

DOCUMENT 00910
ADDENDUM NO. 2

DATE: August 21, 2024

CONTRACT: Construction of Duxbury Beach Seawall - Phase II, Contract 2024-II

OWNER: Town of Duxbury, Duxbury, MA

ENGINEER: PGB Engineering, LLC, Marshfield, MA

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents first issued July 31, 2024, with amendments and additions noted below.

Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

This Addendum consists of 35 pages.

I. BIDDING DOCUMENTS

1. Replace Section **00412 BID FORM** with the attached Section **00412 ADDENDUM BID FORM**.
The Addendum Bid Form has additional quantities in Bid Items 7, 9 and 12; and Item 13 has been added. The additional work is related to the staging area – refer to **Addendum 2 – Figure A1**.
2. Replace Section **01200 MEASUREMENT AND PAYMENT** with the attached Section **01200 ADDENDUM MEASUREMENT AND PAYMENT**.
The Addendum Measurement & Payment has additional work descriptions included in Bid Items 7, 9 and 12; and Item 13 has been added. The additional work is related to the staging area – refer to **Addendum 2 – Figure A1**.
3. Replace Section **03300 CAST-IN-PLACE CONCRETE** with the attached Section **03300 ADDENDUM CAST-IN-PLACE CONCRETE**.

II. CLARIFICATION:

1. The Contractor shall be responsible for all costs associated with concrete testing. The Contractor shall submit to the Engineer, for approval, the concrete testing company that the Contractor intends to use on the project. Costs associated with concrete testing shall be included in the bid price for Bid Items 3 and 4.
2. The proposed location for stockpiling revetement stone removed under Bid Item 11 is shown on **Addendum 2 – Figure A2**.

III. QUESTIONS AND ANSWERS:

Q1: Slag is not mentioned in the spec. Would slag be allowed in the mix?

A1: Yes, slag is allowed in the concrete mix at a maximum of fifteen percent (15%).

Q2: Maximum limits of fly ash and silica fume are mentioned but doesn't necessarily say that we need to use those materials.

A2: Silica fume is required, fly ash may be used but is not required to be used.

Q3: Generally, in these types of applications corrosion inhibitor is used at a dose of 3 gallons per yard, even when using epoxy coated rebar. Just want to clarify if they are going to allow you to just use epoxy rebar and no corrosion inhibitor?

A3: Corrosion inhibitor is required to be used at the dosage recommended by the manufacturer (typically 3 gallons per yard).

Q4: Common mix used for this type of work would be a 5000 psi $\frac{3}{4}$ mix, .40 w/c ratio, 3 gallons of corrosion inhibitor, that has 25% slag, a slump range of 5-8", and 6 +/-1.5% for air?

A4: The cited mix design is in compliance with these Contract Specifications.

Q5: Is high performance concrete, which would require silica fume and corrosion inhibitor, required?

A5: Silica fume and corrosion inhibitor are required.

Q6: Is slag allowed in the mix (not mentioned in spec)?

A6: See answer to Question 1.

Q7: Spec calls out max limits of fly ash and silica fume but it doesn't say that we need to use those materials, are they required?

A7: See answer to Question 2.

Q8: We refer to specification section 03300 para 2.02 D, if corrosion inhibitor is required, would it be dosed at 3 gal/cy (typical)?

A8: See answer to Question 3.

Q9: Would a joint venture satisfy the project's requirements related to qualifications?

A9: A joint venture would be considered provided that the parties involved meet the Contract Qualifications requirements of specification Section 00200 – Instructions to Bidders, Part 5.

Q10: Is an office trailer required for the Owner/Engineer?

A10: No office trailer is required.

Q11: Please refer to Section IV General Conditions, and on page 45 please confirm the TOY Restriction listed for Tidal Waters (January 15 – November 15) is not applicable?

A11: These time of year restrictions are not applicable to this project.

Q12: Please refer to Note 17 of the General Notes. Are those dates solely for the 25 ft wide opening as an access point, it's not a work restriction? In other words, construction of the wall may proceed between March 31 and September 15, via other access points?

A12: The time of year restrictions indicated in General Note 17 is for passage over the dune and any work in the southern portion of the project, including the cobble berm, dune restoration and seawall construction from the southern end to Sta. 5+76.

IV. ATTACHMENTS:

1. Section 00412 Addendum Bid Form.
2. Section 01200 Addendum Measurement and Payment.
3. Section 03300 Addendum Cast-In-Place Concrete.
4. Addendum 2 – Figure A1.
5. Addendum 2 – Figure A2.

END OF DOCUMENT

SECTION 00412
ADDENDUM BID FORM

To: Town of Duxbury, MA

Project: Construction of Duxbury Beach Seawall - Phase II, Contract 2024-II

Date: _____

Submitted by: _____
(full name)

(full address)

The Owner reserves the right to reject any bid in the event that any bid item is obviously unbalanced or appears to the Owner to be so unbalanced as to affect or to be liable to affect adversely any interest of the Owner.

In the event of a discrepancy in any bid item between the amount written in words and the amount written in figures, the amount written in words shall govern.

The Owner reserves the right to reject any or all bids if it deems to be in its best interest to do so.

The undersigned states that no officer, agent or employee of the Owner directly or indirectly has a financial interest in the Bid.

1. OFFER

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by PGB Engineering LLC, Engineer for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work, including the work of all Subcontractors, for the **TOTAL SUM PRICE** for Items 1 through 13, inclusive, of:

.....dollars

and cents(\$.....) \$.....

<u>Item No.</u>	<u>Estimated Quantity</u>	<u>Brief description, unit or lump-sum price bid in both words and figures</u>	<u>Total in Figures</u>
1	Lump sum	Mobilization / Demobilization, the lump sum price of dollars and cents (\$.....)	\$.....
2	5,500* cu. yd.	Remove & dispose of existing concrete, per cubic yard, dollars and cents (\$.....)	\$.....
3	2,860 lin. ft.	Construct new seawall, per linear foot, dollars and cents (\$.....)	\$.....
4	Lump sum	Construct new seawall return wall at southern end, the lump sum price of dollars and cents (\$.....)	\$.....
5	3,200* sq. yd.	Steel sheeting, per square yard, dollars and cents (\$.....)	\$.....
6	150* cu. yd.	Construct cobble berm, per cubic yard, dollars and cents (\$.....)	\$.....

* Indeterminate quantity assumed for comparison of bids.

