shall be submitted in writing to the Conservation Commission at least thirty days prior to the expiration date.

9. The Commission reserves the right to amend this Order of Conditions prior to completion of construction, after a legally advertised public hearing, if plans or circumstances are changed or if new conditions or information so warrant.
10. The Commission reserves the right to require additional information from the Applicant or his/her Representative prior to completion of construction, after a legally advertised public hearing, if plans or circumstances are changed or if new conditions or information so warrant. If the Applicant will not provide such information, the Commission reserves the right to hire a third party applicant at the applicant's expense to obtain the information needed.
11. The Approved Plan for this Order of Conditions does not constitute specific acceptance of the boundaries of resource areas for work The Commission may require new plans and/or delineation of resource areas, as it deems appropriate.
12. Upon completion of the project the applicant shall submit a written request for a Certificate of Compliance to the Commission and shall include:
    a. A written statement from a Massachusetts registered professional engineer certifying that the work has been conducted as shown on the plan and documents referenced above, as conditioned by the Commission.
    b. An "as-built" plan, including final contours and planted areas, prepared and signed and stamped by a Massachusetts registered professional engineer or land surveyor for the file.
13. This Order of Conditions shall be deemed not to have been complied with until the applicant has obtained a Certificate of Compliance and it has been recorded in the Barnstable County Registry of Deeds.
14. Failure to comply with the above conditions shall constitute cause to revoke this permit and/or issue fines.