<u>Item No.</u>	<u>Estimated Quantity</u>	<u>Brief description, unit or lump-sum price bid in both words and figures</u>	<u>Total in Figures</u>
7	250* cu. yd.	Reconstruct sand dune, per cubic yard. dollars and cents (\$.....)	\$.....
8	1,500* cu. yd.	Earth excavation below normal depth, per cubic yard, dollars and cents (\$.....)	\$.....
9	1,850* cu. yd.	Crushed stone, per cubic yard, dollars and cents (\$.....)	\$.....
10		<u>Remove & Reconstruct (R&R) Existing Revetment</u>	
10a	850 l.f.	R&R existing permitted revetment, per linear foot, dollars and cents (\$.....)	\$.....
10b	Lump sum	R&R existing revetment end wall protection at Sta. 29+50, the lump sum price of, dollars and cents (\$.....)	\$.....
10c	Lump sum	R&R existing revetment end wall protection at Sta. 33+00, the lump sum price of, dollars and cents (\$.....)	\$.....

* Indeterminate quantity assumed for comparison of bids.

<u>Item No.</u>	<u>Estimated Quantity</u>	<u>Brief description, unit or lump-sum price bid in both words and figures</u>	<u>Total in Figures</u>
11	400 cu. yd.	Remove existing revetment stone and transport to DBR, per cubic yard, dollars and cents (\$.....)	\$.....
12	800 s.y.	Plant Cape American Beach Grass, per square yard, dollars and cents (\$.....)	\$.....
13	870 l.f.	Furnish, Install and Maintain Silt Fence, per linear foot, dollars and cents (\$.....)	\$.....

We have included the security deposit or Bid Bond in the form of a certified check or Bid Bond, payable to the Owner, in the amount of Five percent (5%) of the General Bid Amount.

2. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for *thirty* days, Saturdays, Sundays and legal Holidays excluded, from the bid closing date.

The time period for holding bids, where Federal approval is not required is 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids and where Federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and holidays excluded after Federal approval.

If this bid is accepted by the Owner within the time period stated above, we will:

- Execute the Agreement within *fourteen* days of receipt of Notice of Award.
- Furnish the required 100 percent (100%) Performance and 100 percent (100%) Labor and Materials Bonds within *fourteen* days of receipt of Notice of Award in the form described in Supplementary Conditions.
- Commence work within *seven* days after written Notice to Proceed.

If this bid is accepted within the time stated, and we fail to provide the required bonds, the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference

between this bid and the bid upon which a Contract is signed.

In the event our bid is not accepted within the time stated above, the required security deposit will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

We understand that the estimated quantities for unit-price work are approximate only and may increase or decrease from the quantities listed and that the bid prices are fair compensation for the work whether or not actual quantities are more or less than estimated.

3. CONTRACT TIME

If this Bid is accepted, we will:

- Complete the Work by December 1, 2025.

4. BIDDINGS LAWS

Bids for Contract 2024-II are subject to MASSACHUSETTS GENERAL LAWS, CHAPTER 30s, 39M, AS AMENDED TO DATE, APPLIES. Contract 2024-II is subject to the minimum wage rates issued by the Commissioner of Department of Labor and Industries, in accordance with MGL Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the Contractor, before bid opening, to request, if necessary, any additional information on minimum wage rates for those trades people who may be employed for the proposed work under this contract.

5. ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Price.

Addendum # _____ Dated _____
Addendum # _____ Dated _____
Addendum # _____ Dated _____

6. LIQUIDATED DAMAGES

Liquidated damages specified in this contract are \$1000 per day for each calendar day beyond the contract completion date that work remains incomplete.

7. APPLICABLE GENERAL LAWS AND REGULATIONS

Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern Contract 2024-II and any provision violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Code of Federal Regulations and State Laws and Regulations exist, the more stringent requirement shall apply.

8. CERTIFICATION STATEMENTS

The undersigned bidder certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph, the work “person” shall mean any natural person, joint venture/partnership, corporation or other business or legal entity.

The undersigned bidder certifies under penalties of perjury that there have been no substantial changes in his financial position or business organization other than those changes noted within the application since the applicant’s most recent pre-qualification statement and that the bid is in all respects bona fide, fair and made without collusion or fraud with any other person. “Person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity which sells material, equipment or supplies used in or for, or engages in the performance of, the same or similar construction, reconstruction, installation, demolition, maintenance or repair work or any part thereof.

The undersigned bidder certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to *section forty-four A*.

The undersigned bidder certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section twenty-nine F of Chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

9. BID FORM SIGNATURES

The Corporate Seal of

(Bidder - print the full name of your firm)

(Bidder’s address, city, state, zip)

was hereunto affixed in the presence of:

(Authorized signing officer and Title)

(Seal)

(Authorized signing officer and Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture/partnership in the appropriate form or forms as above.

The Bidder is requested to state below what work of a similar character to that included in the proposed Contract he has done and to give references that will enable the Owner to judge his experience, skill, and business standing.

(Add supplementary page if necessary)

Have you ever failed to complete any work awarded to you? If so, state where, when and why.

AFFIDAVIT

State of _____)

_____) ss _____ 2024

(Bid Opening Date)

The undersigned being duly sworn, deposes and says that he is the _____
sole owner, partner, president, treasurer, or other duly authorized agent or official of

(Name of bidder as appearing in submitted proposal)

for work in _____ or _____
(City/Town)

and certifies that of his own knowledge, said bidder has not either directly or indirectly,
entered into any agreement, participated in any collusion, or otherwise taken any action in
restraint of free competitive bidding in connection with this contract.

(Signature and title of person making affidavit)

Sworn to before me this

_____ day of _____ 2024

Notary Public

CERTIFICATION TO PAYMENT OF TAXES

Pursuant to M.G.L. Ch.62C, s49A, I hereby certify under the penalties of perjury that

(Name of Bidder)

has filed all State tax returns, paid all State taxes required under law and complied with all laws of the Commonwealth of Massachusetts relating to the payment of taxes.

Signed under the penalties of perjury.

Signature of Authorized Representative

Date

OSHA 10 COURSE

Pursuant to M.G.L. CH30 S39M(c)

Under the provisions of M.G.L. CH30 S39M(c), “any person submitting a bid for, or signing a contract to work on” any public works or public building, **estimated to be worth more than \$10,000**, must certify that “all employees to be employed at the worksite” have successfully completed a 10 hour course in construction safety approved by the United States Occupational Safety and Health Administration (OSHA), referred to as the OSHA 10 course. In order to demonstrate compliance, the Act requires persons to submit documentation of successful completion of the OSHA 10 course with the submission of the first prevailing wage certified payroll report (CPR) for each employee. The Attorney General's Office (AGO) is responsible for enforcement of the Act and is authorized to undertake two actions to remedy violations of the Act. First, the AGO can institute proceedings in Superior Court to restrain the awarding of and performance of contracts, and second, it may remove employees who do not have OSHA 10 training from the worksite.

The Act requires “all employees to be employed at the worksite” to have the appropriate OSHA 10 training. In enforcing the Act, the AGO will require two categories of employees to have OSHA 10 training. The first category includes any employee who is entitled to receive the prevailing wage while on the worksite as determined by the Division of Occupational Safety. See M.G.L. CH149 S26-27D and 27F. The second category includes any other employee of any entity that is required to pay the prevailing wage at the worksite. Generally, supervisors (with the exception of so-called “working foremen”) are not entitled to receive the prevailing wage and therefore serve an example of employees who fall into this second category. Employees who fall into one of these two categories and work on a public works or public building worksite shall be required to have the OSHA 10 training (the “Covered Employees”). Examples of individuals who are not Covered Employees are truck drivers and individuals delivering materials provided they are not entitled to the prevailing wage while on the worksite.

In summary, all employees to be employed at the worksite shall have successfully completed a course in construction safety approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time that the employee begins work. Employers shall submit documentation of successful completion of OSHA 10 course with the submission of the first certified payroll for each employee. An OSHA Completion Card or copy thereof will be accepted as documentation.

Pursuant to M.G.L. CH30 S39M as amended and this bid proposal, I certify under the penalties of perjury that all employees to be employed at the worksite will have successfully completed the “OSHA 10” training, 10 hour course in construction safety approved by the Division of Occupational Safety prior to commencement of work at the project site.

Signature of Individual or Corporate Officer

SECTION 01200
ADDENDUM MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Procedures
 - 2. Scope of Payment
 - 3. Partial Payments

1.02 PROCEDURES

- A. For unit price items, the Contractor shall be paid for the actual amount of work accepted during the period of construction. After the work is completed, before final payment is made, the Engineer shall make final measurements to determine the quantities of the various items of work accepted as the basis for final payment.
- B. For lump sum items, the Contractor shall be paid in accordance with the progress schedule and schedule of values on the basis of actual percentage of work accepted until the work item is completed. Upon completion of the item, 100% of the lump sum price may be paid, less retainage.
- C. Once each month the Contractor shall prepare and sign an Application for Payment, and submit the original and five (5) copies for review and signature of the Owner and the Engineer. These completed forms will provide the basis upon which payment will be made to the Contractor.
- D. No payment of any application for Payment or of any retained percentage shall relieve the Contractor of his obligation to repair or replace any defective parts of the construction or to be responsible for all damage due to such defects during the construction period or the one-year guarantee period.

1.03 SCOPE OF PAYMENT

- A. Payments to the Contractor shall be made for the actual quantities of the contract unit price items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Bid, the contract unit prices will still prevail, except as provided in the General Conditions, Supplementary Conditions or Special Conditions.
- B. No payment of any Application for Payment or of any retained percentage shall relieve the Contractor of his obligation to repair or replace any defective parts of the construction or to be responsible for all damage due to such defects during the construction period or the one-year guarantee period.

1.04 PARTIAL PAYMENTS

- A. Partial payment shall be made monthly as the work progresses. All partial payments shall be subject to correction in subsequent partial payments or the final Application for Payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. The items of work required by the General Conditions, Supplemental Conditions, Special Conditions and Division 1 – General Requirements shall not be measured and paid separately except as expressly indicated therein, but shall be included in the prices bid for each unit and lump sum item.
- B. Each unit or lump sum price stated in the BID FORM shall constitute full compensation as herein specified for each item of work completed, including cleaning up, in accordance with the drawings and specifications.
- C. The prices for those items, which involve excavation, shall include compensation for disposal of surplus excavated material, handling water, and installation of all necessary sheeting and bracing.

3.02 PAYMENT – CONSTRUCTION OF DUXBURY BEACH SEAWALL

PHASE II

The payment for various unit and lump sum items listed below shall include all labor, tools, equipment and incidental work necessary to complete the item in accordance with the plans and specifications whether or not the particular work is mentioned in the following paragraphs.

ITEM 1 – MOBILIZATION / DEMOBILIZATION

- 1. The lump-sum price bid for Item 1 shall constitute full compensation for furnishing and transporting to the work site and, upon completion of the work, dismantling and removal of all equipment and materials necessary to perform the work and for cleaning up the site.
- 2. The lump-sum price under Item 1 shall be paid in two installments; fifty percent (50%) with the first payment request after the Contractor has mobilized to the site and fifty percent (50%) upon full completion of the entire project. Compensation under Item 1 shall also constitute full compensation for contract bonds and insurance and other contractual conditions.
- 3. The lump-sum price bid for Item 1 shall not be greater than ten percent (10%) of the total price bid.

ITEM 2 – REMOVE & DISPOSE OF EXISTING CONCRETE

1. Measurement. The quantity of existing concrete to be paid for under Item 2 shall be the number of cubic yards of existing concrete seawalls, return walls, footings, patios, walks stairs, ramps and slabs removed and disposed of complete to the lines and grades as shown on the drawings and as directed.
2. Payment. The unit price bid for Item 2 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for excavating, cutting, demolishing, removing and disposing of the existing concrete as specified and as directed. Cutting the existing seawall at the Marshfield Town line shall be included in the price bid for Item 2.

ITEM 3 – CONSTRUCT NEW REINFORCED CONCRETE SEAWALL

1. Measurement. The length of reinforced concrete seawall to be paid for under Item 3 shall be measured by the linear foot along the top of the wall as constructed.
2. Payment. The unit price for Item 3 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for constructing the reinforced concrete seawall and footing, complete, as indicated on the drawings and as specified herein, including excavation and backfill, layout, temporary excavation support, crushed stone, drainage appurtenances (PVC pipes, crushed stone trench, geotextiles), formwork, falsework, reinforcing steel, dowels, adhesives, joint fillers, sealants, expansion joints, construction joints, dowel connection to existing wall, concrete testing, surface preparation, curing, finishing, water control and all work incidental thereto and not specifically included for payment under other items. The unit price for Item 3 shall also include the restoration of adjacent areas damaged by construction.

ITEM 4 – CONSTRUCT NEW SEAWALL RETURN WALL AT SOUTHERN END

The lump-sum price bid for Item 4 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for constructing the reinforced concrete return wall and footing, complete, as indicated on the drawings and as specified herein, including excavation and backfill, layout, temporary excavation support, crushed stone, formwork, falsework, reinforcing steel, dowels, adhesives, joint fillers, sealants, expansion joints, construction joints, dowel connection to new seawall, concrete testing, surface preparation, curing, finishing, water control and all work incidental thereto and not specifically included for payment under other items. The unit price for Item 4 shall also include the restoration of adjacent areas damaged by construction.

ITEM 5 – STEEL SHEETING

1. Measurement. The quantity of steel sheeting to be paid for under Item 5 shall be measured by the square yard along the face of the sheeting as installed, complete in place to the lines and grades as shown on the drawings and as directed.

2. Payment. The unit price bid for Item 5 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for installing the sheeting, complete, as indicated on the drawings and as specified herein, including steel sheeting, layout, falsework, cutting, finishing/coating and all work incidental thereto and not specifically included for payment under other items.

ITEM 6 – CONSTRUCT COBBLE BERM

1. Measurement. The quantity of cobble berm to be included for payment under Item 6 shall be the number of cubic yards of cobble material used to construct the cobble berm to the lines and grades as shown on the drawings and as directed.
2. Payment. The unit price bid for Item 6 shall constitute full compensation for furnishing, placing, grading and compacting the cobble berm material, as specified.

ITEM 7 – RECONSTRUCT SAND DUNE

1. Measurement. The quantity of sand to be included for payment under Item 7 shall be the number of cubic yards of sand material used to reconstruct the sand dune to the lines and grades as shown on the drawings and as directed. **Included in this work is the restoration of the sand dune which was previously used for machine access to the beach (see Addendum 2 – Figure A1).**
2. Payment. The unit price bid for Item 7 shall constitute full compensation for furnishing, placing, grading and compacting the sand material, as specified. Planting of Cape American Beach grass on the reconstructed dune, shall be paid for under Item 12.

ITEM 8 – EARTH EXCAVATION BELOW NORMAL DEPTH

1. Measurement. The quantity of earth excavation below normal depth (limit of normal excavation) to be included for payment under Item 8 shall be the number of cubic yards of unsuitable material excavated, measured to the depths and lengths ordered, and to the width between payment limits for normal excavation as indicated on the drawings.
2. Payment. The unit price bid for Item 8 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for excavation below normal depth and disposal of the unsuitable material. Replacement of the unsuitable material shall be paid for under Item 9 – crushed stone.

ITEM 9 – CRUSHED STONE

1. Measurement. Crushed stone backfill below normal depth shall be paid for under Item 9. The quantity of crushed stone used as backfill below normal depth shall be the same as that number of cubic yards of earth excavation below normal depth measured for payment under Item 8, which said crushed stone replaces. Crushed stone used as backfill in other areas shall only be paid for under Item 9 when approved by the Engineer.

Crushed stone shown on the plans as a base for the seawall and return wall footings and for the drain trench along the back of the seawall shall be paid for under those respective items (Item 3 and Item 4) and shall not be paid for under Item 9. Crushed stone shown on the plans as a base for the proposed reconstructed revetment shall be paid for under Item 10a.

Crushed stone used to maintain the transition apron at the staging area shall also be paid for under Item 9 (see Addendum 2 – Figure A1).

2. Payment. The unit price bid for Item 9 shall constitute full compensation for furnishing, placing and compacting the crushed stone, as specified.

ITEM 10 – REMOVE & RECONSTRUCT EXISTING REVETMENT

1. Measurement. The quantity of existing revetment to be included for payment under Item 10a shall be the number of linear feet of revetment removed and reconstructed as shown on the drawings and as directed.
2. Payment. The unit price bid for Item 10a shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for excavation, removal, stockpiling and reconstructing the stone revetment, including crushed stone base from Sta. 15+69 to Sta. 19+20 and from Sta. 36+65 to the Marshfield Town line.
3. The lump-sum price to be paid for Items 10b and 10c shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for removing and stockpiling the existing revetment stone and reconstructing the revetment to match the existing revetment as directed.

ITEM 11 – REMOVE EXISTING REVETMENT STONE

1. Measurement. The quantity of existing revetment stone to be included for payment under Item 11 shall be the number of cubic yards of revetment stone excavated and removed from the project site as indicated and as directed.
2. Payment. The unit price bid for Item 11 shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for excavation, removal, transporting the stone over the road and stockpiling the stone at the Duxbury Beach Reservation property.

ITEM 12 – PLANT CAPE AMERICAN BEACH GRASS

1. Measurement. The quantity of Cape American Beach Grass to be measured under Item 12 shall be the total square yards of dune actually planted with Cape American Beach Grass, as shown on the drawings and as directed.
2. Payment. The unit price for Item 12 shall constitute full compensation for furnishing and installing/planting the Cape American Beach Grass. The Cape American Beach Grass shall be planted at **three** locations as directed. One location is the restored sand dune, the construction of which is paid for under Item 7. The second location is the twenty-five-foot-wide construction vehicle access route over the existing dune between the staging area at the DBR north parking lot and the beach. **The third**

location is the sand dune which was previously used for machine access to the beach (see Addendum 2 – Figure A1).

ITEM 13 – FURNISH, INSTALL AND MAINTAIN SILT FENCE

- 1. Measurement. The quantity of Silt Fence to be measured under Item 13 shall be the total linear feet of silt fence actually installed, as shown on the drawings and as directed.**
- 2. Payment. The unit price for Item 13 shall constitute full compensation for furnishing, installing and maintaining the silt fence for the duration of the project, as shown and as directed.**

END OF SECTION

SECTION 03300
ADDENDUM CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes all concrete masonry and control, expansion and contraction joint devices associated with concrete work.
- B. Related Sections:
 - 1. Section 03100 - Concrete Forms and Accessories: Formwork and accessories.
 - 2. Section 03200 - Concrete Reinforcement.

1.02 REFERENCES

- A. ACI 301 (American Concrete Institute) - Standard Specification for Structural Concrete for Buildings.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ACI 305R - Hot Weather Concreting.
- D. ACI 306.1 - Standard Specification for Cold Weather Concreting.
- E. ACI 308 - Standard Practice for Curing Concrete.
- F. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C40 – Method of Test for Organic Impurities in Sands for Concrete.
- I. ASTM C144 – Aggregate for Masonry Mortar.
- J. ASTM C150 - Portland Cement.
- K. ASTM C231 – Tentative method of Test for Air Content of Freshly Mixed Concrete.
- L. ASTM C260 - Air Entraining Admixtures for Concrete.
- M. ASTM C494 - Chemicals Admixtures for Concrete.
- N. ASTM C1107 - Packaged Dry, Hydraulic Cement Grout (Nonshrink).
- O. ASTM C1240 – Silica Fume Used in Cementitious Mixtures

- P. ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- Q. ASTM D 1854 – Jet Fuel Resistant Concrete Joint Sealer, Hot-Poured Elastic Type.
- R. TT-S-00227E (3) (COM-NBS) - Interim Federal Specification Sealant Compound, Elastometric Type.

1.03 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on joint devices, attachment accessories and admixtures.
- C. Submit proposed mix design of concrete to Engineer for review prior to commencement of work.
- D. Name and address of Independent Testing Laboratory for approval by Owner.

1.04 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.05 TESTING OF CONCRETE

- A. Quality Control
 1. Test Specimens: The Contractor will be required to make, cure and have tested, a minimum of one set of four test specimens from the concrete of each day's pour and for each fifty cubic yards of concrete cast in accordance with ASTM Designations C172, C31 and C39. One cylinder shall be broken after seven days and three cylinders after twenty-eight days.
 2. Slump: A slump test shall be made for each truckload of concrete in accordance with ASTM Designation C143. Slumps greater than design mix limit will be grounds for rejection of the concrete.
 3. Air Content: The Contractor shall make an air content test from each day's pour of concrete by the pressure method in accordance with ASTM Designation C231. Air contents above or below the limits specified will be grounds for rejection of the concrete.
 4. Testing: All personnel and laboratories testing concrete shall be licensed by the Commonwealth of Massachusetts.
 5. Test Failures: In the event the compressive strength of the cylinders, when tested, is below the specified minimum, the Owner may require test cores

of the hardened structure to be taken by the Testing Laboratory in accordance with ASTM C-42. If such test indicates that the core specimen is below the required strength, the concrete in question shall be removed and replaced without cost to the Owner. Any other work damaged as a result of this concrete removal shall be replaced with new materials to the satisfaction of the Owner at no additional cost to the Owner. The cost of coring will be deducted from the Contract amount. Where core cylinders have been taken by the Testing Laboratory and the concrete proves to be satisfactory, core holes shall be filled in a manner satisfactory to the Owner at no additional cost to the Owner.

- B. The Contractor shall coordinate the date and location of tests with the Owner before any concrete work is started.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Maintain one copy of each document on site.
- C. Acquire cement and aggregate from one source for Work.
- D. Conform to ACI 305R when concreting during hot weather.
- E. Conform to ACI 306.1 when concreting during cold weather.

1.07 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type IIA - Air Entraining or, with written permission of the Engineer Type IIIA - Air Entraining. When used in the work, cement shall be free from lumps and partially or wholly set cement.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Fine Aggregate. ASTM C33.
 - 1. Fine aggregate shall be clean, sound, sharp, screened, well-graded sand and shall have not less than 15 percent nor more than 30 percent, by weight, passing the No. 50 sieve.
 - 2. No fine aggregate shall be used if it contains more than 2 percent of silt or

which shows a color darker than Plate 2 when tested according to the ASTM Standard Method of Test for Organic Impurities in Sands for Concrete, Designation C40.

3. The weighted average loss when fine aggregate is subjected to five cycles of the soundness test using magnesium sulfate shall not exceed 10 percent.
- D. Coarse Aggregate: ASTM C33.
1. Coarse aggregate shall be washed, hard, tough and durable screened gravel or crushed stone and shall not have more than 5 percent by weight of deleterious substances and soft fragments. Unless otherwise approved, aggregate shall be well graded and shall conform to the grading requirements for coarse aggregates for nominal size 1-in. to No. 4.
 2. No coarse aggregate shall be used if it contains more than 1 percent of silt or which shows a color darker than Plate 1 when tested as above specified for fine aggregate.
 3. The weighted average loss when coarse aggregate is subjected to 5 cycles of the soundness test using magnesium sulfate shall not exceed 14 percent.
- E. Water: Clean, clear, free from deleterious amounts of oil, acid, alkali, salts and organic matter, unchlorinated and not detrimental to concrete. The water shall be from an approved source.

2.02 ADMIXTURES

- A. Air Entrainment: ASTM C260; Chloride Free, manufactured by Master Builders Solutions of BASF, Cleveland, OH; Construction Products Division of W. R. Grace & Co., Cambridge, MA; Sika Chemical Co., Lyndhurst, NJ or approved equal product.
- B. Water Reducing: ASTM C494 Type A – Water Reducing, chloride-free, manufactured by Master Builders Solutions of BASF, Cleveland, OH; Construction Products Division of W. R. Grace & Co., Cambridge, MA; Sika Chemical Co., Lyndhurst, NJ or approved equal product.
- C. Silica Fume: ASTM C1240; powder, densified; Sikacrete-950DP by Sika Corporation, Eucon MSA by Euclid Chemical Company or approved equal.
- D. Corrosion Inhibitor: Calcium nitrate-based corrosion inhibitor conforming to ASTM C494. Dosage as recommended by the manufacturer (typically three gallons per yard of concrete).
- E. Other Admixtures: Admixtures specifically for accelerating or retarding the setting of the concrete mix or superplasticizing the concrete mix shall not be used without approval of the Engineer.

2.03 ACCESSORIES

- A. Non-Shrink Grout: ASTM C1107, premixed compound consisting of non-metallic

aggregate, cement, water reducing and plasticizing agents; saltwater resistant, capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

2.04 JOINT DEVICES AND FILLER MATERIALS

- A. Construction and expansion joints shall be of the types indicated on the drawings and shall be constructed wherever and only in such places as are indicated on the drawings or otherwise directed or approved. The Contractor shall plan the work to minimize the use of joints in addition to those indicated.
- B. Expansion Joints in Slabs: ASTM D1854, Jet-Fuel-Resistant Concrete Joint Sealer, Hot-Poured Elastic Type. The compound shall be applied in accordance with the instructions of the manufacturer, using a suitable primer if necessary.
- C. Construction and Expansion Joints in Walls: Joint sealer shall be Sikadur-Combiflex SG System by Sika Corporation, or equal. The system shall be applied in accordance with manufacturer's instructions.
- D. Premolded-Joint Filler: ASTM D1752, Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction, Type I or Type II. Joints shall be of the thickness indicated on the drawings, of suitable length and width. As far as practicable, sheets shall be of correct width so that no longitudinal cutting will be required in the field. When strips are cut in the field, the cut surface shall be treated as recommended by the manufacturer.

2.05 CONCRETE MIX

- A. QUALITY AND PROPORTIONING OF CONCRETE: Materials for concrete shall be proportioned to produce a thoroughly workable, plastic mixture resulting in a dense, watertight concrete. The concrete shall meet the following limitations:
 - 1. Minimum compressive strength at 28 days (psi) 5,000
 - 2. Minimum cement content per cubic yard of concrete (lbs.) 615
 - 3. Maximum water/cement ratio 0.40
 - 4. Maximum fly ash (percent) 15
 - 5. Maximum slag (percent) 25
 - 6. Maximum Silica fume (percent) 10
 - 7. Design slump (in.) per ACI 318 6
- B. A field tolerance on slump of plus or minus one inch will be permitted at the discretion of the Engineer, depending on placement conditions.
- C. All Concrete shall contain air-entraining and water-reducing admixtures, designed and used in strict accordance with manufacturer's specifications and the approved concrete mix design.
- D. The amount of air-entraining admixture used shall include allowance for the addition of a water-reducing agent. The average resulting air content shall be 6.0

percent when measured by means of an Acme air meter, in conformance with ASTM C231, Tentative Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method. No concrete shall be used when the air content is less than 4.5 or greater than 7.5 percent, unless otherwise specified.

- E. Water-reducing admixture shall achieve a minimum 10 percent increase in 28-day compressive strength for any given cement content per cubic-yard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.02 PREPARATION

- A. In order to secure full bond at construction joints, the surface of the concrete previously placed (including vertical, inclined, and substantially horizontal areas) shall be thoroughly cleaned of foreign materials and laitance, if any, and then roughened so that the aggregate will be slightly exposed over 90 percent of each 2-in. square area. Such cleaning and roughening shall be done by the use of suitable tools and methods, such as picks, wire brushes, wet sandblasting, etc., and shall be followed by recleaning by means of a stream of clean water or compressed air.
- B. After preparation for bonding, the previously placed concrete at the joint shall be saturated with clean water and kept thoroughly wet overnight, after which all pools shall be removed. The concrete shall be given a thorough coating of neat cement mixed to a suitable consistency. The coating shall be 1/8-in. thick on vertical surfaces and 1/4-in. thick on horizontal surfaces, and shall be well scrubbed. New concrete shall be deposited before the neat cement dries.
- C. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 EMBEDDED WORK IN CONCRETE

- A. All embedded work shall be accurately built into or encased in the masonry by the Contractor as directed, and all necessary precautions shall be taken to prevent such work from being displaced or deformed.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301 and ACI 318.
- B. Notify Engineer a minimum of 24 hours prior to commencement of operations.
- C. Concrete placement, once started, shall be performed as a continuous operation until the entire section of approved size and shape is completed.
- D. No concrete shall be placed or frozen sub-grade or in water. Forms and excavations shall be free from water and all dirt, debris, and other foreign matter when concrete is placed.
- E. If chutes are used for conveying concrete, they shall be of metal or shall be metal lined. Chutes causing segregation of the concrete shall not be used.
- F. Concrete may be placed by pumping if approved in writing by the Engineer. Equipment for pumping shall be of such size and design as to ensure a relatively continuous flow of concrete at the discharge end without causing segregation of the concrete.
- G. Concrete shall be deposited in 18-in. layers maximum. Free-fall drop shall not exceed 5-ft. While being deposited, the concrete shall be thoroughly compacted by rodding and spading or by mechanical vibration. Vibration shall be held to the minimum necessary to produce thorough compaction without segregation.
- H. Concrete shall be deposited as near as possible in its final position to avoid re-handling or flowing.
- I. Ensure reinforcement, inserts, embedded parts, and formed expansion and contraction joints, are not disturbed during concrete placement.
- J. Construction and expansion joints shall be of the types indicated on the drawings and shall be constructed wherever and only in such places as are indicated on the drawings or otherwise directed or approved. The Contractor shall plan the work to minimize the use of joints in addition to those indicated.
- K. Footings, walls, and slabs shall have no horizontal joints. Unless otherwise indicated, all construction joints shall have keyways the widths of which are equal to one-third the thickness of the member in which the keyways are placed.
- L. Concrete to be sealed with joint compound shall be clean and dry and, if required, shall be primed. Compound shall be carefully poured, to prevent spilling the material over the adjoining surfaces, or placed with a caulking gun.
- M. Surfaces to which bituminous coating is to be applied shall be prepared and primed and an approved bituminous mastic coating material shall be applied in accordance with the instructions of the manufacturer.

- N. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.05 BONDING CONCRETE AT CONSTRUCTION JOINTS

- A. In order to secure full bond at construction joints, the surface of the concrete previously placed (including vertical, inclined, and substantially horizontal areas) shall be thoroughly cleaned of foreign materials and laitance, if any, and then roughened so that the aggregate will be slightly exposed over 90 percent of each 2-in. square area. Such cleaning and roughening shall be done by the use of suitable tools and methods, such as picks, wire brushes, wet sandblasting, etc., and shall be followed by recleaning by means of a stream of clean water or compressed air.
- B. After preparation for bonding, the previously placed concrete at the joint shall be saturated with clean water and kept thoroughly wet overnight, after which all pools shall be removed. The concrete shall be given a thorough coating of neat cement mixed to a suitable consistency. The coating shall be 1/8-in. thick on vertical surfaces and 1/4-in. thick on horizontal surfaces, and shall be well scrubbed. New concrete shall be deposited before the neat cement dries.

3.06 BONDING FILL TO BASE CONCRETE

- A. Where concrete fill is to be placed on structural or other concrete, the previously placed base concrete shall be prepared as hereinafter specified under "Surface Finish".

3.07 CURING AND PROTECTING

- A. All concrete work shall be protected against damage from the elements and defacement of any nature during construction operations.
- B. The Contractor shall make every effort to perform all work in the dry to the extent practicable. Tidal fluctuations will be allowed to enter the excavation. However, the Contractor shall be responsible for insuring that recently placed concrete is sufficiently cured such that any exposure to water, tidal or otherwise, will not damage the concrete or any other completed work.
- C. For at least seven days after having been placed, all concrete shall be so protected that the temperature at the surface will not fall below 50° F.
- D. No manure, salt or other chemicals shall be used for protection.
- E. The above-mentioned 7-day period may be reduced to 3 days in each case if high-early-strength cement is used in the concrete.
- F. Wherever practicable, finished slabs shall be protected from the direct rays of the sun to prevent checking and crazing.

- G. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- H. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.08 TRIMMING AND REPAIRS

- A. It is the intent of this specification to require forms, mixture of concrete, and workmanship so that concrete surfaces, when exposed, will require a minimum of trimming and repair.
- B. As soon as the forms have been stripped and the concrete surfaces exposed, fins and other projections shall be removed, recesses left by the removal of form ties shall be filled, and surface defects which do not impair structural strength shall be repaired.
- C. Defective concrete shall be cut normal to the surface until sound concrete is reached, but not less than 1-in. deep. The remaining concrete shall be thoroughly roughened and cleaned. Concrete around the cavity of the form-tie recess shall be thoroughly wetted and promptly painted with 1/16-in. brush coat of neat cement mixed to the consistency of lead paint. The hole shall then be filled with mortar. Mortar shall be 1:1-1/2 cement and sand mix.
- D. For filling form-tie recesses, the mortar shall be mixed slightly damp to the touch (just short of “balling”), hammered into the recess until it is dense and an excess of paste appears on the surface, and then troweled smooth. All patches shall be warm-moist cured as above specified.
- E. The use of mortar patching as above specified shall be confined to the repair of small defects in relatively green concrete. If substantial repairs are required, the defective portions shall be cut out to sound concrete and the masonry replaced by means of a cement gun, or the masonry shall be taken down and rebuilt, all as the Engineer may determine as necessary to meet this specification.

3.09 SURFACE FINISH

- A. Unexposed Surfaces
 - 1. Fins and irregularities on unexposed formed surfaces shall be smoothed.
- B. Top of Footing
 - 1. Surface on which other concrete will later be placed shall be struck off true at the surface indicated on the drawings or approved, as the concrete is being placed. As soon thereafter as the condition of the concrete permits and before it has hardened appreciably (normally within 2 hours after being deposited), all water, scum, laitance, and loose aggregate shall be removed from the surface by means of wire or bristle brooms in such manner as to leave the coarse aggregate slightly exposed and the surface

clean.

2. The Contractor shall take all necessary precautions to ensure that the surface prepared shall be kept free from storage piles, drippings, staining, or accumulation of substances which would adversely affect the concrete or the bond between layers of concrete and which cannot be adequately removed by the cleaning specified under “Bonding Concrete at Construction Joints”.
3. Where the top surface of structural concrete or concrete fill is to be left in a finished condition, the concrete shall be brought monolithically to the finished grade, as indicated on the drawings or required; subsequent addition of a layer of mortar (“topping”) or concrete to bring the finished surface to the correct grade will not be permitted.

C. Top of Wall

1. The top of the wall shall be given a monolithic steel trowel finish. The finish shall be sufficiently worked to provide a smooth, hard, dense, impervious surface, free of defects.

D. Exposed Faces of the Wall

1. The faces of the wall which will be exposed shall be given a rubbed finish.

3.10 BROOMED FINISH

- A. Surfaces to be given broomed finish shall first be given a steel-trowel finish. Immediately after troweling, the surface shall be lightly brushed in one direction with a hair broom to produce a nonslip surface of uniformly good appearance.

3.11 WOOD-FLOAT FINISH

- A. Surfaces to be given a wood-float finish shall be finished by tamping with special tools to force aggregates away from the surface, and screeding with straight edges to bring the surface to the required line.
- B. As soon after screeding as the condition of the concrete permits and before it has hardened appreciably, all water, film, and foreign material, which may work into the surface, shall be removed by means of lutes. Rough finishing shall be done with straight edges and darbies. Machine floating if used, shall not be started until the surface will support the float adequately without digging in and/or bringing excess fines to the surface. At such time, a minimum of machine and/or hand floating with a wood float shall be employed to bring the finish to a true and uniform surface with no coarse aggregate visible.
- C. Under no circumstances will sprinkling with water or dusting with cement be permitted during finishing of the slab.

3.12 STEEL-TROWEL FINISH

- A. Surfaces to be given a steel-trowel finish shall first be given a wood-float finish.

This shall be followed by hand troweling with steel trowels to bring the surface to a uniform, smooth, hard, impervious surface free from marks and blemishes. Troweling shall not be started until all water has disappeared from the surface. Over-troweling shall be avoided. Dusting with dry cement or other mixtures or sprinkling with water will not be permitted in finishing.

3.13 RUBBED FINISH

- A. Immediately after the forms have been stripped, all fins and other projections shall be carefully removed by use of a hammer or other suitable means, and imperfections shall be repaired as hereinbefore specified under “Trimming and Repairs”. While the surface is still damp, a thin coat of cement slurry of medium consistency shall be applied by means of bristle brushes to provide a bonding coat within pits and minor blemishes in the parent concrete; the coating of large areas of the surface with this slurry shall be avoided.
- B. Before the slurry has dried or changed color, a dry (almost crumbly) grout composed of 1 volume of cement to 1-1/2 volumes of masonry sand shall be applied. The sand shall have a fineness modulus of approximately 2.25 and comply with the gradation requirements of the ASTM Standard Specifications for Aggregate for Masonry Mortar, Designation C144.
- C. The grout shall be uniformly applied by means of damp pads of burlap and shall be well scrubbed into the pits, etc., to provide a dense mortar in such imperfections. The mortar shall be allowed to harden for one or two hours, depending on the weather. In hot, dry weather the surface shall be kept damp by means of a fine fog spray during the hardening period.
- D. When the grout has hardened sufficiently therefor but before it becomes so hard as to be difficult to remove, excess grout shall be scraped from the surface of the parent concrete by the edge of a steel trowel, without removing the grout from the imperfections. Thereafter the surface shall be allowed to dry thoroughly. If the Owner/Engineer determines that the surface does not present a uniformly smooth, clean surface of even texture and appearance, the surface shall be treated and rubbed to obtain a satisfactory finish.
- E. If rubbing is required, the surface should be wetted with clean water and rubbed with a No. 16 carborundum brick or other abrasive of equal quality until even and smooth and of uniform appearance, without applying any cement or other coating. If additional finishing is necessary it shall be obtained by a thorough rubbing with a No. 10 carborundum brick or other abrasive of equal quality. When approved by the Owner/Engineer, rubbing may be performed by use of satisfactory power tools and equipment. The Owner shall be the sole judge of the amount of rubbing required.

3.14 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and Inspection Services.

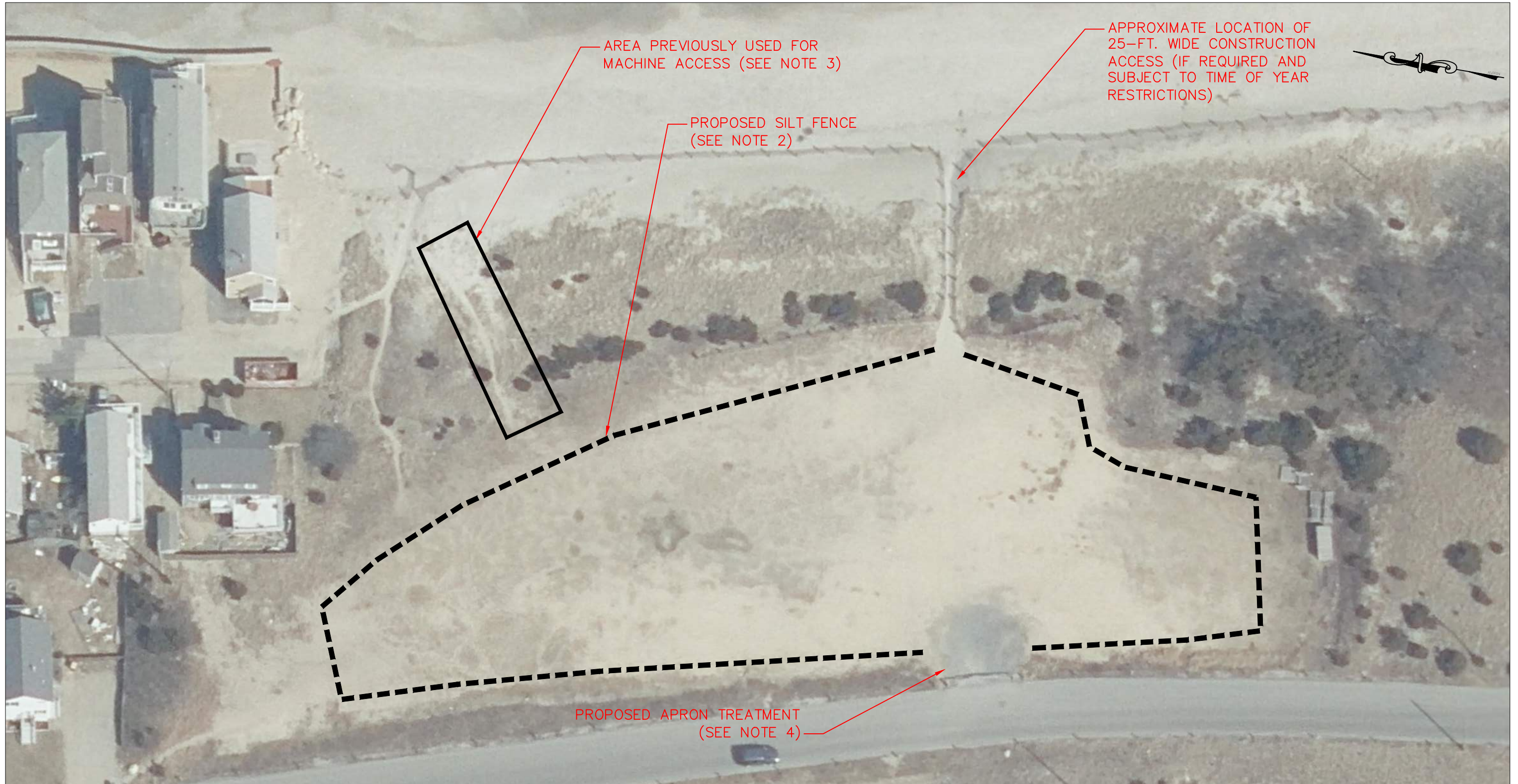
- B. Field inspection and testing will be performed in accordance with ACI 301 and under provisions of Section 01400.
- C. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of Work.
- D. The ready-mixed concrete manufacturer shall furnish, from an independent testing laboratory and through the Contractor, appropriate certificates of tests, materials, proportions, mixing, and strengths. Such certificates shall have an effective date not more than 6 months prior to the time when the concrete will be used and shall be furnished to the Engineer at least 7 days before the time of use. No ready-mixed concrete shall be used before the Engineer has given his approval thereof.
- E. The quantity of concrete to be mixed or delivered in any one batch shall not exceed the rated capacity of the mixer or agitator as stated on the nameplate for the type of mixer in use.
- F. At the time of delivery of each load of concrete, the Engineer shall be given a slip stating the actual quantity of each ingredient in that load. No admixtures shall be added to the load until delivery at the job site. Temperature of the concrete at the time of mixing shall not exceed 150° F. Concrete delivered in outdoor temperatures lower than 40° F. shall arrive at the work having a temperature of not less than 60° F. nor greater than 90° F.
- G. Attention is directed to the importance of dispatching trucks from the batching plant so that they shall arrive at the site of the work just before the concrete is required, thus avoiding excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms. Concrete shall be discharged into forms within 1-1/2 hours after water was first added to the mix, and shall be mixed at least 5 minutes after all water has been added.
- H. No water shall be added after one-half hour from when water was first added to the mix.
- I. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- J. The Contractor shall provide all necessary equipment for field-testing the concrete including but not limited to cylinder molds and slump cone.
- K. Concrete Cylinders:
 - 1. The Contractor shall notify a laboratory approved by the Engineer, sufficiently in advance of the work, of intention to place concrete so that arrangements can be made for taking concrete cylinders for concrete testing by the laboratory when directed by the Engineer. Certified laboratory personnel only shall take and store concrete cylinders, in accordance with proper practices, and deliver them in a timely manner to

the testing laboratory. Cylinders shall be taken at the beginning, middle and end of discharge of each batch chosen for testing.

2. All costs associated with this work, including but not limited to taking, storing, delivering test cylinders, and performing compression tests, shall be paid by the Contractor.

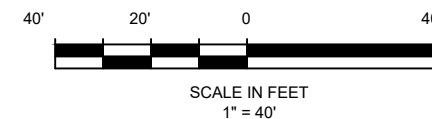
END OF SECTION

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NOTES:

1. BASE MAP IS MassGIS 2023 ORTHOPHOTOS.
2. SILT FENCE BARRIER IS TO BE INSTALLED PRIOR TO CONTRACTOR OCCUPYING STAGING AREA AND IT IS TO BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE PROJECT. ALL STAGING OF VEHICLES, EQUIPMENT, MATERIALS AND SUPPLIES SHALL BE CONTAINED WITHIN THE SILT FENCE BARRIER.
3. AREA PREVIOUSLY USED FOR MACHINE ACCESS IS TO BE RESTORED BY BRINGING RUTS UP TO GRADE WITH ADJACENT DUNE AND PLANTING WITH AMERICAN BEACH GRASS.
4. CONTRACT SHALL MAINTAIN THE TRANSITION FROM GURNET ROAD PAVEMENT INTO THE STAGING AREA WILL CRUSHED STONE TO PROTECT DAMAGE TO THE EDGE OF THE PAVEMENT.
5. PORTABLE TOILETS, PROVIDED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE STAGING AREA AND LOCATED ON HIGHER GROUND WHEN A STORM IS FORECAST.

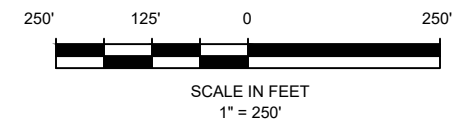


DEPARTMENT OF PUBLIC WORKS DUXBURY, MASSACHUSETTS DUXBURY SEAWALLS STAGING AREA PLAN	
DATE: 8/21/24	SCALE: 1" = 40'
PGB ENGINEERING, LLC MARSHFIELD, MASSACHUSETTS	



NOTES:

- 1. BASE MAP IS MassGIS 2023 ORTHOPHOTOS.
- 2. EXACT LOCATION OF REVETMENT STONE STOCKPILE AREA WILL BE STAKED OUT.



DEPARTMENT OF PUBLIC WORKS DUXBURY, MASSACHUSETTS	
DUXBURY SEAWALLS STONE LOCATION PLAN	
DATE: 8/21/24	SCALE: 1" = 40'
PGB ENGINEERING, LLC MARSHFIELD, MASSACHUSETTS	